

# Functional status of the patient: a potential tool for the reimbursement of physiotherapy in Belgium? – Appendices

*KCE reports vol. 40 Supplements*

## Het Federaal Kenniscentrum voor de gezondheidszorg

Voorstelling : Het Federaal Kenniscentrum voor de gezondheidszorg is een parastatale, opgericht door de programma-wet van 24 december 2002 (artikelen 262 tot 266) die onder de bevoegdheid valt van de Minister van Volksgezondheid en Sociale Zaken. Het centrum is belast met het realiseren van beleidsondersteunende studies binnen de sector van de gezondheidszorg en de ziekteverzekering.

### Raad van Bestuur

Effectieve leden : Gillet Pierre (Voorzitter), Cuypers Dirk (Ondervoorzitter), Avontroodt Yolande, De Cock Jo (Ondervoorzitter), De Meyere Frank, De Ridder Henri, Gillet Jean-Bernard, Godin Jean-Noël, Goyens Floris, Kesteloot Katrien, Maes Jef, Mertens Pascal, Mertens Raf, Moens Marc, Perl François, Smiets Pierre, Van Massenhove Frank, Vandermeeren Philippe, Verertbruggen Patrick, Vermeyen Karel

Plaatsvervangers : Annemans Lieven, Boonen Carine, Collin Benoît, Cuypers Rita, Dercq Jean-Paul, Désir Daniel, Lemye Roland, Palsterman Paul, Ponce Annick, Pirlot Viviane, Praet Jean-Claude, Remacle Anne, Schoonjans Chris, Schrooten Renaat, Vanderstappen Anne

Regeringscommissaris : Roger Yves

### Directie

Algemeen Directeur : Dirk Ramaekers

Algemeen Directeur adjunct : Jean-Pierre Closon

### Contact

Federaal Kenniscentrum voor de gezondheidszorg - Centre fédéral d'expertise des soins de santé.  
Résidence Palace (10<sup>de</sup> verdieping-10<sup>ème</sup> étage)  
Wetstraat 155 Rue de la Loi  
B-1040 Brussel-Bruxelles  
Belgium  
Tel: +32 [0]2 287 33 88  
Fax: +32 [0]2 287 33 85  
Email : [info@kenniscentrum.fgov.be](mailto:info@kenniscentrum.fgov.be) , [info@centredexpertise.fgov.be](mailto:info@centredexpertise.fgov.be)  
Web : <http://www.kenniscentrum.fgov.be> , <http://www.centredexpertise.fgov.be>

---

Functional status of the patient:  
a potential tool for the  
reimbursement of  
physiotherapy in Belgium?

-

APPENDICES

---

KCE vol. 40 Supplements

## APPENDICES OF CHAPTER II: INTERNATIONAL COMPARISON OF PHYSIOTHERAPY SERVICES

### A. GENERAL BIBLIOGRAPHY SOURCES

Busse R. Presentation on Health Care Systems in Europe; 2006 [updated cited Presentation on Health Care Systems in Europe. Available from: [http://www.mig.tu-berlin.de/files/2005.lectures/2005.04.21.rb\\_Barcelona.pdf](http://www.mig.tu-berlin.de/files/2005.lectures/2005.04.21.rb_Barcelona.pdf)

CIA. World Factbook, Populations Numbers July 2006. In; 2006. Available from: <https://www.cia.gov/cia/publications/factbook/>

ER-WCPT. Documents and Database; 2006 [updated cited Documents and Database. Available from: <http://www.physio-europe.org/>

Mathieu C NF, Peeters G et al. De kwaliteit en de organisatie van type 2 diabeteszorg. mei 2006. GCP. Available from: [http://kce.fgov.be/index\\_nl.aspx?ID=0&SGREF=5263&CREF=6615](http://kce.fgov.be/index_nl.aspx?ID=0&SGREF=5263&CREF=6615)

OECD. OECD HEALTH DATA; 2005 [updated cited OECD HEALTH DATA.

Policies EOHSa. Country Information: Health Care Systems in Transition; 2006 [updated cited Country Information: Health Care Systems in Transition. Available from: <http://www.euro.who.int/observatory>

RIZIV-INAMI. Statistieken Geneeskundige Verzorging; 2006 [updated cited Statistieken Geneeskundige Verzorging. Available from: [www.riziv.be](http://www.riziv.be)

USA S. STAT-USA Market Research Reports; 2006 [updated cited STAT-USA Market Research Reports. Available from: <http://strategis.ic.gc.ca/epic/internet/inimr-ri2.nsf/en/gr-01000e.html>

## B. COUNTRY ANALYSES

### I. BELGIUM

#### I.1 BACKGROUND INFORMATION ON THE HEALTHCARE SYSTEM

##### I.1.1. Existing Coverage Schemes

The Belgian health care system is based on a statutory insurance scheme, traditionally distinguishing between salaried workers and the self-employed. Universal coverage for all residents was officially introduced in 1998. Complementary to the compulsory health insurance, additional coverage for mainly outpatient care is taken by the majority of self-employed (9,6% of all insured residents in 2004). In general, private complementary insurance policies are gaining in popularity. In 2003, there were over 13.000.000 private policies for 10.355.844 residents (1).

##### I.1.2. Institutional Framework

Regulation and supervision of the health care system is centralized at the federal level. Federal authorities issue laws on health and disability insurance, hospitals, professional qualifications, etc. They also set annual budgets and supervise health care technology control. The main governmental body at this level is the Ministry for Social Affairs, Public Health and the Environment.

Reimbursement (and auditing) of medical care is organised by various “mutualities”, private not-for-profit sickness funds. The mutualities in turn are funded by the RIZIV/INAMI, National Institute for Sickness and Invalidity, a public body that comes under the Ministry. Mutualities and health care providers are both represented within RIZIV/INAMI and regulate health care fees through annual agreements.

Regional authorities (language communities) are mainly responsible for health care measures pertaining to education and prevention.

##### I.1.3. Health Care Delivery

Health care provision in primary care is predominantly private and based on independent medical practice. In general, no referral system applies to primary care in Belgium. Most doctors (GPs and specialists alike) operate in solo practices.

Secondary and tertiary care is provided by hospitals. Most are non-profit organisations. Privately run hospitals account for around 60% in total. A further distinction is made between psychiatric and general hospitals, the latter comprising acute care hospitals, geriatric hospitals and specialist hospitals. So-called “university hospitals” have special status on account of additional research and teaching functions.

#### I.2. PHYSIOTHERAPIST PROFESSION

##### I.2.1. Minimal Entry Requirements

Educational requirements are set by the Ministry of Health for practicing physiotherapy at minimally 4 years of post-secondary education (master's degree). Furthermore, physiotherapists in private practices have to satisfy general legal criteria for self-employment. Private professionals are required to meet minimal standards regarding their working environment and medical equipment. A registered declaration has to be filed with the INAMI/RIZIV. Physiotherapy services are covered for professionals who enjoy additional recognition by RIZIV/INAMI.

At the federal level<sup>1</sup> it was decided to limit the number of newly recognized physiotherapists (set at 450 for the years 2005 to 2008). This limited number breaks down to 60% Dutch speaking and 40% French speaking physiotherapists. As a consequence, a competency exam was held for newly graduated Dutch speaking physiotherapists in 2005, leaving 104 participants unrecognised for practicing reimbursed care. This written one-session examination covered aspects related to “the knowledge, competence and attitude” for practicing physiotherapy.

### 1.2.2. Number of physiotherapists

The number of recognised physiotherapists was estimated at 28.252 in 2004 by RIZIV/INAMI. The vast majority operate within RIZIV/INAMI agreements and provide reimbursed services. Their number was estimated at 22.007 out of 27.475 in 2002 (2). Most professionals are self-employed (estimated at 17.936 in 2003).

### 1.2.3. Practice

Outpatient care is typically delivered through private solo practice on a fee-per-service basis. Physiotherapists are also active in hospital care, residential care for the elderly, both through salaried pay or self-employment. More and more, hospitals and residential care homes for the elderly are setting up rehabilitation centres that provide physiotherapy care (2). As a result, physiotherapists in primary care are providing a dwindling percentage of physiotherapy care and salaried pay for physiotherapists in general is on the rise.

## 1.3. CONDITIONS FOR COVERED SERVICES

A referral prescription by a physician (GP or specialist) is required for reimbursed physiotherapy care. This prescription should stipulate the patient’s diagnosis, required medical interventions and maximum number of treatment sessions (6). Outpatients are then free to choose their physiotherapist, provided she or he is recognized by RIZIV/INAMI.

A thorough reform of reimbursement conditions for physiotherapy care was put through in 2002. A distinction is made between 5 main categories:

- Common disorders for which 18 treatment sessions qualify for maximal reimbursement per annum. Examples are sprained wrists, low back pain, etc.
- Disorders involving functional limitations (“F-listed” disorders) that qualify for 60 sessions (maximum reimbursements annually). Examples are post-surgery disorders, chronic fatigue, etc.
- Severe disorders (“E-listed disorders”), for which the number of sessions is not limited. Examples are paralysis, burn victims, etc.
- Labour; 9 reimbursed sessions in outpatient care, pre or post birth.
- Consultation examinations of patients on behalf of physicians for medical physiotherapy advice.

Depending on the category of physiotherapy care, number of (additional) sessions and the patient’s statutory profile the level of maximal reimbursement varies between 65% to 90% of official RIVZ/INAMI tariffs. Coverage for care by recognised physiotherapists who do not adhere to the annual tariff agreements and claim higher charges (around 1 out of 10 physiotherapists) is limited to 25% of regular coverage. A further limitation consists of the set average duration of treatment sessions depending on the type of treatment and point of care.

In 2004 the total amount of reimbursed physiotherapy interventions accounted for 394.019.000€, 2,3% of all medical expenses sickness funds reimbursed that year.

<sup>1</sup> The so-called “planning committee” at the Ministry of Health is charged with human resources planning for three medical professions: physiotherapists, doctors (general physicians and specialists) and dentists.

## 1.4. QUALITY ASSURANCE AND EVALUATION SYSTEM

### 1.4.1. Mandatory Programs

As stated above, professionals aspiring to set up a private practice are required to meet minimal standards regarding their working environment and medical equipment. A registered declaration has to be filed with the INAMI/RIZIV in this respect. A further additional restriction that can be interpreted as quality-enhancing is the possibility of barring newly graduated professionals from RIZIV/INAMI covered care through a central examination. As mentioned above, this has proven to be very controversial. More specifically, it is claimed by some that the 2005 Flemish examination overemphasized the importance of legal and technical expertise and thus does not constitute an appropriate, i.e. quality inducing, means of selection.

Physiotherapists providing reimbursed care are obliged to keep medical patient records (ordered per prescription). Minimally these records should mention surname, first name, date of birth and identification of the referring physician, medical data of the prescription, summarized findings of the physiotherapy examination, a copy of physiotherapy reports on behalf of referring physicians, envisaged treatment plan and possible posterior changes, interventions per session and dates of various sessions. At present, there is no obligation to store these records in a digital format. However, RIZIV/INAMI has made financial allowances for physiotherapists keeping electronic records. It seems logical that the consistent use of an orderly record system can contribute to a more self-aware and uniform manner of delivering care for individual practitioners.

### 1.4.2. Voluntary programs

Contrary to existing programs for physicians, no accreditation program for physiotherapists is officially recognised by the government<sup>2</sup>.

Currently, continuing development initiatives are developed and centralized by the professionals associations "UKFGB", Union des Kinés Francophones et Germanophones de Belgique and "UZK", Unie van Zelfstandige Kinesisten, who disseminate related information through their websites. It would appear these initiatives primarily focus on enhancing individual physiotherapists' medical expertise. Initiatives that aim to raise quality through a more efficient organisation of practices, (self-assessment schemes followed by (peer-reviewed) audits) seem to be less stressed.

An approach toward physiotherapy that accentuates the scientific underpinning of physiotherapy care is favoured by the "WVVK", Wetenschappelijke Vereniging van Vlaamse Kinesisten. The association propagates evidence based physiotherapy by offering access to medical databases to its members (at low cost), organising courses on information retrieval strategies and advocates the use of evidence-based guidelines in physiotherapy<sup>3</sup>. Further noteworthy developments include peer review projects and smaller local quality control groups of members.

In collaboration with the UZK professional association, the WVVK has elaborated a quality management program for physiotherapists financed by the European Social Fund and the Flemish Community. This program is designed as a teaching package (workshops and lectures) and is modular in its outline, comprising 4 components (3):

- The use of ICT in physiotherapy practices: establishing necessary hardware, software and user skills.
- "Rationalisation" of patient record keeping in physiotherapy: developing a patient record that satisfies legal requirements, supports high standards of care and facilitates communication with various "stakeholders".<sup>4</sup>

<sup>2</sup> These programs include criteria with regard to size of practice, peer review, patient records and continuing development.

<sup>3</sup> References to various guidelines, including Dutch KNGF and British CSP guidelines, databases and guideline validation tools can be found at the WVVK website.

<sup>4</sup> Stakeholders mentioned by WVVK: referring physician, colleagues, other care providers, consulted physicians, sickness funds and patients.

- Various therapeutic possibilities of ICF<sup>5</sup>: propagating the understanding of ICF and its possible use in physiotherapy care.
- Effective communication in physiotherapy: recommendations on ways of communicating with stakeholders (cf. supra).

The program is executed according to a time schedule. By October 2006 all modular components should have been tested and evaluated.

### **1.4.3. Current Points of Contention**

The recent reforms in the field of reimbursed physiotherapy were designed to avoid unnecessary expenses in care whilst enhancing quality of care. Measures were taken regarding both the level of patient access and access to the profession (2).

Criticisms mainly address the arbitrary nature of “E- and F-listing” certain disorders as opposed to others. Also, the number of sessions per common disorder qualifying for maximum reimbursement is considered too low. Moreover, the new reimbursement scheme is seen to disregard the potential preventive nature of physiotherapy care, thus hampering overall savings in health care (4, 5).

The current practice of limiting entry to the profession posterior to graduation is criticized by some who feel the content of the 2005 examination was ill-considered. More in general, it is claimed entrance examinations should limit access to education, thus avoiding aspiring future physiotherapists spending unnecessary years of training.

## **1.5. HEALTH INFORMATION SYSTEMS**

Traditionally, sickness funds collect data on reimbursed interventions by coded numbers. These data can then be split out according to chronology, type of physiotherapist, point of care. Their use is mainly limited to administrative purposes (follow-up of billing regulations).

As emphasized by the WVK in their quality project a “rationalized” patient record system can help to enhance and standardize quality of care. The WVK, however, does not champion the use of these data for benchmarking exercises, scientific research and/or external auditing.

---

<sup>5</sup> International Classification of Functioning, Disability and Health, as defined by the World Health Organisation “ICF is useful to understand and measure health outcomes. It can be used in clinical settings, health services or surveys at the individual or population level. Thus ICF complements ICD-10”



## I.6. KEY POINTS

- The Belgian health care system is based on a statutory insurance scheme, traditionally distinguishing between salaried workers and the self-employed. Regulation and supervision of the health care system is centralized at the federal level.
- Educational requirements are set at minimally 4 years of post-secondary education. The number of recognised physiotherapists was estimated at 28.252 in 2004.
- Depending on the category of physiotherapy care (type of disorder), the number of (additional) sessions and the patient's statutory profile the level of maximal reimbursement varies between 65% to 90% of official RIVZ/INAMI tariffs for physiotherapists practicing within reimbursement agreements.
- Currently, continuing development initiatives are developed and centralized by the professional associations. An approach toward physiotherapy that accentuates the scientific underpinning of physiotherapy care is favoured by the scientific member-led association "WVVK".
- Recent reforms in the field of reimbursed physiotherapy were designed to rationalize both patient access and access to the profession. Criticisms of these reforms mainly address the arbitrary nature of reimbursement.
- The use of health information data is mainly limited to administrative purposes (follow-up of billing regulations).

## APPENDICES BELGIUM

### Appendix 1: Visited websites

RIZIV/INAMI, National Institute for Sickness and Invalidity Insurance: [www.riziv.be](http://www.riziv.be)

Belgian Federal State: legislation and institutions: [www.belgium.fgov.be](http://www.belgium.fgov.be)

Intermutualistisch Agentschap (scientific association of Belgian sickness funds) [www.nic-ima.be](http://www.nic-ima.be)

Professional association (French and German speaking physiotherapists): [www.webkine.be](http://www.webkine.be)

Scientific (member-led) association (Dutch speaking physiotherapists): [www.wvbk.be](http://www.wvbk.be)

Professional association (Dutch speaking physiotherapists): <http://www.uzk.be>

### Appendix 2: Additional references

1. Schriftelijke vraag van Mevr. Yolande Avondtroodt aan Minister Demotte. In: Parlement; 2005.
2. K. R. Sectorrapport Kinesitherapeuten; 2005 [updated cited Sectorrapport Kinesitherapeuten. Available from: [http://www.startersservice.be/images/res70483\\_9.pdf](http://www.startersservice.be/images/res70483_9.pdf)
3. WVK U. Kwaliteitsmanagement voor Kinesitherapeuten; 2006 [updated cited Kwaliteitsmanagement voor Kinesitherapeuten. Available from: <http://www.wvk.be/55.html>
4. Nieuwsblad. Een op de vijf ontevreden over de kinesithérapie. Nieuwsblad 2006 31/07/2006.
5. Pijnlig V. Tarieven Kinésithérapie (2004) Hervormingen lopen nog mank; 2004 [updated cited Tarieven Kinésithérapie (2004) Hervormingen lopen nog mank. Available from: <http://www.tlichtpuntje.be/info/kinesithérapie2004.doc>
6. RIZIV/INAMI. Voetnotenreferentie bij "De Kinesithérapie"; 2003 [updated cited Voetnotenreferentie bij "De Kinesithérapie". Available from: [www.riziv.be](http://www.riziv.be)

## **2. CANADA, PROVINCE OF ONTARIO**

### **2.1. BACKGROUND INFORMATION ON THE HEALTHCARE SYSTEM**

#### **2.1.1. Existing Coverage Schemes**

Under the 1984 Canada Health Act all eligible Canadian residents should have access to universal, comprehensive coverage for medically necessary hospital and physician services through the Medicare program. Additional benefit schemes exist in various provinces covering expenses outside of Medicare: prescription drug coverage, dental and vision care, etc.

Private (complementary) insurances schemes are mostly employment-based.

#### **2.1.2. Institutional Framework**

Three levels of government are active in public health: federal government, provincial and territorial governments, municipal governments.

The primary role of the federal government is to establish and administer uniform national principles for health care and to assist provincial/territorial health care by means of fiscal transfers.

The provincial government is the main regulator and provider of health care. Most of the health care financing comes from provincial funds.

#### **2.1.3. Health Care Delivery**

Delivery of health care services varies strongly from province to province. Provincial health care services include primary health care services by doctors, nurses and other health professionals as well as care in hospital.

In 2004 Canadians spent CAD 130 billion on health care; 70% of which through the public sector.

### **2.2. PHYSIOTHERAPIST PROFESSION**

#### **2.2.1. Minimal Entry Requirements**

Throughout Canada a minimum of four years of post-secondary education (BSc) is required for newly graduated physiotherapists wishing to practice. From 2010 onward 6 years of post-secondary education (MSc) will be mandatory.

Posterior to graduation aspiring physiotherapists should successfully complete the Physiotherapy Competency Examination (PCE) in order to work in all Canadian provinces, barring the provinces of New Brunswick and Quebec.

The PCE is organised by the Canadian Alliance of Physiotherapy Regulators and intended to determine whether candidates have “the knowledge, skills, attitudes and behaviour needed to enter the physiotherapy profession in Canada”. A striking feature of the PCE is the practical component (treatment of actor-patients) it contains.

Finally, physiotherapists are required to register with a provincial licensing authority as a condition of practice.

#### **2.2.2. Number of physiotherapists**

In 2004 15.607 registered physiotherapists were active in Canada, including 5.494 practitioners in the province of Ontario. That same year 631 new Bachelors in physiotherapy graduated from Canadian universities (1).

Over 9000 physiotherapists are member (on a voluntary basis) with the Canadian Physiotherapy Association (CPA), a national professional organisation.

### 2.2.3. Practice

Physiotherapists work in a variety of settings, both private and public, such as health clinics, hospitals, rehabilitation centres and nursing homes (2). Generally, physiotherapists receive salaried pay, although private practices may work on a fee-for-service basis.

## 2.3. CONDITIONS FOR COVERED SERVICES

Under the provisions of the Canada Health Act, while in hospital physiotherapy services are publicly funded and free of charge. In Ontario, the Canada Health Act is implemented by the Ontario Health Insurance Plan (OHIP). No premiums are to be paid for OHIP coverage. Three criteria determine general eligibility for OHIP coverage (3):

- One must be a Canadian citizen or landed immigrant or refugee.
- One must have one's permanent and principal home in Ontario.
- One must be present in Ontario for at least 153 days in any twelve-month period.

Five specific criteria determine eligibility for OHIP coverage of physiotherapy care in ambulatory care:

- Treatment must be ordered by a physician.
- Patients must be younger than 20 years of age or 65 years of age and older.
- The patient has been discharged as a hospital patient and needs physiotherapy care for a condition for which he was admitted to hospital.
- The patient needs in-home services due to his/her condition, illness or injury.
- The patient is an Ontario Disability Support Program, Family Benefits, or Ontario Works recipient.

OHIP will cover physiotherapy services in hospitals and community care centres. As federal contributions to healthcare budgets have steadily declined, however, provincial authorities resorted to cost containment. As a result, long waiting lists now persist for OHIP-covered outpatient physiotherapy services.

Many, otherwise OHIP-covered, people therefore purchase physiotherapy care through self-pay or partial coverage by employer-based plans. In Ontario these plans (e.g. the Workplace Safety and Insurance Board) allow for direct access without a prior referral prescription. Covered charges, however, typically are limited to a low amount of around 500 CAD (or about 346€) annually.

## 2.4. QUALITY ASSURANCE AND EVALUATION SYSTEM

### 2.4.1. Mandatory Programs

Specific accreditation programs for physiotherapy education at academic level are provided by the Accreditation Council for Canadian Physiotherapy Academic Programs (ACCPAP). Another quality guarantee is provided through the nation wide Competency Examination (cf. supra).

Regarding practices of established physiotherapists, each province has legislation on the scope of physiotherapy services, ongoing practice/continuing competence and complaint procedures. The College of Physiotherapists of Ontario is the largest regulatory physiotherapy body in Canada. It lays down the mandatory standards for physiotherapy practice. These standards are comprehensive and include among others:

- Confidentiality, conflicts of interests, record keeping, etc.
- Billing procedures, Referral procedures, Supervision of Physiotherapy students, etc.
- Application of medical guidelines.

The College is involved in activities to promote continuing education, but apparently does not impose it as a formal obligation for practising physiotherapy. A striking feature of the college's didactic approach is the real-life application of adopted standards to hypothetical situations (online accessible scenario's).

### 2.4.2. Voluntary programs

The Canadian Council on Health Services Accreditation (CCHSA) is a national independent organisation. As a non-for-profit outfit it grants accreditation to health services that pass its quality standards. Among others, its program covers rehabilitation services and long term care. The two-stage procedure encompasses organisational self-assessment and external peer review. Services and methods are held against an established set of national standards.

Additionally, specific accreditation programs for physiotherapy services are available through the Canadian Physiotherapy Association. An external assessment of service standards by peer review referees is offered through this program. Individual practitioners have access to continuing education facilities at reduced rates.

## 2.5. HEALTH INFORMATION SYSTEMS

The Canadian Institute for Health Information (CIHI) will start collecting standardized data on active physiotherapists and integrate them into the "National Physiotherapy Database", from 2007 in order to analyse the profession to more extensive detail starting 2008. The main purpose of this undertaking is to underpin central manpower planning efforts.

## 2.6. KEY POINTS

- **Provincial and territorial authorities are the main parties in financing, regulating and delivering health services.**
- **Admission criteria for the profession have been harmonized across (most of) Canada and include testing of practical physiotherapy skills.**
- **Long waiting lists exist for OHIP-reimbursed physiotherapy care. Many people resort to the self-pay market.**
- **For some employment-based complementary insurance schemes direct access (without a prior referral prescription) is allowed.**
- **Quality standards are imposed through provincial bodies; they concern both individual practitioners as the organisation of services.**

## APPENDICES CANADA

### Appendix 1: Visited websites

#### **Canadian Physiotherapy Association: national professional association**

Canadian Alliance of Physiotherapy Regulators: coordinating body of provincial regulatory bodies.  
[www.physiotherapy.ca](http://www.physiotherapy.ca)

Canadian Institute for Health Information. [www.cihi.ca](http://www.cihi.ca)

Canadian Council on Health Services Accreditation. [www.cchsa.ca](http://www.cchsa.ca)

Ministry of Health, Ontario [www.health.gov.on.ca](http://www.health.gov.on.ca)

### Appendix 2: Contacted experts

Dawn Burnett, PT, PhD Director Practice and Policy Canadian Physiotherapy Association

### Appendix 3: Additional references

1. CIHI (2006). Health Personnel Trends in Canada 1995 to 2004.
2. Regulators, C. A. o. P. (2002). Physiotherapy Health Human Resources.
3. Wilson, R. (2006). The Canadian Medicare System - An Overview.

## 3.FRANCE

### 3.1. INTRODUCTION : PRINCIPES GENERAUX DE L'ORGANISATION DES SOINS ET DE LEUR FINANCEMENT DANS LE PAYS

L'ensemble de la population bénéficie de la couverture garantie par l'assurance maladie obligatoire, qui est financée principalement par les cotisations des travailleurs, et une cotisation sociale généralisée. La majeure partie des frais de soins est prise en charge par des caisses d'assurance maladie dont la gestion est centralisée<sup>6</sup> ; les taux de remboursement des régimes obligatoires s'étagent, pour la plupart des biens et services, entre 60 et 80 %.

Il existe trois principaux régimes d'assurance maladie :

- le régime général des salariés (85% de la population, dont 95% affiliés à la Caisse Nationale d'Assurance Maladie des Travailleurs Salariés, ou CNAMTS),
- le régime des travailleurs agricoles (Mutualité Sociale Agricole),
- le régime des travailleurs indépendants (Assurance Maladie des Professions Indépendantes)

De plus, toute personne, résidant en France de façon stable et régulière qui n'est pas couverte au titre de son activité professionnelle, ou comme ayant droit d'un assuré, a droit à la couverture maladie universelle (CMU) de base (1,6% de la population en 2001)

Il existe des systèmes d'exemptions, permettant un remboursement de 100 %, pour certaines maladies chroniques (affections longues durée – ALD – comme SIDA, diabète...), certains traitements (infertilité...), ou certaines personnes (femmes enceintes, enfants handicapés, etc.) (1).

Environ 90% des Français disposent également d'une assurance complémentaire (ou volontaire). Ces assurances sont appelées « mutuelles ». Ces assurances complémentaires constituent un groupe hétérogène incluant assureurs publics et privés et varient donc en termes de garanties et de cotisations.

#### Données générales, 2002

Habitants	59 486 000
Dépenses totales de santé (€, millions)	148,082
Dépenses totales de santé, en % du produit national brut	9.7
Dépenses totales de santé, par habitant (€)	2489

Source : OECD Health Data, 2004

(NB : l'OECD utilise une définition standardisée des dépenses de santé).

Les rapports entre les différents professionnels de santé - dont les kinésithérapeutes - et les Caisses d'Assurances sont régis par une convention. Tous les professionnels qui souhaitent obtenir pour leurs patients assurés un remboursement des soins, doivent adhérer à cette convention.

Ce sont les syndicats dits "représentatifs" qui signent la convention avec les Caisses d'Assurance. Toute nouvelle actualisation est considérée comme acceptée par les professionnels de terrain. Etre conventionné implique en théorie le respect des tarifs proposés par l'Assurance-Maladie.

## 3.2. DEPENSES ET CONSOMMATION DE SOIN POUR LA KINESITHERAPIE AMBULATOIRE

La consommation médicale totale est la somme des dépenses encourues par l'assurance obligatoire, les mutuelles, les assurances privées, les institutions de prévoyance et les ménages (NB : définition différente des dépenses de santé OECD).

### Données globales (2002)

Consommation médicale totale (€, millions)	138.390
Consommation totale pour la kinésithérapie en ambulatoire (€, millions)	3.117
Valeur totale des dépenses de kinésithérapie en ambulatoire, en % de la consommation médicale totale	2%
Valeur totale des dépenses de kinésithérapie en ambulatoire, par habitant (€)	52

Source : Comptes nationaux de la santé, 2003 (2).

## 3.3. Les kinésithérapeutes et leurs activités

### 3.3.1. Qui peut exercer la profession en France ?

Les études de masso-kinésithérapie durent 3 ans. Des quotas stricts limitent les inscriptions qui se font sur base d'un concours extrêmement sévère (ex : dans certains instituts de formation 2500 postulants pour 30 places). Une autorisation d'exercice est délivrée automatiquement aux diplômés européens qui en font la demande ; ces autorisations sont pour l'essentiel délivrées à des titulaires de diplômes belges (88 %), dont les deux tiers sont d'ailleurs de nationalité française. Le nombre d'autorisations délivrées en 2003 (1.200) était presque équivalent au quota d'entrée.

### 3.3.2. Nombre de kinés, et répartition par secteur d'activité

En 2004, on recensait 58.642 kinés en France, soit 98/100.000 habitants (3), dont environ 78 % exerçant une activité libérale et 22 % une activité salariée. Les salariés se répartissent entre secteurs hospitalier (69%), médicosocial (8%) et autre (23%) (4).

Le nombre de kinésithérapeutes conventionnés avec l'Assurance-Maladie, (c'est-à-dire, habilités à obtenir un remboursement de leurs prestations auprès des assurés) était de 41,763 soit 69,7/100.000 habitants (5).

Il y a en France pénurie de kinésithérapeutes (ce qui se marque par exemple par le grand nombre d'offres d'emplois, la difficulté de trouver un kinésithérapeute, un taux de chômage très faible, etc.)

### 3.3.3 Description des activités des kinésithérapeutes

Les actes de rééducation des conséquences des affections orthopédiques et rhumatologiques sont les plus fréquents. En 2001, tous libellés confondus, ils représentaient environ 70% de la totalité des actes (ambulatoires et hospitaliers) suivis de loin par les actes de rééducation respiratoire et la rééducation des conséquences d'affections neurologiques et musculaires (d'après une étude sur un échantillon représentatif des actes de kinésithérapie pour lesquels un remboursement était demandé; voir détails en annexe (5)



### 3.4. REMBOURSEMENT DES PRESTATIONS

#### 3.4.1. Système de paiement; et description de la nomenclature

L'assurance obligatoire rembourse les prestations sur base d'un paiement à l'acte ; l'ensemble des actes remboursés fait l'objet d'une nomenclature. Un ticket modérateur de 40 % reste en principe à charge des assurés ordinaires sans droit à une exemption. Ce ticket modérateur est entièrement couvert par les assurances complémentaires pour ceux (la grande majorité) qui en disposent. Dans les grandes agglomérations cependant, les kinésithérapeutes dépassent souvent le tarif conventionnel. Ce dépassement n'est pas toujours remboursé par les mutuelles. Aucune sanction n'est appliquée pour ce non-respect des tarifs conventionnels.

La nomenclature actuelle date de 2000 et est organisée en 12 'articles', dont 8 sur base anatomopathologique (rééducation des affections orthopédiques et rhumatologiques, neuro-musculaires, etc.) les 4 autres étant : la déambulation chez le sujet âgé, les brûlures, les soins palliatifs, et les manipulations vertébrales (ces dernières ne sont cependant pas des compétences des masseurs-kinésithérapeutes).

Chaque 'article' contient une liste d'actes. Un acte correspond à la prise en charge d'un patient souffrant d'un problème particulier. A chaque acte correspond un et un seul tarif, pour une durée moyenne de 30 minutes et quels que soient les moyens thérapeutiques mis en œuvre (il existe une seule exception, pour la balnéothérapie). Ce tarif est exprimé par une 'cotation', qui exprime le multiplicateur de la lettre-clé, lequel varie de 6 à 12,2 selon les actes.

Cette nomenclature n'est pas codée. Le kinésithérapeute ne transmet à l'Assurance-Maladie que la cotation correspondant à l'acte presté, c'est-à-dire sa valeur monétaire.

La nomenclature actuelle a donc le mérite de la simplicité (l'ensemble tient en quelques pages)<sup>7</sup>.

Exemple :

*Article 1 : Rééducation des conséquences des affections orthopédiques et rhumatologiques*

*Acte : rééducation de l'enfant ou de l'adolescent pour déviation latérale ou sagittale du rachis*

*Cotation : 7 (fois la lettre-clé)*

Comme la nomenclature ne décrit en aucune façon *des modalités de traitement*, il n'y a aucun lien établi entre remboursement et 'kinésithérapie basée sur les preuves'.

#### 3.4.2. Qui prescrit, qui décide de la nature et longueur du traitement ?

Seuls les médecins (spécialistes, ou non) sont habilités à prescrire des prestations de kinésithérapie.

Depuis 2000, la prescription médicale peut ne comporter que l'indication du traitement (prescription non quantitative), auquel cas c'est le kinésithérapeute qui décide du nombre de séances et le type de technique utiles au traitement. Cependant la majorité des médecins continue à prescrire de manière 'quantitative'.

A l'origine, il était prévu dans la nomenclature un nombre maximum de séances remboursées par problème décrit (en particulier, 15 séances pour la rééducation des lombalgies), la prolongation étant soumise à l'accord du médecin conseil. La logique de cette limite résidait dans l'hypothèse que dans 80% des cas, ce nombre serait suffisant. Les autres seraient évaluées au cas par cas par le médecin conseil.

Ce nombre fixe de séances a été refusé par les associations professionnelles lors des négociations de cette nomenclature. Aujourd'hui, toute demande de kiné (et de prolongation) est soumise à l'accord préalable du médecin conseil.

---

<sup>7</sup> La nomenclature et le texte de la convention peuvent être consultés sur le site web de la Fédération Française des Masseurs-Kinésithérapeutes-Rééducateurs (FFMKR): <http://www.ffmkr.com/?page=menu&rubrique=texteoff&ssm=accueil>

## 3.5. MECANISMES D'ASSURANCE QUALITE ET D'EVALUATION DES PRATIQUES PROFESSIONNELLES

### 3.5.1. La convention actuelle

La convention nationale entre les masseurs-kinésithérapeutes et les caisses d'assurance maladie comporte deux outils destinés à promouvoir la qualité des soins : (1) le bilan-diagnostic kinésithérapique (engagement collectif) et (2) le contrat de pratique professionnelle (engagement individuel).

#### 3.5.1.1. Le bilan diagnostic

Le bilan-diagnostic kiné est un acte remboursable en début et fin de traitement dès que le traitement dépasse 10 séances ; le résultat, sur fiche de synthèse standardisée doit être communiqué dans tous les cas au médecin prescripteur, et au médecin conseil en cas de prolongation et peut être communiqué au patient s'il le demande. (voir annexe). Ce bilan est obligatoire, en vertu du décret de compétence des masseurs kinésithérapeutes.

Cette fiche comprend entre autres :

- un bilan des déficits structurels, fonctionnels, et autres problèmes identifiés par le kinésithérapeute
- le diagnostic kinésithérapique et objectifs à court, moyen et long terme.
- le protocole thérapeutique (nombre, rythme des séances, techniques utilisées).
- les propositions consécutives : poursuite du traitement ou arrêt.

L'accent est mis ici sur l'utilité clinique des ces bilans, et donc sur la qualité des soins. Il ne s'agit pas d'un instrument de contrôle. L'information recueillie est qualitative, non codée, et un encodage centralisé n'est pas prévu.

En pratique, bien que ces bilans diagnostiques soient obligatoires depuis 2000, ils ne sont encore pas suffisamment utilisés et leur qualité est inégale.

Plusieurs raisons peuvent être invoquées pour ce peu d'intérêt de la profession :

- **l'outil** : il ne semble pas encore au point et la façon de remplir la fiche n'est pas claire pour beaucoup de kinés ; il n'est pas adapté aux logiciels spécialisés utilisés par les kinés (mais cela est en train de changer).
- **les kinésithérapeutes** : beaucoup de kinés, peu habitués à faire des rapports écrits, n'en voient pas l'utilité. Les formations sur les bilans-diagnostic sont peu fréquentées.
- **les modalités d'introduction** : le bilan diagnostic est théoriquement obligatoire, mais son absence ne fait l'objet d'aucune sanction dans la pratique. Le bilan-diagnostic n'a pas été introduit dans le curriculum des études de kiné.

#### 3.5.1.2. Le contrat de pratique professionnelle

Le masseur-kinésithérapeute qui choisit de souscrire à ce contrat 1) s'engage à participer chaque année à une action de formation continue (pour laquelle une indemnité est prévue) et 2) s'engage à prendre en compte les recommandations de bonnes pratiques professionnelles. Le suivi de son activité porte sur l'utilisation de la fiche de synthèse du bilan-diagnostic kinésithérapique. Souscrire à ce contrat donne droit à une rémunération forfaitaire annuelle de 600 euros.

### 3.5.2. Autres initiatives qualité dans le passé

Les recommandations opposables : il était envisagé d'appliquer à la kinésithérapie le concept de *référence médicale opposable* (RMO). L'idée était d'établir des normes de traitement sur base de

recommandations de bonne pratique (par exemple, pour les lombalgies), avec en cas de déviance de ces recommandations, une possibilité 'd'opposition'.

Cette expérience n'a pas eu lieu. D'une part, il s'est avéré difficile de trouver le bon équilibre entre simplicité et complexité de ces recommandations. D'autre part, l'idée d'évaluer la mise en pratique de ces recommandations au travers d'un questionnaire rempli par les patients semble une option peu réaliste comme moyen de contrôle de routine.

### 3.5.3. Autres projets 'qualité'

- La formation continue deviendra sous peu une obligation pour toutes les professions paramédicales en France. En ce qui concerne les kinésithérapeutes, les meilleures modalités de mise en œuvre de cette formation continue sont à l'étude. Différentes idées sont en train de s'élaborer telles que *l'auto-évaluation*, au moyen de fiches techniques par lesquelles le kiné pourrait lui-même analyser sa pratique, et évaluer ses besoins en formation, et *l'évaluation* par les pairs
- Un projet de création d'un ordre des kinésithérapeutes a été voté mais ne s'est pas encore concrétisé. Cet ordre aurait entre autres une mission d'évaluation des pratiques professionnelles.
- L'approche 'qualité' favorisée par la Fédération (FFMKR), repose sur une amélioration de la formation de base en la rendant de niveau universitaire.

### 3.5.4. Kinésithérapie basée sur des preuves ; échelle d'évaluation fonctionnelle

- La Haute Autorité en Santé (HAS, ex- ANAES) publie régulièrement des recommandations de bonne pratique dans le domaine de la kinésithérapie
- Il existe une 'Association Française pour la Recherche et l'Evaluation en Kinésithérapie', regroupant diverses associations professionnelles, qui travaille directement avec l'ANAES. Une base de données en ligne propose des fiches de bilans spécifiques par pathologie ou problèmes de santé afin d'évaluer l'état du patient et éventuellement les résultats du traitement.
- Les échelles d'évaluation fonctionnelles sont utilisées par certains kinésithérapeutes comme outil d'évaluation clinique des résultats, mais pas dans un cadre de financement.

## 3.6. CONTROLE ET REGULATION

### 3.6.1. Contrôle des demandes de soin

La nécessité d'obtenir l'accord du médecin-conseil pour toute demande de soins de kinésithérapie donne lieu à une telle charge de travail que cette procédure d'accord s'apparente à une formalité purement administrative, inefficace dans le but de contrôle qui avait été prévu. Cette demande 'd'entente préalable' (DEP) est ressentie par la majorité des professionnels de santé comme une contrainte administrative inutile. Sa suppression est souvent évoquée (6).

En pratique il n'y a pas de contrôle, ni de 'plafond' limitant le nombre de séances et la durée du traitement.

### 3.6.2. Mécanismes mis en place pour limiter les dépenses

La réforme de 2000 prévoyait en principe un suivi financier, à la fois au niveau individuel et collectif. En cas de non respect des engagements budgétaires par la profession (dépassement de l'enveloppe), il devait y avoir une baisse de valeur automatique des lettres-clés, ou coefficients. Par exemple la profession s'était engagée à diminuer le nombre d'actes de 5 % pour la rééducation ostéo-articulaire et de 2% pour les autres actes. Malgré une diminution du nombre total d'actes, cette réforme a été suivie d'une flambée des dépenses, liée à une augmentation des actes mieux rémunérés.

Cette procédure ne s'applique plus actuellement.

Le concept de 'plafonds d'efficience' ou le nombre maximum d'actes que les kinés peuvent facturer par an a été abandonné suite aux pressions de la profession. Le but était d'éviter certains abus tels

que la prise en charge de plusieurs patients en même temps, qui est en principe soumise à certaines conditions.

### 3.7. SYSTEME D'INFORMATION SANITAIRE

Les données transmises en routine à l'Assurance-Maladie (de plus en plus, par télétransmission) dans le cadre de la kinésithérapie ambulatoire se limitent à :

- données purement administratives
- la 'cotation', c'est-à-dire la valeur monétaire de l'acte
- les lettres clés : il en existe 3, de valeur monétaire égale, permettant de différencier: a) la rééducation des affections orthopédiques et rhumatologiques en hospitalier et ambulatoire, b) les autres rééducations en milieu hospitalier, c) les autres rééducations, en ambulatoire.)

Il n'y a donc pas d'informations collectées en routine permettant de documenter les pratiques, à part le fait d'avoir ou non facturé un bilan diagnostic lorsque c'était requis.

### 3.8. POINTS MARQUANTS

- **L'organisation générale de la kinésithérapie ambulatoire en France est celle qui se rapproche le plus de notre pays (paiement à l'acte, remboursement par l'assurance obligatoire)**
- **Il y a une pénurie de kinésithérapeutes**
- **Les kinésithérapeutes exerçant une pratique libérale doivent obligatoirement être conventionnés pour que leurs patients bénéficient d'un remboursement.**
- **Pour l'énorme majorité des patients, les soins de kiné ambulatoire sont virtuellement gratuits, du fait d'exemptions du ticket modérateur, ou de la prise en charge par une assurance complémentaire - sauf pratiques illégales de dépassement des tarifs conventionnels.**
- **La nomenclature française est simple, et développée principalement sur base anatomo/pathologique. Elle n'est pas codée. A un problème donné, correspond un et un seul tarif par séance, pour une durée moyenne de 30 minutes et quels que soient les moyens thérapeutiques mis en œuvre.**
- **L'accord du médecin conseil est obligatoire pour toute demande mais cela ne représente en réalité qu'une formalité purement administrative. Il n'y a en pratique pas de contrôle ni de limites sur le nombre des séances.**
- **Les données récoltées en routine ne permettent pas de documenter la pratique (type d'actes), encore moins de l'évaluer.**
- **Les mécanismes de promotion de la qualité se concentrent actuellement sur l'utilisation d'un bilan diagnostic standardisé, et sur la participation à des programmes de formation continue.**
- **Des mécanismes d'évaluation par les pairs, et d'autoévaluation, sont à l'étude**

### 3.9. MÉTHODES ET BIBLIOGRAPHIE

#### 3.9.1. SITES WEB VISITES

Ministère de la Santé : <http://www.sante.gouv.fr/>

Assurance Maladie : <http://www.ameli.fr/>

Haute Autorité en Santé (HAS, anciennement ANAES) : <http://www.anaes.fr/>

Association Française pour la recherche et l'évaluation en kinésithérapie <http://www.afrek.com/>

Fédération Française des Masseurs-Kinésithérapeutes-Rééducateurs (FFMKR) : <http://www.ffmkr.org/>

Association Française des Kinésithérapeutes Experts : [www.kinelegis.com](http://www.kinelegis.com)

### 3.9.2. PERSONNES CONTACTEES

Nous remercions les personnes suivantes, pour les informations fournies. Cependant ce rapport n'engage en aucune façon leur responsabilité : Maurice Ramin, kinésithérapeute, FFMKR ; Pierre Trudelle, kinésithérapeute, HAS ; Michel Gedda, kinésithérapeute, HAS ; Dr XXXX, médecin-conseil, CNAMTS (ne souhaite pas être nommé).

### 3.9.3. Bibliographie

- 1. Sandier S, Paris V, Polton D. Systèmes de santé en transition: France. Observatoire Européen des Systèmes et des Politiques de Santé. 2004. Available from: <http://www.euro.who.int/observatory/Hits/TopPage>
- 2. Fénina A, Geffroy Y. Comptes nationaux de la santé 2003. Direction de la Recherche, des Études, de l'Évaluation et des Statistiques (DRESS), Ministère de la Santé et des Solidarités (France); 2003. Collection Études et statistiques Available from: [http://www.sante.gouv.fr/htm/publication/ind\\_drees.htm](http://www.sante.gouv.fr/htm/publication/ind_drees.htm)
- 3. Institut National de la Statistique et des Etudes Economiques (INSEE); 2005 [updated 2004]. France en faits et chiffres: santé. Effectifs des professions de santé. Available from: [http://www.insee.fr/fr/ffc/chifcle\\_fiche.asp?ref\\_id=NATTEF06103&tab\\_id=104](http://www.insee.fr/fr/ffc/chifcle_fiche.asp?ref_id=NATTEF06103&tab_id=104)
- 4. Darriné S. Projections du nombre de masseurs-kinésithérapeutes en activité en France à l'horizon 2020. Ministère des Affaires Sociales, du Travail et de la Solidarité. Ministère de la Santé, de la Famille, et des Personnes Handicapées, ; 2003 Septembre 2003. Série etudes (34) Available from: <http://www.sante.gouv.fr/drees/serieetudes/pdf/serieetud34.pdf>
- 5. Ameli: Assurance-Maladie en Ligne France; 2005 [cited 5-9-2005]. L'Assurance-Maladie: chiffres et repères, janvier 2005. Available from: <http://www.ameli.fr/213/DOC/1908/article.html#>
- 6. Association Française des Kinésithérapeutes Experts; 2005 [updated 2004; cited 12/09/2005]. Faut-il sauver la DEP? Available from: <http://www.kinelegis.com/>

### 3.10. DOCUMENTS ANNEXES FRANCE

#### 3.10.1. Répartition des actes de kinésithérapie selon leur nature, 2001 (N= 17 125 actes, hôpital et ambulatoire)

Nature de l'acte réalisé au cours de la séance	Fréquence (%)
<b>Article 1</b> : Rééducation des conséquences des affections orthopédiques et rhumatologiques, dont :	<b>69,6</b>
Rééducation du rachis et/ou des ceintures	30,5
Rééducation d'un membre et de sa racine	30,1
Rééducation de tout ou partie de plusieurs membres, ou du tronc et d'un ou plusieurs membres	8,0
Rééducation de l'enfant ou de l'adolescent pour déviation latérale du rachis	0,8
Rééducation et réadaptation après amputation	0,2
<b>Article 2</b> : Rééducation des conséquences des affections rhumatismales inflammatoires	<b>1,4</b>
<b>Article 3</b> : Rééducation de la paroi abdominale	<b>1,6</b>
<b>Article 4</b> : Rééducation des conséquences d'affections neurologiques et musculaires	<b>6,8</b>
<b>Article 5</b> : Rééducation des conséquences des affections respiratoires	<b>11,7</b>
<b>Article 6</b> : Rééducation dans le cadre des pathologies maxillo-faciales et oto-rhino-laryngologiques	<b>0,4</b>
<b>Article 7</b> : Rééducation des conséquences des affections vasculaires	<b>2,4</b>
<b>Article 8</b> : Rééducation des conséquences des affections périnéo-sphinctériennes	<b>2,0</b>
<b>Article 9</b> : Rééducation de la déambulation du sujet âgé	<b>3,7</b>
<b>Article 10</b> : Rééducation des patients atteints de brûlures	<b>0,1</b>
<b>Article 11</b> : Soins palliatifs	<b>0,1</b>
Actes hors nomenclature	<b>0,2</b>
<b>Total</b>	<b>100,0</b>

Source : CNAMTS / Direction des statistiques et des études - Direction du service médical.  
Nouvelles pratiques de kinésithérapie : bilan six mois après la réforme., 2001.

### 3.10.2. Fiche de synthèse du Bilan-Diagnostic

FICHE DE SYNTHÈSE DU BILAN-DIAGNOSTIC KINÉSITHÉRAPIQUE		
RENSEIGNEMENTS SOCIO-ADMINISTRATIFS		
Patient : Nom    Prénom    Téléphone    Sexe    Date de naissance / âge N° Sécurité Sociale Prescripteur    Docteur    Adresse / Téléphone		
PRESCRIPTION    Date de prescription :    S'agit-t-il d'une prescription quantitative ? Oui <input type="checkbox"/> Non <input type="checkbox"/>		
INDICATION MÉDICALE    Y a-t-il eu des séances de kinésithérapie antérieures pour cette indication    Oui <input type="checkbox"/> Non <input type="checkbox"/> Ne sait pas <input type="checkbox"/>		
INTITULÉS	<input type="checkbox"/> FICHE INITIALE Date :	<input type="checkbox"/> INTERMÉDIAIRE <input type="checkbox"/> FINALE    Date :
Bilan des déficits structurels - articulaire ; - force musculaire ; - douleurs. Bilan des déficits fonctionnels Autres problèmes généraux identifiés par le MK Objectifs    - à court terme ; - à moyen terme ; - à long terme. Diagnostic kinésithérapique Protocole thérapeutique Nombre :    Rythme des séances : Lieu des séances : Travail de groupe    Oui <input type="checkbox"/> Non <input type="checkbox"/> Techniques : Date de première séance : Conseils. Propositions consécutives. Commentaires.		
Date	Nom du masseur-kinésithérapeute et cachet	Signature

### 3.10.3. (AMBULATORY) physiotherapy care: Health insurance coverage FOR SELECTED conditions

Fictional cases : 1) 80-year old female, physiotherapy following hip prosthesis, treatment at home 2) 40-year old, otherwise healthy male, suffering from back pain, treatment at the physiotherapist (PT) practice 3) 8-yr old child, cerebral palsy, (IMC) treatment at the PT practice

### 3.10.4. Compulsory health insurance assurance obligatoire

Case	Coverage and restrictions*	Cost to insurance	Cost to the patient	Comment
1	Couvert, pas de restrictions	N séances * 60% du coût / séance + indemnité de déplacement . Coût séance 2005 : xx Euros ??	Ticket modérateur = 40% coût par séance	90-95% of patients have a voluntary insurance
2	id	N sessions * 60% du coût par sessions Coût séance 2005 : ?	Id	
3	id	N sessions * 100% du coût par session Coût séance 2005 : ?	0%	Liste maladies chroniques

5 \* Are there any conditions or restrictions on duration of treatment, number and time of sessions, treatment modalities.

### 3.10.5. Voluntary health insurance\* assurance complémentaire

Case	Coverage and restrictions	Cost to insurance	Cost to the patient	Comment
1	None	Ticket modérateur - N séances * coût par séance * 40%	0	
2	id	Id	0	
3	Id	Nothing	0	



## **4. GERMANY**

### **4.1. BACKGROUND INFORMATION ON THE HEALTHCARE SYSTEM**

#### **4.1.1. Existing Coverage Schemes**

Nearly 90% of German residents are insured through the Statutory Health Insurance system (SHI). Contributions of SHI-members serve to finance sickness funds. The remainder of residents are mostly insured under private, employment-based schemes. All insured persons receive health benefits. Suppliers are financed directly by the insurance funds.

#### **4.1.2. Institutional Framework**

Both the federal government and Länder are involved with the regulation of health care. Issues of equity and comprehensiveness and rules for the planning and financing of health services are regulated at the federal level. The Länder are responsible of the supervision of health services, hospital planning, health education and promotion. The “Gemeinsamer Bundesausschuss” is responsible for actual management of the SHI. It is composed of representatives for the sickness funds and associations of practitioners and hospitals.

#### **4.1.3. Health Care Delivery**

Traditionally, a strict distinction was made between in- and out-patient care, implying most ambulatory physicians were not allowed to work in hospitals and accordingly, hospital physicians not allowed to work in an ambulatory setting. Reforms since the 1990s gave rise to the existence of more polyclinics and integrated care programs, blurring the divide between ambulatory and hospital care.

### **4.2. PHYSIOTHERAPIST PROFESSION**

#### **4.2.1. Minimal Entry Requirements**

The minimum entry requirement for physiotherapy education comprises at least 10 years' secondary (so-called “polytechnic”) schooling. No academic degree is required as opposed to most other European countries.

Private practitioners adhere to the criteria stipulated by the social welfare law (“Sozialgesetzbuch V, § 124 – Abs. 2”). In accordance to the law registered physiotherapists should have completed the minimally required training, dispose of the medical equipment specified by guidelines and accept the general agreements (“Heilmittel-Richtlinien”) that have been agreed upon by sickness funds and professional associations.

Membership of professional associations for SHI-accredited physiotherapists is mandatory in ambulatory care. Three national professional associations, with regional affiliate associations, are active in Germany:

- Bundesverband selbständiger Physiotherapeuten (IFK)
- Deutscher Verband für Physiotherapie (ZVK)
- Verband Physikalische Therapie (VPT)

### 4.2.2. Number of physiotherapists

The number of practising physiotherapists was around 100.000 in 2004. Approximately 31.000 physiotherapists were registered as private practitioners in that same year. They are responsible for the foremost part of outpatient services.

Around 5.500 students graduated as physiotherapists in 2005. Unemployment among physiotherapists is estimated at around 5.000.

### 4.2.3. Practice

Physiotherapists work in solo or group practices (including multidisciplinary practices) as well as in hospital settings, prevention centres or rehabilitation centres ("Vorsorge- oder Rehaeinrichtungen"). Health professionals working in hospitals or institutions for

nursing care or rehabilitation centres receive salaried pay. Services in ambulatory SHI-care are subject to fee-for-service payment ("Einzelleistungsvergütung").

## 4.3. CONDITIONS FOR COVERED SERVICES

In order for patients to be reimbursed under SHI, a referral prescription by a specialist physician or general practitioner is mandatory. Patient co-payments are limited to a lump sum payment of 10€ per prescription in addition to 10% of overall treatment costs. The German reimbursement scheme characterizes anatomically grouped disorders by type of diagnosis, indication/symptoms, treatment objectives, duration and number of sessions per "typical" patient case (see example in the appendices). A single prescription usually comprises 6 up to 10 treatment sessions, as defined by the Heilmittel-Richtlinien (cf. infra). In principle, patients can receive further care following ensuing prescriptions. However, in practice, prescribing physicians act as gatekeepers, curtailing reimbursed expenditures. This is clearly demonstrated in the figures for the observed mean number of sessions (see included appendix 5) per treatment type as these hardly exceed the standard prescription numbers.

In all, some 5 billion euros worth of outpatient physiotherapy care were reimbursed in 2005. This amount includes charges covered by complementary insurance.

## 4.4. QUALITY ASSURANCE AND EVALUATION SYSTEM

### 4.1.1. Agreements between professional associations and insurance funds

In accordance to the social welfare law, national health insurance providers and professional associations agree to uniform definitions of provided physiotherapy services as a safeguard for standard quality of care. These agreements include:

- Required staff, practice space, equipment and other organisational prerequisites.
- Specifications regarding administered therapies: definition, prescription, indication, objectives, duration, etc. These elements are listed in the so-called "Richtlinientext" and "Heilmittel-Katalog"

An inspection committee composed by representatives of insurance funds and professional associations is entitled to verify practitioners' compliance to the above agreements.

### 4.4.2. Voluntary quality schemes

#### 4.4.2.1. Quality schemes for individual practitioners

Physiotherapists are offered the possibility to further enhance their professional expertise through continuing learning programs organised by the professional associations. These programs encompass

training courses, workshops, conferences and literature studies. Several certification programs have been developed by professional associations in collaboration with health insurance companies. These programs deal with specialty fields such as manual therapy techniques, lymph drainage therapy, orthoses/protheses patient instruction, etc. Certified physiotherapists are entitled to various financial advantages (“erhöhten Abrechnungsposition”) for the delivery of reimbursed outpatient care. Furthermore, physiotherapists contribute, through the professional associations, to the development of guidelines (“Leitlinien”). Certain certified training programs lead to specialisations that are formally recognized by insurance funds. At present, there is an ongoing debate on the voluntary status of continuing learning. It is very likely that from 2007 onwards, continuing learning will become mandatory (“Fortbildungspflicht”).

#### 4.4.2.2. *Quality schemes for practices*

The Institut für Qualitätssicherung in der Heilmittelversorgung (IQH e.V.) aims at improving practice standards through a comprehensive quality program. Self-assessment surveys, workshop cycles and external auditing are means applied to screen and raise physiotherapist’s practices general working standards. The IQT is a private organisation and participation as a practice is voluntary.

### 4.5. HEALTH INFORMATION SYSTEMS

Centralized data for the whole of Germany on expenditures by type of intervention, sex and age are collected through the “Heilmittel-Informationen-System” (HIS), a common project by national health insurers. At set intervals utilisation data, both country-wide and per region, are published through the HIS-website. Moreover, certain large sickness funds periodically publish specific analyses based on these data (1,2). In all, the purpose of the collected data is to allow for follow-up of budgetary evolutions.

### 4.6. KEY POINTS

- **The German Health System is grass-root based at the provincial level (Länder).**
- **Substantial regulatory powers are granted to professional associations in a spirit of consulted self-administration.**
- **Reimbursed physiotherapy care has been defined in a nation-wide uniform and detailed manner.**
- **Cost containment is achieved through gatekeeping (mandatory referral prescriptions).**
- **Continuing education will probably become mandatory for physiotherapists practicing under the SHI.**

## APPENDICES GERMANY

### Appendix 1: Visited websites

Bundesverband Selbständiger Physiotherapeuten (national professional association) [www.ifk.de](http://www.ifk.de)

Deutscher Verband Für Physiotherapie, Zentralverband Der Physiotherapeuten / Krankengymnasten (national professional association) [www.zvk.org](http://www.zvk.org)

European Region of the World Confederation for Physical Therapy (supranational professional organisation) [www.physio-europe.org](http://www.physio-europe.org)

German Ministry of Health: informational website on recent health care reforms. [www.die-gesundheitsreform.de](http://www.die-gesundheitsreform.de)

GKV Heilmittel Informations System: common health information project of legally recognized health insurers [www.gkv-his.de](http://www.gkv-his.de)

Institut für Qualitätssicherung in der Heilmittelversorgung (Institution for Quality Assurance in – among others- Physiotherapy) [www.ighv.de](http://www.ighv.de)

Verband Physikalische Therapie (national professional association) [www.vpt-online.de](http://www.vpt-online.de)

### Appendix 2: Contacted experts

Eckhardt Boele, General Secretary Deutscher Verband für Physiotherapie (ZVK)

Dudda Frank, Geschäftsführer Bundesverband Selbständiger Physiotherapeuten (IFK)

### Appendix 3: Additional references

1. (AOK), W. (2005). Die Heilmittel-versorgung 2004.
2. GEK (2005). GEK-Heil-und Hilfsmittel-Report 2005.

## Appendix 4: Example of heilmittel-richtlinien scheme

1. Erkrankungen der Stütz- und Bewegungsorgane				
Indikation		Ziel der Physikalischen Therapie		Verordnungsverordnung im Regelfall
Diagnosengruppe	Leitsymptomatik: Schädigung, Funktionsstörung		Heilmittelverordnung im Regelfall	Verordnungsverordnung im Regelfall
<b>WS1</b> <b>Wirbelsäulenerkrankungen</b> <ul style="list-style-type: none"> <li>mit prognostisch kurzzeitigem Behandlungsbedarf</li> </ul>	<b>a</b> Funktionsstörungen / Schmerzen durch Gelenkfunktionsstörung, Gelenkblockierung (auch ISG oder Kopfgelenke) <b>b</b> Funktionsstörungen / Schmerzen durch Fehl- oder Überbelastung discoligamentärer Strukturen <b>c</b> Muskeldysbalance, -insuffizienz, -verkürzung <b>d</b> segmentale Bewegungsstörungen <b>e</b> Schmerzen / Funktionsstörungen durch Muskelspannungsstörungen, Verkürzung elastischer und kontraktiler Strukturen, Gewebeerkrankungen, -verletzungen, -verklebungen	Funktionsverbesserung, Schmerzreduktion durch Verringerung o. Beseitigen der Gelenkfunktionsstörung Funktionsverbesserung, Verminderung, Beseitigung der Fehl- oder Überbelastung discoligamentärer Strukturen Wiederherstellung, Besserung der gestörten Muskelfunktion Wiederherstellung, Besserung der gestörten Beweglichkeit	<b>A. KG / MT</b> <b>C. Traktion / Wärme- / Kälthherapie</b> <b>A. KG</b> <b>C. Traktion</b> <b>A. KG / KG-Gerät</b> <b>B. Übungsbehandlung / Chirogymnastik</b> <b>A. KG / MT</b> <b>B. Übungsbehandlung / Chirogymnastik</b> <b>C. Wärmetherapie / Kälthherapie</b> <b>A. KMT</b> <b>B. UMM / SM / PM / BGM</b> <b>C. Elektrotherapie / Wärmetherapie / Kälthherapie / Hydroelektische Bäder</b>	<b>ErstVO:</b> • bis zu 6x/VO <b>Gesamtverordnungsmenge des Regelfalles:</b> • bis zu 6 Einheiten <b>Frequenzempfehlung:</b> mind. 2x wöchentlich <b>Ziel:</b> Erzielen eines Eigenübungsprogrammes

## Appendix 5: Predominant treatment categories in heilmittel scheme

**GVK HIS: 14 highest treatment categories, ranked by overall reimbursement expenditures, data applying to Germany, 1<sup>st</sup> quarter 2006.**

Type of Treatment (original German label)	Type of Treatment (suggested translation)	Overall expenses including patient copayments (in 1000€, %)		Number of treatment sessions (#, %)		Mean number of session per treatment cycle
0503 Krankengymnastik	Remedial/ Medical Gymnastics	295.270 €	30,0%	22.247.020	30,4%	6,4
4103 Ergoth. (sensomotorisch/perzeptiv)	Ergotherapy (sensomotoric, perceptive)	96.814 €	9,8%	3.019.918	4,1%	9,1
3103 Sprachtherapie, 45 Minuten, EB <sup>8</sup>	Speech Therapy, 45 minutes IT	73.141 €	7,4%	2.334.883	3,2%	8,6
0704 Krankengymnastik-ZNS <sup>9</sup> -Erwachsene, EB	Remedial/ Medical Gymnastics -CNS- adult, IT	67.639 €	6,9%	3.786.380	5,2%	10,7
0106 Klassische Massagetherapie	Classical Massage	59.017 €	6,0%	6.569.028	9,0%	5,8
1201 Manuelle Therapie	Manual Therapy	56.055 €	5,7%	3.918.017	5,4%	5,9
9901 Hausbesuch eines Patienten	Residential Patient Visit	54.137 €	5,5%	7.431.866	10,2%	8,2
0201 Manuelle Lymphdrainage 45 min	Manual Lymph Drainage Therapy 45 minutes	43.072 €	4,4%	2.208.993	3,0%	7,8
1501 Wärmepackungen	Hot Packs	42.780 €	4,3%	5.704.852	7,8%	5,9
0202 Manuelle Lymphdrainage 60 min	Manual Lymph Drainage Therapy 60 minutes	29.162 €	3,0%	971.066	1,3%	8,7
0703 Krankengymnastik-ZNS-Kinder, EB	Remedial/ Medical Gymnastics -CNS-child, IT	24.229 €	2,5%	1.049.031	1,4%	9,5
9999 Wegegeld für Hausbesuche	Transport charges Residential Patient visit	22.304 €	2,3%	835.234	1,1%	1
0507 Krankengymnastik, (gerätegestützte), EB	Remedial/ Medical Gymnastics (prosthesis/orthosis training), IT	12.667 €	1,3%	524.281	0,7%	6,1
4105 Ergoth. bei psychischen Störungen, EB	Ergotherapy for psychological disorders, IT	11.316 €	1,1%	288.576	0,4%	9,1
Other (default category, own calculations)		96.630 €	9,8%	12.291.842	16,8%	NA (cannot be derived from available data)
AVERAGE						7,3
SUM		984.233 €	100,0%	73.180.987	100,0%	

<sup>8</sup> “EB” or Einzelbehandlung, Individual Treatment (IT)

<sup>9</sup> “ZNS” or Zentralnervensystem, Central Nervous System (CNS)

## 5. THE NETHERLANDS

### 5.1. BACKGROUND INFORMATION ON THE HEALTH CARE SYSTEM

#### 5.1.1. Health care delivery

Health providers, particularly in primary care (PHC), are (mostly) private. There is a strong emphasis on primary health care, with general practitioners required to act as gate-keepers to secondary care.

#### 5.1.2. Statutory Health Insurance

Entitlement to the statutory health insurance used to be based on income: 60% of the population was then publicly insured, while 40 % of the population (those with higher income) had to opt for a private insurance scheme.

The health insurance system has recently undergone a dramatic reform and is now (since 01-01-2006) defined as a system 'under private law, with public features', (1). The 'private law' means that health insurance is provided by private insurance companies (and care offered is predominantly private). The 'public features' incorporate some market regulations for those medical insurers willing to participate in this system, such as the definition of minimal requirements for a compulsory 'basic care package'; the obligation for the insurer to accept anybody who applies for this basic package; and the interdiction to charge different premiums to persons insured for the same range of services and conditions within this basic care package (no risk selection).

All residents in the Netherlands must be insured for the basic health package, through the private insurer of their choice. All residents must also pay an income-related contribution to a state-managed centralised Health Insurance Fund (one of the purpose of this fund is to compensate insurers insuring high-risk people).

The *Health Insurance Act* defines the modalities of this new compulsory insurance against the costs of curative care, including its contents and extent of coverage, as well as several particular features designed to take into accounts special groups (workers, children, low-income people...). In addition the costs of prolonged nursing and care are covered by a statutory, compulsory insurance defined by the *Exceptional Medical Expenses Act*. Protection against types of care not covered by these 2 compulsory health insurances can be purchased under the form of supplementary, voluntary health insurance. Supplementary health insurances are not subject to regulation other than regulations applied to insurances in general.

The care insurer might decide whether to provide the insured care through its own network of services, or to reimburse the costs incurred with the care provider chosen by the patients.

#### 5.1.3. Health insurance and ambulatory physiotherapy

Until 2004, publicly insured patients (60% of the population) were entitled to 9 sessions of physiotherapy per year; those with chronic diseases were entitled to 18 sessions per year. Since 2004, entitlement within the public insurance has been limited to and to chronic diseases (for these, there is a deductible of 9 sessions per year: first 9 sessions are paid by the patients) and to children <18 y.o. (without deductible). This coverage will remain essentially the same under the new compulsory insurance system (3).

Most insurers now offer supplementary insurance for total or partial reimbursement of physiotherapy. Most patients (90-95%) in the Netherlands have such a voluntary health insurance (2).

## 5.2. EXPENDITURE, AND UTILISATION OF PHYSIOTHERAPY SERVICES IN AMBULATORY CARE

### 5.2.1. Utilisation of services by the population

**Table 1. Contacts with physiotherapists in primary care setting**

	% persons with contact	N contacts, per person	Mean N contacts, per person having a contact
2002	17,2	2,8	16,3
2003	17,6	3	17,2
2004	17,3	2,9	16,8

Source: CBS (Centraal Bureau voor de Statistiek)

From 2002 data it can be extrapolated that there were a total of 45 million contacts with primary health care physiotherapists in that year. This is equivalent to 3,600 contacts per active physiotherapist and 4,000 per full-time-equivalent (FTE) (3).

### 5.2.2. Expenditure for primary health care physiotherapy

The expenditure on physiotherapy in PHC was estimated to 676 millions euros (2002) (3).

## 5.3. HOW ARE PHYSIOTHERAPISTS PAID: WHICH FEES FOR WHICH SERVICES

### 5.3.1. Basic fee

Physiotherapists in ambulatory care work for a fee-for-service. The basic 'service' unit is the 25-minute session, whatever the treatment modalities. If the session lasts longer than 25 minutes, there is the possibility to bill 2 consecutive sessions for the same patient. Recognized specialists (like paediatric physiotherapists) can charge more. The list of 'basic unit fees' also includes travel allowances (if the session takes place at home, or in a nursing home), a different (higher) fee for a complete physiotherapeutic diagnosis, and a few other possibilities. Overall, this list of 'basic' fees is extremely simple.

Fees used to be regulated; the *maximum* fee for a 25-minute session was 20.5 euros in 2002. An experience is now taking place whereby fees are completely deregulated; this experience will be evaluated after 2 years. In practice fees are negotiated with insurance companies. Price per session is now around 24 Euros (2004).

### 5.3.2. Who prescribes, who decides the length of treatment

Since a recent reform the patient has the possibility of 'direct access' to the physiotherapist; this has also been accepted by the insurance companies. However, whether the patient is referred by a doctor or not, the physiotherapist is the one deciding on the number of sessions needed.

In practice a great deal of physiotherapy in primary care setting is paid for by private insurances, and most contracts with insured persons simply stipulate a fixed ceiling for the number of sessions and/or the cost of physiotherapy that could be refunded to the insured person per year, whatever his or her problem(s).



On the other hand health insurers want to pay the providers they contract 'per product'. Only one large company (Agis) has so far defined some 'products' for physiotherapy. This takes the form of 'protocols' (such as '1333 Euros for treatment of COPD/Ashtma, groups of 8 patients, over a 3-month period. These protocols can be found on its website'<sup>10</sup>.

## 5.4. PHYSIOTHERAPISTS AND THEIR ACTIVITIES

### 5.4.1. Who can practice physiotherapy in the NL?

To qualify as a physiotherapist requires four years of full-time higher vocational education in a recognized school. There are 10 public, and one private such school. An admission quota (1,054 students per year for all public schools) was lifted in 2000. Admissions the following year went up to 1,787 (3). Qualified physiotherapists need to be registered in a centralised, so-called 'BIG' (*Beroepen in de Individuele Gezondheidszorg*) register.

Physiotherapists are free to set up in practice wherever they wish. However it is difficult for them to run a profitable practice without a contract with a health insurance.

### 5.4.2. Number of physiotherapists, and distribution

In 2003, there were 32,668 physiotherapists in the BIG register (3). Of these 13,254 were working in a primary health care practice, providing a total of 12,250 full-time equivalent (FTE) of physiotherapy. The number of inhabitants per active primary health care physiotherapist (FTE) was 1,322.

Out of all physiotherapists in primary health care, 62% were self-employed (in solo or group practices) and 38% had a salaried employment for a practice owner.

It is important to stress that a distinction is made between physiotherapists and "manual therapists" (*manuele therapeuten*). The latter group consists of physiotherapy graduates with a subsequent specialisation in manual therapy techniques. Currently there are some 2.600 manual therapists.

### 5.4.3. Description of activities<sup>11</sup>

Data are available from the physiotherapist surveillance network (see further: Health Information System) (4, 5). See annex for more details.

- *place*: for the publicly insured 15 % of the sessions in 2004 took place outside the physiotherapy practice (home, or nursing home)

- *diagnosis* : the most frequent 3 diagnosis accounted for +/- 30 % of all treatment episodes (2004): *Lage rugpijn zonder uitstraling; Nek symptomen/ klachten, Rug symptomen/ klachten*

- *number of sessions*: (2003) : considering only publicly insured patients, mean number of sessions per treatment episode was around 12 sessions for the most frequent reasons for treatment (back pain) ; and 32 sessions (in a year) for patients suffering from a 'list' problem (list of chronic diseases, allowing a higher number of sessions per year).

## 5.5. QUALITY ASSURANCE AND EVALUATION SYSTEMS

The Royal Dutch Society for Physical Therapy (*Koninklijk Nederlands Genootschap Fysiotherapie*, KNGF) is the only professional organisation for physiotherapists in the Netherlands. Important among its mandates is the promotion of quality.

<sup>10</sup> <http://www.agis.web.nl/> → 'zorgverleners' → fysiotherapists'

<sup>11</sup> Data collected before the major reforms in 2004 and 2006 might not reflect the present reality.

### 5.5.1. Evidence-based guidelines

KNGF is regularly developing, publishing, and now updating, evidence-based guidelines for physiotherapy. It is entirely privately funded. Around 10 guidelines are presently available on its website (in Dutch, some are translated into English).

### 5.5.2. Quality assurance

Since 2000, physiotherapists can register with a Central Quality Register (*Centraal Kwaliteitsregister*, CKR). This register is maintained by KNGF. Requirements are:

- having attended a compulsory 'quality programme' focusing on 'methods and tools' and composed of 4 modules: evidence-based practice, scientific reading, reporting system, and communication. (Some of these courses are now included in the basic training and are not compulsory for new graduates)
- be affiliated to a recognized 'complaint committee' that would handle patients' complaints, should these arise (*klachtenregeling*).
- earn a certain number of 'points'. Points are earned through following accredited training courses, and/or participating in quality circles (peer groups discussing their practice: *Intercollegiaal Overleg fysiotherapie*, IOF).
- Commit themselves to work in accordance with KNGF guidelines
- Adhere to partial quality management systems "kwaliteitsdeelsystemen"<sup>12</sup>
- Have sufficient workload to maintain proficiency

The peer-groups (IOF) are also used to disseminate the good practices guidelines.

## 5.6. CONTROLS AND REGULATIONS

### 5.6.1. Cost containment measures and efficiency

Cost containment for physiotherapy in the public sector has been achieved through increasing the share of private insurance schemes and out-of-pocket expenditure.

Health insurers promote 'efficiency' (*doelmatigheid*). One of the largest health insurance company – Agis - computes the mean number of sessions for all treatment-episodes, per contracted physiotherapist. These individual mean (adjusted for age, sex, chronic vs acute problem) are assessed against the overall distribution and results are fed back to physiotherapists. Outliers (high adjusted means) run the risk to lose their contract with the insurance, if they fail to provide a satisfactory explanation (such as a particular case-mix) to an audit commission.

### 5.6.2. Quality control

Being registered in the Central Quality Register is not compulsory. However it is usually required by health care insurers before they contract physiotherapists. This is in effect a very strong pressure for physiotherapists to register.

<sup>12</sup> "Partial quality management instead of total Total Quality Management efforts are often incremental and focus only on specific processes."

## 5.7. HEALTH INFORMATION SYSTEM

### 5.7.1. Network of physiotherapists

A network of physiotherapists<sup>13</sup> - which could be compared to a sentinel system - was established in 2001. It comprises 40 primary care practices in which +/- 100 physiotherapists routinely record data on their activities, collecting information on +/- 12.000 treatment-episodes per year.

Physiotherapists were recruited in the network on a voluntary basis; they receive some financial incentive for participating in the project and a yearly feed-back on the data collected. Overall distribution of physiotherapists in the network is similar to the distribution of physiotherapists in the Netherlands as regards sex, age, and number of physiotherapists per practice.

A standard commercial software commonly used by physiotherapists was adapted to serve the project purpose. Data are entered directly in the computer and sent electronically to the project coordination office.

The main unit of analysis is the treatment episode. Apart from standard patients administrative, demographic, and socio-economic data, the following variables are collected:

- diagnosis (as written on the referral form; ICPC-coding is done at central level)
- duration of complaints
- use of a specific treatment guideline (11 possible treatment guidelines available)
- treatment objectives: 2 dimensions: activities (*activiteiten*), and body functions (*lichaamsfuncties*), derived from ICF concepts
- treatment method (*verrichting*) various codes including manual treatment, physical treatment (TENS...) etc
- number of sessions (dates of patient's visits)
- reason for terminating treatment (objectives are reached, patient has moved, is no more insured, etc
- treatment results (objectives are completely reached, partially reached, not reached...)

This system provides a wealth of information on physiotherapy and is able to monitor trends such as the use of guidelines, of physical techniques, the impact of various reforms on duration of treatment episodes. For instance, physical techniques (such as TENS or ultra-sounds) were used in +/- 10% of the treatment episodes in 2002; it now seems to be decreasing.

### 5.7.2. Standardised electronic reporting

KNGF has issued guidelines on standardised reporting for physiotherapy (6).

Data to be registered during the care process are grouped in 8 categories. Each category contains a set of 'basic' (necessary) variables and a set of 'plus' (optional) variables.

Diagnosis process	Therapeutic process
1) Administrative data and referral process	5) Treatment plan
2) Anamnesis	6) Treatment
3) Clinical exam	7) Evaluation
4) Analyse	8) Closure of episode

<sup>13</sup> National Information Network for allied Health Care (Landelijke informatievoorziening Paramedische Zorg, or LiPZ netwerk)

These data will be the basis for a general, compulsory, computerised system of data registration for physiotherapy (EGF: *Elektronische Fysiotherapeutische Verslaglegging*). This project is presently in a pilot phase.

This standardised reporting has, on the one hand, a clinical objective (helping the physiotherapist in its practice), and a monitoring objective at a higher level (for instance, documenting adherence to guidelines). It should complement, not duplicate, data provided by the sentinel network.

## 5.8. UTILISATION OF ICF AND FINANCING: THE AMSTERDAM MODEL

At the time the 'Amsterdams dienstenmodel' was proposed (1997), both private and public health insurers in Holland were refunding only 9 sessions of physiotherapy per year and per problem (except for those patients suffering from a chronic disease 'in the list').

The 'Amsterdams dienstenmodel' proposed an alternative to this rigid, one-size-fits-all rule, by devising 11 different categories of entitlements, from one session (diagnosis) to more than 30 sessions per year (see annex). These categories, or 'products', to use insurance terminology, were not defined on the basis of a medical diagnosis (like the lists F or S in Belgium), but rather took into account the patient complaint and the physiotherapist assessment of the objectives of treatment.

The 'Amsterdams dienstenmodel' made use of ICF *concepts* - (**not** of ICF codes or definitions) in linking treatment objectives to a certain number of sessions. If the main objective was to 'improve functioning', then the patient was entitled to a short treatment (10 sessions over 12 weeks). If the main objective was to improve activities, then the entitlement was to 20 sessions over 6 months. If the objective was to improve participation, then the entitlement was to a long treatment – 30 sessions per year.

This model was developed by health insurer ZAO ("Ziekenfonds Amsterdam en Omstreken") together with regional professional associations of physiotherapists, and piloted in Amsterdam. A first evaluation showed that this model cost no more than the '9-sessions' scheme, but entailed higher patients' and providers' satisfaction.

Based on the medical diagnosis, paramedical diagnosis and treatment objectives, the therapist would choose the most suitable subservice. Therapists could switch to an alternative subservice provided they informed the referring practitioners. In case the anticipated maximum is exceeded, a report should be filed with ZAO containing a detailed description of needed care. Finally, patients can recurrently be referred for the same indication within the same year.

When regional insurers ZAO, Anoz and Anova merged into nationwide insurer Agis it was decided not to upscale the Amsterdams Dienstenmodel. As general practitioners and paramedical therapists outside of the wider Amsterdam region were unfamiliar with (the principles underlying) the Amsterdams Dienstenmodel, a potential nationwide extension of the model was curbed. Moreover, the application of the model was discontinued in the Amsterdam region. Since then coverage of physiotherapy within the public and/or compulsory insurance system has been dramatically reduced. The 'Amsterdam model' proposed at that time an alternative to a system that no longer exists today in the Netherlands.

## 5.9. CONCLUSIONS - KEY POINTS

- Coverage for physiotherapy in primary care in the Netherlands under the compulsory insurance scheme is extremely limited (chronic diseases, children); 90-95% of the population has a voluntary health insurance, for which different schemes exist.
- Private health insurers are key actors in physiotherapy, ambulatory care. They contract and monitor the providers; the terms of the voluntary insurance contract determine the amount of physiotherapy services that could be claimed by the insured person in a year.
- The trend among health insurers is towards the definition of 'products' – a package of care, for a given condition. However very little yet exists for physiotherapy. Coverage for physiotherapy services is usually expressed as a maximum number of physiotherapy sessions, or a cost ceiling, and does not depend on the condition.
- A project using ICF concepts in product definition (different number of sessions being refunded if the objective is to improve functioning, activities, or participation) was not extended over its pilot phase
- The Netherlands have extensive experience in quality insurance for physiotherapy. Continuing education and peer group meeting are central elements of this system.
- A project for a general, electronic, standardised, compulsory reporting in its pilot phase
- A sentinel system allows the collection of routine data on an ongoing basis; these data are used to monitor trends such as the use of guidelines, or the impact of reforms.

## 5.10. METHODS AND BIBLIOGRAPHY THE NETHERLANDS

### 5.10.1. Websites consulted

Ministry of Health Welfare and Sports.: [www.minvws.nl](http://www.minvws.nl)

Centraal Bureau voor Statistiek (CBO): [www.cbs.nl](http://www.cbs.nl)

Netherlands Instituut Voor Onderzoek van de Gezondheidszorg (NIVEL):  
[www.nivel.nl](http://www.nivel.nl)

Royal Dutch Society for Physical Therapy: [www.kngf.nl](http://www.kngf.nl)

Nederlands Paramedisch Instituut (NPI): [www.paramedisch.org](http://www.paramedisch.org)

Agis Health Insurance: [www.agisweb.nl](http://www.agisweb.nl)

Central Insurance Site (informative site for patients set up by insurers): [www.fysiotherapie.nl](http://www.fysiotherapie.nl)

### 5.10.2. Key informants

We are particularly grateful to the following persons for the information provided, and for their useful comments on this report. However, they do not commit themselves to the content of this document.

I.C.S. Swinkels, researcher, LiPZ network of physiotherapists, NIVEL

Philippe Van der Wees, physiotherapist, Royal Dutch Society for Physical Therapy. Quality Insurance Systems

### 5.10.3. Bibliography

1. Ministry of Health Welfare and Sports. Health Insurance in the Netherlands. The new health insurance system from 2006.; 2005. Available from: <http://www.minvws.nl/en/folders/z/2005/health-insurance-in-the-netherlands.asp>
2. Cuijpers S, Hoeksema N, de Bie R. Financiering van de zorg in 2004.; 2005. Zorgmonitor Jaarboek. Available from: [www.vektis.nl/?hm=/actueel/publicaties/publicaties.php&lft=1&tp=8](http://www.vektis.nl/?hm=/actueel/publicaties/publicaties.php&lft=1&tp=8)
3. Ministry of Health Welfare and Sports. Primary health care in the Netherlands.; 2005. Available from: <http://www.minvws.nl/en/folders/cz/2005/primary-health-care.asp>
4. NIVEL: Nederlands instituut voor onderzoek van de gezondheidszorg. Dossier: Fysiotherapeut Utrecht. [updated cited 20-11-2005]. Dossier: Fysiotherapeut. Available from: <http://www.nivel.nl/>
5. Wimmers R, Swinkels I, de Konink M, de Bakker D, van den Ende E. Beroepsgroep fysiotherapie.2002. Utrecht: Nivel; 2003. LIPZ: Landelijke Informatievoorziening Paramedische Zorg. Available from:
6. Koninklijk Nederlands Genootschap voor Fysiotherapie (KNGF). Fysiotherapeutische Verslaglegging: KNGF-richtlijn. Supplement bij het Nederlands Tijdschrift voor Fysiotherapie. 2003;nummer 1 / 2003.
7. van Ravensberg CD, van Berkel DM. Fysiotherapeutische diagnose en het Amsterdams dienstenmodel. FysioPraxis. A publication of the Koninklijk Nederlands Genootschap Fysiotherapie. 2000(12).

## 5.11. ANNEXES THE NETHERLANDS

### 5.11.1. Physiotherapy treatment in primary care in the Netherlands: diagnosis and length of treatment

**Table 2. Top ten diagnoses in ambulatory physiotherapy, 2004.**  
**N= 11587 treatment episodes**

ICPC code		% patients
L03	<i>Lage rugpijn zonder uitstraling</i>	13,7
L01	<i>Nek symptomen/ klachten</i>	10,7
L02	<i>Rug symptomen/ klachten</i>	6,3
L08	<i>Schouder symptomen/ klachten</i>	6
L15	<i>Knie symptomen/ klachten</i>	5,4
L86	<i>Lage rugpijn met uitstraling</i>	5,2
L83	<i>Syndromen cervicale wervelkolom</i>	5
L99	<i>Andere ziekten bewegingsapparaat</i>	4,2
L92	<i>Schoudersyndroom/ PHS</i>	3,4
L81	<i>Andere traumata bewegingsapparaat</i>	3,3

Source : LiPZ - Nivel{NIVEL: Nederlands instituut voor onderzoek van de gezondheidszorg  
#359}



Table 3. Number of session per treatment episode started in 2003

Patient characteristic	N treatment episodes	Mean number of sessions
<b>Type of insurance</b>		
Public		
List*	○ 894	○ 31,8
Not-list	○ 7.709	○ 10,8
All	○ 8.603	○ 13
Private	○ 3.870	○ 11,5
<b>Complaint</b>	○	○
<i>Nek symptomen/klachten</i>		
Public insurance (ZWV)	○ 888	○ 12,1
Private insurance (particulier)	○ 383	○ 11,6
<i>Rug symptomen/klachten</i>	○	○
Public insurance	○ 564	○ 11,9
Private insurance	○ 270	○ 11,8
<i>Lage rugpijn zonder uitstraling</i>	○	○
Public insurance	○ 1.164	○ 10,6
Private insurance	○ 544	○ 8,8

Source : LiPZ - Nivel{NIVEL: Nederlands instituut voor onderzoek van de gezondheidszorg #359}

\* "List" : included in the list of chronic diseases (and entitled to more sessions)

### 5.11.2. Different entitlement categories in the Amsterdam model (7)

Category	Sub-category	N sessions	Requirement, target patient
Diagnosis	1. Consultation	1	
	2. Trial treatment ( <i>proefbehandeling</i> )	5, over 4 wks	
Guidance, support	3. Advice	3, over 2 wks	
	4. Guidance ( <i>Begeleiding</i> )	12, over 1 year	Chronic patient, stable
	5. Advice for self-treatment ( <i>advies mantelzorg</i> )	3, over 4 wks	
Treatment	6. According to protocol	Protocols are 'products' - entitlements pre-defined for some specific medical diagnoses, (COPD/asthma), patients (the elderly), treatment modality (hydrotherapy), or problem (psychosomatic). Usually group sessions	
	7. Treatment for acute problem ( <i>crisisinterventie</i> )	9, over 3 wks	Duration of complaint < 1 week
	8. Regular treatment	10, over 12 wks	Duration of complaint > 1 week Treatment aimed at improving functioning ( <i>stoornisgericht</i> )
	9. Medium treatment	20, over 6 months	Treatment aimed at improving activities ( <i>activiteitengericht</i> )
	10. Long treatment	30, over 1 year	Duration of complaint > 6 months. Treatment aimed at improving participation ( <i>participatiegericht</i> )
	11. Long treatment	> 30	With authorisation of health insurance

### 5.11.3. (AMBULATORY) physiotherapy care : Health insurance coverage FOR SELECTED conditions

Fictional cases : 1) 80-year old female, physiotherapy following hip prosthesis, treatment at home 2) 40-year old, otherwise healthy male, suffering from back pain, treatment at the physiotherapist (PT) practice 3) 8-yr old child, cerebral palsy, treatment at the PT practice

### 5.11.4. Compulsory health insurance

Case	Coverage and restrictions*	Cost to insurance	Cost to the patient	Comment
1	9 sessions	100% basic fee and travel allowance for the 10 <sup>th</sup> session and further	First nine sessions	
2	Not covered	-	100%	90-95% of patients have a voluntary insurance
3	18 sessions	100%		

5 \* Are there any conditions or restrictions on duration of treatment, number and time of sessions, treatment modalities.

### 5.11.5. Voluntary health insurance\*

Case	Coverage and restrictions	Cost to insurance	Cost to the patient	Comment
1		18 sessions	0	
2		About 9 sessions (dependent on the kind of health care insurance)	Tenth session and further	
3			0	

\* take as an example a 'common scheme'

## 6. PORTUGAL

### 6.1. BACKGROUND INFORMATION ON THE HEALTHCARE SYSTEM

#### 6.1.1. Existing Coverage Schemes

Based on the National Health Services Model, the Portuguese healthcare system was founded in 1979. As such, it is characterized by universal coverage of residents and national (general) tax financing. Alternative health care systems are provided through employment-based schemes (covering 10% of the population) and voluntary (complementary) private health insurance (applying to 10% of the population).

#### 6.1.2. Institutional Framework

The Ministry of Health is the main governmental body responsible for the development of health policy and its evaluation. Regulation, management and planning of the NHS are its core functions. Other regulatory bodies of importance include:

- The Department of Health Modernization and Resources, dealing with professional education and practice of health staff.
- The General Directorate of Health, in charge of all health promotion and disease prevention initiatives.
- The General Inspectorate of Health, acting as a disciplinary auditor for the NHS.
- The General Directorate of Health Infrastructures and Equipment, responsible for the procurement of equipment and NHS building work.

#### 6.1.3. Health Care Delivery

The NHS is divided into 5 regional health administrations (RHA), which are subdivided into 16 sub-regions. Primary care is provided through local (multidisciplinary) health centres directly run by the RHAs. Secondary and tertiary care are predominantly provided through hospitals ().

### 6.2. PHYSIOTHERAPIST PROFESSION

#### 6.2.1. Minimal Entry Requirements

In order to start practicing physiotherapy in Portugal a 4-year academic degree from a state recognised institution is required. This two-tier degree encompasses a BSc. (3 years) followed by a Msc (1 year). Additionally, private practices employing physiotherapists are subject to compulsory government registration.

#### 6.2.2. Number of physiotherapists

Some 2.500 physiotherapists are currently active in Portugal. About 200 new physiotherapists graduate annually. There is one professional association counting 980 members in all: Associação Portuguesa de Fisioterapeutas (APF).

#### 6.2.3. Practice

Both public and private physiotherapy services (through contractual arrangements with the NHS) exist. Physiotherapists, whether in a hospital or ambulatory environment, work in a multidisciplinary setting. As such, physiotherapists cannot set up solo practices and invariably receive salaried pay.

### 6.3. CONDITIONS FOR COVERED SERVICES

Under the NHS system patient co-payments finance from 10% up to 20% of physiotherapy services. This percentage depends on the number of medical “acts”<sup>14</sup> the physiotherapist performs.

In order to qualify for reimbursement a referral prescription by a specialist physician or general practitioner is required. Further limitations regard the number of reimbursed acts. A maximum of 4 to 5 acts per day is set depending on type of treatment. The overall number of acts is limited per semester depending on the type of treatment (e.g. treatment for osteo-arthritis is limited to 80 acts per semester). No precise limits defining the duration of each treatment session prevail. In practice, though, physiotherapists treat 2 to 3 patients an hour.

### 6.4. QUALITY ASSURANCE AND EVALUATION SYSTEM

#### 6.4.1. NHS reform

At present, the NHS is undergoing a general overhaul. The “New National Healthcare System” drafted by the government came into effect during 2002-2006. The reform was inspired by a need for cost containment and an awareness of lacking efficiency, accessibility and accountability in the national healthcare. The main traits of the reform concern (1):

- The introduction of Public/Private Partnerships (PPPs), with far-reaching consequences in the field of hospital management.
- The shortening of existing waiting lists for surgery and consultations.
- Curbing expenditures for pharmaceuticals by promoting generics through public campaigning and reference pricing.
- A more expedient management of human resources, specifically addressing geographic distribution through means of an integrated information system.

An assessment of the above policy measures would be premature at this stage.

#### 6.4.2. Self-regulatory efforts

The APF laid down a code of professional conduct. It would appear this self-regulatory initiative is not legally binding, however. Local programs inducing quality of care indirectly concern physiotherapy through mostly hospital-based management programs.

### 6.5. HEALTH INFORMATION SYSTEMS

No general Health Information Systems for physiotherapy services were identified for Portugal.

---

<sup>14</sup> A typical treatment includes 3 up to 5 “acts”. “Heat, Ice, Mobilisation, Massage” are examples of medical “acts”.

## 6.6. KEY POINTS

- **Most of Portugal's physiotherapy services operate within a traditional NHS setting.**
- **The healthcare system is currently undergoing major restructuring. As a result, private (contractually arranged) services have found their way in physiotherapy services**
- **Physiotherapists work in a multidisciplinary setting. Reimbursement is dependent on referral prescriptions and maximum limits in the number of treatment sessions prevail.**

## APPENDICES PORTUGAL

### Appendix 1: VISited websites

National professional association

[www.apfisio.pt](http://www.apfisio.pt)

Ministry of Health

[www.dgs.pt](http://www.dgs.pt)

European Region of the World Confederation for Physical Therapy (supranational professional organisation)

[www.physio-europe.org](http://www.physio-europe.org)

### Appendix 2: contacted experts

Fernando Parada, Dr., Physical and Rehabilitation Medicine, Hospital de S.JOAO.

### Appendix 3: additional references

- I. Diogo, C. (2004). The Reform of the NHS in Portugal.

## 7.UK

### 7.1. BACKGROUND INFORMATION ON THE HEALTHCARE SYSTEM

#### 7.1.1. Existing Coverage Schemes

The UK National Health Service (NHS) is a tax-based provider of universal public healthcare free of charge at the point of delivery. Co-payments are required for certain types of patients for dental care, ophthalmology and pharmaceuticals. Some 10% of residents have a private (complementary) insurance, mostly employment-based and covering acute hospital care.

#### 7.1.2. Institutional Framework

In effect there are four NHSs operating in the UK: England, Wales, Scotland and Northern Ireland, each constituting a branch within their respective Departments of Health. In England 28 Strategic Health Authorities (SHAs) link the Department of Health to the various trusts (cf. infra).

#### 7.1.3. Health Care Delivery

The UK healthcare system employs providers from both public and private sectors, the latter accounting for 25% of provided services. In England, the so-called “trusts” are responsible for running various local services. Three main types of trusts exist: primary care trusts (PCT), secondary care and specialist trusts and ambulance trusts.

### 7.2. PHYSIOTHERAPIST PROFESSION

#### 7.2.1. Minimal Entry Requirements

The minimal educational requirement for practicing physiotherapy in England is 3 years of post-secondary education (BSc). Moreover, physiotherapists must be state registered with both the Health Professions Council (HPC) and obtain a licence to practice. Membership of the Chartered Society of Physiotherapy (CSP) is obligatory for those wishing to work under NHS-provisions. Furthermore, several professional associations of CSP-recognized professionals exist within various specialty fields: amputee and prosthetic rehabilitation, manipulation techniques, women's health, acupuncture, etc.

#### 7.2.2. Number of physiotherapists

Currently, there are around 45.000 “chartered physiotherapists, physiotherapy students and assistants”. Newly graduated physiotherapists find it very hard to land a NHS vacancy as a practitioner (“No NHS for more than 9 out of 10 graduate physios” as announced by the CSP in a press statement dated July 18<sup>th</sup> 2006). Consequently, unemployment figures are on the rise.

#### 7.2.3. Practice

Most physiotherapists provide NHS covered services and receive salaried pay. All practitioners working for the NHS should be chartered with the CSP, the professional, educational and trade union body for the UK.

### 7.3. CONDITIONS FOR COVERED SERVICES

In order to qualify for (full) NHS-reimbursement a GP referral is required. Long waiting lists for physiotherapy care are observed in the UK. As a remedial to this problem, a self-referral scheme can now be followed via the newly established “Physio direct” phone services in some NHS trusts (cf. infra).



## 7.4. QUALITY ASSURANCE AND EVALUATION SYSTEM

### 7.4.1. Governmental Regulations

The Health Professions Council (HPC) operates as regulator for 13 professions in the UK. It sets comprehensive standards for individual practitioners; the most relevant for the physiotherapy practitioners being:

- Standards of proficiency regarding skills and professional knowledge.
- Standards of conduct, performance and ethics.
- Standards of continuing professional development (CPD).

The latter standards apply to the development of skills related to physiotherapy practice, teaching activities, management and research. Registrants of the HPC are obliged to maintain a record of their CPD activities and present a written profile to the HPC on request. Random checks are performed routinely by the HPC. As this obligation was only recently (1<sup>st</sup> July 2006) introduced for health professions, the first wave of audits is only programmed from 2008 on.

### 7.4.2. Self (sector) Regulations

The Chartered Society of Physiotherapy (CSP) laid down core standards of physiotherapy practice. These standards in part apply to individual practitioners and in part apply to health service delivery at an organisational level.

For individual practitioners the Chartered Society of Physiotherapy adopted the principles of CPD in accordance to the HPC regulations. It offers support in individual practitioners' CPD portfolio's and "personal development plans" and has developed its own "CSP outcomes model". The model complements the CSP approach to CPD and focuses on broad outcomes<sup>15</sup> that constitute individual professional competence.

Regulations for ensuring properly organised health services deal with health informatics, necessary medical equipment and general working conditions. The CSP also actively endorses the development of clinical guidelines through its guidelines programme.

### 7.4.3. Current (controversial) topics in quality improvement

It is observed that, in some parts of the country, shortages of qualified health professionals such as physiotherapists exist. In the NHS Plan (2000) considerable increases in manpower have been programmed by 2008. It would seem, however, that currently vacant physiotherapist positions are not been filled in or even permanently lost due to budgetary constraints. Furthermore, training budgets for physiotherapists are reported to have been reduced.

In general long waiting lists for physiotherapy care prove to be a burden on healthcare delivery. One solution mentioned to remedy this shortcoming is by direct self-referral, bypassing mandatory GP referrals. It is argued that the current gatekeeper system hampers efficient working standards at GP practices and further lengthens existing waiting lists.

Alternatively, some NHS trusts, have set up a "Physio Direct" service for patients (e.g. the East Gloucestershire NHS trust) allowing patients telephone access to physiotherapists so patients can be presented with direct advice and exercises and seemingly acute patient cases can be fast-tracked (2). The purpose of Physio Direct is to lower organisational strain on GP practices and to optimise and tailor patient identification and timely follow-up.

---

<sup>15</sup> Outcomes focus primarily on ethics, effectiveness, communication skills in professional conduct.

## 7.5. HEALTH INFORMATION SYSTEMS

“Summary Information” on Physiotherapy services is collected annually for the NHS England (1). These data describe the nature of initial physiotherapy contacts (contacts initiating a new episode of care by physiotherapists) according to the type of referral, geography and patient age and sex. The use of these data for analytic purposes seems to be limited.

As part of its “effective practice” goals the CSP developed the “sharing effective physiotherapy project” (SEPP). Either by type of project or type of client group descriptions of various initiatives in physiotherapy care are listed and made available through the CSP website. These projects are hallmarked as prime examples of good practice standards that should be promoted and propagated.

## 7.6. KEY POINTS

- **NHS trusts are responsible for health care delivery in primary, secondary and tertiary care.**
- **Membership of the Chartered Society of Physiotherapy is mandatory for NHS-related practitioners.**
- **Unemployment among young graduates is on the rise as NHS vacancies are not filled.**
- **In general a GP gatekeeper system is in practice. For physiotherapy in particular long waiting lists prevail. Self referral is advocated by the profession as a means to amend this problem.**
- **The Health Professions Council laid down official codes for individual physiotherapists, including the obligation of continuing professional development.**
- **The Chartered Society of Physiotherapy incorporated legal requirements in its code. Additional quality criteria for service organisation are defined as well.**
- **Information on various successful physiotherapy initiatives has been made publicly available at the CSP website.**

## APPENDICES UK

### Appendix 1: Visited websites

Chartered Society of Physiotherapy: professional, educational and trade union body.

[www.csp.org.uk](http://www.csp.org.uk)

Health Professions Council: UK-wide health regulator.

[www.hpc-uk.org](http://www.hpc-uk.org)

European Region of the World Confederation for Physical Therapy (supranational professional organisation)

[www.physio-europe.org](http://www.physio-europe.org)

Department of Health.

[www.dh.gov.uk](http://www.dh.gov.uk)

### Appendix 2: contacted experts

Barry Davis, Customer Service Centre, Department of Health

Kay East, Chief Health Professions Officer, Department of Health

### Appendix 3: additional references

- I. NHS (2006). NHS Physiotherapy Services Summary Information for 2004-05 Engeland.
- I. Practice, P. (2006). Physio Direct.

## C. THE ICF IN REIMBURSED PHYSIOTHERAPY CARE

### I. FULL ICF CODING

As observed in the international comparison of reimbursement schemes for outpatient physiotherapy care, no system based on ICF codification was found to be in use for the analysed countries. This could, in part, be explained by the still somewhat experimental nature of ICF codification, which only received formal WHO-approval in 2001. Statistical use of ICF is still largely under development, which may impede professionals' familiarity with the classification system.

The main advantage of ICF lies in its application as a cross-disciplinary multipurpose framework for comprehensive understanding of various health states. As such, it makes for a promising clinical tool allowing to compare (and hence evaluate) medical effectiveness across health care systems and between settings. However promising ICF may prove as a scientific lever to lift quality of care, considerable difficulties arise in handling ICF as a means to regulate reimbursement.

A general principle underlying the ICF coding is its aspiration to exhaustiveness, in spite of the obvious fact no coding system will incorporate all possible individual patient cases. The number of separate ICF measurements per person can relate to 1.424 scored items in all. Even assuming that for this set of items a qualitative binary criterion ("bad/good") is used, this would engender an abstractly high value of theoretically possible patient case categories<sup>16</sup>. A minimal coding approach would require 34 (dichotomously scored) items<sup>17</sup>, still allowing for an impressive continuum of theoretic patient cases (2 raised to the power of 34, equating to 17.179.869.184). As reimbursement schemes seek to reconcile patient case differentiation and organisational feasibility, an ICF codification base seems an unwieldy and therefore unlikely option.

All the more so, it is not clear how ICF coded patient cases would be linked to reimbursement categories. These categories imply measurement in monetary terms and would primarily rely on quantifying intermediary variables such as required number of treatment episodes, set episode duration and episode frequency. One would assume the link between ICF coded patient cases would ideally be established through empiric observation of evidence-based protocols. As our literature search indicated, even for a limited set of pathologies, the traced evidence is not univocal and sometimes missing. Expert consensus findings applicable to Belgium may offer a way out here.

A further argument corroborating the case against the use of ICF codification in physiotherapy care lies in the intrinsic nature of adequately scoring patient case items. Not only would this be a time-consuming activity on the part of physiotherapists, but proper scoring practices would require some form of "blind referral scoring" as practitioners both scoring and treating the same patient would be exposed to considerable financial incentives to engage into all imaginable forms of "up-coding". Consequently, this would bring about "ICF creep", similar to experiences in DRG-financed care settings and blunt the promising tool ICF could grow out to be. One could, of course, counter-argue that peer provider comparison checks would suffice. However, as ICF codification incorporates patient case mix specifications in great detail, it is hard to imagine any straightforward ex post control mechanism.

In summary, reimbursement schemes for physiotherapy care based on full ICF codification are unwieldy from an organisational point-of-view, uncertain from a scientific standpoint and bear the risk of encumbering the future usability of ICF coding as a clinical tool.

### 2. PARTIAL ICF CODING

As suggested by our research, partial ICF coding could be implemented on a pathology-specific basis, limited to (global) measures summarizing overall observations for 1 or 2 ICF dimensions. As indicated by the literature search body and activities dimension are best covered by existing functional tests. Certain specific disadvantages should be taken into account following such an approach:

- The intrinsic rationale for ICF codification is corrupted as inter-pathology comparability is lost.

<sup>16</sup> In the quoted example this value equates to 2 raised to the power of 1.424 (assuming the absence of exclusive dependence between scoring outcomes).

<sup>17</sup> One-digit level codification: 8 body functions, 8 body structures, 9 performance and 9 capacity codes.

- The current fit of existing tests for global ICF dimensions is often incomplete for varying pathologies. This could regard both the absence of an exhaustive list of item tests or of overall global scoring measures. Questions regarding the link between scoring outcomes and reimbursement terms remain.
- The gain in taxonomic simplicity brought on by globalizing dimension scores would be partially offset by adding an initial pathology-based classification. As shown in our prospective research the ten most frequent pathologies only accounted for 43,3% of attributed treatment sessions. As some of these defined pathologies should be further subdivided for obvious reasons (e.g. presence of orthopaedic implants into anatomic categories: hip, knee, etc.) it should be clear that any top-down pathology-based classification would require a manifold of base categories if some degree of overall real life exhaustiveness is aspired to.
- The general concern for proper coding practices and related scientific relevance of ICF tools also prevails in a partial coding system.

Following the exposed arguments, our conclusion reads that the disadvantages full ICF codification as a reimbursement framework entails, also apply to schemes resorting to partial ICF coding: unmanageable organisational complexity, scientific uncertainty (at present) and deterioration of ICF tools as clinical standards.

### 3. CONCLUSION

As stated by our research most analysed fee-for-service schemes favour an approach based on a rudimentary classification of pathologies into broad reimbursement categories that correspond to a set number of entitled treatment episodes. Exceptional patient cases warrant complementary treatment on an ad hoc basis through additional administrative measures (follow-up prescriptions, etc.). Further observed developments regard care capitation and product bundling. These measures aim to simplify billing procedures and make third-party expenditures more manageable.

Consequently, observed reimbursement schemes appear to be driven by an impetus toward organisational simplicity rather than attested clinical effectiveness. As our discussion on ICF coding aimed to demonstrate, this approach is justified from a third-party payer perspective. Even more so, applying ICF as a reimbursement reference could be detrimental to its intrinsic scientific relevance. Therefore, it should be clear that the significance of ICF as a policy tool must be restricted to its use as a complementary and strictly scientific means, in time perhaps helping to fill a crucial void in assuring the quality of physiotherapy care.

## APPENDICES OF CHAPTER III: LITERATURE REVIEW ON FUNCTIONAL ASSESSMENT IN PHYSIOTHERAPY

### A: PROCEDURE FOR LITERATURE SEARCH

This appendix describes the procedure followed to search the medical literature for the purpose of the study and presents the number of retrieved references. The literature search focused on four specific areas: i) the identification of functional tests, ii) psychometric qualities of the tests, iii) the ICF dimensions covered by functional test and iv) the use of functional tests in health care policy. The literature search was carried out in 4 steps.

#### STEP 1: KEYWORDS

The following list of keywords was preliminarily identified in order to cover the scope of the study: *physical therapy, functional, evaluation, assessment, outcome, disability, impairment, handicap, participation, quality of life, life satisfaction, validation, reliability, psychometrics, health care financing, ICF, ICIDH*.

#### STEP 2: MESH TERMS

The keywords were entered into the Medical Subject Headings (MeSH, <http://www.nlm.nih.gov/mesh/2005/MBrowser.html>) in order to find their most relevant counterpart in the MeSH terms. The first MeSH term identified allowed the field of investigation to be specified.

*Physiotherapy / Physical Therapy*. The auxiliary health profession which makes use of physical therapy techniques to prevent, correct, and alleviate movement dysfunction of anatomic or physiologic origin.

Additional MeSH terms were selected in order to cover each focal domain of the literature search: i) functional evaluation, ii) psychometric qualities, iii) health policy and iv) functional classification (ICF and ICIDH, the former name of the ICF classification). The list and description of each MeSH term is detailed hereunder.

##### Functional evaluation

*Activities of Daily Living*. The performance of the basic activities of self care, such as dressing, ambulation, eating, etc., in rehabilitation.

*Disability Evaluation*. Determination of the degree of a physical, mental, or emotional handicap. The diagnosis is applied to legal qualification for benefits and income under disability insurance and to eligibility for Social Security and workmen's compensation benefits.

*Outcome Assessment*. Research aimed at assessing the quality and effectiveness of health care as measured by the attainment of a specified end result or outcome. Measures include parameters such as improved health, lowered morbidity or mortality, and improvement of abnormal states (such as elevated blood pressure).

*Quality of Life*. A generic concept reflecting concern with the modification and enhancement of life attributes, e.g., physical, political, moral and social environment; the overall condition of a human life.

##### Psychometric qualities

*Evaluation Studies*. Studies determining the effectiveness or value of processes, personnel, and equipment, or the material on conducting such studies. For drugs and devices, CLINICAL TRIALS; DRUG EVALUATION; and DRUG EVALUATION, PRECLINICAL are available.

*Psychometrics*. Assessment of psychological variables by the application of mathematical procedures.

*Reproducibility of Results*. The statistical reproducibility of measurements (often in a clinical context), including the testing of instrumentation or techniques to obtain reproducible results. The concept includes reproducibility of physiological measurements, which may be used to develop rules to assess probability or prognosis, or response to a stimulus; reproducibility of occurrence of a condition; and reproducibility of experimental results.

*Validation Studies.* Works consisting of research using processes by which the reliability and relevance of a procedure for a specific purpose are established.

## Functional classification

*ICF* (International Classification of Functioning, Disability and Health) and *ICIDH* (International Classification of Impairments, Disability and Handicap). These keywords were not found in the MeSH terms but they kept anyway for the literature search.

## Health Policy

*Delivery of health care.* The concept concerned with all aspects of providing and distributing health services to a patient population.

*Economics.* Used for the economic aspects of any subject, as well as for all aspects of financial management. It includes the raising or providing of funds.

*Health Planning Guidelines.* Recommendations for directing health planning functions and policies.

*Health Policy.* Decisions, usually developed by government policymakers, for determining present and future objectives pertaining to the health care system.

*Health Services Research.* The integration of epidemiologic, sociological, economic, and other analytic sciences in the study of health services. Health services research is usually concerned with relationships between need, demand, supply, use, and outcome of health services. The aim of the research is evaluation, particularly in terms of structure, process, output, and outcome.

*Health Services.* Services for the diagnosis and treatment of disease and the maintenance of health.

*National Health Programs.* Components of a national health care system which administer specific services, e.g., national health insurance.

*Program Evaluation.* Studies designed to assess the efficacy of programs. They may include the evaluation of cost-effectiveness, the extent to which objectives are met, or impact.

## STEP 3: SEARCH CRITERIA

Each MeSH term was combined with the keyword "physical therapy" and with a fixed list of qualifiers representing psychometric qualities in order to limit the results to a manageable number of references. For example, the literature search criterion for the MeSH term *Outcome Assessment* was formulated as: "Physical therapy" AND "Outcome Assessment" AND (valid\* OR reliab\* OR reproducib\* OR repeatab\* OR responsiv\* OR sensitiv\* OR specificity OR psychometr\*). The latter criterion was used to search all references on outcome assessment in physical therapy that contain any of the following words: valid, validate, validation, validity, validly, reliability, reliable, reliably, reproducibility, reproducible, reproducibly, repeatability, repeatable, repeatably, responsive, responsiveness, sensitive, sensitively, sensitiveness, sensitivity, specificity, psychometric, psychometry and psychometrics. An analogous criterion was formulated for each MeSH term.

## STEP 4: SEARCH OF PEDRO DATABASE

Step 1 to 3 were used for the search of Medline (see below). However, when adopted to PEDro, a physiotherapy evidence database, it appeared unsuccessful, probably due to the structure of this database. PEDro has been developed to give rapid access to randomised controlled trials, systematic reviews and evidence-based clinical practice guidelines in physiotherapy, and is mostly focussed on evidences of therapeutic procedures rather than on functional evaluation ([www.pedro.fhs.usyd.edu.au](http://www.pedro.fhs.usyd.edu.au)). Hence, a second search strategy was adopted. In another chapter of this study, a selection of therapists are asked about the functional scales they are using to evaluate their patients, but also about the treatments they adopt for five selected diagnoses: bronchiolitis in infants, knee arthroplasty, hemiplegia secondary to stroke, aspecific gait difficulties in the elderly and low back pain. The five diagnoses selected for this survey, were taken as a starting point for the PEDro search. The following search combinations were used: "bronchiolitis" (15 hits), "knee arthroplasty" (52 hits), "hemiplegia" (63 hits), "hemiplegic stroke" (53 hits), "gait impairment AND elderly" (7 hits), "gait

impairment AND aged” (5 hits). Although in some of these articles the use of functional tests was described, none of the articles yielded direct information on the psychometric properties of these tests. For the search term “low back pain” 682 results were found. This term was combined with “Activities of Daily Living” (11 hits), “Disability Evaluation” (33 hits), “Outcome Assessment” (103 hits) and “Quality of Life” (55 hits). Again, no articles specifically dealing with psychometric properties of functional tests were retrieved.

## NUMBER OF REFERENCES RETRIEVED IN MEDLINE

All literature search criteria were submitted to PubMed (<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed>) in order to retrieve the references covering the four domains of the literature review.

The number of references retrieved from PubMed is presented in Table I. The results indicate that a total of 2045 references were retrieved. Among those, 564 (28%) references are related to functional evaluation, 1076 (53%) are related to evaluation methodology, 17 (<1%) are related to functional classification and 388 (19%) are related to health policy. Some references are duplicate across multiple domains, leading to a total of 1567 individual studies.

Table I. Summary number of reference selection in MEDLINE.

MeSH term	Number of references retrieved
<b>Functional evaluation</b>	
Activities of Daily Living	189
Disability Evaluation	122
Outcome Assessment	63
Quality of Life	190
<b>Evaluation methodology</b>	
Evaluation Studies	369
Psychometrics	155
Reproducibility of Results	412
Validation Studies	140
<b>Functional classification</b>	
ICF (International Classification of Functioning, Disability and Health)*	7
ICIDH (International Classification of Impairments, Disability and Handicap)*	10
<b>Health policy</b>	
Delivery of health care*	125
Economics	82
Health Planning Guidelines*	5
Health Policy*	51
Health Services Research	18
Health Services*	51
National Health Programs*	36
Program Evaluation	20
<b>All MeSH terms combined</b>	<b>2045</b>
<b>All MeSH terms combined without duplicates</b>	<b>1567</b>

\* The qualifiers representing psychometric qualities were not included for this criterion because this prevented any reference to be retrieved.



## B. CHECKLIST FOR LITERATURE REVIEW ON FUNCTIONAL EVALUATION

A systematic checklist was adopted to review each study on functional assessment. The checklist was specifically designed to assess papers presenting psychometric qualities of functional tests in the field of physiotherapy, i.e. the majority of the selected studies. The other studies addressed clinical, methodological or organisational issues, and were not evaluated according to the checklist. The checklist is described hereunder.

### GENERAL INFORMATION

- Reference of the study.
- Reader.
- Study type: test (study presenting psychometric qualities of functional tests), commentary (study addressing clinical issues in the field of physiotherapy), satisfaction (study addressing patient satisfaction with physiotherapy) or economic (study addressing physiotherapy financing issues).
- Full name of the test.
- Abbreviated name of the test.
- Diagnosis of the patients studied.
- Sub-diagnosis (when applicable).
- The sample size of the study.
- The domain of the ICF addressed by the test items: body structure, body function, activities, participation or environmental factors).

### TEST ADMINISTRATION

- The type of administration used for the test: clinical test, self-, proxy- or interviewer-completed questionnaire or telephone or semi-structured interview.
- Clinical utility summarized in one sentence.
- The time required to score the test in a routine clinical practice (when available).
- The evaluator actually scoring the test: patient, therapist or proxy.
- Brief description of the training required to administer the test and whether training material is available (when available).
- Brief description of the equipment required to administer the test (when available).

### PSYCHOMETRIC QUALITIES

- The type of scoring of the test: descriptive (qualitative appraisal rather than scoring), classification, profile score or total score.
- Scaling level of the test score: nominal, ordinal, interval or ratio.
- Either unidimensional or multidimensional scoring of the test.
- Evidence of content validity.
- Evidence of concurrent validity.
- Evidence of construct validity.
- Evidence of internal consistency.
- Evidence of reproducibility test-retest.
- Evidence of reproducibility inter rater.

- Evidence of responsiveness.

## COMMENTS

- Reader's open-ended comments.

## APPENDICES OF CHAPTER IV: LITERATURE REVIEW OF PHYSICAL THERAPY MODALITIES IN SOME COMMON MEDICAL AND MUSCULOSKELETAL CONDITIONS

### A. DETAILED PRELIMINARY SEARCH PROCEDURES FOR PHYSIOTHERAPY IN BRONCHIOLITIS

#### 1. MEDLINE (PUBMED; APRIL 2006)

Search for “bronchiolitis” AND “Physical therapy”: one reference found; discarded as not relevant.

Search for “bronchiolitis” AND physiotherapy (free term); no limits: 24 references found.

- Limit previous search to ‘practice guidelines’: no reference found,
- Limit to ‘meta-analysis’: 1 reference found, a Cochrane Review: Chest physiotherapy for acute bronchiolitis in pediatric patients between 0 and 24 months old (5),
- Limit to ‘Reviews’: 5 references found. Four discarded as not relevant, one Cochrane Review already found.
- Limit to ‘RCTs’: 2 references were found. One discarded as dated from 1985, one discarded as in Spanish.

#### 2. PEDRO (MAY 2006)

Search for “bronchiolitis” in the advanced search window: 16 records found.

- Limit previous search to ‘practice guidelines’. Ten records found, only one kept as all others only are ‘Quick reference guides’: Evidence based clinical practice guideline for infant with bronchiolitis, Cincinnati Children’s Hospital Medical Center, (3),
- Limit to ‘systematic review’. Three records found. The Cochrane Review already found. Another Cochrane Review: Continuous negative extrathoracic pressure or continuous positive airway pressure for acute hypoxemic respiratory failure in children, (6). One discarded as in Spanish and not specifically focused on physiotherapy.

#### 3. CENTRE FOR REVIEWS AND DISSEMINATION (MAY 2006)

Search for “bronchiolitis” AND physiotherapy in all CRD databases: one record previously found (the Cochrane Review from Perrotta).

Search “bronchiolitis” in all CRD databases: 49 records were found. Among them, two Cochrane reviews previously found, one on the general medical management of bronchiolitis : Management of bronchiolitis in infants and children, Agency for Health Care Research and Quality, Evidence Report/Technology Assessment (8). The remaining 46 references were discarded as not relevant to physiotherapy.

#### 4. COCHRANE REVIEWS (APRIL 2006)

Search by topic: respiratory infections > bronchiolitis > treatment: 8 records found. Only one relevant to physiotherapy and previously found.

Search for “bronchiolitis” in the ‘search the abstracts’ window of the main Cochrane Reviews page. Nine records found. Only one relevant, same as above.

## 5. NATIONAL GUIDELINE CLEARINGHOUSE (MAY 2006)

Search for “bronchiolitis” in the main search window. Twenty references found. Only one relevant: the practice guideline on bronchiolitis in the infant from the Cincinnati Children’s Hospital Medical Center (already found).

## 6. ADDITIONAL SEARCH ON ANAES, SSMG, WVVH WEBSITES (MAY 2006)

ANAEs

Search for “bronchiolitis” in the search window of the main ‘Publications’ page. One reference found: Prise en charge de la bronchiolite du nourrisson, conference de consensus, 2000 (7).

SSMG, Wvvh : no records found

## 7. ADDITIONAL SEARCH IN EMBASE (JUNE 2006)

No new relevant reference found.

## References retrieved from the literature on physiotherapy for bronchiolitis in the infant

Reference	Type of reference	General description	Critical appraisal
Evidence based clinical practice guideline for infant with bronchiolitis (3)	Practice guideline from de Cincinnati Children's Hospital Medical Center, US First published in 1996, last revision in 2005	Practice guideline addressing prevention, diagnosis and medical management. No specific section on physiotherapy but states that routine respiratory care therapy other than suction (i.e., chest physiotherapy, cool mist therapy, aerosol with saline) should not be used as not helpful. Based on 85 references.	<b>Agree total score: 76/92</b>  <b>Cochrane Va form:</b> The answers to most questions included in this form are positive. Some questions are not relevant for this guideline. The main recommendations of this guideline seem valid, well documented and applicable in most rehabilitation facilities at most levels of practice.
Chest physiotherapy for acute bronchiolitis in paediatric patients between 0 and 24 months old (5)	Cochrane Review	Systematic review of RCTs on traditional chest physical therapy modalities such as: postural drainage, chest percussion, vibration, chest shaking, directed coughing or forced exhalation techniques. Conclusions based on only 3 RCTs as no other study met the inclusion criteria.	Not to be rated
Continuous negative extrathoracic pressure (CNEP) or continuous positive airway pressure (CPAP) for acute hypoxemic respiratory failure in children (6)	Cochrane Review	Systematic review of RCTs on CNEP and non invasive CPAP. Conclusions based on only one RCT on CNEP in children as no other study met the inclusion criteria.	Not to be rated
Management of bronchiolitis in infants and children (8)	Evidence Report/Technology from the Assessment Agency for Health Care Research and Quality, US Gov	Evidence reports that focuses only on prevention, diagnosis and efficacy or effectiveness of medical treatment (pharmaceutical agents: corticosteroids, bronchodilators, antimicrobial and antiviral agents) of bronchiolitis. Physiotherapy is not addressed in this report.	Not rated as not relevant. This report has been excluded from further analysis.
Prise en charge de la bronchiolite du nourrisson (7)	Conférence de consensus d'experts	Expert consensus that addresses natural history, hospital admission criterias, medical treatments, chest physiotherapy, organisation of care and prevention of bronchiolitis.	Not to be rated

## B. DETAILED SEARCH PROCEDURES FOR REHABILITATION IN STROKE

**Mesh terms:** cerebrovascular accident, rehabilitation

### I. MEDLINE (PUBMED; JUNE 2006)

PubMed Search for : "Cerebrovascular Accident/rehabilitation"[MeSH]

Limits: practice guidelines, last 5 years. 6 records found; only 1 kept:

- Physical activity and exercise recommendations for stroke survivors: an American Heart Association scientific statement from the Council on Clinical Cardiology, Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention; the Council on Cardiovascular Nursing; the Council on Nutrition, Physical Activity, and Metabolism; and the Stroke Council. *Circulation*. 2004 Apr 27;109(16):2031-41

PubMed Search for : "Cerebrovascular Accident/rehabilitation"[MeSH]

Limits: meta-analysis, last 5 years. 29 records found; 10 kept:

- Pomeroy VM, King L, Pollock A, Baily-Hallam A, Langhorne P. Electrostimulation for promoting recovery of movement or functional ability after stroke. *Cochrane Database Syst Rev*. 2006 Apr 19;(2):CD003241. Review.

- Moseley AM, Stark A, Cameron ID, Pollock A. Treadmill training and body weight support for walking after stroke. *Cochrane Database Syst Rev*. 2005 Oct 19;(4):CD002840. Review.

- Barclay-Goddard R, Stevenson T, Poluha W, Moffatt ME, Taback SP. Force platform feedback for standing balance training after stroke. *Cochrane Database Syst Rev*. 2004 Oct 18;(4):CD004129. Review.

- Kwakkel G, van Peppen R, Wagenaar RC, Wood Dauphinee S, Richards C, Ashburn A, Miller K, Lincoln N, Partridge C, Wellwood I, Langhorne P. Effects of augmented exercise therapy time after stroke: a meta-analysis. *Stroke*. 2004 Nov;35(11):2529-39. Epub 2004 Oct 7. Review.

- Saunders DH, Greig CA, Young A, Mead GE. Physical fitness training for stroke patients. *Cochrane Database Syst Rev*. 2004;(1):CD003316. Review.

- van der Lee JH. Constraint-induced movement therapy: some thoughts about theories and evidence. *J Rehabil Med*. 2003 May;(41 Suppl):41-5.

- Meek C, Pollock A, Potter J, Langhorne P. A systematic review of exercise trials post stroke. *Clin Rehabil*. 2003 Feb;17(1):6-13.

- Therapy-based rehabilitation services for stroke patients at home. *Cochrane Database Syst Rev*. 2003;(1):CD002925. Review.

- Ada L, Foongchomcheay A. Efficacy of electrical stimulation in preventing or reducing subluxation of the shoulder after stroke: a meta-analysis. *Aust J Physiother*. 2002;48(4):257-67. Review.

- de Kroon JR, van der Lee JH, IJzerman MJ, Lankhorst GJ. Therapeutic electrical stimulation to improve motor control and functional abilities of the upper extremity after stroke: a systematic review. *Clin Rehabil*. 2002 Jun;16(4):350-60.

PubMed Search for systematic reviews on Clinical Queries : ("Cerebrovascular Accident/rehabilitation"[MeSH]) AND systematic[sb]

Limits: last 5 years. 152 records found, many of them including references other than true systematic reviews. Preliminary selection was made based on the title and abstract. Only the following 27 new relevant references were kept:

- Van Peppen RP, Kortsmit M, Lindeman E, Kwakkel G. Effects of visual feedback therapy on postural control in bilateral standing after stroke: a systematic review. *J Rehabil Med*. 2006 Jan;38(1):3-9. Review.

- Bates B, Choi JY, Duncan PW, Glasberg JJ, Graham GD, Katz RC, Lamberty K, Reker D, Zorowitz R; US Department of Defense; Department of Veterans Affairs. Veterans Affairs/Department of Defense Clinical Practice Guideline for the Management of Adult Stroke Rehabilitation Care: executive summary. *Stroke*. 2005 Sep;36(9):2049-56.

- van Dijk H, Jannink MJ, Hermens HJ. Effect of augmented feedback on motor function of the affected upper extremity in rehabilitation patients: a systematic review of randomized controlled trials. *J Rehabil Med.* 2005 Jul;37(4):202-11. Review.
- Luke C, Dodd KJ, Brock K. Outcomes of the Bobath concept on upper limb recovery following stroke. *Clin Rehabil.* 2004 Dec;18(8):888-98. Review.
- Van Peppen RP, Kwakkel G, Wood-Dauphinee S, Hendriks HJ, Van der Wees PJ, Dekker J. The impact of physical therapy on functional outcomes after stroke: what's the evidence? *Clin Rehabil.* 2004 Dec;18(8):833-62. Review.
- Aoyagi Y, Tsubahara A. Therapeutic orthosis and electrical stimulation for upper extremity hemiplegia after stroke: a review of effectiveness based on evidence. *Top Stroke Rehabil.* 2004 Summer;11(3):9-15. Review.
- Kottink AI, Oostendorp LJ, Buurke JH, Nene AV, Hermens HJ, IJzerman MJ. The orthotic effect of functional electrical stimulation on the improvement of walking in stroke patients with a dropped foot: a systematic review. *Artif Organs.* 2004 Jun;28(6):577-86. Review.
- Legg L, Langhorne P; Outpatient Service Trialists. Rehabilitation therapy services for stroke patients living at home: systematic review of randomised trials. *Lancet.* 2004 Jan 31;363(9406):352-6. Review.
- Weinrich M, Good DC, Reding M, Roth EJ, Cifu DX, Silver KH, Craik RL, Magaziner J, Terrin M, Schwartz M, Gerber L. Timing, intensity, and duration of rehabilitation for hip fracture and stroke: report of a workshop at the National Center for Medical Rehabilitation Research. *Neurorehabil Neural Repair.* 2004 Mar;18(1):12-28. Review.
- Morris SL, Dodd KJ, Morris ME. Outcomes of progressive resistance strength training following stroke: a systematic review. *Clin Rehabil.* 2004 Feb;18(1):27-39. Review.
- Lannin NA, Herbert RD. Is hand splinting effective for adults following stroke? A systematic review and methodologic critique of published research. *Clin Rehabil.* 2003 Dec;17(8):807-16. Review.
- Barreca S, Wolf SL, Fasoli S, Bohannon R. Treatment interventions for the paretic upper limb of stroke survivors: a critical review. *Neurorehabil Neural Repair.* 2003 Dec;17(4):220-6. Review.
- Langhorne P, Legg L. Evidence behind stroke rehabilitation. *J Neurol Neurosurg Psychiatry.* 2003 Dec;74 Suppl 4:iv18-iv21. Review.
- Woldag H, Waldmann G, Heuschkel G, Hummelsheim H. Is the repetitive training of complex hand and arm movements beneficial for motor recovery in stroke patients? *Clin Rehabil.* 2003 Nov;17(7):723-30.
- Teasell RW, Bhogal SK, Foley NC, Speechley MR. Gait retraining post stroke. *Top Stroke Rehabil.* 2003 Summer;10(2):34-65.
- Foley NC, Teasell RW, Bhogal SK, Doherty T, Speechley MR. The efficacy of stroke rehabilitation: a qualitative review. *Top Stroke Rehabil.* 2003 Summer;10(2):1-18.
- Fang Y, Chen X, Li H, Lin J, Huang R, Zeng J. A study on additional early physiotherapy after stroke and factors affecting functional recovery. *Clin Rehabil.* 2003 Sep;17(6):608-17.
- Jutai JW, Teasell RW. The necessity and limitations of evidence-based practice in stroke rehabilitation. *Top Stroke Rehabil.* 2003 Spring;10(1):71-8. Review.
- Teasell RW, Foley NC, Bhogal SK, Speechley MR. An evidence-based review of stroke rehabilitation. *Top Stroke Rehabil.* 2003 Spring;10(1):29-58. Review.
- Riolo L, Fisher K. Is there evidence that strength training could help improve muscle function and other outcomes without reinforcing abnormal movement patterns or increasing reflex activity in a man who has had a stroke? *Phys Ther.* 2003 Sep;83(9):844-51. Review. No abstract available.
- Pollock A, Baer G, Pomeroy V, Langhorne P. Physiotherapy treatment approaches for the recovery of postural control and lower limb function following stroke. *Cochrane Database Syst Rev.* 2003;(2):CD001920. Review.
- Meek C, Pollock A, Potter J, Langhorne P. A systematic review of exercise trials post stroke. *Clin Rehabil.* 2003 Feb;17(1):6-13.
- Langhorne P, Legg L, Pollock A, Sellars C. Evidence-based stroke rehabilitation. *Age Ageing.* 2002 Nov;31 Suppl 3:17-20.
- de Kroon JR, van der Lee JH, IJzerman MJ, Lankhorst GJ. Therapeutic electrical stimulation to improve motor control and functional abilities of the upper extremity after stroke: a systematic review. *Clin Rehabil.* 2002 Jun;16(4):350-60.
- Greener J, Langhorne P. Systematic reviews in rehabilitation for stroke: issues and approaches to addressing them. *Clin Rehabil.* 2002 Feb;16(1):69-74. Review.

- van der Lee JH. *Constraint-induced therapy for stroke: more of the same or something completely different?* *Curr Opin Neurol.* 2001 Dec;14(6):741-4. Review.
- Chatterton HJ, Pomeroy VM, Gratton J. *Positioning for stroke patients: a survey of physiotherapists' aims and practices.* *Disabil Rehabil.* 2001 Jul 10;23(10):413-21.

## 2. PEDRO (JUNE 2006)

Search for "Stroke rehabilitation" in "neurology" subdiscipline in an advanced search ([http://129.78.28.173/pedro/FMPPro?-db=Sessions.fp5&-format=search\\_new.htm&-new](http://129.78.28.173/pedro/FMPPro?-db=Sessions.fp5&-format=search_new.htm&-new)) limited to the 5 last years. 3 practice guidelines and 17 SR found. The only 1 new following relevant references was kept:

- Lindley R, Brown J, Chalmers C, Corker U, Dawson M, el-Ghorr A, Langhorne P, Legg L, MacGillivray F, Jackson T, Mackenzie C, MacWalter R, McDonald J, McHattie G, Pollock A, Sellars C, Smith M, Taylor J, Tinson D, Wellwood I. *Management of patients with stroke. Rehabilitation, prevention and management of complications, and discharge planning: a national clinical guideline.*

## 3. COCHRANE (JUNE 2006)

Search "Stroke rehabilitation" in the search window of the Cochrane Review page (<http://www.cochrane.org/reviews/index.htm>) of the Cochrane Collaboration site (<http://www.cochrane.org/>). 19 records found. No new relevant reference was found.

Search in the "general rehabilitation policies" of the "Stroke" topic of the Cochrane reviews page: 3 references found. No new relevant reference was found. All the relevant Cochrane reviews have been obtained in the previous search.

## 4. CENTRE FOR REVIEWS AND DISSEMINATION (JUNE 2006)

Search for "Stroke" AND 'Rehabilitation in all CRD databases (in title and abstracts). 141 records found. Only 3 relevant new references were kept (last 5 years):

- Snels I A, Dekker J H, van der Lee J H, Lankhorst G J, Beckerman H, Bouter L M. *Treating patients with hemiplegic shoulder pain.* *American Journal of Physical Medicine and Rehabilitation,* 2002; 81(2), 150-160.
- van der Lee J H, Snels I A, Beckerman H, Lankhorst G J, Wagenaar R C, Bouter L M. *Exercise therapy for arm function in stroke patients: a systematic review of randomized controlled trials.* *Clinical Rehabilitation,* 2001;15(1), 20-31.
- Bernath V. Clayton, *Shoulder supports in patients with hypotonicity following stroke.* Victoria: Centre for Clinical Effectiveness (CCE), 2001. (Evidence Centre Evidence Report)

## 5. NATIONAL GUIDELINE CLEARINGHOUSE AND GUIDELINES FINDER (JUNE 2006)

Search for "stroke" in the Disease/Condition window and "rehabilitation" in the Treatment/Intervention window of the Detailed search page (<http://www.guideline.gov/search/detailedsearch.aspx>) of the NGC site (<http://www.guideline.gov/>). 16 records found. The 2 new following relevant references were kept:

- *Life after stroke. New Zealand guideline for management of stroke.* NGC:3364

Search for "stroke rehabilitation" in the main search windows of the Guidelines Finder page (<http://www.library.nhs.uk/guidelinesfinder/>). 7 records found. Only one new relevant reference kept:

- *National Clinical Guidelines for stroke (second edition).* Royal College of Physicians, London, UK, 2004



## 6. ANAES, KNGF, SSMG, WVVH ... (JULY 2006)

ANAEs: one reference retrieved

- *Prise en charge initiale des patients adultes atteints d'accident vasculaire cerebral; aspects paramédicaux, 2003*

KNGF, SSMG, Wvvh: no reference found

## 7. ADDITIONAL SEARCH IN EMBASE (JUNE 2006)

An additional search conducted independently identified the following references:

- Hacke W., Kaste M., Olsen T. S., Orgogozo J. M., Bogousslavsky, J. *European Stroke Initiative: recommendations for stroke management. Organisation of stroke care. J. Neurol, 2000; 247:9: 732-48,*
- Dobkin B.H. *Clinical practice: rehabilitation after stroke. N Engl J Med, 2005; 352: 16: 1677-84,*
- Langhammer B. *Bobath or motor relearning programme? A follow-up one year and four years post stroke. Clin Rehabil, 2003; 17:731-734*

The first reference was discarded as outdated (numerous more recent guidelines available).

The second references was discarded as being a narrative review.

The third one (40) was kept as addressing a physical therapy modality which is very popular in our country and on which evidence is scarce.

## References on rehabilitation for hemiplegia, hemiparesis due to stroke

Reference	Type of reference	General description	Critical appraisal
VA/DoD Clinical practice guideline for the management of stroke rehabilitation, 2003 (22)	Practice guideline This clinical practice guideline has been updated and endorsed by the American Heart Association (AHA) and the American Stroke Association (ASA) in 2005	Very good quality clinical practice guideline This reference covers the following topics: <ul style="list-style-type: none"> <li>• Organization of rehabilitation care</li> <li>• Standardized assessment tools</li> <li>• Intensity, duration of therapy</li> <li>• Patient's family and caregivers</li> <li>• Patient's family and caregivers education</li> <li>• Rehabilitation (orthotics, strengthening, constraint-induced movement therapy, functional electric stimulation, neurodevelopmental training, spasticity therapy, biofeedback, shoulder pain therapy...)</li> </ul> Bibliography includes 328 references.	<b>Agree total score: &gt;70/92</b> Information on the development process of the guideline is available on the VA/DoD site  <b>Cochrane Va form for SRs</b> The answers to most questions included in this form are positive. Some questions are not relevant for this guideline. The main recommendations of this guideline seem valid, well documented and applicable in most rehabilitation facilities at most levels of practice.
Management of Adult Stroke Rehabilitation Care: a clinical practice guideline (16)	Clinical practice guideline by the VA/DoD initially published in 2003 (see below) and slightly update before being endorsed by the American Heart Association (AHA) and the American Stroke Association (ASA) in 2005	Update of the VA/DoD clinical practice guideline (22) by inclusion of recommendations of more recent institutional guidelines (17, 18) presented below in this same Table 2.5. A few more recent references not directly relevant to rehabilitation have also been added to this reference. Bibliography includes 264 references.	See (22)
National clinical guideline for stroke: second edition. Intercollegiate stroke working party, clinical effectiveness & evaluation unit, Royal College of Physicians, London, UK, 2004 (18)	Practice guideline This is a general practice guideline on stroke evaluation and management from onset to the longer term. It includes a section that specifically focuses on stroke rehabilitation.	Very good quality clinical practice guideline This reference covers the following topics: <ul style="list-style-type: none"> <li>• Introduction (definitions, terminology...)</li> <li>• Service organisation</li> <li>• Clinical care <ul style="list-style-type: none"> <li>○ acute management</li> <li>○ rehabilitation (psychological and cognitive impairments, language trouble, motor and sensory impairment, pain, spasticity, functional interventions),</li> <li>○ transfer to community</li> </ul> </li> </ul> Bibliography includes 785 references.	<b>Agree total score: &gt;80/92</b> Information on the development process of the guideline (literature search...) is available on the Royal College of Physicians site ( <a href="http://www.rcplondon.ac.uk">www.rcplondon.ac.uk</a> )  <b>Cochrane Va form for SRs</b> The answers to most questions included in this form are positive. Some questions are not relevant for this guideline. The main recommendations of this guideline seem valid, well documented and applicable in most rehabilitation facilities at most levels of practice

Life after stroke. New Zealand guideline for management of stroke, 2003 (23)	Practice guideline by the Stroke Foundation of New Zealand endorsed by the New Zealand Guidelines Group. This guideline is an adaptation of the AHA (Stroke Council), ASA, RCP and SIGN stroke guidelines, with the evidence updated and expanded where thought appropriate. This guideline is a revised version of a first 1996 first version. This 2003 version should be reviewed in 2006.	Good clinical practice guideline that covers the following topics among others: <ul style="list-style-type: none"> <li>• Introduction: stroke in New Zealand</li> <li>• Organisation and evaluation of stroke services in New Zealand,</li> <li>• Assessment and management of stroke (including rehabilitation),</li> <li>• Alternative therapies for stroke</li> </ul> Bibliography includes 164 references.	<b>Agree total score: &gt;75/92</b>  <b>Cochrane Va form for SRs</b> The answers to most questions included in this form are positive. Some questions are not relevant for this guideline. The main recommendations of this guideline seem valid, well documented and applicable in most rehabilitation facilities at most levels of practice
Management of patients with stroke. Rehabilitation, prevention and management of complications, and discharge planning. A national clinical guideline by the Scottish Intercollegiate Guidelines Network (SIGN, 2002) (17)	Practice guideline This guideline is the part IV of a more complete guideline on Stroke: Part I : Assessment, investigation, immediate management and secondary prevention Part II: Management of carotid stenosis and carotid endarterectomy Part III: Identification and management of dysphagia Part IV: Rehabilitation, prevention and management of complications, and discharge planning.	This very good practice guideline has been developed in the framework of the WHO ICF model.  Bibliography includes 168 references.	<b>Agree total score: &gt;75/92</b>  <b>Cochrane Va form for SRs</b> The answers to most questions included in this form are positive. Some questions are not relevant for this guideline. The main recommendations of this guideline seem valid, well documented and applicable in most rehabilitation facilities at most levels of practice
Prise en charge initiale des patients adultes atteints d'accident vasculaire cerebral; aspects paramédicaux. ANAES, 2002	Practice clinical guideline  This reference is the Part IV of a larger practice guideline on diagnosis and management of patients with acute stroke.	Low quality clinical practice guideline in which most levels of evidences are not discussed and strength of recommendations are proposed without referring to any references. No references are included in the text to support recommendations. Most recommendations specific to rehabilitation are based on expert consensus only.  No references list is available in the document.	<b>Agree total score: 43/92</b>  <b>Cochrane Va form for SRs</b> Due to the low level of methodology the recommendations specific to rehabilitation seem poorly reliable. Recommendations of this reference have not been included in Table 2.5
Physical activity and exercise recommendations for stroke survivors: an American Heart Association (AHA) statement, 2004 (20)	Scientific statements and recommendations developed by the AHA council on clinical cardiology, subcommittee on exercise, Cardiac Rehabilitation, and Prevention; the Council on Cardiovascular Nursing; the Council on Nutrition, Physical	Review of 96 retrieved references. Search strategy is not described in this reference.	Not relevant

	Activity, and Metabolism; and the Stroke Council		
Physiotherapy treatment approaches for the recovery of postural control and lower limb function following stroke (27)	Cochrane Database Syst Rev	<p>This Cochrane review included 11 trials, 3 of which were included in 2 comparisons.</p> <ul style="list-style-type: none"> <li>• trials: comparison of a neurophysiological approach with another approach,</li> <li>• trials: comparison of a motor learning approach with another approach,</li> <li>• studies: comparison of a mixed approach with another approach,</li> <li>• 2 trials: comparison of sub-groups of the same approach.</li> </ul> <p>Large number of heterogeneous outcome measures.</p>	Not to be rated
Treadmill training and body weight support for walking after stroke (24)	Cochrane Database Syst Rev	This Cochrane review included 15 trials (622 patients).	Not to be rated
Force platform feedback for standing balance training after stroke (26)	Cochrane Database Syst Rev	This Cochrane review included 7 trials (246 patients).	Not to be rated
Electrostimulation for promoting recovery of movement or functional ability after stroke (31)	Cochrane Database Syst Rev	This Cochrane review included 24 trials out of the 2077 references identified.	Not to be rated
Electrical stimulation for preventing and treating post-stroke shoulder pain (32)	Cochrane Database Syst Rev	<p>This Cochrane review included 4 trials (170 patients).</p> <p>It is the only Cochrane Review selected in this work that has been included in the selected guidelines (</p>	Not to be rated
Physical fitness training for stroke patients (33)	Cochrane Database Syst Rev	This Cochrane review included 12 trials.	Not to be rated
Effects of augmented Exercise Therapy Time After Stroke: A Meta-Analysis (19)	Meta-analysis	<p>Meta-analyses based on 20 eligible RCTs (2686 patients) out of 31 pre-selected studies in a period of search from 1966 to 2003.</p> <p>The methodological quality of the studies ranged from 2 to 10 out of the maximum score of 14 points.</p>	<p><b>Cochrane Va form for SRs</b></p> <p>The answers to most questions included in this form are positive. The main results found in this systematic review seem valid, well documented and applicable in most rehabilitation facilities at most levels of practice.</p>
Effects of visual feedback therapy on postural control in bilateral standing after stroke: a systematic review (28)	Meta-analysis of 8 eligible studies	<p>Systematic review of randomized controlled trials and controlled clinical trials, comparing visual feedback therapy with conventional balance treatments were included up to April 2005. The methodological quality of each study was assessed with the Physiotherapy Evidence Database scale.</p>	<p><b>Cochrane Va form for SRs</b></p> <p>Very good quality study. Positive answer to all questions of the form.</p>
Constraint-induced movement	Meta-analysis	Meta-analysis based on 4 eligible low-quality studies	<b>Cochrane Va form for SRs</b>

therapy: some thoughts about theories and evidence (34)			Medium to low-quality study. Negative answer to 6 questions of the form. Literature search not described. No critical appraisal of the selected references... This may be acceptable since only a paucity of study addressed the issue of constraint-induced movement therapy.
Gait retraining post stroke (14)	Meta-analyses	Meta-analyses of 48 studies on gait rehabilitation. Evaluation of the efficacy of a variety of gait retraining techniques currently in clinical use, including strength training, functional electrical stimulation, treadmill training, partial body-weight support, EMG biofeedback, and splinting of the lower extremity. 48 studies evaluating 6 gait enhancement techniques were reviewed.	<b>Cochrane Va form for SRs</b> Overall medium to good-quality study that reviews a large number of RCTs. Literature search procedure and quality appraisal available in another previous paper by the same authors in the same journal (35). However, answers to questions 6 and 7 of the form are negative (the authors do not address statistical heterogeneity and do not pool the results of the studies on the same techniques). Hence, strength of recommendations available in this reference must be implemented with caution.
Effect of augmented feedback on motor function of the affected upper extremity in rehabilitation patients: a systematic review of randomized controlled trials (36)	Systematic review	Systematic review of 26 RCT's on the effects of augmented-feedback, i.e. electromyographic biofeedback, kinetic feedback, kinematic feedback, or knowledge of results.	<b>Cochrane Va form for SRs</b>
Outcomes of the Bobath concept on upper limb recovery following stroke (25)	Systematic review	Systematic review of 8 trials (5 RCT's); period of search 1966 to 2003.	<b>Cochrane Va form for SRs</b> Very good quality study. Positive answer to all questions of the form.
The orthotic effect of functional electrical stimulation on the improvement of walking in stroke patients with a dropped foot: a systematic review (37)	Systematic review	Systematic review of 8 included studies (only one RCT). Methodological score of the studies ranged from 8 to 18 out of 19.	<b>Cochrane Va form for SRs</b>
Outcomes of progressive resistance strength training following stroke: a	Systematic review	Systematic review of 8 included studies (period of search, 1966 to 2002).	<b>Cochrane Va form for SRs</b> Very good quality study.

systematic review (38)			Positive answer to all questions of the form.
An evidence-based review of stroke rehabilitation (15)	Systematic review	Review of 403 trials on stroke rehabilitation (272 RCTs); period of search, 1968 to 2001)	<b>Cochrane Va form for SRs</b> Overall medium to good-quality study that reviews a very large number of RCTs and physical therapy modalities. Literature search procedure and quality appraisal available in another previous paper by the same authors in the same journal (35). However, answers to questions 6 and 7 of the form are negative (the authors do not address statistical heterogeneity and do not pool the results of the studies on the same techniques). Hence, strength of recommendations available in this reference must be implemented with caution.
Is there evidence that strength training could help improve muscle function and other outcomes without reinforcing abnormal movement patterns or increasing reflex activity in a man who has had a stroke? (39)	Systematic review	Unusual narrative review in which, starting from a case report, the author discusses the results of 4 RCTs obtained through a well-described systematic search of the literature.	<b>Cochrane Va form for SRs</b> Low-quality review that should be considered more as a narrative review (no systematic critical appraisal of the selected studies, no statistical evaluation of the results...).
The impact of physical therapy on functional outcomes after stroke: what's the evidence? (21)	Systematic review	Review of 151 eligible studies (123 RCTs and 28 CTs) that focused on 10 rehabilitation methods applied in post stroke patients. Methodological quality of all RCTs had a median of 5 points on the 10-point PEDro scale (range 2-8 points).	<b>Cochrane Va form for SRs</b> Very good quality study. Positive answer to all questions of the form.
Bobath or motor relearning programme? A follow-up one and four years post stroke (40)	RCT	RCT comparing effectiveness of Bobath and Motor Relearning Programme techniques in patients (28+33). Outcome measures: 2 motor functioning indices, Barthel index, Nottingham Health Profile, and balance.	<b>Cochrane II form for RCTs</b> Methods of this RCT are described in a previous paper by the same author (41). Medium-quality RCT as it is not sure whether subjects, physiotherapists and evaluators were blinded to intervention.

## C. SEARCH PROCEDURES FOR GAIT REHABILITATION IN THE ELDERLY

### 1. MEDLINE (PUBMED; MAY 2006)

Different associations of key word are realised to increase the possibility to find specific publications about the walking disorders in elderly people:

Elderly people AND walking disorders / elderly people AND gait disorders / elderly people AND locomotion disorder / elderly people AND ambulation disorder.

Search for “elderly people walking disorders” AND “rehabilitation” 690 references found. Selection of the references to be retrieved is made on basis of the title and the abstract. Only references focusing on gait rehabilitation in the elderly in general are retrieved. The following limitations have been applied to the search:

- Limit previous search to ‘practice guidelines’: no reference found,
- Limit to ‘meta-analysis’: 2 references found, not relevant,
- Limit to ‘reviews’: 38 references found. Four are retrieved,
- Limit to ‘RCTs’: 81 references were found. Only four are retrieved.

Search for “Elderly people gait disorders” AND “rehabilitation”: 300 references found

Search for “Elderly people locomotion disorders” AND “rehabilitation”: 209 references found

Search for “Elderly people ambulation disorders” AND “rehabilitation”: 168 references found

For the last three searches, the same articles were selected than for walking disorders.

### 2. PEDRO (MAY 2006)

Search for “elderly people and walking disorders” in the advanced search window: 10 records found:

- no practice guidelines
- 2 systematic reviews; only one relevant (48),
- 8 clinical trials found; only two relevant and already found in Medline (54, 58).

### 3. COCHRANE REVIEWS (MAY 2006)

Search for “elderly people walking disorders” in the ‘search the abstracts’ window of the main Cochrane Reviews page: 2 records found. No one relevant.

### 4. CENTRE FOR REVIEWS AND DISSEMINATION (MAY 2006)

Search for “elderly people” AND “Rehabilitation” in all CRD databases (in title and abstracts). 24 records found. Only 1 new relevant reference was kept (53).

### 5. ANAES, SSMG, WVVH, KNGF (MAY 2006)

ANAES: Physiotherapy clinical practice guidelines: 1 reference was found: Prescribing motor function in frail elderly people living at home. April 2005.

SSMG, WVVH, KNGF: No new reference found

### 6. ADDITIONAL SEARCH IN EMBASE (JUNE 2006)

The 2 new following relevant references were found and retrieved:

- Latham N, Anderson C, Bennett D. *Progressive resistance training for physical disability in older people*. Cochrane Database of Systematic Reviews,
- Rydwik E, Frandin K, Akner G. *Effects of physical training on physical performance in institutionalised elderly patients (70+) with multiple diagnoses*. *Age and Ageing*; 2004; 33: 13-23.



## References from the literature on gait rehabilitation in the elderly

Reference	Type of reference	General description	Critical appraisal
Progressive resistance training for physical disability in older people (45)	Cochrane systematic review	Systematic review of RCTs on the progressive resistance training exercises on measures of physical disability, functional limitations and impairment in older people (60+). Inclusion of 66 RCTs of moderate or low quality (3783 patients).	Not applicable
Effect of Therapeutic Exercise on Gait Speed in Community – Dwelling People : a Meta analysis (46)	Meta-analysis	The influence of the exercise type, intensity and dosage to produce a change in habitual walking speed of community-dwelling elderly people. Review of the published literature from 1993 to 2003: 33 eligible studies included in this meta-analyses.	Results of this meta analysis must be implemented with caution. The main recommendations of this meta-analysis seem well documented and applicable in this kind of rehabilitation.
Effects of physical training on physical performance in institutionalized elderly patients (70+) with multiple diagnoses (47)	Systematic review	Inclusion of 16 RCTs (6 high-, 8 medium- and 2 low-quality studies according to a quality evaluation form originally developed by the Cochrane Collaboration (evaluation based on a weighted scale of 0-100 points)	
The effects of exercise training in institutionalized elderly people: a systematic review (48)	Systematic review	No convincing evidence exists supporting positive effects of exercises on balance, mobility and gait. The authors measure the effect of exercise on the improvement of muscle strength .	<b>Cochrane Va form:</b> Data were extracted according to Cochrane methodology. Negative answers to questions 6, 7, 8 of the Va form. Hence, results of the literature review must be implemented with caution. Recommendations seem applicable to Belgian situation
The effects of exercise on skeletal muscle in the aged (49)	Review	The effect of increased mechanical loading of the musculoskeletal system (e.g., resistive exercise) on a reduction in the risk of falls	<b>Cochrane Va form:</b> Negative or no answer possible for 7 of the 8 first questions of the Va form. Critical appraisal not pursued.
Disorders of walking in elderly subjects: towards new concepts (50)	Review	Gait disorders in elderly patient cannot be conceived as a simple impairment in muscle, tendons or joint effectors but must be assessed in relation to defective central programming or dysfunctioning synergy. The postural imbalance induced by visual stimulations is studied in this review.	Results of this review must be implemented with caution.
Benefits of exercise for older adults.	Review	This study supports the potential value of exercise	Old review of 1992. Results must be

A review of existing evidence a current recommendations for the general population (51)		for elderly people. Walking seems to be the safest, cheapest, easiest, and most widely accessible exercise for the average senior.	implemented with caution. Negative or no answer possible for 7 of the 8 first questions of the Va form. Critical appraisal not pursued.
Vibrating insoles and balance control in elderly people (52)	Review	With age, the somato-sensory function declines and such changes have been associated with diminished motor performance. Input noise can enhance sensory and motor function. The authors try to demonstrate that exercises on vibrating gel-based insoles (with noise) could ameliorate age-related impairments in balance control	Negative answers to 7 questions of the first questions of the Va form. Critical appraisal not pursued.
Have we oversold the benefit of late-life exercise (53)	Review	This review supports a strong argument for exercises as an effective means of reducing disability (strength, aerobic capacity, flexibility, walking and standing balance).	Negative answers or no possible answer to questions 4, 5, 6, 7, 8 of the Va form. Hence, results of this review must be implemented with caution. Recommendations seem applicable to Belgian situation
Effect of a physical therapeutic intervention for balance problems in the elderly : a single-blind, randomized, controlled multi-center trial (54)	RCT	The influence of a short individualized exercise programme to improve functional balance in people aged 75 years and older. (Effect at short or long term )	Pedro 8/10
Medio-lateral motion of the center of mass during obstacle crossing distinguishes elderly individuals with imbalance (55)	RCT	This study investigate whether elderly patients with imbalance can be distinguished from elderly subjects by comparing their whole body center of mass motions in the medio-lateral direction during obstacle crossing.	Negative or no answer possible for 6 of the 9 first questions of the II form. Critical appraisal not pursued.
Effects of balance training in elderly people with non-peripheral vertigo and unsteadiness (56)	RCT	The effect of balance training on improving of objective and perceived balance in elderly people with non-peripheral vertigo and unsteadiness	Negative or no answer possible for 6 of the 9 first question of the II form. Recommendations seem applicable to Belgian situation
Training of balance under single-and dual-task conditions in older adults with balance impairment (57)	RCT	The usual rehabilitation programs emphasize training balance under single-task conditions to improve balance and reduce risk for falls. This study showed that older adults may improve their balance under dual-task conditions.	The major methodologic problem in the present study is its sample size limited to 3 patients. No conclusions should be drawn that would lead to therapeutic recommendations on the basis of such a study.

New intervention program for preventing falls among frail elderly people: the effects of perturbed walking exercise using a bilateral separated treadmill (58)	RCT	The authors try to determine the effects of a perturbed walking exercise using a bilateral separated treadmill in physically disabled elderly.	4/10 Pedro
Gait analysis and tailored exercise prescription in older adults (59)	RCT	The effect of regular walking exercise, and particularly Tai-Chi with its emphasis on sequenced, slow, and highly-controlled movements, to be helpful in maintaining the automated level of motor control.	Article in German
Effects of a fall prevention program including exercise on mobility and falls in frail older people living in residential care facilities (60)	CT	The influence of exercises to preserve the ability to walk, maintain gait speed, ambulate independently and improve step height.	Negative or no answer possible for 5 of the 9 first questions of the II form. The results must be implemented with caution. Recommendations seem applicable to Belgian situation

## D. DETAILED SEARCH PROCEDURES FOR ANKLE SPRAIN REHABILITATION

**Mesh terms:** ankle, ankle injuries, rehabilitation

### 1. MEDLINE (PUBMED; JUNE 2006)

PubMed Search for : "Ankle Injuries/rehabilitation"[MeSH]

Limits: practice guidelines and meta-analyses, last 5 years. 0 records found.

PubMed Search for systematic reviews in Clinical Queries ("Ankle Injuries/rehabilitation"[MeSH])

Limits: last 5 years. 4 records found; 3 were kept:

- van der Wees PJ, Lenssen AF, Hendriks EJ, Stomp DJ, Dekker J, de Bie RA. Effectiveness of exercise therapy and manual mobilisation in ankle sprain and functional instability: a systematic review. *Aust J Physiother.* 2006;52(1):27-37. Review.
- van Os AG, Bierma-Zeinstra SM, Verhagen AP, de Bie RA, Luijsterburg PA, Koes BW. Comparison of conventional treatment and supervised rehabilitation for treatment of acute lateral ankle sprains: a systematic review of the literature. *J Orthop Sports Phys Ther.* 2005 Feb;35(2):95-105. Review.
- Struijs P, Kerkhoffs G. Ankle sprain. *Clin Evid.* 2005 Jun(13):1366-76. Review. No abstract available. This reference is an update of 3 previous references by the same author (2002, 2003, 2004).

### 2. PEDRO (JUNE 2006)

Search for "ankle sprain" in "musculo skeletal" subdiscipline in "foot or ankle" body part (advanced search page: [http://129.78.28.173/pedro/FMPro?-db=Sessions.fp5&-format=search\\_new.htm&-new](http://129.78.28.173/pedro/FMPro?-db=Sessions.fp5&-format=search_new.htm&-new)) limited to the last 5 years. 2 practice guidelines, 2 Quick Reference Guides based on these 2 guidelines and 9 SR found. Only the new following relevant references were kept:

- de Bie RA, Heemskerk MAMB, Lenssen AF, van Moorsel SR, Rondhuis G, Stomp DJ, Swinkels RAHM, Hendriks HJM. Koninklijk Nederlands Genootschap voor Fysiotherapie (KNGF). *Clinical practice guidelines for physical therapy in patients with chronic ankle sprain, 2003 (dutch version 2005),*
- de Bie RA, Hendriks HJM, Lenssen AF, van Moorsel SR, Opraus KWF, Remkes WFA, Swinkels RAHM. Koninklijk Nederlands Genootschap voor Fysiotherapie (KNGF). *Clinical practice guidelines for physical therapy in patients with acute ankle sprain, 2003 (dutch version 2005),*
- Bleakley C, McDonough S, MacAuley D. The use of ice in the treatment of acute soft-tissue injury: a systematic review of randomized controlled trials. *The American Journal of Sports Medicine* 2004;32(1):251-261,
- Kerkhoffs GMMJ, Rowe BH, Assendelft WJJ, Kelly K, Struijs PAA, van Dijk CN. Immobilisation and functional treatment for acute lateral ankle ligament injuries in adults (Cochrane review) [with consumer summary]. *Cochrane Database of Systematic Reviews* 2002, Issue 3,
- Handoll HHG, Rowe BH, Quinn KM, de Bie R. Interventions for preventing ankle ligament injuries (Cochrane review) [with consumer summary]. *Cochrane Database of Systematic Reviews* 2001, Issue 3,
- van der Windt DAWM, van der Heijden GJMG, van den Berg SGM, Ter Riet G, de Winter AF, Bouter LM. Ultrasound therapy for acute ankle sprains (Cochrane Review). *Cochrane Database of Systematic Reviews, Issue 1, 2002.*

### 3. COCHRANE (JUNE 2006)

Search for "ankle sprain" in the search window of the Cochrane Review page (<http://www.cochrane.org/reviews/index.htm>) of the Cochrane Collaboration site (<http://www.cochrane.org/>). 5 records found. All of them had been identified in previous searches.

Search in the “Ligament injuries in the ankle” section of the “Bone, joint, muscle trauma” topic of the Cochrane reviews page ([http://www.cochrane.org/reviews/en/topics/81.html#topic\\_63](http://www.cochrane.org/reviews/en/topics/81.html#topic_63)): 7 references found (6 reviews, 1 protocol). No new relevant reference was found.

#### 4. CENTRE FOR REVIEWS AND DISSEMINATION (JUNE 2006)

Search for “Ankle” AND “Sprain” AND “Rehabilitation” in all CRD databases (in title and abstracts). 9 records found. Only 1 relevant new reference was kept:

- Thacker S B, Stroup D F, Branche C M, Gilchrist J, Goodman R A, Weitman E A. *The prevention of ankle sprains in sports: a systematic review of the literature. American Journal of Sports Medicine* 1999; 27(6): 753-760.

Search for “Ankle” AND “Sprain” AND “Physiotherapy” in all CRD databases (in title and abstracts). 6 records found. No relevant reference was kept.

#### 5. NATIONAL GUIDELINE CLEARINGHOUSE (JUNE 2006)

Search for “ankle sprain” in the Disease/Condition window and “rehabilitation” in the Treatment/Intervention window of the Detailed search page (<http://www.guideline.gov/search/detailedsearch.aspx>) of the NGC site (<http://www.guideline.gov/>). 1 record found:

- *Ankle sprain. Institute for Clinical Systems Improvement - 1997 Aug (revised 2006 Mar). 26 pages. NGC:004870*

#### 6. ANAES, KNGF, SSMG, WVVH ... (JUNE 2006)

ANAES: one reference retrieved

- *Rééducation de l'entorse externe de la cheville, 2000*

KNGF: 2 references already found; see above

SSMG: no reference found

Wvvh: one reference found

- *Enkel distorsie, 2000, met opvolgrapport in 2003*

#### 7. ADDITIONAL SEARCH IN EMBASE (JUNE 2006)

No new relevant reference found.

## Selected references on rehabilitation of ankle sprain

Reference	Type of reference	General description	Critical appraisal
ICSI Health care guidelines: Ankle sprain; 7 <sup>th</sup> edition (61)	Clinical practice guideline	Low quality practice guideline focusing on acute (<6 weeks) lateral ankle sprain (85% of all ankle sprains). Only a small section on rehabilitation. Only 24 references; reference selection is not explained in the document which looks very much like an expert consensus.	<b>Agree total score: 52/92</b>  <b>Cochrane Va form:</b> Negative or no answer possible for 7 out of the 8 first questions of the Va form. Critical appraisal not pursued.
KNGF richtlijnen voor acuut enkelletsel (66)	Clinical practice guideline	Good quality practice guideline focusing on diagnosis and management of acute lateral ankle sprain. Literature selection is briefly described. Practical recommendations are not clearly presented. Although the issues of rigid immobilization, taping and bracing are discussed, rehabilitation methods are not addressed in this reference. 119 references.	<b>Agree total score: 53/92</b>  <b>Cochrane Va form:</b> Negative answers to questions 6, 7, 8 of the Va form. Hence, results of the literature review must be implemented with caution. Recommendations seem applicable to Belgian situation.
KNGF richtlijnen voor chronische enkelletsel (65)	Clinical practice guideline	Good quality practice guideline focusing on diagnosis and management of chronic lateral ankle sprain defined as persisting pain and instability after a first episode of lateral ankle sprain. Rehabilitation methods are developed in this reference, which includes well-presented and clear recommendations based on well-documented references. 135 references.	<b>Agree total score: 60/92</b>  <b>Cochrane Va form:</b> Negative answers to questions 6, 7, 8 of the Va form. Hence, results of the literature review must be implemented with caution. Recommendations seem applicable to Belgian situation.
Vvvh: Enkeldistorsie; aanbeveling (67)	Clinical practice guideline	Low quality practice guideline focusing on acute (<6 weeks) lateral ankle sprain (85% of all ankle sprains). Quite similar to the KNGF guideline for acute ankle sprain. Does not address rehabilitation methods specifically. ± 20 references.	<b>Agree total score: &lt;50/92</b>  <b>Cochrane Va form:</b> Negative or no answer possible for 7 out of the 8 first questions of the Va form. Critical appraisal not pursued as quality seems unacceptable.
ANAES: Rééducation de l'entorse de cheville (63)	Clinical practice guideline	Low quality practice guideline focusing on acute (<6 weeks) lateral ankle sprain (85% of all ankle sprains). No references.	<b>Agree total score: &lt;50/92</b>  <b>Cochrane Va form:</b> Negative or no answer possible for 7 out of the 8 first

			questions of the Va form. Critical appraisal not pursued as quality seems unacceptable.
Ultrasound therapy for acute ankle sprains (68)	Cochrane systematic review	Systematic reviews of 5 eligible trials (4 of modest quality, 1 of good quality) on a total of 572 patients with acute ankle sprain.	Not to be rated
Different functional treatment strategies for acute lateral ankle ligament injuries in adults (69)	Cochrane systematic review	Systematic reviews of 9 eligible trials involving 892 patients focusing on comparisons between lace-up semi-rigid, elastic ankle support and ankle taping.	Not to be rated
Immobilisation and functional treatment for acute lateral ankle ligament injuries in adults (70)	Cochrane systematic review	Systematic review of 21 eligible trials involving 2184 patients and focusing on comparing rigid immobilization to functional treatment (semi-rigid contention in a brace or taping).	Not to be rated
Interventions for preventing ankle ligament injuries (71)	Cochrane systematic review	Systematic review of 9 eligible trials involving 8279 patients and focusing on prevention of ankle sprain by means of application of an external ankle support in the form of a semi-rigid orthosis (three trials), air-cast brace (one trial) or high top shoes (one trial); ankle disk training; taping; muscle stretching; boot inserts; health education programme and controlled rehabilitation.	Not to be rated
Effectiveness of exercise therapy and manual mobilisation in ankle sprain and functional instability: a systematic review (64)	Systematic review	Systematic review of 17 eligible studies focusing on the effectiveness of exercise therapy and manual mobilisation in acute ankle sprains and functional instability. In thirteen studies the intervention included exercise therapy and in four studies the effects of manual mobilisation of the ankle joint was evaluated.	
Comparison of conventional treatment and supervised rehabilitation for treatment of acute lateral ankle sprains: a systematic review of the literature (72)	Systematic review	Systematic review of 7 eligible RCTs (6 of low-quality, 1 of high-quality) focusing on comparing the effectiveness of conventional treatment complemented by supervised rehabilitation training (supervised exercises) with conventional treatment alone for the rehabilitation of acute lateral ankle sprains.	

Ankle sprain (62)	Systematic review	Systematic review similar to a practice clinical guideline based on 42 references. The first edition of this reference was published in 2002 and regularly updated later on. Most issues relevant for physiotherapists dealing with ankle sprains are addressed in this reference.	The references search and selection methods specific to this reference are not described in the text. The references search and selection methods used in all Clinical Evidence publications can be found at <a href="http://www.clinicalevidence.com/ceweb/about/search_process.jsp">http://www.clinicalevidence.com/ceweb/about/search_process.jsp</a>
The use of ice in the treatment of acute soft-tissue injury: a systematic review of randomized controlled trials (73)	Systematic review	Systematic review of 22 eligible RCTs focusing on the evidence base for cryotherapy in the treatment of acute soft-tissue injuries.	
The prevention of ankle sprains in sports. A systematic review of the literature (74)	Review	Review using no systematic search strategy (search based on textbook, articles search and experts knowledge). Review based on a total of 113 references	Low quality methodology review



## E. DETAILED SEARCH PROCEDURES FOR TOTAL KNEE REPLACEMENT REHABILITATION

### 1. MEDLINE (PUBMED; MAY 2006)

Search for “total knee arthroplasty” (free term) AND “rehabilitation” (Mesh term); no limits: 140 references found.

- Limit previous search to ‘practice guidelines’: no reference found,
- Limit to ‘meta-analysis’: 4 references found, 1 Cochrane Review on Continuous passive motion following total knee arthroplasty (76); 3 references discarded as not corresponding to the topic,
- Limit to ‘Reviews’: 61 references found; 57 discarded as not relevant, 1 Cochrane Review already found; the remaining were retrieved,
- Limit to ‘RCTs’: 75 references found; 59 discarded as not relevant; the remaining were retrieved.

Search for “total knee replacement” (free term) AND “rehabilitation” (Mesh term); no limits: 131 references found; same references as in the previous search. No new relevant reference identified.

### 2. PEDRO (MAY 2006)

Search for “total knee arthroplasty” in the advanced search window: 50 records found.

- Practice guidelines: no record found,
- Systematic reviews: 4 records found. The Cochrane Review previously retrieved and 2 RCTs included in the Cochrane review,
- Clinical trials: 46 records founds ; 12 discarded as not relevant; the 24 remaining had previously been found.

### 3. CENTRE FOR REVIEWS AND DISSEMINATION (MAY 2006)

Search for “total knee arthroplasty ” AND “ rehabilitation” in all CRD databases: 7 records previously found.

### 4. COCHRANE REVIEWS (MAY 2006)

Search by topic: total knee arthroplasty> rehabilitation > 7 records found. Only two relevant to rehabilitation following total knee arthroplasty: one previously found and the following one retrieved:

*Pre-operative education for hip or knee replacement. Cochrane Database of systematic reviews, 2004*

### 5. NATIONAL GUIDELINE CLEARINGHOUSE (MAY 2006)

Search for “total knee arthroplasty”: 17 records found; only one corresponding to the topic:

*“National Institute of Health Consensus Development Panel on Total Knee Replacement”, 2004*

### 6. ANAES, KNGF, SSMG, WVVH, (MAY 2006)

No reference found.

### 7. ADDITIONAL SEARCH IN EMBASE (JUNE 2006)

No new relevant reference found.

## References from the literature on rehabilitation of total knee replacement

Reference	Type of reference	General description	Critical appraisal
National Institutes of Health (NIH) Consensus Development Panel on Total Knee Replacement, 2004 (75)	NIH position statement based on the report of an expert consensus panel.	Position statement on total hip replacement in general. No section specifically focusing on rehabilitation.	Expert consensus References search and selection procedures specific to this references not available in the text. NIH Consensus and State-of-the-Science Statements are prepared by independent panels of health professionals and public representatives, based on (1) the results of a systematic literature review prepared under contract with the Agency for Healthcare Research and Quality (AHRQ), (2) presentations by investigators working in areas relevant to the conference questions during a 2-day public session; (3) questions and statements from conference attendees during open discussion periods that are part of the public session; and (4) closed deliberations by the panel during the remainder of the second day and morning of the third.
Continuous passive motion following total knee arthroplasty (76)	Cochrane systematic review	Only randomized controlled trials (14) were included in this meta-analysis. This Cochrane review focuses specifically on the effectiveness of continuous passive motion (CPM) following total knee arthroplasty. After systematic search of the literature, 14 eligible RCTs were included in this meta-analyses (952 patients)	no to be rated
Pre-operative education for hip or knee replacement (85)	Cochrane systematic review	Systematic reviews of RCTs on effectiveness of pre-operative education to improve postoperative outcomes and reduce anxiety. Inclusion of 9 eligible RCTs (782 patients). Outcome variables: length of hospital stay, pre- and post-operative anxiety level, days needed to be able to recover standing and stair climbing...	no to be rated
Does pre-operative physiotherapy	Systematic Review	A systematic review of 5 included eligible RCTs to	<b>Cochrane Va form:</b>

improve outcomes from lower limb replacement surgery ? (77)		evaluate the effectiveness of pre-operative physiotherapy programme on outcome following total knee replacement. A great heterogeneity in terms of control intervention, blinding procedure was noted. Methodological quality also varied widely among studies.	Negative or no answer possible for questions 5, 6, 7, 8 of the Va form. Critical appraisal not pursued as quality seems unacceptable.
Continuous passive motion following primary total knee arthroplasty: short-and long-term effects on range of motion (86)	Systematic Review	Systematic review of 15 eligible included RCTs on the efficacy of continuous passive mobilisation on range of motion (mobility). Great heterogeneity was noted among the studies in terms of blinding procedure, control intervention, outcome measures and quality in general. However, there does not seem to be a relationship between study quality and outcome for the studies included in this review.	<b>Cochrane Va form:</b> Negative or no answer possible for 4 out of the 8 first questions of the Va form. Critical appraisal not pursued as quality seems unacceptable. Recommendations seem applicable to Belgian situation
Does a pre-operative exercise programme improve mobility and function post-total knee replacement : a mini-review (87)	Systematic Review	This “mini-review” of 2 RCTs (60 patients) evaluates the effectiveness of pre-operative exercise in improving the mobility and function of adult patients undergoing total knee replacement. The two studies had a number of methodological weaknesses. Hence, conclusions and recommendations available in the studies must be viewed with caution.	<b>Cochrane Va form:</b> Negative or no answer possible for 6 out of the 8 first questions of the Va form. Hence, conclusions and recommendations available in the studies must be viewed with caution.
Review article : knee flexion after total knee arthroplasty (88)	Review	Review of 13 RCTs on factors affecting or predicting final maximal knee flexion achieved after total knee replacement.	<b>Cochrane Va form:</b> Negative or no answer possible for questions 3,4,5,7,8. Recommendations seem applicable to Belgian situation
Exercise recommendations after total joint replacement: a review of the current literature and proposal of scientifically based guidelines (78)	Review	This article presents a literature review of the current recommendations that can be made about physical activities and sports after total joint replacement.	<b>Cochrane Va form:</b> Negative or no answer possible for questions 3,4,5,7,8. Recommendations seem applicable to Belgian situation.
Continuous passive motion (CPM): Theory and principles of clinical application (89)	Review		<b>Cochrane Va form:</b> Negative or no answer possible for 6 out of the 8 first questions of the Va form. Recommendations seem applicable to Belgian situation.
Effectiveness of Continuous Passive Motion and Conventional Physical Therapy After Total Arthroplasty: A randomised	RCT	RCT (82 patients) conducted to compare the effectiveness of 3 in-hospital rehabilitation programs with and without continuous passive	Pedro 8/10

Clinical Trial. (90)		<p>motion (CPM) on range of motion (ROM), functional ability, and length of stay after primary total knee arthroplasty.</p> <p>Interventions: conventional physical therapy intervention only, conventional physical therapy and 35 minutes of CPM applications daily, conventional physical therapy and 2 hours of CPM applications daily.</p> <p>Outcome variables: active ROM in knee flexion at discharge, active ROM in knee extension, Timed "Up &amp; Go" Test results, Western Ontario and McMaster Universities Osteoarthritis Index questionnaire scores, length of stay.</p>	
Cryotherapy compared with Robert Jones bandage after total knee replacement: A prospective randomised trial (91)	RCT	<p>RCT (60 patients) to compare a cold compression dressing (Cryo-cuff®) to a modified Robert Jones bandage after total knee replacement.</p> <p>Interventions: Cryo/cuff compared to modified Robert Jones bandage.</p> <p>Outcome variables: blood loss, range of movement, pain scores and need for analgesia.</p>	Pedro 3/10
No need for outpatient physiotherapy following total knee arthroplasty. A randomized trial of 120 patients (81)	RCT	<p>RCT (120 patients) on effectiveness on outpatient physiotherapy versus no physiotherapy after total knee replacement.</p> <p>Interventions: traditional physiotherapy versus no physiotherapy after total knee arthroplasty.</p> <p>Outcome variables: R.O.M.</p>	Pedro 7/10
Does Shortened Length of Hospital Stay Affect Total Knee arthroplasty Rehabilitation Outcomes ? (92)	RCT	<p>RCT on the influence of length of hospital stay on the rehabilitation outcomes after primary total knee arthroplasty.</p> <p>Interventions: hospital joint arthroplasty program implemented to decrease length of stay versus no program.</p> <p>Outcome variables: range of motion and Knee Society scores at preoperative and 3-, 6-, and 12-month postoperative intervals</p>	<p><b>Cochrane II form:</b></p> <p>Negative or no answer possible for 6 out of the 9 of the first questions of the Va form. Results of this study must be implemented with caution.</p>
Electrical stimulation effect on extensor lag and length of hospital stay after total knee arthroplasty (84)	RCT	<p>CT (40 patients) on the effects of electrostimulation to reduce extensor lag and decrease length of hospital stay.</p> <p>Interventions: electrostimulation and traditional physiotherapy versus physiotherapy only.</p> <p>Outcome variables: extensor lag and length of hospital stay</p>	Pedro 4/10

Effect of adjunctive range-of-motion therapy after primary total knee arthroplasty on the use of health services after hospital discharge (93)	RCT	RCT (120 patients) on the influence of continuous passive motion (CPM) and slider-board (SB) therapy used as adjuncts to standardized exercises on duration of hospital stay and rehabilitation needs after total knee arthroplasty. Interventions: CPM and standardized exercises (SEs), SB therapy and SEs or SEs alone Outcome variables: tertiary Health service use, post-discharge rehabilitation, readmission and complication rates and their associated costs.	Pedro 8/10
A Randomised Controlled Trial of Osteopathic Manipulative Treatment Following Knee or Hip Arthroplasty (94)	RCT	RCT (60 patients) on the efficacy of osteopathic manipulative treatment on pain and ambulation performance after total knee arthroplasty. Interventions: either osteopathic manipulative treatment or sham treatment in addition to standard care. Outcome variables: Functional Independence Measure (FIM) scores and in daily analgesic use during the rehabilitation unit stay; length of stay; rehabilitation efficiency, defined as the FIM total score change per rehabilitation unit day; and changes in Medical Outcomes Study Short Form-36 scores from rehabilitation unit admission to 4 weeks after discharge.	The major methodological problems in this study are its sample size and the presence of a comprehensive, multidisciplinary treatment program as a standard co-intervention. <b>Cochrane II form:</b> Answer possible and generally positive for 8 of the 9 first questions of the II form. Recommendations seem applicable to Belgian situation
A Randomized, Controlled Trial Comparing Compression bandaging and Cold Therapy In Postoperative Total Knee Replacement Surgery (95)	RCT	RCT (84 patients) on simple compression as a technique associating cold and compression. Outcome variables: length of hospital stay, blood loss and transfusion, joint swelling, R.O.M., pain and opiate use. Interventions: compression bandaging versus a cryo-pad technique. Outcome variables: length of hospital stay, blood loss, blood transfusion, swelling, flexion, pain, and opiate use.	<b>Cochrane II form:</b> Negative or no answer possible for 5 out of the 9 first questions of the form. Results must be implemented with caution.
Cryo/Cuff Compared to Epidural Anesthesia After Knee Unicompartamental Arthroplasty (82)	RCT	RCT (60 patients randomized in 3 intervention groups) on the efficacy of cold compressive dressings (Cryo/cuff) and epidural anaesthesia after total knee replacement. Interventions: Cryo/cuff and epidural PCA. Outcome variables: pain, morphine consumption, bleeding, swelling, range of motion, and function.	<b>Cochrane II form:</b> Negative or no answer possible for 6 out of the 9 first questions of the form. Results must be implemented with caution.
Transcutaneous electrical nerve	RCT	RCT on the efficacy of TENS on postoperative pain	<b>Cochrane II form:</b>

stimulation for postoperative pain relief after total knee arthroplasty (96)		after total knee arthroplasty. Outcome variable: amount of opioids used during postoperative Patient Controlled Anaesthesia procedure. Interventions: patient-controlled anesthesia (PCA) alone, PCA plus TENS, or PCA plus sham TENS. Outcome variables: cumulative dose of morphine by PCA.	Answer possible and generally positive for 8 of the 9 first questions of the form. Recommendations seem applicable to Belgian situation
The effect of a preoperative exercise and education program on functional recovery, health service utilization following primary total knee arthroplasty (97)	RCT	RCT (131 patients) on the effectiveness of preoperative exercise/education on functional recovery after total knee replacement. Statistical analysis revealed that the study was underpowered to reach conclusive results Interventions: 4-week exercise/education program before surgery. Outcome variables: Western Ontario McMaster Osteoarthritis Index, the SF-36, and knee range of motion (ROM) and strength measures, length of stay, numbers of community rehabilitation or homecare visits following discharge from the surgical hospital, and costs associated with these services.	<b>Cochrane II form:</b> Negative answer for 4 of the 9 first questions of the form. Hence, results and recommendations must be implemented with caution. Recommendations seem applicable to Belgian situation.
Pre-arthroplasty rehabilitation is effective in reducing hospital stay (79)	RCT	RCT (133 patients with complex needs (co-morbid conditions or limited social support) on the effect on length of stay of individually-tailored rehabilitation after hip or knee arthroplasty. Interventions: pre-operative usual care without rehabilitation versus individual assessment followed by multi-disciplinary rehabilitation to optimize functional capacity, education about the in-hospital phase and early discharge planning Outcome variables: time to meet discharge criteria and length of stay	<b>Cochrane II form:</b> Negative or no answer possible for 5 out of the 9 first questions of the form. Conclusions and recommendations of this study must be implemented with caution.
Effectiveness of electric stimulation of vastus medialis muscle in the rehabilitation of patients after total knee arthroplasty (83)	RCT	RCT (30 patients) on the effect of electric muscle stimulation (EMS) after total knee arthroplasty. Interventions: EMS (40Hz, 300micros) of the vastus medialis muscle for 4 hours a day, starting on postoperative day 2, over the first 6 postoperative weeks. Outcome measures: Changes in walking speed, HSS knee score, and effort of walking as measured by the PCI.	Pedro 5/10

Comparison of clinic-and home based rehabilitation programs after total knee arthroplasty (80)	RCT	RCT (160 patients) evaluating clinic-based rehabilitation versus home-based rehabilitation. Interventions: clinic-based rehabilitation provided by outpatient physical therapists versus home-based rehabilitation monitored by periodic telephone calls from a physical therapist. Outcome variables: total score on the Knee Society clinical rating scale, total score on the Western Ontario and McMaster Universities Osteoarthritis Index, total score on the Medical Outcomes Study Short Form, score on the pain scale of the Knee Society clinical rating scale, score on the pain scale of the Western Ontario and McMaster Universities Osteoarthritis Index, score on the functional scale of the Western Ontario and McMaster Universities Osteoarthritis Index, distance walked in 6 minutes, number of stairs ascended and descended in 30 seconds, and knee flexion range of motion.	Pedro 6/10
A randomized controlled trial of exercise to improve mobility and function after elective knee arthroplasty. Feasibility, results and methodological difficulties (98)	RCT	RCT (47 patients) comparing the results of a home-based traditional exercise group to a home based functional exercise group. Interventions: Home-based traditional exercise group or home-based functional exercise group following discharge from hospital. Outcome variables: goniometry, a knee-specific pain score, leg extensor power and a walking test.	<b>Cochrane II form:</b> Well-conducted RCT (9 first answers to the Cochrane form are positive). Recommendations seem applicable to Belgian situation. However, the results of this study need to be replicated on a larger patients sample before definitive conclusions can be drawn.
Costs and effectiveness of pre-and post-operative home physiotherapy for total knee replacement : randomized controlled trial (99)	RCT	RCT (160 patients) comparing the effectiveness of pre- and post-operative home-physiotherapy to hospital outpatient physiotherapy. Interventions: physiotherapy delivered at home or in an outpatient physiotherapy facility in a teaching hospital. Outcome variables: health-related quality of life (HRQoL), measured by the Western Ontario McMaster Osteoarthritis index (WOMAC) and the Short Form 36 health survey (SF-36) pre-operatively and at 12 weeks post-TKR operation; patient satisfaction; and NHS resource use.	<b>Cochrane II form:</b> Negative or no answer possible for 3 out of the 9 first questions of the form. Conclusions and recommendations of this study must be implemented with caution.
Home continuous passive motion machine versus professional physical therapy following total knee replacement (100)	RCT	RCT (103 total knee arthroplasties in 80 patients) studying the costs of self-continuous passive motion at home program versus traditional physical therapy delivered by a physiotherapist.	<b>Cochrane II form:</b> Negative or no answer possible for 4 out of the 9 first questions of the form. Critical appraisal not pursued

		Interventions: self-continuous passive motion at home program versus traditional physical therapy delivered by a physiotherapist. Outcome variables: R.O.M. at 2 weeks and 6 months.	as quality seems too low. Conclusions and recommendations of this study must be implemented with caution.
The effect of preoperative exercise on total knee replacement outcomes (101)	RCT	RCT comparing the effects of preoperative traditional physiotherapy, general cardiovascular conditioning exercises and no intervention. Interventions: traditional pre-operative physiotherapy (strengthening and mobilization exercises) and cardiovascular conditioning program, consisting of arm ergometry, cycle ergometry, aquatic exercises, and aerobic activity Outcome variables: Hospital for Special Surgery Knee Rating, the Arthritis Impact Measurement Scale, and the Quality of Well Being instrument.	<b>Cochrane II form:</b> Negative or no answer possible for 4 out of the 9 first questions of the form. Although recommendations seem applicable to Belgian situation, conclusions and recommendations of this study must be implemented with caution.
The use of low velocity submaximal eccentric contractions of the hamstring for recovery of full extension after total knee replacement: A randomized controlled study (102)	CT	CT (60 patients) on eccentric exercises of the hamstrings to increase tendon and muscle extensibility. Interventions: Outcome variables:	Pedro 3/10



## F. PRELIMINARY (NON VALIDATED) DRAFT OF THE RELEVANT PART OF THE KCE PROJECT 14/2005 (2005-04-GCP): EVALUATION AND TREATMENT OF CHRONIC LOW BACK PAIN (ONLY THE PART ADDRESSING PHYSIOTHERAPY TREATMENT)

THIS PART IS DISPLAYED AS AN INFORMATION AND WILL BE LATER VALIDATED BY EXPERTS FROM THE KCE PROJECT LOW BACK PAIN

### I. NON INVASIVE TECHNIQUES

#### I.1 Advice to stay active

The considered intervention is the advice to stay active as single treatment, compared with an advice to rest in bed. This issue is addressed in the CBO guidelines (2003) based on the systematic reviews of Van Tulder 1999, Maher 1999. Our search find one Cochrane systematic review (Hilde 2006).

#### Results

For acute or subacute LBP, an advice to stay active has small beneficial effects for the patient (level A). For Chronic low back pain, there is no evidence. Our search find only studies that concern patients with LBP of less than 12 weeks.

According to CBO 2003, the systematic review of Van Tulder et al (1999) conclut à l'efficacité de donner un avis de rester actif et à un niveau de preuve important pour affirmer que donner un avis de rester actif est un conseil pertinent dans la prise en charge de la lombalgie de moins de 12 semaines. The systematic review of Maher (1999) arrive à la même conclusion. Les bénéfices en aigu sont un retour plus rapide au travail, moins de limitations chroniques et moins de problèmes récidivants.

La Cochrane systematic review de Hilde inclut également des études de patients avec low back pain de moins de 12 semaines (four trials of 491 patients : two trials with low risk of bias and two with moderate to high risk of bias) et aboutit à des résultats semblables: an advice to stay active alone has small beneficial effects for patients with acute simple low back pain, and little or no effect for patients with sciatica. There is no evidence that advice to stay active is harmful for either acute low back pain or sciatica (Hilde 2006).

#### Conclusion :

Notre revue de littérature n'a pas mis en évidence d'études de bonne qualité concernant des patients avec lombalgies chroniques. Chez les lombalgiques de moins de 12 semaines, la littérature montre que le conseil de rester actif est efficace. Ces études n'ont pas mis en évidence de danger à rester actif en cas de lombalgie et/ou de sciatique.

#### I.2 Bed rest

Ce point est considéré dans les guidelines CBO 2003 et ANAES 2000 concernant des lombalgies chroniques. Ces études s'appuient cependant sur des études de patients aigus ou subaigus, avec des lombalgies de moins de 12 semaines : Abenham 2000, van Tulder 1999. Notre recherche n'a pas mis en évidence d'étude complémentaire de bonne qualité méthodologique.

L'intervention étudiée est le conseil de rester au lit, comme seul traitement.

#### Results

Il y a des preuves importantes que le repos au lit n'est pas efficace en cas de lombalgies aspécifiques de moins de 12 semaines (CBO 2003). Notre revue de littérature n'a pas mis en évidence d'études de bonne qualité méthodologique relative aux patients avec lombalgies chroniques.

Le guideline de l'ANAES ne recommande pas le repos au lit sur base d'un accord professionnel vu le manque d'études identifiées dans la lombalgie chronique (> 12 semaines). (ANAES 2000). Pour les mêmes raisons, le guideline du CBO 2003 se base sur l'International Paris Task Force on Back pain (Abenham 2000) pour établir le conseil suivant : un patient avec CLBP doit être avisé de rester actif autant que possible et d'éviter le repos au lit. Il est conseillé au lombalgique de se mouvoir sans stimuler la douleur et d'élargir progressivement son champ d'occupations (CBO 2003).

#### Safety :

La prescription d'un repos au lit a des effets néfastes comme la passivité, la raideur articulaire, l'atrophie musculaire, la réduction de la densité osseuse, le décubitus, la thrombo-embolie veineuse et la dégradation de l'état général (van Tulder 1999) (CBO 2003).

#### Conclusion

Aucune étude de bonne qualité méthodologique n'est identifiée dans le cas des CLBP. Il y a des preuves importantes que le repos au lit n'est pas efficace en cas de lombalgies aspécifiques de moins de 12 semaines. Le repos au lit peut être source d'effets indésirables.

### 1.3 Lumbar supports

Ce point est abordé dans les guidelines de bonne qualité méthodologique: SBU 2000, ANAES 2000, CBO 2003 et COST B13 2004. Notre recherche de littérature a mis en évidence une Cochrane systematic review (van Tulder 2006), ainsi qu'un rapport HTA (NHS CRD 2000).

The intervention is the use of a rigid or semi rigid lumbar support as treatment by a patient with chronic low back pain compared with a lumbar corset without support or no treatment. The outcomes are the pain, the function and the return to work.

#### Results :

There is limited and conflicting evidence that lumbar supports are more effective than no treatment. There is no evidence or conflicting low quality evidence that lumbar supports are more effective than other interventions for the treatment of low back pain. There is no evidence on the effectiveness of lumbar supports for secondary prevention. The studies are of low of middle quality and include often patients with acute or subacute low back pain.

Selon l'ANAES 2000, l'intérêt d'une contention lombaire reste à démontrer (3 études de faible qualité). Le rapport HTA SBU 2000 mentionne une limited evidence en faveur du support lombaire (1 étude de qualité moyenne). Le guideline CBO 2003 s'appuie sur une étude de qualité moyenne pour indiquer qu'un support lombaire pourrait réduire la douleur (versus pas de prise en charge).

Comparé aux autre formes de prise en charge, le guideline CBO 2003 conclut que le support lombaire n'est pas efficace sur la réduction de la douleur (4 études de qualité moyenne), qu'il y a des preuves contradictoires qu'un patient avec support lombaire a une fonction améliorée (3 études de qualité moyenne) et que les patients avec support lombaire retournent plus vite au travail (2 études de qualité moyenne).

The COST B13 2004 guideline concludes that there is no evidence for the effectiveness of lumbar supports compared with sham/placebo treatments and no evidence for the effectiveness of lumbar support compared with other treatment (6 études dont une seule inclut uniquement des patients chroniques).

Le rapport du NHS centre for reviews and dissemination (2000) base ses conclusions sur la Cochrane systematic review de Tulder 2000. Cette SR retient 6 essais thérapeutiques randomisés, de qualité plutôt faible. No evidence was found on the effectiveness of lumbar supports for secondary prevention. The systematic review of therapeutic trials showed that there is limited evidence that lumbar supports are more effective than no treatment, while it is still unclear if lumbar supports are more effective than other interventions for the treatment of low back pain. Il est à noter que cette SR ne concerne pas spécifiquement le patient chronique.

Le guideline CBO 2003 indique, à partir d'un étude de qualité moyenne, qu'un support lombaire rigide améliore plus la situation globale (algehele toestand) du patient qu'un support non rigide.

#### Safety

COST B13 2004 related that adverse effects of lumbar supports have been reported in the literature : skin lesions, gastrointestinal disorders, muscle wasting, higher blood pressure and higher heart rates.

#### Conclusion

There is no evidence or conflicting poor quality evidence that lumbar supports are effective in patients with chronic low back pain. Likewise, no evidence was found suggesting that such devices may be effective for secondary prevention of low back pain.

Adverse effects (skin lesions, gastro-intestinal disorders, elevated blood pressure and heart rate and trunk muscle wasting) have been reported.

### 1.4 Rehabilitation

#### 1.4.1 Massage

Ce point est traité dans les guidelines de bonne qualité: SBU 2000, ANAES 2000, Philadelphia 2001, CBO 2003, (based on Ernst 1999 et Furlan 2001) COST B13 2004 (based on 2 SR de bonne qualité Ernst 1999 et Furlan 2002, reprenant les études Cherkin et al 2001, Franke et al 2000, Hernandez-Reif et al 2001, Hoehler et al 1981, Hsieh et al 1992, Melzack et al 1983, Pope et al 1994, Preyde 2000, Hsieh 2004), KNGF 2005. Notre recherche a trouvé une mise à jour de la Cochrane systematic review (Furlan 2006).

The intervention consists in soft tissue manipulation using the hands or a mechanical device (Furlan et al 2002). Different techniques can be used, such as: effleurage, pétrissage, friction, kneading or hacking (COST B13 2004).

#### Results

2 SR récentes COST B13 2004 et Furlan 2006, concluent à la supériorité du massage versus pas de traitement, versus sham placebo, ou versus relaxation therapy, acupuncture and self-care education. Pour les comparaisons du massage avec les autres traitements (manipulation and TENS), les résultats sont contradictoires. En ce qui concerne le type de massage, les 2 SR concluent in favour of acupuncture massage versus classic Swedish massage.

Les guidelines (SBU 2000, ANAES 2000, Philadelphia 2001, KNGF 2005) considèrent qu'il n'y a pas d'études démontrant l'efficacité des massages chez le patient avec lombalgies chroniques.

Le guideline CBO 2003 inclut 2 SR de bonne qualité (Ernst 1999 et Furlan 2001) reprenant les 4 même RCTs. Le massage y est étudié comme intervention-contrôle et non comme intervention expérimentale. La qualité méthodologique des études est faible. Aucune conclusion ne peut dès lors être tirée.

COST B13 2004, however, concludes that the effectiveness of massage is significantly better than sham laser therapy with regard to both pain and function up to 1 month after treatment (limited evidence based on one high quality RCT Preyde 2000),

that immediately after treatment, massage therapy led to significantly greater disability and pain improvements compared with remedial exercise and posture education (limited evidence based on one high quality RCT Preyde 2000),

that there is more pain relief after massage therapy in comparison to progressive relaxation therapy (limited evidence based on one low quality study Hernandez-Reif et al 2001),

that massage is more effective than acupuncture in reducing pain (long-term = 52 weeks) and improving function (short-term = 10 weeks and long-term) (limited evidence based on one high quality study: Cherkin et al 2001),

that massage is better than self care education in reducing pain and improving function in the short term but not in the longer term (limited evidence based on one high quality study: Cherkin et al 2001),

that effectiveness of massage is equally effective in pain relief than spinal manipulation, but that spinal manipulation results in better function versus spinal manipulation, that acupressure massage is more effective in mid-term pain relief versus general physical therapies, that there is no difference between massage and transcutaneous muscle stimulation with regards to improvements in either pain or function, that there is no difference versus corset (niveaux de preuves limités COST B13 2004),

that massage in combination with remedial exercises and education is better than massage alone, remedial exercises alone or sham laser therapy for short term pain relief and improved function (limited evidence based on one high quality RCT Preyde 2000),

that therapeutic acupuncture massage is more effective than classical massage (limited evidence based on one high quality study Franke et al 2000).

Il est à noter qu'aucune des études citées ci-dessus par COST B13 n'est reprise dans la synthèse de CBO 2003.

#### Recherche complémentaire :

La Cochrane systematic review (Furlan 2006) traite du non-specific low-back pain. Nine publications reporting on eight randomized trials were included. Three had low and five had high methodological quality scores. Massage was compared to an inert treatment (sham laser) in one study that showed that massage was superior, especially if given in combination with exercises and education. In the other seven studies, massage was compared to different active treatments. They showed that massage was inferior to manipulation and TENS; massage was equal to corsets and exercises; and massage was superior to relaxation therapy, acupuncture and self-care education. The beneficial effects of massage in patients with CLBP lasted at least one year after the end of the treatment. One study comparing two different techniques of massage concluded in favour of acupuncture massage with classic (Swedish) massage. (Furlan 2006)

#### Conclusion

There is a moderate level of evidence (level B) that massage has a superior positive effect on low back pain as compared to passive therapeutic modalities such as relaxation, acupuncture and self-care education.

#### 1.4.2. Heat and cold therapy

Ce point est abordé dans les guidelines de bonne qualité: SBU 2000, ANAES 2000, CBO 2003 et COST B13 2004. Notre recherche a également trouvé une Cochrane systematic review (French 2005).

#### Results

All the mentioned guidelines conclude that there is no studies for the efficacy of cold or heat treatment in patients with chronic low back pain (SBU 2000, ANAES 2000, CBO 2003, COST B13 2004). La Cochrane systematic review (French 2005) concerne des patients en phase aiguë ou subaiguë. Elle ne mentionne pas d'étude chez des patients chroniques.

#### Conclusion

There is no evidence available for or against the effectiveness of heat and/or cold therapies in patients with chronic low back pain.

#### 1.4.3. Conventional physiotherapy (electrotherapy, ultra-sound, laser...)

Ce point est abordé dans les guidelines: SBU 2000, ANAES 2000 (sur base de Klein 1990, De Bie 1998), Philadelphia 2001 (sur base de Roman 1960), CBO 2003 (sur base de van Tulder 1999 et van der Heijden 1999), COST B13 2004 et KNGF 2005. Notre recherche complémentaire a mis en évidence une HTA de faible qualité méthodologique (Wang 2004) .

##### Results

Peu d'études de bonne qualité méthodologiques sont disponibles pour la physiothérapie conventionnelle. Aucune étude ne montre une efficacité des méthodes utilisées.

##### Laser

2 études RCTs ne montrent pas de différence d'efficacité entre le laser et un placebo.

L'ANAES 2000 retient une RCT en double aveugle concernant des lombalgies évoluant depuis plus d'un an (Klein 1990). 20 patients sont randomisés en 2 groupes : laser de basse énergie (gallium-arsenic) associé à des exercices à domicile versus laser-placebo + exercices à domicile. Il n'y avait pas de différence entre les 2 groupes en ce qui concerne la douleur ou la fonction.

CBO 2003 se base de De Bie et al 1998 (RCT de bonne qualité méthodologique) comparant le Laser 904 au placebo ou au laser utilisant d'autres doses. Il n'y avait pas de différence d'efficacité.

Un rapport HTA (Wang 2004) étudie le Low Level Laser Therapy (LLT). Une seule étude concerne la CLBP. La présentation des résultats ne permet pas de tirer des conclusions par rapport au patient CLBP.

KNGF 2005 et Prodigy 2005 déconseillent l'utilisation du Laser dans la CLBP.

##### Therapeutic ultrasound :

Une RCT ne montre pas de différence entre le continuous therapeutic ultrasound et le placebo.

Philadelphia 2001 retient une RCT (N=36) of continuous therapeutic ultrasound versus a placebo (Roman 1960 de mauvaise qualité méthodologique). There was no difference in pain improvement between continuous therapeutic ultrasound after 1 month of therapy. There is no evidence for the use of therapeutic ultrasound (SBU 2000, CBO 2003, COST B13 2004, Prodigy 2005, KNGF 2005).

##### Conventional thermotherapy and diathermy

There is no evidence (no studies known) for shortwave diathermy, thermothérapie, rayons infrarouges, ondes courtes et micro-ondes (SBU 2000, ANAES 2000, Philadelphia 2001, COST B13 2004).

##### Electrotherapy: ionophoresis, diadynamic and interferential currents...

CBO 2003 based on the systematic review of van der Heijden 1999 (11 studies concern LBP) concludes that the evidence for electrotherapy is insufficient.

There is no evidence for the use of electrotherapy: ionophoresis, diadynamic and interferential currents...(ANAES 2000, Philadelphia 2001, KNGF 2005, Prodigy 2005)

##### Conclusion :

There is weak evidence that Ultra Sound therapy as part of traditional physical therapy modalities is ineffective to treat low back pain. However very little good quality studies on this topic are available in the literature. . On the basis of the available evidence, Ultra Sound therapy should not be recommended.

There is very little evidence available in the literature on the effectiveness of electrotherapy (ionophoresis, diadynamic and interferential currents...). The effectiveness of such physical therapy modalities remains unknown. Such treatment modalities should thus not be recommended unless conclusive evidence on the effectiveness of such treatments becomes available.

There is no evidence available in the literature on the effectiveness of heat therapy through conventional thermotherapy and through diathermy. Such treatment modalities should thus not be recommended unless conclusive evidence on the effectiveness of such treatments becomes available.

There is weak evidence that Laser therapy as part of traditional physical therapy modalities is ineffective to treat low back pain. However very little good quality studies on this topic are available in the literature. On the basis of the available evidence, Laser therapy should not be recommended.

#### 1.4.4 TENS : Transcutaneous Electrical Nerve Stimulation

Ce point est abordé dans les guidelines: SBU 2000, ANAES 2000, Philadelphia 2001, CBO 2003 (Van Tulder 1999), COST B13 2004 (Brosseau 2002 et al, Milne et al 2002, van Tulder et al 1999), PRODIGY 2005 (Airaksinen et al 2004), KNGF 2005. Notre recherche complémentaire a trouvé deux Cochrane systematic review (Khadilkar 2006 and Gadsby 2006), une systematic review (Khadilkar 2005) de bonne qualité méthodologique, ainsi qu'un rapport HTA (NHS CRD 2000).

L'intervention étudiée est la Transcutaneous Electrical Nerve Stimulation (TENS). Les électrodes sont appliquées sur la peau et la stimulation électrique se fait par voie transcutanée. La méthode consiste à réduire la perception physiologique de la douleur grâce à une stimulation électrique (Gate control theory of pain). Les techniques utilisées varient selon les études : haute fréquence, basse fréquence, burst frequency, (hyper)stimulation électrique neuromusculaire, pulsation biphasique symétrique. La comparaison se fait versus TENS placebo ou versus acupuncture. ALTENS is acupuncture like TENS. PENS is percutaneous electrical nerve stimulation (see invasive procedure in this report).

## Results

Les résultats des études sont contradictoires, le nombre de systematic reviews de bonne qualité avec résultats défavorables étant actuellement les plus nombreuses.

SR avec conclusions défavorables ou résultats contradictoires :

PHILADELPHIA 2001 réalise une méta-analyse de 3 études (1 de bonne qualité et 2 de faible qualité) portant sur la douleur à 1 mois et 2 études (1 étude de faible qualité et une étude d'observation) portant sur la douleur à 6 mois and concluded that efficacy was not demonstrated. There was no difference in the pooled estimate of patient-rated pain at 1 month post therapy (SMD Standardized Mean Difference = -0,2 95% CI = - 0.4 to 0.1). This SMD is equivalent to a difference between treatment and control groups of 4 mm on a 100mm VAS for pain. In addition, there was no difference between placebo and TENS for functional status, ROM (range of motion), or strength at 1 month post therapy. At 3 to 6 months post therapy, there was no difference in self-rated pain or activity level in any study.

CBO 2003 insiste sur les limites des études qui portent toutes sur des séances réalisées en pratique clinique et non sur des appareils portables utilisés durant les 24 heures par les patients et conclut à un manque de clarté sur les preuves d'efficacité du TENS. Les résultats sont contradictoires (Sur base de la SR de Van Tulder 1999).

COST B13 2004 concluded that TENS was not more effective than placebo or sham TENS (1 SR de bonne qualité : Philadelphia 2001, et 3 Cochrane systematic reviews Brosseau 2002 et al, Milne et al 2002, van Tulder et al 1999) and that TENS was no more effective than vertebral axial decompression, acupuncture, PENS, or electroacupuncture (1 étude de moins bonne qualité et 3 études dont la validation n'est pas précisée).

KNGF 2005 conclut à une efficacité non démontrée et des résultats contradictoires (sur base de van Tulder 1999)

PRODIGY 2005 conclut à un manque de preuve d'efficacité (sur base de Airaksinen et al 2004)

Le rapport du NHS centre for reviews and dissemination (NHS CRD 2000) base ses conclusions sur la systematic review de Tulder 2000 and report contradictory evidence.

La Cochrane systematic review de Khadilkar 2006 traite du Transcutaneous Electrical Nerve Stimulation (TENS) for chronic low back pain : Seules les RCTs sont incluses. 37 études ont été exclues. Seules 2 études RCTs correspondaient aux critères de sélection de la SR. They differed with respect to study design, methodological quality, inclusion and exclusion criteria, characteristics of TENS application, treatment schedule, co interventions and measured outcomes. Une systematic review de Khadilkar en 2005 reprend les mêmes études et aboutit aux mêmes conclusions : limited and inconsistent evidence to support the use of TENS as an isolated intervention.

SR avec conclusions légèrement positives:

La Cochrane systematic review de Gadsby 2006 traite du TENS and acupuncture-like TENS (ALTENS) for chronic low back pain. The inclusion criterion for studies included (6 of 68 identified), was comparisons of TENS/ALTENS versus placebo in patients with chronic low back pain. The conclusion is that TENS appears to reduce pain and improve the range of movement on CLBP subjects. A definitive randomised controlled study of ALTENS, TENS, placebo/no treatment controls, of sufficient power, is needed to confirm these findings.

SBU 2000 found a limited evidence (4 essais randomisés, dont 3 de haute qualité, comparant les TENS avec un placebo TENS).

ANAES 2000 conclut que le TENS semble montrer une efficacité antalgique pendant la période d'utilisation (sur base de SBU 2000 et la version disponible en 2000 de la Cochrane SR de Gadsby incluant 9 études comparant TENS/ALTENS versus placebo dont 5 essais randomisés et une étude TENS versus acupuncture).

## Conclusion

There is conflicting evidence that TENS as an isolated intervention is effective in patients with chronic low back pain. Some studies support a limited effect of TENS or ALTENS (acupuncture-like TENS) in reducing pain and improving function. However, more studies of sufficient power are needed before definitive conclusions can be drawn.

### 1.4.5 Balneotherapy (Health resorts)

Ce point est abordé uniquement dans les guidelines: SBU 2000, ANAES 2000. Notre revue de littérature n'a pas mis en évidence d'autres articles de bonne qualité méthodologique.

L'intervention étudiée est le traitement en station thermale. Le type de soins n'est pas décrit.

Results :

Le rapport HTA SBU 2000 conclut à une strong evidence for Health resorts chez les patients de plus de 60 ans avec chronic low back pain.

Sous le terme « Balnéothérapie », le guideline de l'ANAES 2000 décrit 2 études traitant de l'hydrothérapie (voir 1.4.6 de ce rapport).

Conclusion:

There is moderate evidence that balneotherapy provided in health resorts is effective in older patients (>60 years) with chronic low back pain.

#### 1.4.6. Hydrotherapy

Ce point est abordé uniquement dans les guidelines: ANAES 2000 (ANAES 1998, Sjorgen 1997, Mcllveen 1998), KNGF 2005. Notre revue de littérature n'a pas mis en évidence d'autres articles de bonne qualité méthodologique.

L'hydrothérapie consiste en la réalisation d'un traitement (exercices) dans l'eau.

Results

Les exercices dans l'eau améliorent la fonction par rapport au placebo (1 étude de qualité méthodologique non évaluée) et sont aussi efficaces que les exercices au sol (1 étude de qualité méthodologique non évaluée).

L'ANAES 2000 se base sur la conférence de consensus (ANAES 1998) et sur 2 essais complémentaires de qualité méthodologique non évaluée incluant des patients avec CLBP (Sjorgen 1997 et Mcllveen 1998). L'étude de Sjorgen (hydrothérapie versus exercices en dehors de l'eau N=60) ne montre aucune différence entre les 2 groupes. L'étude de Mcllveen (hydrothérapie versus placebo N=95) montre une différence pour l'état fonctionnel (Oswestry), pas pour la douleur ni la mobilité ni les tests neurologiques.

Le guideline KNGF 2005 se base sur les mêmes études et conclut qu'il y a des preuves limitées que les exercices dans l'eau améliorent la fonction et sont aussi efficaces que les exercices au sol.

#### 1.4.7. Traction

Ce point est abordé dans les guidelines: SBU 2000, ANAES 2000, Philadelphia 2001, CBO 2003, Cost B13 2004 et KNGF 2005. Les systematic reviews de base sont celles de van der Heijden 1995 et de Van Tulder 1999. Notre recherche complémentaire a mis en évidence une Cochrane systematic review (Clarke 2006) et une SR de Harte 2003 (cette étude n'a pas été retenue car elle considère la LBP en général et pas le patient chronique), ainsi qu'un rapport HTA (NHS CRD 2000) basé sur la SR de Van Tulder 2000.

L'intervention étudiée est la traction continue ou intermittente (30 à 50% du poids du corps). Elle est comparée dans les études à des tractions simulées ou des tractions de moindre force (0-25% du poids du corps).

Results

Le traitement par traction ne peut être conseillé aux patients avec CLBP (strong evidence against).

Tous les guidelines considérés sont en accord: la traction n'apporte pas d'effets positifs au patient avec CLBP, que ce soit sur la douleur, la fonction ou l'évaluation globale du patient (SBU 2000, ANAES 2000, Philadelphia 2001, CBO 2003, COST B13 2004, KNGF 2005). De plus des effets indésirables sont possibles.

Les résultats de notre recherche complémentaire sont en accord avec ces conclusions. Le rapport du NHS centre for reviews and dissemination (2000) concluded that traction is not effective for chronic low back pain (basé sur la systematic review de van Tulder en 2000: 2 RCTs). La Cochrane systematic review de Clarke 2006 integrate twenty four RCTs involving 2177 patients in total (1016 receiving traction). Five trials were considered high quality. There is evidence that there is no significant difference in short or long term outcomes between either continuous or intermittent traction and placebo, sham, or other treatment for patients with a mixed duration of LBP, with or without sciatica (pas de résultats séparés pour CLBP).

Safety

According to COST B13 2004, case reports suggest that there is danger of adverse effects in heavy traction (lumbar traction with forces exceeding 50% of the total body weight). Those risks include increased blood pressure and respiratory constraints due to the traction harness, and a theoretical potential increase of nerve impingement in case of medial or distal disk protrusion (COST B13 2004).

Conclusion:

There is moderate to strong evidence that intermittent and continuous traction is ineffective to treat low back pain in general, with or without sciatica.



#### 1.4.8. Biofeedback

Ce point est considéré dans les guidelines de bonne qualité méthodologique : SBU 2000, ANAES 2000, Philadelphia 2001 et CBO 2003. La systematic review de base est celle de Van Tulder 1999. Notre recherche a mis en évidence un rapport HTA (NHS CRD 2002).

Le biofeedback ou EMG biofeedback: consiste à faciliter ou inhiber l'activité musculaire en transposant la réponse musculaire en un signal visuel ou auditif afin de permettre au patient de contrôler sa réponse. La comparaison se fait via un groupe placebo, tel un groupe figurant sur une liste d'attente.

##### Results:

Le biofeedback ne peut être conseillé au patient avec chronic low back pain (moderate to strong evidence against). Tous les guidelines considérés concluent que biofeedback est inefficace : SBU 2000, ANAES 2000 (basé sur 6 études de qualité moyenne à faible), Philadelphia 2001 (méta-analyse de 5 RCTs (n= 162) de faible qualité méthodologique), CBO 2003 (SR de van Tulder 1999), KNGF 2005 (SR de van Tulder 1999).

Notre recherche complémentaire confirme ces conclusions. Le rapport du NHS centre for reviews and dissemination (2000) se base également sur la SR de van Tulder 2000 et conclut à une evidence of ineffectiveness.

##### Conclusion :

There is a moderate to strong evidence (level B to A) that EMG biofeedback is not effective in patients with chronic low back pain.

#### 1.4.9. Exercise therapy and physical reconditioning

Ce point est considéré dans les guidelines SBU 2000, ANAES 2000, Philadelphia 2001, CBO 2003, COST I3 2004, KNGF 2005, ICSI 2005 et SSMG 2001. Notre recherche a trouvé des articles complémentaires de bonne qualité méthodologique : Hayden 2006 (Cochrane systematic review), Hayden 2005a (méta-analyse), Hayden 2005b (systematic review), Liddle 2004 (systematic review), Kool 2004 (metaanalysis) et une review de moins bonne qualité (Rainville 2004 cependant considérée dans ce rapport parce que analysant la safety of the back exercises), ainsi que 2 rapports HTA (NHS CRD 2000 et Jackson 2002). Notre recherche n'a pas mis en évidence d'études de bonne qualité méthodologique étudiant l'impact des exercices à long terme.

The studied intervention is the exercise therapy (alone or as part of a multidisciplinary treatment) versus no treatment and/or versus other conservative treatments. The outcomes are: pain, function, return to work/absenteeism, and/or global improvement outcomes.

"Exercise therapy" was defined by COST B13 2004 as any programme in which, during the therapy sessions, the participants were required to carry out repeated voluntary dynamic movements or static muscular contractions (in each case, either "whole-body" or "region-specific"; and either with or without external loading), where such exercises were intended as a treatment for low back pain. The exercise was to have been supervised or "prescribed" (van Tulder et al 2003).

##### Results

The exercise therapy is effective on the pain and the function at short term and mid-term. They should be only modest clinical benefits due to limitations of the literature studies. There is conflicting evidence for the return to work. The exercise therapy is more effective than traditional GP care, thermals or exercises at house. It is equally effective than other physiotherapy combinations but there is conflicting evidence regarding the effectiveness of exercise (outpatient) as compared with intensive multi disciplinary programmes. The type of exercise don't influence the result of the treatment. Exercise therapy programs that lasted three months are effective.

Evidence for the outcomes.

Exercise therapy is effective for pain and function.

Relationship between changes in clinical symptoms (pain and disability) and improvements in performance (e.g. spinal range of motion, trunk strength) as a result of exercise therapy: changes in pain and disability reported after various types of exercise therapy are not directly related to changes in any aspect of physical performance capacity (COST B13 2004 RCTs de bonne qualité)

L'exercice therapy a une efficacité à court terme sur la douleur SBU 2000 (strong evidence), ANAES 2000 (6 RCTs de qualité variable), SSMG 2001 (études non RCTs), Philadelphia 2001 (efficacité à 1 mois : méta-analyse de 5 RCTs de qualité bonne à moyenne), CBO 2003 et KGNF 2005 (2 SR de bonne qualité), in a least the mid-term 3-6 mois: COST B13 2004 (RCTs de bonne qualité). Level A

L'exercice therapy a une efficacité sur la fonction à court terme ANAES 2000 (6 RCTs de qualité variable), SSMG 2001 (études non RCTs), Philadelphia 2001 (efficacité à 1 mois : méta-analyse de 3 RCTs de qualité bonne à moyenne), CBO 2003 et KGNF 2005 (2 SR de bonne qualité), in a least the mid-term 3-6 mois: COST B13 2004 (RCTs de bonne qualité). Level A

In the more recent Cochrane systematic review, exercise therapy appears to be slightly effective at decreasing pain and improving function in adults with CLBP, particularly in healthcare populations. Evidence was found of effectiveness in chronic populations relative to comparisons at all follow-up periods; pooled mean improvement was 7.3 points (95% CI, 3.7 to 10.9) for pain (out of 100), 2.5 points (1.0 to 3.9) for function (out of 100) at earliest follow-up. In studies investigating patients (i.e. presenting for health care providers) mean improvement was 13.3 (5.5 to 21.1) for pain, 6.9 (2.2 to 11.7) for function, representing significantly greater improvement over studies where participants included those recruited from a general population (e.g. with advertisements) (Hayden 2005a et 2006).

Limitations of this results may be. The Cochrane review largely reflects limitations of the literature, including low quality studies with heterogeneous outcome measures, inconsistent and poor reporting, and possibility of publication bias (Hayden 2005a et 2006). The ICSI guideline 2005 insists too on the point that studies of the Cochrane SR 2006 and of the NHSCRD HTA report 2000 were limited by inconsistent and poor reporting, publication bias and the use of heterogeneous outcome measures and concludes that exercise therapy provide at best only modest clinical benefits (at decreasing pain and improving function in adults with chronic low back pain).

There is conflicting evidence for exercise therapy and return to work.

The Philadelphia méta-analysis show no difference on the return to work after 1 month (méta-analyse de 3 RCTs de qualité bonne à moyenne). The CBO 2003 concludes that there is no difference on return to work versus other physiotherapy treatment. COST B13 2004 concludes that exercise therapy is more effective than GP care on the return to work in at least the mid-term (3-6 months) (RCTs de bonne qualité).

The metaanalysis of Kool concluded that the qualitative and the quantitative analysis showed strong evidence (multiple relevant, high quality RCTs) that exercises reduces sick days during the first follow-up year, the effect size was -0.24 (95% CI -0.36, -0.11). In a subgroup of studies on the treatment of severely disabled patients (>90 sick days under usual care) the effect size is -0.30 (-0.42, -0.17). The effect size of the number of patients receiving a disability allowance was small and not significant (Kool 2004).

The HTA report of NHS centre for reviews and dissemination (NHS CRD 2000) based on the Cochrane systematic review of van Tulder 2000 conclude that there is strong evidence that exercise therapy may help chronic low back pain patients return to normal daily activities and work.

Comparison exercise therapy versus other treatments.

L'exercice therapy a la même efficacité que les différentes combinaisons de physiothérapie : ANAES 2000 (17 RCTs de qualité faible à bonne), CBO 2003 (2 SR de bonne qualité), COST B13 2004 (RCTs de bonne qualité). Level A

L'exercice therapy est plus efficace que les GP care habituels (prescription médicamenteuse) : CBO 2003 (SR Van Tulder 1999), COST B13 2004 (RCTs de bonne qualité), que le thermalisme et les exercices à domicile ANAES 2000 (17 RCTs de qualité faible à bonne).

There is conflicting evidence regarding the effectiveness of exercise (outpatient) as compared with intensive multi disciplinary programmes COST B13 2004 (RCTs de bonne qualité avec résultats contradictoires).

Type d'exercices

There is no evidence for an exercise type. As many varied exercise types led to comparable positive effects improvements it may be hypothesized that reduction of pain an improvement of function is obtained through general and aspecific physical reconditioning which should be the main goal of such programs.

Il n'y a pas de forme spécifique d'exercice plus efficace qu'une autre CBO 2003 (2 SR de bonne qualité Van Tulder 1999, Hilde 1998). Muscle reconditioning/strengthening exercises is no more effective than other types of exercise COST B13 2004 (RCTs de bonne qualité). For aerobic exercises versus other types of exercise, flexion exercises versus others types of exercise, flexion versus extension exercises, there is limited (small number of studies) or conflicting evidence : COST B13 2004, ANAES 2000.

The Hayden's systematic review (including some poor quality studies) found that individually designed programs including stretching or strengthening, and is delivered with supervision may improve pain and function.(Hayden 2005 b).

The Liddle's systematic review (including only good or middle quality studies) search to identify what treatment characteristics are essentials to achieve and maintain successful results. Exercise quality was subsequently assessed according the predominant exercise used. Despite the variety offered, exercise has a positive effect on CLBP patients, and results are largely maintained at follow-up. Strengthening is a common component of exercise programmes, however, the role of exercise co-interventions must not be overlooked (Liddle 2004).

According to COST B13 2004, there is moderate evidence that individually supervised exercise therapy is not more effective than supervised groups exercises (one low quality RCT N=190 and one high quality RCT N=148).

Duration of the exercise therapy

Le rapport HTA du Centre for Clinical Effectiveness (Jackson 2002) se base sur la Cochrane systematic review (van Tulder 2002) et 8 RCTs de bonne qualité méthodologique. It conclude that 1) A 3-month program of gym workouts was shown to reduce pain and improve spinal and muscle flexibility significantly more than a home exercise program ; 2) A 3-month program of muscle reconditioning using training devices was equally effective as physiotherapy or aerobics in reducing pain



and decreasing disability; 3) Both aerobic exercise and flexion exercise carried out for 3 months reduced the pain score significantly; 4) 3-Month trunk muscle function training was effective in reducing pain and disability and improving lumbar endurance compared to passive treatment consisting of thermal therapy and massage (Jackson 2002).

Exercise performed over more than 20 hours seemed to be more effective than exercise over shorter periods (ICSI 2005).

#### Safety

One less good quality study concluded that exercise is safe for individuals with back pain, because it does not increase the risk of future back injuries or work absence (Rainville 2004).

Two studies reported cardiovascular problems, apparently unrelated to the treatment programmes (COST 13).

#### Conclusion

Many systematic reviews, meta-analyses on numerous RCTs have addressed the issue of the efficacy of exercise programs in patients with low back pain. There is a moderate to high evidence supporting a positive short term modest effect of such programs. However, this short term effect may not be superior to the effects of more conventional treatment (physiotherapy...) on pain intensity and function. There is a moderate level of evidence that exercise is more effective than traditional GP care. There is a low to moderate level of evidence supporting a long term positive effect on pain and function and number of sick days in the year following the intervention in patient with chronic low back pain.

According to the relatively low quality level of most RCTs on the topic and their heterogeneity (type of exercise programs, outcomes...), there is no clear evidence on the type of exercises that should be recommended. Likewise, although low intensity exercises seem ineffective, there is no clear evidence on the frequency, duration and intensity of exercises that should be recommended. There is a low level of evidence supporting the safety of exercise programs and physical reconditioning in patients with chronic low back pain. There is no evidence that such interventions may be harmful.

#### 1.4.10. Back School

Ce point est considéré dans les guidelines: CBO 2003, ANAES 2000, SBU 2000, COST 13 2004. Les systematic reviews de base sont Van Tulder 1999 et Van Tulder 2000. Notre recherche a trouvé un article complémentaire de bonne qualité méthodologique : Heymans 2006 (Cochrane systematic review), ainsi qu'un rapport HTA (NHS CRD 2000).

"Back schools" definition is variable: According to COST B13, the original "Swedish back school" (1980) consisted of four sessions of 45 minutes (information on the anatomy and function in the back, discussion of the mechanical strain in different positions and teaching of the semi-Fowler position) but in some studies, back school include exercises program. The lessons are given to groups of patients and supervised by a paramedical therapist or medical specialist. Les programmes des back schools ne sont pas semblables et la proportion entre les aspects éducatifs et la prise en charge pour des exercices est très variable, ce qui pourrait expliquer des divergences dans les résultats. Dans les systematic reviews de van Tulder, la définition du back school inclut la présence d'exercices. L'efficacité obtenue dans les études concernant les back schools avec exercice pourrait être liée à la présence d'exercices. Les comparaisons se font versus placebo or waiting list controls, exercises only manipulation, myofascial therapy, advice.

#### Results

Paradoxalement, les études comparant les back schools au placebo (listes d'attente) ne montrent pas d'efficacité en faveur des back schools ou donnent des résultats contradictoires, tandis que les comparaisons avec d'autres traitements (simple information, exercices seuls, manipulation, NSAID, physiothérapie) montrent des effets en faveur des back schools à 6 mois. Ces effets ne semblent pas se maintenir à long terme. Les études sur les back schools en entreprises montrent également des effets positifs à court et à moyen terme.

Versus placebo ou contrôle sur liste d'attente :

Tandis qu' ANAES 2000 conclut qu'il n'y a pas d'efficacité sur la douleur (5 essais back school sans exercices, de faible qualité méthodologique), les autres concluent que les résultats sur les outcomes douleur et fonction et retour au travail sont contradictoires : CBO 2003 (Van Tulder 1999 : SR de 6 RCTs de bonne qualité), COST B13 2004 (2 études de bonne et plusieurs de moins bonne qualité), NHS CRD 2000 (van Tulder 2000). SBU 2000 conclude that there is limited evidence for the back school.

Versus autres traitements:

Ecole du dos (+ exercices physiques) est plus efficace à court terme qu'une simple information : ANAES 2000 (4 essais de qualité moyenne à faible), COST B13 2004 (une RCT de bonne qualité et plusieurs de faible qualité)

Ecole du dos (+ exercices physiques) versus exercices seuls: résultats contradictoires pour l'ANAES 2000 (4 essais de qualité moyenne à faible), plus efficace à 6 mois pour la réduction de la douleur et l'amélioration de la fonction pour le CBO 2003 (Van Tulder 2000 : Cochrane SR de 5 RCTs de bonne qualité), plus efficace également pour COST B13 2004 (une RCT de bonne qualité et plusieurs de faible qualité).

Ecole du dos (+ exercices physiques) versus manipulation, NSAID, physiothérapie : Plus efficace à 6 mois pour la réduction de la douleur et l'amélioration de la fonction : CBO 2003 (Van Tulder 2000 : Cochrane SR de 5 RCTs de bonne qualité), plus efficace également pour COST B13 2004 (une RCT de bonne qualité et plusieurs de faible qualité),

A more recent Cochrane systematic review (Heymans 2006) find that only six trials were to be high quality. In general the clinical relevance of the studies was rated as insufficient. It was not possible to perform relevant subgroup analyses for LBP with radiation or without radiation. There is moderate evidence suggesting that back schools have better short and intermediate-terms effects on pain and functional status than other treatments for patients with recurrent and chronic low back pain.

According to COST B13 2004, there is moderate evidence for no difference between back schools and other treatments with regard to their long-term effects and functional status (2 RCTs de faible qualité).

Back school in an occupational setting:

According to CBO 2003, il y a des preuves limitées que l'école du dos en entreprise donne moins d'absentéisme que le placebo (Van Tulder 1999 et 2000). There Cochrane systematic review (Heymans 2006) also concluded that there is moderate evidence suggesting that back school for CLBP in an occupational setting, are more effective than other treatments and placebo or waiting list controls on pain, functional status and return to work during short and intermediate-term follow-up.

Conclusion:

There is moderate evidence (level B) suggesting that back schools have better short and intermediate-terms effects on pain and function in patients with recurrent or chronic low back pain than other traditional treatments.

There is moderate evidence (level B) suggesting that back school in an occupational setting, is effective in reducing pain, improving function and return to work rate during short and intermediate-term follow-up.

However, back schools programs usually include education, exercise and interventions on movement and postures ergonomics in proportions and quantities that may considerably vary. More studies should be conducted to identify the optimal proportion of the different components of back schools programs as well as the characteristics of the total program in terms of number, frequency, duration and composition of the sessions.

## 1.5. Psychotherapeutical interventions

### 1.5.1 Cognitivo-behavioral intervention

Ce point est abordé dans les guidelines: SBU 2000, ANAES 2000, CBO 2003, COST 13 2004. les systematic reviews de base sont van Tulder 2000, van Tulder 2001 et van Tulder 2004. Les études citées par rapport à l'efficacité des traitements sont celles de Turner 1996, Brox et al 2003, Lindstrom et al 1992, Staal et al 2004, Kole-Snijders et al 1999, Turner and Clancy 1988. Notre recherche complémentaire a mis en évidence une Cochrane systematic review (Ostelo 2006) et un rapport HTA (NHS CRD 2000).

According to COST B13 definition, *"cognitive and behavioural methods involve procedures where changes in the cognitions and behaviours are the main aspect of the treatment offered. They are commonly used in the treatment of chronic (disabling) low back pain. The main assumption of a behavioural approach is the pain and pain disability are not only influenced by somatic pathology, if found, but also by psychological and social factors (e.g., patients attitudes and beliefs, psychosocial distress, and illness behaviour) (Waddell 1987).*

Consequently, the treatment of chronic low back pain is not primarily focused on removing an underlying organic pathology, but at the reduction of disability through the modification of environmental contingencies and cognitive processes. In general, three behavioural treatment approaches can be distinguished: operant, cognitive and respondent (Turk and Flor 1984) (Vlaeyen et al 1995). Each of these focuses on the modification of one of the three response systems that characterize emotional experiences, that is behaviour, cognitions, and physiological reactivity. Operant treatments are based on the operant conditioning principles of Skinner (Skinner 1993) and applied to pain by Fordyce (Fordyce 1976) and include positive reinforcement of healthy behaviours and consequent withdrawal of attention towards pain behaviours, time-contingent of pain-contingent pain management, and spouse involvement. The graded activity programme is one example of operant treatment for chronic low back pain (Lindstrom et al 1992).

Cognitive treatment aims to identify and modify patients' cognitions regarding their pain and disability. Cognitions (the meaning of pain, expectations regarding control over pain) can be modified directly by cognitive restructuring techniques (such as imagery and attention diversion), or indirectly by the modification of maladaptive thoughts, feelings and beliefs (Turner and Jensen 1993).

Respondent treatment aims to modify the physiological response system directly, e.g., by reduction of muscular tension. Respondent treatment includes providing the patient with a model of the relationship between tension and pain, and teaching the patient to replace muscular tension by a tension-incompatible reaction, such as the relaxation response. Electromyographic (EMG) biofeedback, progressive relaxation and applied relaxation are frequently used (Turk and Flor 1984) (Vlaeyen et al 1985).

A large variety of behavioural treatment modalities are used for chronic low back pain, because there is no general consensus about the definition of operant and cognitive methods. Furthermore, behavioural treatment often consists of a combination of these modalities or is applied in combination with other therapies (such as medication or exercises). Although they may vary in aims and methods, cognitive and behavioural treatments have in common 1) the assumption that the individual's feelings and behaviours are influenced by his/her thoughts; 2) the use of structured techniques to help patients identify, monitor and change maladaptive thoughts, feelings and behaviours; 3) an emphasis on teaching skills that patients can apply to a variety of problems (Turner 1996)."

Results

Il y a des preuves importantes que la behavioral therapy est plus efficace que le placebo à court terme en cas de chronic low back pain. Cette efficacité se confirme également dans les études en première ligne. Les patients n'étaient pas sélectionnés sur base de problèmes psychosociaux sous-jacents. Il ne semble pas y avoir de différences entre l'efficacité des thérapies comportementales et celles des autres traitements comme les exercices ou la spinal fusion surgery. Le niveau de preuve est cependant modéré : peu d'études et de qualité méthodologique allant de faible à bon. Par contre, a graded activity programme using a behavioural approach is more effective than traditional care for returning patients at work. Il ne semble pas y avoir de bénéfice à ajouter une thérapie comportementale en complément d'un autre traitement, mais les conclusions des guidelines sur ce point sont divergentes. Tous les guidelines s'accordent pour conclure qu'il n'y a pas de différence d'efficacité entre les méthodes de thérapie comportementale.

#### Thérapies comportementales versus placebo:

Tous les guidelines s'accordent pour affirmer que les thérapies comportementales sont plus efficaces que le placebo (ou pas de traitement ou inscription sur une liste d'attente) :

SBU 2000 concluded that there is strong evidence for behavioral therapy,

ANAES 2000 efficace dans la prise en charge de la douleur à court terme et éventuellement dans l'amélioration du handicap (sur base de 7 études de faible qualité méthodologique)

CBO 2003 conclut que les thérapies comportementales sont plus efficaces qu'une attitude attentiste (strong evidence). L'effet est surtout positif en ce qui concerne l'intensité de la douleur, tandis que l'effet est faible sur le statut fonctionnel (sur base de la systematic review de Van Tulder 2001 comprenant 21 RCTs). Une méta-analyse de Turner 1996 étudie l'efficacité des thérapies comportementales chez les patients lombalgiques en première ligne. 14 études répondent à ce critère. Les conclusions rejoignent celles de la systematic review de Van Tulder 2001.

COST B13 2004 concluded that there is strong evidence that behavioural treatment is more effective for pain, functional status and behavioural outcomes than placebo/no treatment/waiting list control (van Tulder et al 2000, van Tulder et al 2004; 2 RCTs de bonne qualité et 5 RCTs de faible qualité):

Le rapport du NHS centre for reviews and dissemination (NHS CRD 2000) aboutit aux mêmes conclusions, également basées sur la Cochrane systematic review de van Tulder 2000.

One more recent update of the Cochrane systematic review on the topic (Ostelo 2006) includes only randomised trials on behavioural treatment for non-specific CLBP. Seven studies (33%) were included and considered as high quality studies. Comparing behavioural treatment to waiting list control revealed strong evidence (4 trials, 134 people) in favour of a combined respondent-cognitive therapy for a medium effect on pain, and moderate evidence (2 trials, 39 people) in favour of progressive relaxation for a large positive effect on pain and behavioural outcomes (short-term only). When comparing operant treatment to waiting list control no significant differences could be detected on general function status (strong evidence: 2 trials, 87 people) or on behavioural outcomes (moderate evidence: 3 trials, 153 people) (short term only).

L'efficacité semble indépendante de facteurs psychosociaux sous-jacents. En effet, Cost B13 2004 précise que in most trials included in the review, patients with severe, long-lasting chronic non specific low back pain were recruited. Patients were usually not selected through screening for psychosocial factors.

#### Thérapie comportementale versus autres traitements

L'ANAES 2000 ne peut conclure (à partir d'études de faible qualité). Le CBO 2003 (à partir de la SR de Van Tulder 2001) conclut que l'efficacité des thérapies comportementales versus un autre traitement n'est pas claire. La Cochrane systematic review (OSTELO 2006) conclut with limited evidence (1 trial, 39 people) that there are no differences between behavioural treatment and exercises. COST B13 2004 conclut également à une limited evidence (one low quality trial: Turner et al 1990) that there is no difference between the effects of behavioural therapy and exercise therapy in terms of pain, functional status or depression up to 1 year after treatment. COST B13 2004 Concludes also that there is limited evidence (one high quality trial: Brox et al 2003) that in patients with CLBP and lower lumbar disc degeneration there is no difference between the effects of cognitive-behavioural therapy and spinal fusion in terms of disability 1 year after treatment.

Par contre, COST B13 2004 conclut that there is strong evidence (2 RCTs de bonne qualité: Lindstrom et al 1992, Staal et al 2004) that a graded activity programme using a behavioural approach is more effective than traditional care for returning patients at work. Il est à noter que l'étude de Lindstrom concerne des subacute LBP. Ostelo 2006 concludes also that there is limited evidence (1 trial, 98 people) that a graded activity program in an industrial setting is more effective than usual care for early return to work and reduced long-term sick leave.

#### Thérapie comportementale en complément d'un autre traitement versus l'autre traitement seul :

L'ANAES 2000 conclut que les thérapies comportementales associées à un autre traitement (exercice physique, kinésithérapie, etc) semblent plus efficaces (6 études de faible qualité méthodologique) sur la douleur que ce même traitement seul.

Tandis que COST B13 2004 concludes that there is moderate evidence (6 low quality RCTs) that the addition of cognitive behavioural treatment to another treatment has neither short or long term effects on functional status and behavioural outcomes. Les conclusions de la Cochrane systematic review (Ostelo 2006) sont similaires : there were no significant

differences in short-term and long-term effectiveness when behavioural components are added to usual treatments programs for CLBP (i.e. physiotherapy, back education) on pain, generic functional status and behavioural outcomes.

Comparaison des différentes techniques comportementales entre elles

ANAES 2000 conclut qu'au total, aucune technique comportementale n'apparaît supérieure à une autre dans la prise en charge des lombalgies chroniques. Toutefois, les études ((cognitive versus operant (1 étude), cognitive versus respondent (2 études), cognitive-behavioural versus cognitive (2 études), cognitive-behavioural versus operant (2 études), cognitive behavioural versus respondent (1 étude)) sont de faible qualité méthodologique et portent sur un petit nombre de patients.

CBO 2003 confirme la non différence d'efficacité entre les méthodes utilisées sur base de la systematic review de Van Tulder 2001 (21 RCTs)

COST 13 2004 aboutit aux mêmes conclusions avec un niveau de preuve important (level A). (2 high quality RCTs: Kole-Snijders et al 1999, Turner and Clancy 1988 and 5 low quality RCTs):

#### Conclusion

There is strong evidence (level A) that most behavioural interventions are more effective than no treatment in reducing pain and improving function in patients with chronic low back pain.

There is limited evidence (level C) that behavioural interventions are equivalent in terms of effectiveness as compared with exercise therapy. Noteworthy one good quality study suggests that cognitive-behavioural therapy is as effective as lumbar disc fusion surgery in reducing disability, at one-year follow-up (level C).

There is strong to moderate evidence (level A to B) that there is no difference in terms of effectiveness between the different types of behavioural interventions.

There is moderate evidence (level B) that adding a behavioural intervention to more traditional treatments is not effective in improving function as compared to the traditional treatment alone. However, graded activity programs using a behavioural approach seem more effective than traditional care for returning patients to work (level B).

#### 1.5.2. Brief educational interventions to promote self-care

Ce point est abordé uniquement dans le guideline COST B13 2004.

COST B13 2004 defined the brief educational interventions (as distinct from back schools) as interventions that involve minimal contact with a healthcare professional (normally just one or two sessions), the use of self-management patient-led groups, the provision of educational booklets, and the use of internet and e-mail discussion groups. The interventions aim to encourage active self-management and to reduce concerns. Some such interventions are described as "mobilisation" in some studies, to indicate the attempt to encourage the patient to become more active; this should not be confused with the manual therapy treatment of spinal mobilisation.

#### Results

Un bref conseil encourageant la reprise des activités quotidiennes a un impact chez les patients avec chronic low back pain. Le niveau de preuve est surtout important quand le conseil est donné par le physiothérapeute ou par le physiothérapeute et par le médecin.

COST B 13 2004 concludes (based on 10 RCTs, which 4 of good methodological quality) that there is moderate evidence that brief intervention addressing concerns and encouraging a return to normal activities are better than usual care in increasing return to work rates (level B), that there is moderate evidence that brief interventions encouraging self-care are more effective than usual care in reducing disability (up to 6 months) but not pain (level B).

Other conclusions concern minimal contact defined as internet-based discussion groups/educational interventions. There is limited evidence they are more effective than no intervention, in reducing disability (level C) and there is conflicting evidence they are more effective than no intervention, in reducing pain (level C).

Brief interventions provided by a physiotherapist, or a physician and physiotherapist, and encouraging a return to normal activities, are as effective in reducing disability as routine physiotherapy or aerobic exercise (strong evidence level A)

There is limited evidence that brief self-care interventions are as effective as massage or acupuncture in terms of reducing pain and disability (level C)

#### Conclusion

There is moderate to strong evidence (levels A to B) that brief educational interventions that may be provided by varied care providers (GP, physiotherapist...) are effective to reduce disability and increase return to work but are ineffective to reduce pain level.

There is limited (level C) or conflicting evidence that internet-based interventions based on discussion groups are effective to reduce disability and pain level.

There is limited evidence (level C) that brief self care interventions are effective to reduce pain and disability.

Such findings emphasize the importance of educating and encouraging patient with chronic low back pain to resume normal activities of daily life as soon as possible.

#### 1.6. Multidisciplinary programs

Ce point est abordé dans les guidelines: SBU 2000, ANAES 2000, CBO 2003, COST 13 2004. Les études de base citées sont Fordyce et al 1973, van Tulder 2000, Guzman et al 2001, Schonstein et al 2003, Rose et al 1997. Notre recherche complémentaire a mis en évidence une Cochrane systematic review (Guzman 2006) et un rapport HTA (NHS CRD 2000).

Les définitions sont variables selon les guidelines. A fortiori, les programmes étudiés dans la littérature divergent, rendant difficiles les comparaisons.

Selon l'ANAES 2000, les programmes multidisciplinaires incluent dans des proportions variables des séances d'éducation et de conseils (définition stricte des écoles du dos), des exercices physiques, de la relaxation, des thérapies comportementales cognitives, des conseils ergonomiques, des massages, de l'électrothérapie, etc. Ils se font souvent en hospitalisation de 3 à 6 semaines, avec intervention d'un kinésithérapeute, du médecin rééducateur, du psychiatre, de l'assistante sociale, de l'ergothérapeute, etc ; C'est une prise en charge globale dépassant la seule rééducation fonctionnelle et dont la finalité est la réinsertion sociale et professionnelles (reprise du travail) voire la réinsertion familiale. L'ANAES précise que les études disponibles s'adressent à des personnes différentes (lombalgies subaiguës, récidivantes, chroniques en arrêt de travail) ; ont des organisations très diverses (de 1h 2X par semaine à 6h par jour tous les jours) ; font appel à des professionnels variés ; conjuguent traitements passifs et actifs, mesures éducatives et pédagogiques, techniques comportementales et cognitives dans des proportions variables ; ont des méthodologies d'évaluation différentes (variabilité des critères) : douleur, retentissement physique et psychique, signes cliniques objectifs, conséquences sociales et économiques (retour au travail, nombre de jours d'arrêt de travail, etc.) (ANAES 2000).

Le CBO le définit comme une prise en charge par plusieurs disciplines (avec différents abords), s'accordant sur une ligne commune. En principe, la prise en charge multidisciplinaire comprend un reconditionnement physique et comportemental, dans le but de remplacer le comportement vis à vis de la douleur par un comportement normal, appelé "stresscoping" normal. Ceci est atteint par le changement des pensées bloquantes (négatives) et des attributions (CBO 2003).

According to COST B13, multidisciplinary treatment programs for CLBP were originally based on a model of operant conditioning (Fordyce et al 1973). Because chronic LBP is believed to be associated with physical deconditioning effects, an exercise component is always included. Because many patients with CLBP have problems at the work-place and are relatively young (mean age of 42 years in most studies), there has been a strong belief in so-called work hardening or conditioning exercises, and these are included in the treatment in most trials. The content of multidisciplinary treatment programs usually consists of an extensive combination of physical, vocational, and behavioural components, and the modification of medication use. Commonly, such programmes are carried out for a considerable number of hours per week, sometimes even on an inpatient basis. The content of these programmes and the way they are labelled or described varies widely. (COST B13 2004).

#### Results

Tous les guidelines et études considérés s'accordent à conclure que les programmes multidisciplinaires sont efficaces chez les patients avec chronic low back pain. Il y a d'importantes preuves montrant que les programmes multidisciplinaires favorisent le retour au travail. Contrairement aux autres guidelines, CBO 2003 restreint les conclusions positives aux patients CLBP actifs en entreprises. L'accent est mis par la littérature sur les divergences entre les programmes au sein des études. Pour ce qui concerne le type de multidisciplinary treatment programmes, those involving components such as education, active exercise programmes, behavioural treatment, relaxation exercises, and work-place visits, can improve long-term outcomes for pain, functional status and sick leave compared with other treatments for chronic low back pain. Intensive multidisciplinary bio-psycho-social rehabilitation with a functional restoration approach improves pain and function. Less intensive interventions did not show improvements in clinically relevant outcomes.

Efficacité sur les outcomes :

SBU 2000 concludes that there is strong evidence for multidisciplinary treatment.

ANAES 2000 conclut à partir de 16 études de qualité méthodologique variée, que les traitements associant, dans des proportions qui restent à définir, des exercices physiques intensifs supervisés ou non par un kinésithérapeute à une prise en charge psychologique sont plus efficaces à court et à moyen terme (Ia) sur la douleur et sur l'état fonctionnel du lombalgie chronique que des prises en charge moins intensives (grade B). Ces prises en charge semblent également favoriser la reprise du travail à court terme (grade B).

CBO 2003 a réétudié en détails les 4 études de bonne qualité sur lesquelles se base la systematic review de van Tulder 2000 et met en évidence de grandes différences entre les formes de traitements. CBO 2003 limite sa conclusion au fait que la prise en charge multidisciplinaire visant une revalidation fonctionnelle est efficace pour les patients CLBP actifs en entreprises industrielles (Niveau I basé sur la systematic review de van Tulder 2000) et recommande cette prise en charge chez les patients avec une perte de fonction importante et chez lesquels un résultat insuffisant a été obtenu par les autres traitements.

COST B 13 2004 (based on Guzman et al 2001, Schonstein et al 2003 ainsi que des RCTs complémentaires) concludes that there is strong evidence that intensive multidisciplinary biopsychosocial rehabilitation with functional restoration reduces



pain and improves function in patients with CLBP (level A) and that there is strong evidence that intensive multidisciplinary biopsychosocial interventions are effective in terms of return to work, work-readiness (level A).

Comparaison avec les autres traitements:

According to COST B13 2004, there is moderate evidence that intensive multidisciplinary biopsychosocial rehabilitation with a functional restoration approach improves pain when compared with outpatient non multidisciplinary rehabilitation or usual care (level B).

Based on the Cochrane systematic review that evaluated the effectiveness of physical conditioning programs for workers with back and neck pain in reducing time lost from work (Schonstein et al 2003), COST B13 2004 concluded that there is strong evidence that "work hardening" programs with a cognitive-behavioural component are more effective than usual care in reducing work absenteeism in workers with back pain (level A).

Types d'interventions et intensité du programme :

Le rapport du NHS centre for reviews and dissemination (2000) base ses conclusions sur une systematic review de Tulder 2000. They concluded that multidisciplinary treatment programmes, involving components such as education, active exercise programmes, behavioural treatment, relaxation exercises, and work-place visits, can improve long-term outcomes for pain, functional status and sick leave compared with other treatments for chronic low back pain. According to COST B13 2004, one high quality study of 26 patients (Rose et al 1997) shows no difference between group or individual programs.

According to COST B13 2004, the additional studies strengthen the evidence of the Cochrane reviews (Guzman et al 2001, Schonstein et al 2003) for the greater effectiveness of intensive multidisciplinary treatments compared with less intensive treatments, especially in relation to return to work or work capacity (level A). La Cochrane systematic review (Guzman 2006) confirme ces conclusions. Cette intervention concerne des adultes avec low back pain depuis plus de 3 mois. Intervention is defined as patients who had to be assessed and treated by qualified professionals according to a plan that addresses physical and at least one of psychological, or social/occupational dimensions. The reviewed trials provide evidence that intensive multidisciplinary bio-psycho-social rehabilitation with a functional restoration approach improves pain and function. Less intensive interventions did not show improvements in clinically relevant outcomes.

Conclusion

The definition of multidisciplinary programs for patients with low back pain may vary considerably between studies. Generally such programs include graded activity, physical reconditioning, "work hardening" using a behavioural approach and other more conventional approaches as back schools, traditional physiotherapy, medications...

There is strong evidence that intensive multidisciplinary biopsychosocial rehabilitation with functional restoration are more effective in reducing pain and improving function in patients with chronic low back pain than more conventional treatments alone (level A). More intensive programs seem more effective than less intensive ones, especially in terms of return to work and improvement of physical capacity (level A).

There is moderate evidence that intensive multidisciplinary biopsychosocial rehabilitation with a functional restoration approach improves pain when compared with outpatient non multidisciplinary rehabilitation or usual care (level B).

There is contradictory evidence regarding occupational outcomes of intensive multidisciplinary bio-psycho-social intervention (level C).

## 1.7. Spinal manipulation

Ce point est abordé dans les guidelines: SBU 2000, ANAES 2000, CBO 2003 (sur base de 4 SR : Assendelft 1995, Koes 1996, Van Tulder 1997 et Bronfort 1997), COST 13 2004, PRODIGY 2005 (UK BEAM trial 2004). Notre recherche complémentaire a trouvé une Cochrane systematic review (Assendelft 2006 data search 2000), ainsi qu'une systematic review d'Assendelft 2003, Bronfort 2004 (ces 3 SR incluent des RCTs de qualité méthodologique inégales allant de faibles à bonnes), Kent 2005 et Licciardone 2005 (ces 2 études n'ont pas été retenues car elles considèrent la LBP en général et pas le patient chronique), ainsi qu'un rapport HTA (HNS CRD 2000)

According to COST B13 2004, "spinal manipulation is defined as a high velocity thrust to a joint beyond its restricted range of movement. Spinal mobilization involves low-velocity, passive movements within or at the limit of joint range (Brox et al 1999, Koes et al 1996 in Cost 13 2004). Le type varie selon les études: rotational manipulation; manipulation and mobilization according to Cyriax, Kaltenborn, Lewit and Janda ; or to Maitland; or to Maigne; or to Kaltenborn, Evjen and Hamberg; rotational thrust manipulation to both sides; or in pain free direction; long-lever high-velocity thrust manipulation; Side-Lying manipulation."

Les études utilisent des techniques parfois fort différentes. In the studies, comparison are made with sham procedure; or conventional general practitioner care and analgesics; or Physical therapy and exercise; or treatments considered as ineffective (traction, corset, bed rest, home care, topical gel, no treatment, diathermy, and minimal massage; or back school.

Results

La littérature considérée s'accorde à reconnaître un effet antalgique à court terme. Le niveau de preuve reste cependant modéré en raison de la qualité des études de base. Spinal manipulative therapy had no statistically or clinically significant advantage over general practitioner care, analgesics, physical therapy, exercises or back school, AINS et ondes courtes.

Efficacité sur les outcomes

SBU 2000 concluded that there is strong evidence for spinal manipulation.

ANAES 2000 relate un effet antalgique à court terme versus placebo (3 études de faible à moyenne qualité méthodologique).

CBO 2003 conclut à des preuves modérées de l'efficacité des manipulations vertébrales (versus placebo et versus soins usuels en médecine générale), surtout à court terme (sur base de 4 SR : Assendelft 1995, Koes 1996, Van Tulder 1997 et Bronfort 1997)

According to COST B13 2004, manipulation is superior to sham manipulation for improving short term pain and function (consistent findings 4 studies of middle quality) (level B). Manipulation is superior versus treatments considered to be ineffective (such as traction, corset, topical gels) for short term pain relief and for short-term improvement of function (Assendelft et al 1994 sur base de 5 études dont 3 de bonne qualité). The pooled difference in pain intensity (on a 0-100 mm VAS) was just 4 mm (95% CI, 0-8mm) and in function on the 24-Point Roland Morris disability scale, 2.6 points (95% CI, 0.5 – 4.8). There were no significant benefits in relation to long-term pain and function.

The UK BEAM trial (cited by prodigy 2005) evaluated the additional benefit to best practice care provided by general practitioners, by exercises and/or spinal manipulation therapy. (UK BEAM trial 2004). However, participants were people with simple low back pain of at least one month duration, not CLBP.

Le rapport du NHS centre for reviews and dissemination (NHS CRD 2000) conclut that manipulation can provide short-term improvement in pain and activity levels and higher patients satisfaction. They are however contradictory results between the studies.

The Cochrane systematic review (Assendelft 2006) and the meta-analysis (Assendelft 2003) identified thirty-nine RCTs. Meta-regression models were developed for acute or chronic pain and short-term and long-term pain and function. For patients with acute low back pain, spinal manipulative therapy was superior only to sham therapy (10mm difference (95% CI 2 to 17mm) on a 100mm visual analogue scale) or therapies judged to be ineffective or harmful. Results for patients with chronic low back pain were similar. Radiation of pain, study quality, profession of manipulator, and use of manipulation alone or in combination with other therapies did not effect the results.

The systematic review of Bronfort 2004 concluded that there is moderate evidence that spinal manipulation therapy/mobilization is effective in the short term when compared with placebo (3 études de qualité faible à moyenne) or general practitioner care (1 étude de qualité moyenne), and in the long term compared with physical therapy (1 étude de qualité moyenne).

Manipulations vertébrales versus autres traitements :

The Cochrane systematic review (Assendelft 2006) and the meta-analysis (Assendelft 2003) concluded that spinal manipulative therapy had no statistically or clinically significant advantage over general practitioner care, analgesics, physical therapy, exercises or back school. COST B13 2004 has the same conclusion (based on the SR Assendelft 2004) avec un niveau de preuve A pour la comparaison with general practitioner or analgesics et B pour les autres comparaisons.

La systematic review de Bronfort 2004 concluded that there is moderate evidence that spinal manipulation therapy has an effect similar to an efficacious prescription AINS (One good quality study). L' ANAES 2000 conclut que les manipulations sont aussi efficaces que les AINS lorsque les patients font par ailleurs des exercices dans les 2 cas (1 essai contrôlé randomisé en simple aveugle non évalué) mais supérieures aux AINS seuls (1 essai randomisé prospectif non évalué pour les AINS et une étude de faible qualité pour le diclofenac).

L'ANAES 2000 rapporte des résultats contradictoires versus les ondes courtes, pour la douleur (études de qualité moyenne)

La systematic review de Bronfort 2004 concluded that there is limited evidence than spinal manipulation therapy is superior to sham spinal manipulation therapy in the short term (one poor quality study) and superior to chemonucleolysis for disc herniation in the short term (One poor quality study)

Type de manipulation

Notre recherche de littérature n'a pas mis en évidence d'articles de bonne qualité comparant les techniques de manipulation entre elles.

Safety

3 SRs focused on the safety. Elles ne traitent pas spécifiquement du CLBP; les effets sévères sont accidents vertébrobasilaires, hernie discale ou syndrome de la queue de cheval. Leur incidence est estimée entre 1 pour 2 millions de manipulations à 1 pour 400.000 Des effets mineurs et transitoires sont signalés par un patient sur 2 : inconfort local, maux de tête, fatigue et inconfort.(COST B13 2004)

## Conclusion

There is moderate evidence that spinal manipulative treatment/mobilization is more effective than no treatment to treat low back pain.

There is moderate evidence that spinal manipulative treatment is as effective as more traditional treatments such as efficacious NSAID, GP care, physical therapy, exercise and back schools to treat acute, sub acute and chronic and/or recurrent low back pain.

There is little and sometimes conflicting evidence on safety of manipulative treatment for low back pain. Minor secondary effects (headache, fatigue sensation, general transient unwellness state and/or pain enhancement) seem frequent and self limiting. Major complications (stroke due to vertebro-basilar artery dissection, herniated discs, cauda equina syndrome) seem very uncommon but potentially dramatic.

## REFERENCES ON EVALUATION AND TREATMENT OF CHRONIC LOW BACK PAIN

Abdi, S., S. Datta, et al. (2005). "Role of epidural steroids in the management of chronic spinal pain: A systematic review of effectiveness and complications." *Pain Physician* 8(1): 127-143.

Abenham L, Rossignol M, Valat JP and al. The role of activity in the therapeutic management of back pain. Report of the International Paris Task Force on Back pain. *Spine* 2000; 25: 4 suppl.

Abram SE, O'Connor TC (1996) Complications associated with epidural steroid injections. *Reg Anesth*, 21(2): 149-62.

Agence Nationale d'Accréditation et d'Evaluation en Santé. Diagnostic, prise en charge et suivi des malades atteints de lombalgie chronique. Décembre 2002. <http://www.anaes.fr>

Airaksinen O, Brox JL, Cedraschi C et al (2004). European guidelines for the management of chronic non specific low back pain. European commission, research Directorate General. [www.backpaineurope.org](http://www.backpaineurope.org) (accessed: 03/02/2005).

Alberta Heritage Foundation for Medical Research. COX-2 inhibitors (etoricoxib) for the treatment of non-malignant chronic low back pain. Alberta Heritage Foundation for Medical Research (AHFMR) 2005 (Technote TN 48): 21.

Ammendolia, C., M. S. Kerr, et al. (2005). "Back belt use for prevention of occupational low back pain: A systematic review." *Journal of Manipulative and Physiological Therapeutics* 28(2): 128-134.

ANAES. Agence Nationale d'Accréditation et d'Evaluation en Santé, Association Française pour la recherche et l'évaluation en Kinésithérapie. Prise en charge kinésithérapique du lombalgie. Conférence de consensus 13 novembre 1998. Paris : ANAES ; 1998.

Arbus L, Fajadet B, Aubert D, Morre M, Goldfinger E (1990) Activity of tetrazepam in low back pain. *Clinical Trials Journal*, 27(4): 258-67.

Assendelft WJJ, Koes BW, Knipschild PG, Bouter LM. The relation between methodological quality and conclusions in reviews of spinal manipulation. *JAMA* 1995; 274: 1942-8.

Assendelft, W. J. J., S. C. Morton, et al. (2003). "Spinal manipulative therapy for low back pain. A meta-analysis of effectiveness relative to other therapies.[see comment][summary for patients in Ann Intern Med. 2003 Jun 3;138(11):133; PMID: 12779310]." *Annals of Internal Medicine* 138(11): 871-81.

Assendelft WJ, Morton SC, Yu EI, Suttrop MJ, Shekelle PG (2004) Spinal manipulative therapy for low-back pain (Cochrane Review). In: The Cochrane Library, Issue 3. John Wiley & Sons, Ltd.: Chichester, UK.

Assendelft, WJJ, Morton, SC, Yu Emily, Y et al. Spinal manipulative therapy for low back pain. *Cochrane Database of Systematic Reviews*. 1, 2006.

Australian Safety and Efficacy Register of new Interventional Procedures-surgical (ASERNIP-S). intradiscal electrothermal therapy (IDET). ASERNIP-S; 2003. Available at <http://www.surgeons.org/asernip-s>.

Axelsson P, Johnsson R, Stromqvist B, Andreasson H (1999) External pedicular fixation of the lumbar spine: outcome evaluation by functional tests. *J Spinal Disord*, 12(2): 147-50.

Axelsson P, Johnsson R, Stromqvist B, Andreasson H (2003) Temporary external pedicular fixation versus definitive bony fusion: a prospective comparative study on pain relief and function. *Eur Spine J*, 12(1): 41-7.

Baker DJ, Pynsent PB, Fairbank J. The Oswestry Disability Index revisited: its reliability, repeatability and validity, and a comparison with the St. Thomas's disability index. In Roland Mo, Jenner JR, eds. Back pain. New approaches to rehabilitation and education. Manchester: Manchester University press; 1990;175-81.

Banken R. Agence d'Evaluation des Technologies et des Modes d'Intervention en Sante (AETMIS) Intradiscal electrothermal therapy for discogenic low back pain. 2005 (AETMIS 05-02 RE): 30.

Barendse GA, van Den Berg SG, Kessels AH, Weber WE, van Kleef M (2001) Randomized controlled trial of percutaneous intradiscal radiofrequency thermocoagulation for chronic discogenic back pain: lack of effect from a 90-second 70 C lesion. *Spine*, 26(3): 287-92.

Basmajian JV (1978) Cyclobenzaprine hydrochloride effect on skeletal muscle spasm in the lumbar region and neck: two double-blind controlled clinical and laboratory studies. *Arch Phys Med Rehabil*, 59(2): 58-63.

Bednar DA, Raducan V (1996) External spinal skeletal fixation in the management of back pain. *Clin Orthop*, (322): 131-9.

Berry H, Bloom B, Hamilton EB, Swinson DR (1982) Naproxen sodium, diflunisal, and placebo in the treatment of chronic back pain. *Ann Rheum Dis*, 41(2): 129-32.



- Birbara CA, Puopolo AD, Munoz DR, Sheldon EA, Mangione A, Bohidar NR, Geba GP (2003) Treatment of chronic low back pain with etoricoxib, a new cyclooxygenase-2 selective inhibitor: improvement in pain and disability--a randomized, placebo-controlled, 3-month trial. *J Pain*, 4(6): 307-15.
- Biyani, A., G. B. J. Andersson, et al. (2003). "Intradiscal electrothermal therapy: a treatment option in patients with internal disc disruption." *Spine* 28(15 Suppl): S8-14.
- Blue Cross Blue Shield Association. Percutaneous intradiscal radiofrequency thermocoagulation for chronic discogenic low back pain. Blue Cross Blue Shield Association (BCBS) 2004 (TEC Assessment 18(19)): 23.
- Boal, R. W. and R. G. Gillette (2004). "Central neuronal plasticity, low back pain and spinal manipulative therapy." *Journal of Manipulative & Physiological Therapeutics* 27(5): 314-26.
- Boden SD, Davis DO, Dina TS, Patronas NJ, Wiesel SW (1990) Abnormal magnetic-resonance scans of the lumbar spine in asymptomatic subjects. A prospective investigation. *J Bone Joint Surg Am*, 72(3): 403-8.
- Bombardier C, Laine L, Reicin A, Shapiro D, Burgos-Vargas R, Davis B, Day R, Ferraz MB, Hawkey CJ, Hochberg MC, Kvien TK, Schnitzer TJ (2000) Comparison of 14 upper gastrointestinal toxicity of rofecoxib and naproxen in patients with rheumatoid arthritis. VIGOR Study Group. *N Engl J Med*, 343(21): 1520-8, 2 p following 8.
- Boos N, Lander PH (1996) Clinical efficacy of imaging modalities in the diagnosis of low-back pain disorders. *Eur Spine J*, 5(1): 2-22.
- Borge JA, Leboeuf-Yde C, Lothe J (2001) Prognostic values of physical examination findings in patients with chronic low back pain treated conservatively: a systematic literature review. *J Manipulative Physiol Ther*, 24(4): 292-5.
- Boswell MV, Shah RV, Everett CR and al. Interventional techniques in the management of chronic spinal pain: evidence based practice guidelines. *Pain physician*. 2005;8:1-47.
- Bourne IHJ. Treatment of chronic back pain. Comparing corticosteroid-lignocaine injections with lignocaine alone. *Practitioner* 1984; 228: 333-8.
- Bronfort G. Efficacy of spinal manipulation and mobilization for low back pain and neck pain: A systematic review and best evidence synthesis (thesis). Amsterdam: Vrije Universiteit, 1997.
- Bronfort, G., M. Haas, et al. (2004). "Efficacy of spinal manipulation and mobilization for low back pain and neck pain: A systematic review and best evidence synthesis." *Spine Journal* 4(3): 335-356.
- Brosseau L, Milne S, Robinson V, Marchand S, Shea B, Wells G, Tugwell P (2002) Efficacy of the transcutaneous electrical nerve stimulation for the treatment of chronic low back pain: a meta-analysis. *Spine*, 27(6): 596-603.
- Brox JJ, Sorensen R, Friis A, Nygaard O, Indahl A, Keller A, Ingebrigtsen T, Eriksen HR, Holm I, Koller AK, Riise R, Reikeras O (2003) Randomized clinical trial of lumbar instrumented fusion and cognitive intervention and exercises in patients with chronic low back pain and disc degeneration. *Spine*, 28(17): 1913-21.
- Burchiel KJ, Anderson VC, Brown FD, Fessler RG, Friedman WA, Pelofsky S, Weiner RL, Oakley J, Shatin D (1996) Prospective, multicenter study of spinal cord stimulation for relief of chronic back and extremity pain. *Spine*, 21(23): 2786-94.
- Calmels, P., F. Bethoux, et al. (2005). "[Low back pain disability assessment tools]." *Annales de Readaptation et de Medecine Physique* 48(6): 288-97.
- Canadian Coordinating Office for Health Technology Assessment. Spinal manipulation for lower back pain. Canadian Coordinating Office for Health Technology Assessment (CCOHTA) 2002.
- Canadian Coordinating Office for Health Technology Assessment. Intradiscal electrothermal therapy (IDET) for the treatment of chronic, discogenic low back pain. Canadian Coordinating Office for Health Technology Assessment (CCOHTA) 2003.
- Cannon DT, Aprill CN (2000) Lumbosacral epidural steroid injections. *Arch Phys Med Rehabil*, 81(3 Suppl 1): S87-98; quiz S9-100.
- Carette S, Marcoux S, Truchon R, Grondin C, Gagnon J, Allard Y, Latulippe M (1991) A controlled trial of corticosteroid injections into facet joints for chronic low back pain. *N Engl J Med*, 325(14): 1002-7.
- Carette S, Leclaire R, Marcoux S, Morin F, Blaise GA, St-Pierre A, Truchon R, Parent F, Levesque J, Bergeron V, Montminy P, Blanchette C (1997) Epidural corticosteroid injections for sciatica due to herniated nucleus pulposus. *N Engl J Med*, 336(23): 1634-40.
- Carragee EJ, Hannibal M (2004) Diagnostic evaluation of low back pain. *Orthop Clin North Am*, 35(1): 7-16.
- Carragee EJ, Paragioudakis SJ, Khurana S (2000) 2000 Volvo Award winner in clinical studies: Lumbar high-intensity zone and discography in subjects without low back problems. *Spine*, 25(23): 2987-92.
- Carroll, D, Moore, RA, McQuay et al. Transcutaneous electrical nerve stimulation (TENS) for chronic pain. *Cochrane Database of Systematic Reviews*. 1, 2006.
- Carter, M. L. (2004). "Spinal cord stimulation in chronic pain: a review of the evidence." *Anaesthesia & Intensive Care* 32(1): 11-21.
- CBO Kwaliteitsinstituut voor de gezondheidszorg. Aspecifieke lage rugklachten. Richtlijn. 2003. <http://www.cbo.nl>
- Cherkin DC, Wheeler KJ, Barlow WV, Deyo RA (1998) Medication use for low back pain in primary care. *Spine*, 23(5): 607-14
- Cherkin DC, Eisenberg D, Sherman KJ, Barlow WV, Kaptchuk TJ, Street J, Deyo RA (2001) Randomized trial comparing traditional Chinese medical acupuncture, therapeutic massage, and self-care education for chronic low back pain. *Arch Intern Med*, 161(8): 1081-8.
- Chopra, P., H. S. Smith, et al. (2005). "Role of adhesiolysis in the management of chronic spinal pain: A systematic review of effectiveness and complications." *Pain Physician* 8(1): 87-100.

- Chrubasik S, Junck H, Breitschwerdt H and al. Effectiveness of harpagophytum extract WS 1531 in the treatment of exacerbations of low back pain: a randomized, placebo-controlled, double blind study. *Eur J Anaesthesiol* 1999; 16: 118-29.
- Chrubasik S, Model A, Black A, Pollak S (2003) A randomized double-blind pilot study comparing Doloteffin and Vioxx in the treatment of low back pain. *Rheumatology (Oxford)*, 42(1): 141-8.
- Clare, H. A., R. Adams, et al. (2004). "A systematic review of efficacy of McKenzie therapy for spinal pain." *Australian Journal of Physiotherapy* 50(4): 209-216.
- Clarke JA, van Tulder, MW, Blomberg, SEI. Traction for low back pain with or without sciatica. *Cochrane Database of Systematic Reviews*, 1, 2006.
- Cohen SP, Larkin T, Abdi S, Chang A, Stojanovic M (2003) Risk factors for failure and complications of intradiscal electrothermal therapy: a pilot study. *Spine*, 28(11): 1142-7.
- Collee G, Dijkmans BA, Vandenbroucke JP, Cats A (1991) Iliac crest pain syndrome in low back pain. A double blind, randomized study of local injection therapy. *J Rheumatol*, 18(7): 1060-3.
- COST B13 Working Group. European guidelines for the management of chronic non-specific low back pain. November 2004. <http://www.backpaineurope.org>
- Davis TT, Delamarter RB, Sra P, Goldstein TB (2004) The IDET procedure for chronic discogenic low back pain. *Spine*, 29(7): 752-6.
- De Bie RA, Verhagen AP, Lenssen AF and al. Efficacy of 904nm laser therapy in the management of musculoskeletal disorder: a systematic review. *Phys Ther rev* 1998; 3: 59-72.
- Dechow E, Davies RK, Carr AJ, Thompson PW (1999) A randomized, double blind, placebo-controlled trial of sclerosing injections in patients with chronic low back pain. *Rheumatology (Oxford)*, 38(12): 1255-9.
- Delgado-Lopez, P. D., A. Rodriguez-Salazar, et al. (2005). "Role of surgery in spinal degenerative disease. Analysis of systematic reviews on surgical and conservative treatments from an evidence-based approach." *Neurocirugia* 16(2): 142-157.
- De Luca CJ (1993) Use of the surface EMG signal for performance evaluation of back muscles. *Muscle Nerve*, 16: 210-6.
- DeMoor M, Ooghe R. Clinical trial of oxometacin in low back pain and cervicobrachialgia. *Ars medici revue internationale de Therapie pratique* 1982; 37: 1509-15.
- Deville WL, van der Windt DA, Dzaferagic A, Bezemer PD, Bouter LM (2000) The test of Lasegue: systematic review of the accuracy in diagnosing herniated discs. *Spine*, 25(9): 1140-7.
- Devoize JL, Fuzeau C, Pin JC, Bonnefoy M (1993) [Chemical meningitis after intradural injection of corticosteroids. Recovery without antibiotics]. *Presse Med*, 22(18): 879.
- Deyo RA, Diehl AK (1988) Cancer as a cause of back pain: frequency, clinical presentation, and diagnostic strategies. *J Gen Intern Med*, 3(3): 230-8.
- Deyo RA. Drug therapy for back pain. Which drugs help which patients? *Spine* 1996; 21: 2840-50.
- Dolan AL, Ryan PJ, Arden NK, Stratton R, Wedley JR, Hamann W, Fogelman I, Gibson T (1996) The value of SPECT scans in identifying back pain likely to benefit from facet joint injection. *Br J Rheumatol*, 35(12): 1269-73.
- Dreyfuss P, Halbrook B, Pauza K, Joshi A, McLarty J, Bogduk N (2000) Efficacy and validity of radiofrequency neurotomy for chronic lumbar zygapophysial joint pain. *Spine*, 25(10): 1270-7.
- Elfving B, Dederich A, Nemeth G (2003) Lumbar muscle fatigue and recovery in patients with long-term low-back trouble-electromyography and health-related factors. *Clin Biomech (Bristol, Avon)*, 18(7): 619-30.
- Epstein, N. E. (2004). "Lumbar synovial cysts: A review of diagnosis, surgical management, and outcome assessment." *Journal of Spinal Disorders and Techniques* 17(4): 321-325.
- Ercelen O, Bulutcu E, Oktenoglu T, Sasani M, Bozkus H, Cetin Saryoglu A, Ozer F (2003) Radiofrequency lesioning using two different time modalities for the treatment of lumbar discogenic pain: a randomized trial. *Spine*, 28(17): 1922-7.
- Ernst E, White AR (1998) Acupuncture for back pain: a meta-analysis of randomized controlled trials. *Arch Intern Med*, 158(20): 2235-41.
- Ernst E. Massage therapy for low back pain: a systematic review. *J pain Symptom Manage* 1999; 17: 65-9.
- Fairbank J, Davies JB, Couper J et al. The Oswestry Low Back Pain Disability Questionnaire. *Physiotherapy* 1980;66:271-3.
- Fairbank JC, Frost H, Wilson-MacDonald J, Yu LM, Barker K, Collins R (2005) Randomised controlled trial to compare surgical stabilisation of the lumbar spine with an intensive rehabilitation programme for patients with chronic low back pain: the MRC spine stabilisation trial. *BMJ*, 330: doi: 10.1136/bmj.38441.620417.BF (published 23 May 2005).
- Ferreira, M. L., P. H. Ferreira, et al. (2003). "Efficacy of spinal manipulative therapy for low back pain of less than three months' duration." *Journal of Manipulative & Physiological Therapeutics* 26(9): 593-601.
- Fishbain D (2000) Evidence-based data on pain relief with antidepressants. *Ann Med*, 32(5): 305-16.
- Fishbain, D. A., B. Cole, et al. (2003). "A structured evidence-based review on the meaning of nonorganic physical signs: Waddell signs." *Pain Medicine* 4(2): 141-181.
- Fisher MA (2002) Electrophysiology of radiculopathies. *Clin Neurophysiol*, 113(3): 317-35.
- Fordyce WE, Fowler RS, Jr., Lehmann JF, Delateur BJ, Sand PL, Trieschmann RB (1973) Operant conditioning in the treatment of chronic pain. *Arch Phys Med Rehabil*, 54(9): 399-408.

Fordyce WE (1976) Behavioural methods for chronic pain and illness. Mosby, St.Louis.

Franke A, Gebauer S, Franke K, Brockow T (2000) [Acupuncture massage vs Swedish massage and individual exercise vs group exercise in low back pain sufferers--a randomized controlled clinical trial in a 2 x 2 factorial design]. *Forsch Komplementarmed Klass Naturheilkd*, 7(6): 286-93.

Fransen M, Woodward M, Norton R, Coggan C, Dawe M, Sheridan N (2002) Risk factors associated with the transition from acute to chronic occupational back pain. *Spine*, 27(1): 92-8.

French S. Centre for Clinical Effectiveness (CCE). Multidisciplinary care for chronic low back pain. 2003 (Evidence Centre Critical Appraisal): 12.

French SD, Cameron M, Walker BF and al. Superficial heat or cold for low back pain. *Cochrane Database of Systematic Reviews*. I, 2006.

Frerick H, Keitel W, Kuhn U, Schmidt S, Bredehorst A, Kuhlmann M (2003) Topical treatment of chronic low back pain with a capsicum plaster. *Pain*, 106(1-2): 59-64.

Fritzell P, Hagg O, Wessberg P, Nordwall A (2001) 2001 Volvo Award Winner in Clinical Studies: Lumbar fusion versus nonsurgical treatment for chronic low back pain: a multicenter randomized controlled trial from the Swedish Lumbar Spine Study Group. *Spine*, 26(23): 2521-32; discussion 32-4.

Fritzell P, Hagg O, Wessberg P, Nordwall A (2002) Chronic low back pain and fusion: a comparison of three surgical techniques: a prospective multicenter randomized study from the Swedish lumbar spine study group. *Spine*, 27(11): 1131-41.

Fritzell P, Hagg O, Nordwall A (2003) Complications in lumbar fusion surgery for chronic low back pain: comparison of three surgical techniques used in a prospective randomized study. A report from the Swedish Lumbar Spine Study Group. *Eur Spine J*, 12(2): 178-89.

Fritzell P, Hagg O, Jonsson D, Nordwall A (2004) Cost-effectiveness of lumbar fusion and nonsurgical treatment for chronic low back pain in the Swedish Lumbar Spine Study: a multicenter, randomized, controlled trial from the Swedish Lumbar Spine Study Group. *Spine*, 29(4): 421-34; discussion Z3.

Fryer, G., T. Morris, et al. (2004). "Paraspinal muscles and intervertebral dysfunction: part two." *Journal of Manipulative & Physiological Therapeutics* 27(5): 348-57.

Furlan AD, Brosseau L, Welch V and al. Massage for low back pain (Cochrane review). In: Cochrane Library issue 3, 2001 oxford: Update software.

Furlan AD, Brosseau L, Imamura M, Irvin E (2002) Massage for low-back pain: a systematic review within the framework of the Cochrane Collaboration Back Review Group. *Spine*, 27(17): 1896-910.

Furlan AD, van Tulder MW, Cherkin DC et al. Acupuncture and dry-needling for low back pain. *Cochrane Database of Systematic Reviews*. I, 2006.

Furlan AD, Brosseau L, Imamura M and al. Massage for low back pain. *Cochrane Database of Systematic Reviews*. I, 2006.

Gadsby JG, Flowerdew MW. Transcutaneous electrical nerve stimulation and acupuncture-like transcutaneous electrical nerve stimulation for chronic low back pain. *Cochrane Database of Systematic Reviews*. I, 2006.

Gagnier, J. J., S. Chrusasik, et al. (2004). "Harpagophytum procumbens for osteoarthritis and low back pain: A systematic review." *BMC Complementary and Alternative Medicine* 4(-): 10p.

Gajraj, N. M. (2004). "Selective nerve root blocks for low back pain and radiculopathy.[see comment]." *Regional Anesthesia & Pain Medicine* 29(3): 243-56.

Gallagher J, Pericic die Vadi PL, Wedley JR, Hamann W, Ryan P, Chikanza I, Kirkham B, Price, Watson RMS, Grahame R, Wood S (1994) Radiofrequency facet joint denervation in the treatment of low back pain: a prospective controlled doubleblind study to assess its efficacy. *Pain Clin*, 7: 193-98.

Garvey TA, Marks MR, Wiesel SW (1989) A prospective, randomized, double blind evaluation of trigger-point injection therapy for low-back pain. *Spine*, 14(9): 962-4.

Geisler FH, Blumenthal SL, Guyer RD, McAfee PC, Regan JJ, Johnson JP, Mullin B (2004) Neurological complications of lumbar artificial disc replacement and comparison of clinical results with those related to lumbar arthrodesis in the literature: results of a multicenter, prospective, randomized investigational device exemption study of Charite intervertebral disc. Invited submission from the Joint Section Meeting on Disorders of the Spine and Peripheral Nerves, March 2004. *J Neurosurg Spine*, 1(2): 143-54.

Geisser ME, Haig AJ, Wallbom AS, Wiggert EA (2004) Pain-related fear, lumbar flexion, and dynamic EMG among persons with chronic musculoskeletal low back pain. *Clin J Pain*, 20(2): 61-9.

Geisser, M. E., M. Ranavaya, et al. (2005). "A meta-analytic review of surface electromyography among persons with low back pain and normal, healthy controls." *Journal of Pain* 6(11): 711-726.

Geurts JW, van Wijk RM, Stolker RJ, Groen GJ (2001) Efficacy of radiofrequency procedures for the treatment of spinal pain: a systematic review of randomized clinical trials. *Reg Anesth Pain Med*, 26(5): 394-400.

Geurts JW, van Wijk RM, Wynne HJ, Hamink E, Buskens E, Lousberg R, Knappe JT, Groen GJ (2003) Radiofrequency lesioning of dorsal root ganglia for chronic lumbosacral radicular pain: a randomised, double-blind, controlled trial. *Lancet*, 361(9351): 21-6.

Ghoname EA, Craig WF, White PF, Ahmed HE, Hamza MA, Henderson BN, Gajraj NM, Huber PJ, Gatchel RJ (1999) Percutaneous electrical nerve stimulation for low back pain: a randomized crossover study. *Jama*, 281(9): 818-23.

Gibson JN, Grant IC, Waddell G (1999) The Cochrane review of surgery for lumbar disc prolapse and degenerative lumbar spondylosis. *Spine*, 24(17): 1820-32.

- Gibson JNA, Grant IC, Waddell G. Surgery for lumbar disc prolapse. [Cochrane Database of Systematic Reviews](#). 1, 2006.
- Gibson JNA, Waddell G. Surgery for degenerative lumbar spondylosis. [Cochrane Database of Systematic Reviews](#). 1, 2006.
- Gron P, Olerud HM, Einarsson G, Leitz W, Servomaa A, Schoultz BW, Hjärdemaal O (2000) A Nordic survey of patient doses in diagnostic radiology. *Eur Radiol*, 10(12): 1988-92.
- Grotle, M., J. I. Brox, et al. (2005). "Functional status and disability questionnaires: What do they assess? A systematic review of back-specific outcome questionnaires." *Spine* 30(1): 130-140.
- Guzman J, Esmail R, Karjalainen K, Malmivaara A, Irvin E, Bombardier C (2001) Multidisciplinary rehabilitation for chronic low back pain: systematic review. *BMJ*, 322(7301): 1511-6.
- Guzman Z, Esmail R, Karjalainen K and al. Multidisciplinary bio-psycho-social rehabilitation for chronic low back pain. [Cochrane Database of Systematic Reviews](#). 1, 2006.
- Hagg O, Fritzell P, Romberg K et al. The General function Score: a useful tool for measurement of physical disability. Validity and reliability. *Eur Spine J* 2001;10:203-10.
- Haig AJ (2002) Paraspinal denervation and the spinal degenerative cascade. *Spine J*, 2(5): 372-80.
- Hameroff SR, Crago BR, Blitt CD, Womble J, Kanel J (1981) Comparison of bupivacaine, etidocaine, and saline for trigger-point therapy. *Anesth Analg*, 60(10): 752-5.
- Harte, A. A., G. D. Baxter, et al. (2003). "The efficacy of traction for back pain: a systematic review of randomized controlled trials." [Archives of Physical Medicine & Rehabilitation](#) 84(10): 1542-53.
- Hayden, J. A., M. W. van Tulder, et al. (2005). "Meta-analysis: exercise therapy for nonspecific low back pain.[summary for patients in Ann Intern Med. 2005 May 3;142(9):171; PMID: 15867402]." [Annals of Internal Medicine](#) 142(9): 765-75.
- Hayden, J. A., M. W. Van Tulder, et al. (2005). "Systematic review: Strategies for using exercise therapy to improve outcomes in chronic low back pain." [Annals of Internal Medicine](#) 142(9): 776-785.
- Hayden, JA, van Tulder, mw, malmivaara, A et al. Exercise therapy for treatment of non-specific low back pain. [Cochrane Database of Systematic Reviews](#). 1, 2006.
- Hernandez-Reif M, Field T, Krasnegor J, Theakston H (2001) Lower back pain is reduced and range of motion increased after massage therapy. *Int J Neurosci*, 106(3-4): 131-45.
- Health Technology Advisory Committee. Health Technology Advisory Committee (HTAC) 2001. Intradiscal electrothermal therapy (IDET) for lower back pain.
- Heavner JE, Racz GB, Raj P. percutaneous epidural nucleoplasty. Prospective evaluation of 0.9% NaCl versus 10% NaCl with or without hyaluronidase. *Reg Anesth Pain Med* 1999; 24: 202-7.
- Hestbaek L, Leboeuf-Yde C (2000) Are chiropractic tests for the lumbo-pelvic spine reliable and valid? A systematic critical literature review. *J Manipulative Physiol Ther*, 23(4): 258-75.
- Heymans MW, van Tulder, MW, Esmail R et al. Back schools for non-specific low back pain. [Cochrane Database of Systematic Reviews](#). 1, 2006.
- Hickey RFJ. Chronic low back pain. A comparison of diflunisal with paracetamol. *N Z Med J* 1982; 95: 312-4.
- Hilde G, Bø K. Effect of exercise in treatment of chronic low back pain: a systematic review, emphasizing type and dose of exercise. *Phys Ther rev* 1998; 3: 107-117.
- Hilde G, Hagen KB, Jamtvedt G et al . Advice to stay active as a single treatment for low back pain. [Cochrane Database of Systematic Reviews](#). 1, 2006.
- Hoehler FK, Tobis JS, Buerger AA (1981) Spinal manipulation for low back pain. *Jama*, 245(18): 1835-8.
- Hoogendoorn WE, van Poppel MN, Bongers PM, Koes BW, Bouter LM (2000) Systematic review of psychosocial factors at work and private life as risk factors for back pain. *Spine*, 25(16): 2114-25.
- Hooten, W. M., D. P. Martin, et al. (2005). "Radiofrequency neurotomy for low back pain: evidence-based procedural guidelines.[see comment]." *Pain Medicine* 6(2): 129-38.
- Hsieh CY, Phillips RB, Adams AH, Pope MH (1992) Functional outcomes of low back pain: comparison of four treatment groups in a randomized controlled trial. *J Manipulative Physiol Ther*, 15(1): 4-9.
- Hsieh RL, Lee WC (2002) One-shot percutaneous electrical nerve stimulation vs.transcutaneous electrical nerve stimulation for low back pain: comparison of therapeutic effects. *Am J Phys Med Rehabil*, 81(11): 838-43.
- Hsieh LL, Kuo CH, Yen MF, Chen TH (2004) A randomized controlled clinical trial for low back pain treated by acupressure and physical therapy. *Prev Med*, 39(1):168-76.
- Hudson-Cook N. A revisited Oswestry disability questionnaire. In Roland Mo, Jenner JR, eds. Back pain. New approaches to rehabilitation and education. Manchester: Manchester University press; 1990;187-204.
- Hunt DG, Zuberbier OA, Kozlowski AJ, Berkowitz J, Schultz IZ, Milner RA, Crook JM, Turk DC (2002) Are components of a comprehensive medical assessment predictive of work disability after an episode of occupational low back trouble? *Spine*, 27(23): 2715-9.
- Hunter J (2001) Medical history and chronic pain. *Clin J Pain*, 17(4 Suppl): S20-5.

Hollingworth W, Gray DT, Martin BI, Sullivan SD, Deyo RA, Jarvik JG (2003) Rapid magnetic resonance imaging for diagnosing cancer-related low back pain. *J Gen Intern Med*, 18(4): 303-12.

Institute for Clinical systems improvement (ICSI), Dick J, Folkert K, Stuckley M and al. Intradiscal electrothermal therapy (IDET) for low back pain. Bloomfield, MN: ICSI;2002. (Technology Assessment, vol 62.). Available at <http://www.icsi.org>.

Institute for Clinical Systems Improvement. Fluoroscopically guided transforaminal epidural steroid injections for lumbar radicular pain. Institute for Clinical Systems Improvement (ICSI) 2004 (Technology Assessment Report).

Institute for Clinical Systems Improvement (ICSI) Percutaneous radiofrequency ablation for facet-mediated neck and back pain. 2005 (Technology Assessment Report).

Institute for Clinical systems improvement (ICSI). Thorson DC and al. Adult Low Back pain. Health Care Guideline. Institute for Clinical Systems Improvement. Eleventh edition. September 2005.

Jackson N. Centre for Clinical Effectiveness. Exercise therapy for the treatment of chronic low back pain. (CCE) 2002 (Evidence Centre Critical Appraisal): 22.

Jackson, C., N. Broadhurst, et al. (2003). "An audit of the use of epidural injections for back pain and sciatica." *Australian health review: a publication of the Australian Hospital Association* 26(1): 34-42.

Jamison RN, Raymond SA, Slawsky EA, Nedeljkovic SS, Katz NP (1998) Opioid therapy for chronic non cancer back pain. A randomized prospective study. *Spine*, 23(23): 2591-600.

Jarvik JJ, Hollingworth W, Heagerty P, Haynor DR, Deyo RA (2001) The Longitudinal Assessment of Imaging and Disability of the Back (LAIDBack) Study: baseline data. *Spine*, 26(10): 1158-66.

Jarvik JG, Deyo RA (2002) Diagnostic evaluation of low back pain with emphasis on imaging. *Ann Intern Med*, 137(7): 586-97.

Jarvik JG, Hollingworth W, Martin B, Emerson SS, Gray DT, Overman S, Robinson D, Staiger T, Wessbecher F, Sullivan SD, Kreuter W, Deyo RA (2003) Rapid magnetic resonance imaging vs radiographs for patients with low back pain: a randomized controlled trial. *Jama*, 289(21): 2810-8.

Jensen MC, Brant-Zawadzki MN, Obuchowski N, Modic MT, Malkasian D, Ross JS (1994) Magnetic resonance imaging of the lumbar spine in people without back pain. *N Engl J Med*, 331(2): 69-73.

Ju WD, Krupa DA, Walters DJ, Newman TL, Borenstein DG, Katz N, Group VC (2001) A placebo-controlled trial of rofecoxib in the treatment of chronic low back pain. *Pain Med*, 2(3): 242-3.

Kalauokalani D, Cherkin DC, Sherman KJ, Koepsell TD, Deyo RA (2001) Lessons from a trial of acupuncture and massage for low back pain: patient expectations and treatment effects. *Spine*, 26(13): 1418-24.

Kanmaz B, Collier BD, Liu Y, Uzum F, Uygur G, Akansel G, Gunes I, Krasnow AZ, Hellman RS, Isitman AT, Carrera G (1998) SPECT and three-phase planar bone scintigraphy in adult patients with chronic low back pain. *Nucl Med Commun*, 19(1): 13-21.

Kato F, Mimatsu K, Kawawami N, Ando T (1993) Changes after the intervertebral disc after discography with intradiscal injection of corticosteroids observed by magnetic resonance imaging (MRI). *J Neurol Orthop Med Surg*, 14: 210-6.

Katz N, Ju WD, Krupa DA, Sperling RS, Bozalis Rodgers D, Gertz BJ, Gimbel J, Coleman S, Fisher C, Nabizadeh S, Borenstein D (2003) Efficacy and safety of rofecoxib in patients with chronic low back pain: results from two 4-week, randomized, placebo-controlled, parallel-group, double-blind trials. *Spine*, 28(9): 851-8; discussion 9.

Keitel W, Frerick H, Kuhn U, Schmidt U, Kuhlmann M, Bredehorst A (2001) Capsicum pain plaster in chronic non-specific low back pain. *Arzneimittelforschung*, 51(11): 896-903.

Keller A, Brox JJ, Gunderson R, Holm I, Friis A, Reikeras O (2004) Trunk muscle strength, cross-sectional area, and density in patients with chronic low back pain randomized to lumbar fusion or cognitive intervention and exercises. *Spine*, 29(1): 3-8.

Kendall NAS, Linton SJ, Main CJ (1997) Guide to assessing psychosocial yellow flags in acute low back pain: risk factors for long-term disability and work loss. Accident Rehabilitation & Compensation Insurance Corporation of New Zealand and the National Health Committee.: Wellington

Kendrick D, Fielding K, Bentley E, Kerslake R, Miller P, Pringle M (2001a) Radiography of the lumbar spine in primary care patients with low back pain: randomised controlled trial. *Bmj*, 322(7283): 400-5.

Kendrick D, Fielding K, Bentley E, Miller P, Kerslake R, Pringle M (2001b) The role of radiography in primary care patients with low back pain of at least 6 weeks duration: a randomised (unblinded) controlled trial. *Health Technol Assess*, 5(30): 1-69.

Kent DL, Haynor DR, Larson EB, Deyo RA (1992) Diagnosis of lumbar spinal stenosis in adults: a metaanalysis of the accuracy of CT, MR, and myelography. *AJR Am J Roentgenol*, 158(5): 1135-44.

Kent, P., D. Marks, et al. (2005). "Does clinician treatment choice improve the outcomes of manual therapy for nonspecific low back pain? A metaanalysis." *Journal of Manipulative and Physiological Therapeutics* 28(5): 312-322.

Khadilkar, A., S. Milne, et al. (2005). "Transcutaneous electrical nerve stimulation for the treatment of chronic low back pain: A systematic review." *Spine* 30(23): 2657-2666.

Khadilkar, A, Milne, S, Brosseau, I and al. Transcutaneous electrical nerve stimulation (TENS) for chronic low back pain. *Cochrane Database of Systematic Reviews*. 1, 2006.

Khot A, Bowditch M, Powell J, Sharp D (2004) The use of intradiscal steroid therapy for lumbar spinal discogenic pain: a randomized controlled trial. *Spine*, 29(8): 833-6; discussion 7.



- Kim, S. R., T. P. Stitik, et al. (2004). "Critical review of prolotherapy for osteoarthritis, low back pain, and other musculoskeletal conditions: a physiatric perspective." *American Journal of Physical Medicine & Rehabilitation* 83(5): 379-89.
- Klein RG, Eek BC. Low-energy laser treatment and exercise for chronic low back pain. Double-blind controlled trial. *Arch Phys Med Rehabil* 1990; 71: 34-7.
- Klein RG, Eek BC, DeLong WB, Mooney V (1993) A randomized double-blind trial of dextrose-glycerine-phenol injections for chronic, low back pain. *J Spinal Disord*, 6(1): 23-33.
- Koes BW, Scholten RJ, Mens JM, Bouter LM (1995) Efficacy of epidural steroid injections for low-back pain and sciatica: a systematic review of randomized clinical trials. *Pain*, 63(3): 279-88.
- Koes BW, Assendelft WJJ, van der Heijden GJM, Bouter LM. Spinal manipulation and mobilization for low-back pain: an updated systematic review of randomized clinical trials. *Spine* 1996; 21: 2860-71.
- Koes BW, Scholten RJPM, Mens JMA, Bouter LM (1999) Epidural Steroid Injections for low back and sciatica: an updated systematic review of randomized clinical trials. *Pain Digest*, 9: 241-7.
- Kole-Snijders AM, Vlaeyen JW, Goossens ME, Rutten-van Molken MP, Heuts PH, van Breukelen G, van Eek H (1999) Chronic low-back pain: what does cognitive coping skills training add to operant behavioral treatment? Results of a randomized clinical trial. *J Consult Clin Psychol*, 67(6): 931-44.
- Koninklijk Nederlands Genootschap voor Fysiotherapie (KNGF). Lage-rugpijn. Supplement bij het Nederlands Tijdschrift voor Fysiotherapie. Jaargang 115; nummer 1. 2005.
- Kopce JA, Esdaile JM, Abrahamowicz M et al. The Quebec Back Pain Disability Scale. Measurement properties. *Spine* 1995;20:341-52.
- Kool, J., R. de Bie, et al. (2004). "Exercise reduces sick leave in patients with non-acute non-specific low back pain: a meta-analysis." *Journal of Rehabilitation Medicine* 36(2): 49-62.
- Kosuda S, Kaji T, Yokoyama H, Yokokawa T, Katayama M, Iriye T, Uematsu M, Kusano S (1996) Does bone SPECT actually have lower sensitivity for detecting vertebral metastasis than MRI? *J Nucl Med*, 37(6): 975-8.
- Kotilainen E, Muittari P, Kirvelä O (1997) Intradiscal glycerol or bupivacaine in the treatment of low back pain. *Acta Neurochir (Wien)*, 139(6): 541-5.
- Kovacs FM, Abaira V, Lopez-Abente G, Pozo F (1993) [Neuro-reflexotherapy intervention in the treatment of non specified low back pain: a randomized, controlled, double-blind clinical trial]. *Med Clin (Barc)*, 101(15): 570-5.
- Kovacs FM, Abaira V, Pozo F, Kleinbaum DG, Beltran J, Mateo I, Perez de Ayala C, Pena A, Zea A, Gonzalez-Lanza M, Morillas L (1997) Local and remote sustained trigger point therapy for exacerbations of chronic low back pain. A randomized, double-blind, controlled, multicenter trial. *Spine*, 22(7): 786-97.
- Kovacs FM, Llobera J, Abaira V, Lazaro P, Pozo F, Kleinbaum D (2002) Effectiveness and cost-effectiveness analysis of neuroreflexotherapy for subacute and chronic low back pain in routine general practice: a cluster randomized, controlled trial. *Spine*, 27(11): 1149-59.
- Laslett M, Oberg B, Aprill CN and al. Zygapophysial joint blocks in chronic low back pain: a test of Revel's model as a screening test. *BMC Musculoskelet Disord* 2004;5:43.
- Lawlis GF, Cuencas R, Selby D et al. The development of the Dallas Pain Questionnaire. An assessment of the impact of spinal pain on behavior. *Spine* 1989;14:511-6.
- Leclaire R, Fortin L, Lambert R, Bergeron YM, Rossignol M (2001) Radiofrequency facet joint denervation in the treatment of low back pain: a placebocontrolled clinical trial to assess efficacy. *Spine*, 26(13): 1411-6; discussion 7.
- Lehman, G. J. (2004). "Biomechanical assessments of lumbar spinal function. How low back pain sufferers differ from normals. Implications for outcome measures research. Part I: kinematic assessments of lumbar function." *Journal of Manipulative & Physiological Therapeutics* 27(1): 57-62.
- Licciardone, J. C., A. K. Brimhall, et al. (2005). "Osteopathic manipulative treatment for low back pain: A systematic review and meta-analysis of randomized controlled trials." *BMC Musculoskeletal Disorders* 6(-).
- Lilius G, Laasonen EM, Myllynen P et al. Lumbar facet joint syndrome. A randomized clinical trial. *J Bone Joint Surg* 1989; 71B: 681-4.
- Lindstrom I, Ohlund C, Eek C, Wallin L, Peterson LE, Fordyce WE, Nachemson AL (1992) The effect of graded activity on patients with subacute low back pain: a randomized prospective clinical study with an operant-conditioning behavioral approach. *Phys Ther*, 72(4): 279-90; discussion 91-3.
- Littenberg B, Siegel A, Tosteson AN, Mead T (1995) Clinical efficacy of SPECT bone imaging for low back pain. *J Nucl Med*, 36(9): 1707-13.
- Llorca G, Larbre JP, Cedoz ME et al. Appréciation rachimétrique de la raideur par le score de mobilité rachidienne. *Ann Réadapt Méd phys* 1999 ;42 :117-24.
- Lopez A, Pichon Riviere A, Augustovski F, Garcia Marti S. Ozone therapy for the management of lumbar disc pathologies. Institute for Clinical Effectiveness and Health Policy (IECS) 2005 (Report ITB no. 21).
- Manchikanti KN, Pampati V, Bakhit C and al. Effectiveness of lumbar facet joint nerve blocks in chronic low back pain : A randomized clinical trial. *Pain Physician* 2001; 4: 101-117.
- Manchikanti KN, Pampati V, Bakhit C and al. Role of one day epidural adhesiolysis in management of chronic low back pain: A randomized clinical trial. *Pain Physician* 2001; 4: 153-66.

- Manchikhanti L, Rivera J, Pampati V and al. One day lumbar epidural adhesiolysis and hypertonic saline neurolysis in treatment of chronic low back pain: A randomized double blind trial. *Pain physician* 2004; 7: 177-86.
- Manchikhanti L, Boswell MV, Rivera JJ et al. A randomized, controlled trial of spinal endoscopic adhesiolysis in chronic refractory low back and lower extremity pain. 2005; in press.
- McQuay HJ, Moore RA, Eccleston C, Morley S, Williams AC (1997) Systematic review of outpatient services for chronic pain control. *Health Technol Assess*, 1(6): iv, 1-135.
- Maier C, Latimer J, Refshauge K. Prescription of activity for low back pain: what works? *Aust J Physiother* 1999; 45: 121-32.
- Maier C, Hildebrandt J, Klinger R, Henrich-Eberl C, Lindena G (2002) Morphine responsiveness, efficacy and tolerability in patients with chronic non-tumor associated pain - results of a double-blind placebo-controlled trial (MONTAS). *Pain*, 97(3): 223-33.
- Mallis-Gagnon, A, Furlan AD, Sandoval J et al. Spinal cord stimulation for chronic pain. *Cochrane Database of Systematic Reviews*. 1, 2006.
- Manchikhanti L, Pampati VS, Fellow B. The inability of the clinical picture to characterize pain form facet joint. *Pain Physician* 2000; 3:158-66.
- Mannion AF, Connolly B, Wood K, Dolan P (1997) The use of surface EMG power spectral analysis in the evaluation of back muscle function. *J Rehab Res Devel*, 34(4): 427-39.
- Mannion AF, Junge A, Taimela S, Muntener M, Lorenzo K, Dvorak J (2001a) Active therapy for chronic low back pain: part 3. Factors influencing self-rated disability and its change following therapy. *Spine*, 26(8): 920-9.
- Mannion AF, Taimela S, Muntener M, Dvorak J (2001b) Active therapy for chronic low back pain part 1. Effects on back muscle activation, fatigability, and strength. *Spine*, 26(8): 897-908.
- Marks RC, Houston T, Thulbourne T (1992) Facet joint injection and facet nerve block: a randomised comparison in 86 patients with chronic low back pain. *Pain*, 49(3): 325-8.
- Mason L, Moore RA, Derry S, Edwards JE, McQuay HJ (2004) Systematic review of topical capsaicin for the treatment of chronic pain. *Bmj*, 328(7446): 991.
- Matsumo S, Kaneda K, Nohara Y. Clinical evaluation of ketoprofen (Orudis) in lumbago: a double blind comparison with diclofenac sodium. *Br J Clin Pract* 1981; 35: 266.
- Maugars Y, mathis C, Berthelot JM and al. Assessment of the efficacy of sacroiliac corticosteroid injections spondyloarthropathies: a double blind study. *Br J Rheumatol* 1996; 35: 767-70.
- McCleane GJ (2001) Does Gabapentin have an analgesic effect on background, movement and referred pain? A randomised, double-blind, placebo controlled study. *Pain Clinic*, 13: 103-7.
- McIlveen B, Robertson VJ. A randomized controlled study of the outcome of hydrotherapy for subjects with low back or back and leg pain. *Physiotherapy* 1998; 84: 17-26.
- McLain, R. F., L. Kapural, et al. (2005). "Epidural steroid therapy for back and leg pain: Mechanisms of action and efficacy." *Spine Journal* 5(2): 191-201.
- McNeely, M. L., G. Torrance, et al. (2003). "A systematic review of physiotherapy for spondylolysis and spondylolisthesis." *Manual Therapy* 8(2): 80-91.
- Medical Services Advisory Committee (MSAC). Intradiscal electrothermal anuloaplasty: A treatment for patients with chronic low back pain due to annular disruption of contained herniated discs. Canberra, Australia: MSAC; 2002. Available at : <http://www.msac.gov.au>.
- Melzack R, Vetere P, Finch L (1983) Transcutaneous electrical nerve stimulation for low back pain. A comparison of TENS and massage for pain and range of motion. *Phys Ther*, 63(4): 489-93.
- Million R, Hall W, Nilsen k et al. Assessment of the progress of the back pain patient. *Spine* 1982;7:204-12.
- Milne S, Welch V, Brosseau L, Saginur M, Shea B, Tugwell P, Wells G (2001) Transcutaneous electrical nerve stimulation (TENS) for chronic low back pain. *Cochrane Database Syst Rev*, (2): CD003008.
- Mohseni-Bandpei MA, Watson MJ, Richardson B (2000) Application of surface electromyography in the assessment of low back pain: a literature review. *Physical Therapy Reviews*, 5(2): 93-105.
- Muller FO, Odendaal CL, Muller FR et al. Comparison of the efficacy and tolerability of a paracetamol/codeine fixed-dose combination with tramadol in patients with refractory chronic back pain. *Arzneim Forsch* 1998; 48: 675-9.
- National Institute for Clinical Excellence. Endoscopic division of epidural adhesions. National Institute for Clinical Excellence (NICE) 2004 (Interventional Procedure Guidance 88): 2.
- National Institute for Clinical excellence (NICE). Interventional procedures programme. Interventional procedures overview of percutaneous intradiscal electrothermal therapy for lower back pain. NICE; 2004a. Available at: <http://www.nice.org.uk>.
- Nederlands huisartsen genootschap. Aspecifieke lagerug pijn. NHG-STADAART M54. <http://nhg.artsennet.nl>
- Nelemans PJ, DeBie RA; DeVet HCW and al. Injection therapy for subacute and chronic benign low back pain. *Cochrane study*, 12 July 1999.
- Nelemans PJ, de Bie RA, de Vet HC, Sturmans F (2000) Injection therapy for subacute and chronic benign low back pain. *Cochrane Database Syst Rev*, (2): CD001824.
- Nelemans PJ, de Bie RA, de Vet HC, Sturmans F (2004) Injection therapy for subacute and chronic benign low back pain. In: *The Cochrane Library*, Issue 3. John Wiley & Sons, Ltd: Chichester, UK.

Nelemans, PJ, de Bie, RA, de Vet, HCW et al. Injection therapy for subacute and chronic low back-pain. Cochrane Database of Systematic Reviews. 1, 2006.

NHS Centre for Reviews and Dissemination. Acute and chronic low back pain. Centre for Reviews and Dissemination (CRD) 2000 (Effective Health Care 6(5)): 8.

Niemisto L, Kalso E, Malmivaara A, Seitsalo S, Hurri H (2003) Radiofrequency denervation for neck and back pain: a systematic review within the framework of the cochrane collaboration back review group. *Spine*, 28(16): 1877-88.

Niemisto L, Sarna S, Lahtinen-Suopanki T, Lindgren KA, Hurri H (2004) Predictive factors for 1-year outcome of chronic low back pain following manipulation, stabilizing exercises, and physician consultation or physician consultation alone. *J Rehabil Med*, 36(3): 104-9.

North RB, Kidd DH, Zahurah M and al. Specificity of diagnostic nerve blocks: a prospective, randomized study of sciatica due to lumbosacral spine disease. *Pain* 1996; 65: 77-85.

Oh WS, Shim JC (2004) A randomized controlled trial of radiofrequency denervation of the ramus communicans nerve for chronic discogenic low back pain. *Clin J Pain*, 20(1): 55-60.

Ongley MJ, Klein RG, Dorman TA, Eek BC, Hubert LJ (1987) A new approach to the treatment of chronic low back pain. *Lancet*, 2(8551): 143-6.

Ostelo, RWJG, van Tulder, MW, Vlayen, JWS and al. Behavioural treatment for chronic low-back pain. Cochrane Database of Systematic Reviews. 1, 2006.

Ostelo, RWJG, de Vet, HCW, Waddell, G et al. Rehabilitation after lumbar disc surgery. Cochrane Database of Systematic Reviews. 1, 2006.

Pallay R, Seger W, Adler J, Ettlinger R, Quaidoo E, Lipetz R, O'Brien K, Mucciola L, Skalky C, Petruschke R, Bohidar N, Geba G (2004) Etoricoxib reduced pain and disability and improved quality of life in patients with chronic low back pain: a 3 month, randomized, controlled trial. *Scand J Rheumatol*, 33(4): 257-66.

Pauza KJ, Howell S, Dreyfuss P, Peloza JH, Dawson K, Bogduk N (2004) A randomized, placebo-controlled trial of intradiscal electrothermal therapy for the treatment of discogenic low back pain. *Spine J*, 4(1): 27-35.

Philadelphia Panel Evidence-Based Clinical Practice Guidelines on selected Rehabilitation Interventions for Low Back pain. *Phys Ther*. 2001;81:1641-1674.

Pincus T, Burton AK, Vogel S, Field AP (2002) A systematic review of psychological factors as predictors of chronicity/disability in prospective cohorts of low back pain. *Spine*, 27(5): E109-20.

Polatin, P. B. and J. Dersh (2004). "Psychotropic medication in chronic spinal disorders." *Spine Journal* 4(4): 436-450.

Pope MH, Phillips RB, Haugh LD, Hsieh CY, MacDonald L, Haldeman S (1994) A prospective randomized three-week trial of spinal manipulation, transcutaneous muscle stimulation, massage and corset in the treatment of subacute low back pain. *Spine*, 19(22): 2571-7.

Postacchini F, Facchini M, Palieri P (1988) Efficacy of various forms of conservative treatment in low back pain: a comparative study. *Neurol Orthop*, 6: 113-6.

Pratzel HG, Alken RG, Ramm S (1996) Efficacy and tolerance of repeated oral doses of tolperisone hydrochloride in the treatment of painful reflex muscle spasm: results of a prospective placebo-controlled double-blind trial. *Pain*, 67(2-3): 417-25.

Preyde M (2000) Effectiveness of massage therapy for subacute low-back pain: a randomized controlled trial. *Cmaj*, 162(13): 1815-20.

Price c and al. Cost-effectiveness and safety of epidural steroids in the management of sciatica. *Health Technology assessment* 2005; vol 9: N° 33.

Prodigy Guidance –Back pain lower <http://www.prodigy.nhs.uk>

Pullman SL, Goodin DS, Marquezine AI, Tabbal S, Rubin M (2000) Clinical utility of surface EMG: report of the therapeutics and technology assessment subcommittee of the American Academy of Neurology. *Neurology*, 55(2): 171-7.

Rainville, J., C. Hartigan, et al. (2004). "Exercise as a treatment for chronic low back pain." *Spine Journal: Official Journal of the North American Spine Society* 4(1): 106-15.

Rankine JJ, Gill KP, Hutchinson CE, Ross ER, Williamson JB (1999) The clinical significance of the high-intensity zone on lumbar spine magnetic resonance imaging. *Spine*, 24(18): 1913-9; discussion 20.

Rebain R, Baxter GD, McDonough S (2002) A systematic review of the passive straight leg raising test as a diagnostic aid for low back pain (1989 to 2000). *Spine*, 27(17): E388-95.

Revel MR, Listrat VM, Chevalier XJ and al; Facet joint block for low back pain: identifying predictors of a good response. *Arch Phys Med Rehabil* 1992; 73: 824-8.

Revel M, Poiradeau S, Auleley GR and al. Capacity of the clinical picture to characterize low back pain relieved by facet joint anesthesia. Proposed criteria to identify patients with painful facet joints. *Spine* 1998; 23: 1972-7.

Roach KE, Brown M, Ricker E et al. The use of patient symptoms to screen for serious back problems. *J Orthop Sports Phys Ther* 1995; 21: 2-6.

Roland M, Morris R. A study of the natural history of back pain. Part 1: Development of a reliable and sensitive measure of disability in low back pain. *Spine* 1983;8:141-4.

Roman MP. A clinical evaluation of ultrasound by use of a placebo technic. *Phys Ther rev*. 1960; 40: 649-52.



- Rose MJ, Reilly JP, Pennie B, Bowen-Jones K, Stanley IM, Slade PD (1997) Chronic low back pain rehabilitation programs: a study of the optimum duration of treatment and a comparison of group and individual therapy. *Spine*, 22(19): 2246-51; discussion 52-3.
- Rozenberg S (1998) Glucocorticoid therapy in common lumbar spinal disorders. *Rev Rhum Engl Ed*, 65(11): 649-55.
- Rosenberg JM, Quint TJ, de Rosayro AM (2000) Computerized tomographic localization of clinically-guided sacroiliac joint injections. *Clin J Pain*, 16(1): 18-21.
- Ruoff GE, Rosenthal N, Jordan D, Karim R, Kamin M (2003) Tramadol/acetaminophen combination tablets for the treatment of chronic lower back pain: a multicenter, randomized, double-blind, placebo-controlled outpatient study. *Clin Ther*, 25(4): 1123-41.
- Ruta DA, Garratt AM, Leng M et al. A new approach to the measurement of quality of life: The patient generated index. *Med Care* 1994;32:1109-26.
- Saal JS (2002) General principles of diagnostic testing as related to painful lumbar spine disorders: a critical appraisal of current diagnostic techniques. *Spine*, 27(22): 2538-45; discussion 46.
- Saarto T, Wiffen PJ. Antidepressants for neuropathic pain. *Cochrane Database of Systematic Reviews*. 1, 2006.
- Salén BA, Spangfort EV, Nygren AL et al. Developing a valid and reliable measure of health outcome for patients with low back pain. *Spine* 1994; 19: 1887-96.
- Salerno SM, Browning R, Jackson JL (2002) The effect of antidepressant treatment on chronic back pain: a meta-analysis. *Arch Intern Med*, 162(1): 19-24.
- Salzmann E, Pforringer W, Paal G, Gierend M (1992) Treatment of chronic lowback syndrome with tetrazepam in a placebo controlled double-blind trial. *J Drug Dev*, 4: 219-28.
- Sanders M, Zuurmond WWA (1999) Percutaneous intraarticular lumbar facet joint denervation in the treatment of low back pain: a comparison with percutaneous extraarticular lumbar facet denervation. *Pain Clin*, 11: 329-35.
- Savage RA, Whitehouse GH, Roberts N (1997) The relationship between the magnetic resonance imaging appearance of the lumbar spine and low back pain, age and occupation in males. *Eur Spine J*, 6(2): 106-14.
- SBU. Nachemson A, Carlsson C-A, Englund L, Goosens M et al. Back and neck pain. Swedisch Council on Technology Assessment In Health Care (SBU) 2000 (Report N) 145: 417 (vol I), 389 (vol II).
- Schnitzer TJ, Gray WL, Paster RZ, Kamin M (2000) Efficacy of tramadol in treatment of chronic low back pain. *J Rheumatol*, 27(3): 772-8.
- Schnitzer, T. J., A. Ferraro, et al. (2004). "A comprehensive review of clinical trials on the efficacy and safety of drugs for the treatment of low back pain." *Journal of Pain & Symptom Management* 28(1): 72-95.
- Schonstein E, Kenny D, Keating J, Koes B, Herbert RD (2003) Physical conditioning programs for workers with back and neck pain: a cochrane systematic review. *Spine*, 28(19): E391-5.
- Schultz IZ, Crook J, Meloche GR, Berkowitz J, Milner R, Zuberbier OA, Meloche W (2004) Psychosocial factors predictive of occupational low back disability: towards development of a return-to-work model. *Pain*, 107(1-2): 77-85.
- Schultz IZ, Crook JM, Berkowitz J, Meloche GR, Milner R, Zuberbier OA, Meloche W (2002) Biopsychosocial multivariate predictive model of occupational low back disability. *Spine*, 27(23): 2720-5.
- Schwarzer AC, Aprill CN, Derby R, Fortin J, Kine G, Bogduk N (1994a) Clinical features of patients with pain stemming from the lumbar zygapophysial joints. Is the lumbar facet syndrome a clinical entity? *Spine*, 19(10): 1132-7.
- Schwarzer AC, Aprill CN, Derby R, Fortin J, Kine G, Bogduk N (1994b) The false-positive rate of uncontrolled diagnostic blocks of the lumbar zygapophysial joints. *Pain*, 58(2): 195-200.
- Schwarzer AC, Derby R, Aprill CN and al. Pain from the lumbar zygapophysial joint: A test of two models. *J Spinal Disord* 1994c; 7: 331-6.
- Schwarzer AC, Aprill CN, Derby R, Fortin J, Kine G, Bogduk N (1995a) The prevalence and clinical features of internal disc disruption in patients with chronic low back pain. *Spine*, 20(17): 1878-83.
- Schwarzer AC, Wang SC, Bogduk N, McNaught PJ, Laurent R (1995b) Prevalence and clinical features of lumbar zygapophysial joint pain: a study in an Australian population with chronic low back pain. *Ann Rheum Dis*, 54(2): 100-6.
- Schwarzer AC, Wang SC, O'Driscoll D, Harrington T, Bogduk N, Laurent R (1995c) The ability of computed tomography to identify a painful zygapophysial joint in patients with chronic low back pain. *Spine*, 20(8): 907-12.
- Seffinger MA, Najm WI, Mishra SI, Adams A, Dickerson VM, Murphy LS, Reinsch S (2004) Reliability of spinal palpation for diagnosis of back and neck pain: a systematic review of the literature. *Spine*, 29(19): E413-25.
- Sehgal, N., R. V. Shah, et al. (2005). "Diagnostic utility of facet (zygapophysial) joint injections in chronic spinal pain: A systematic review of evidence." *Pain Physician* 8(2): 211-224.
- Shah, R. V., C. R. Everett, et al. (2005). "Discography as a diagnostic test for spinal pain: A systematic and narrative review." *Pain Physician* 8(2): 187-209.
- Shaw WS, Pransky G, Fitzgerald TE (2001) Early prognosis for low back disability: intervention strategies for health care providers. *Disabil Rehabil*, 23(18): 815-28.
- Siegmeth W, Siegerer W. A comparison of the short-term effects in ibuprofen and diclofenac in spondylosis. *J Int Med Res* 1978; 6: 369-74.
- Silverstein FE, Faich G, Goldstein JL, Simon LS, Pincus T, Whelton A, Makuch R, Eisen G, Agrawal NM, Stenson WF, Burr AM, Zhao WW, Kent JD, Lefkowitz JB, Verburg KM, Geis GS (2000) Gastrointestinal toxicity with celecoxib vs nonsteroidal anti-inflammatory drugs for

osteoarthritis and rheumatoid arthritis: the CLASS study: A randomized controlled trial. Celecoxib Long-term Arthritis Safety Study. *Jama*, 284(10): 1247-55.

Simmons JW, McMillin JN, Emery SF, Kimmich SJ (1992) Intradiscal steroids. A prospective double-blind clinical trial. *Spine*, 17(6 Suppl): S172-5.

Sjogren T, Long N, Storay I, Smith J. Group hydrotherapy versus group land-based treatment for chronic low back pain. *Physiother Res Int* 1997; 2: 212-22.

Skinner BF (1953) *Science and Human Behaviour*. New York: The Macmillan Co.

Slipman, C. W., A. L. Bhat, et al. (2003). "A critical review of the evidence for the use of zygapophysial injections and radiofrequency denervation in the treatment of low back pain." *Spine Journal: Official Journal of the North American Spine Society* 3(4): 310-6.

Slipman CW, Patel RK, Botwin K, Huston C, Zhang L, Lenrow D, Garvan C (2003) Epidemiology of spine tumors presenting to musculoskeletal physiatrists. *Arch Phys Med Rehabil*, 84(4): 492-5.

Sonne M, Christensen K, Hansen SE, Jensen EM (1985) Injection of steroids and local anaesthetics as therapy for low-back pain. *Scand J Rheumatol*, 14(4): 343-5.

SSMG. Timmermans B. Les Lombalgies communes. Recommandations de Bonne Pratique. Société Scientifique de Médecine Générale. Mise à jour 27/02/01.

Staal JB, Hlobil H, Twisk JW, Smid T, Koke AJ, van Mechelen W (2004) Graded activity for low back pain in occupational health care: a randomized, controlled trial. *Ann Intern Med*, 140(2): 77-84.

Stadnik TW, Lee RR, Coen HL, Neirynck EC, Buisseret TS, Osteaux MJ (1998) Annular tears and disk herniation: prevalence and contrast enhancement on MR images in the absence of low back pain or sciatica. *Radiology*, 206(1): 49-55.

Staiger, T. O., B. Gaster, et al. (2003). "Systematic review of antidepressants in the treatment of chronic low back pain.[see comment]." *Spine* 28(22): 2540-5.

Technology Evaluation Center and Blue Cross Blue Shield Association. Percutaneous intradiscal radiofrequency thermocoagulation for chronic discogenic low back pain. Technology Evaluation Centre assessment Program 2004; 18(19):1-23. Available at <http://www.bcbs.com>.

Thomas K J, MacPherson H, Ratcliffe J, Thorpe L, Brazier J, Campbell M, et al. Longer term clinical and economic benefits of offering acupuncture care to patients with chronic low back pain. The National Coordinating Centre for Health Technology Assessment (NCCHTA) 2005: 140.

Tonkovich-Quaranta LA, Winkler SR (2000) Use of epidural corticosteroids in low back pain. *Ann Pharmacother*, 34(10): 1165-72.

Topol EJ (2004) Failing the Public Health -- Rofecoxib, Merck, and the FDA. *N Engl J Med*.

Turk DC, Flor H (1984) Etiological theories and treatments for chronic back pain. II. Psychological models and interventions. *Pain*, 19(3): 209-33.

Turner JA, Clancy S (1988) Comparison of operant behavioral and cognitive-behavioral group treatment for chronic low back pain. *J Consult Clin Psychol*, 56(2): 261-6.

Turner JA, Jensen MP (1993) Efficacy of cognitive therapy for chronic low back pain. *Pain*, 52(2): 169-77.

Turner JA (1996) Educational and behavioral interventions for back pain in primary care. *Spine*, 21(24): 2851-9.

UK BEAM Trial Team. Brealey S, Coulton S, Farrin A, Morton V, Torgerson D, Burton AK, Garratt A, Harvey E, Letley L, Martin J, Vickers M, Whyte K, Manca A, Klaber Moffett J, Russell I, Underwood M, Williams M (2004) United Kingdom back pain exercise and manipulation (UK BEAM) randomised trial: effectiveness of physical treatments for back pain in primary care. *British Medical Journal*, 329(7479):1377

Urrutia G, Burton AK, Morral A, Bonfill X, Zanoli G (2004) Neuroreflexotherapy for non-specific low-back pain. *Cochrane Database Syst Rev*, (2): CD003009.

van den Bosch MA, Hollingworth W, Kinmonth AL, Dixon AK (2004) Evidence against the use of lumbar spine radiography for low back pain. *Clin Radiol*, 59(1): 69-76.

van den Hoogen HM, Koes BW, van Eijk JT, Bouter LM (1995) On the accuracy of history, physical examination, and erythrocyte sedimentation rate in diagnosing low back pain in general practice. A criteria-based review of the literature. *Spine*, 20(3): 318-27.

van der Giesen AM, Bouter LM, Nijhuis FJ (2000) Prediction of return-to-work of low back pain patients sicklisted for 3-4 months. *Pain*, 87(3): 285-94.

van der Heijden GJ, Beurskens AJ, Koes BW, Assendelft WJ, de Vet HC, Bouter LM (1995) The efficacy of traction for back and neck pain: a systematic, blinded review of randomized clinical trial methods. *Phys Ther*, 75(2): 93-104.

Van der Heijden GJ. Gezondheidsraad. De effectiviteit van fysieke therapie; elektrotherapi, lasertherapie en ultrageluidbehandeling. Den Haag: Gezondheidsraad 1999.

van den Hoogen HM, Koes BW, van Eijk JT, Bouter LM (1995) On the accuracy of history, physical examination, and erythrocyte sedimentation rate in diagnosing low back pain in general practice. A criteria-based review of the literature. *Spine*, 20(3): 318-27.

Van Der Hulst, M., M. M. R. Vollenbroek-Hutten, et al. (2005). "A systematic review of sociodemographic, physical, and psychological predictors of multidisciplinary rehabilitation- or, back school treatment outcome in patients with chronic low back pain." *Spine* 30(7): 813-825.

van der Roer, N., M. E. J. B. Goossens, et al. (2005). "What is the most cost-effective treatment for patients with low back pain? A systematic review." *Best Practice & Research in Clinical Rheumatology* 19(4): 671-84.

- van Dieen JH, Selen LP, Cholewicki J (2003) Trunk muscle activation in low-back pain patients, an analysis of the literature. *J Electromyogr Kinesiol*, 13(4): 333-51. 84.
- van Kleef M, Barendse GA, Kessels A, Voets HM, Weber WE, de Lange S (1999) Randomized trial of radiofrequency lumbar facet denervation for chronic low back pain. *Spine*, 24(18): 1937-42.
- Van Trijffel, E., Q. Anderegg, et al. (2005). "Inter-examiner reliability of passive assessment of intervertebral motion in the cervical and lumbar spine: A systematic review." *Manual Therapy* 10(4): 256-269.
- van Tulder MW, Assendelft WJ, Koes BW, Bouter LM (1997) Spinal radiographic findings and nonspecific low back pain. A systematic review of observational studies. *Spine*, 22(4): 427-34.
- van Tulder MW, Koes BW, Bouter LM (1997) Conservative treatment of acute and chronic nonspecific low back pain. A systematic review of randomized controlled trials of the most common interventions. *Spine*, 22(18): 2128-56.
- van Tulder MW, Koes BW, Bouter LM (1997) Conservative treatment of acute and chronic nonspecific low back pain. A systematic review of randomized controlled trials of the most common interventions. *Spine*, 22(18): 2128-56.
- van Tulder MW, Koes BW, Assendelft WJ and al. The effectiveness of conservative treatment of acute and chronic low back pain. Amsterdam: EMGO Instituut, 1999.
- van Tulder MW, Cherkin DC, Berman B, Lao L, Koes BW (1999) The effectiveness of acupuncture in the management of acute and chronic low back pain. A systematic review within the framework of the Cochrane Collaboration Back Review Group. *Spine*, 24(11): 1113-23.
- van Tulder MW, Cherkin DC, Berman B, Lao L, Koes BW (1999) The effectiveness of acupuncture in the management of acute and chronic low back pain. A systematic review within the framework of the Cochrane Collaboration Back Review Group. *Spine*, 24(11): 1113-23.
- van Tulder M, Koes B, Assendelft W et al; Chronic low back pain: exercise therapy, multidisciplinary programs, NSAID's, back schools and behavioural therapy effective, traction not effective; results of systematic reviews. *Ned Tijdschr Geneesk* 2000; 144: 1489-94.
- van Tulder MW, Malmivaara A, Esmail R and Koes BW. Exercise therapy for low back pain., The Cochrane Library Oxford: updated software, 2000.
- van Tulder MW, Esmail R, Bombardier C, et al. Back schools for non-specific low back pain (Cochrane review). The Cochrane library. Oxford: Update Software, 2000.
- van Tulder MW, Ostelo R, Vlaeyen JW, Linton SJ, Morley SJ, Assendelft WJ (2000) Behavioral treatment for chronic low back pain: a systematic review within the framework of the Cochrane Back Review Group. *Spine*, 25(20): 2688-99.
- van Tulder MW, Ostelo R, Vlaeyen JW, Linton SJ, Morley SJ, Assendelft WJ (2000) Behavioral treatment for chronic low back pain. In: The Cochrane library, Issue 3, 2000. Oxford: Update Software.
- Van Tulder MW. Chronische lage rugpijn: oefentherapie, multidisciplinaire programma's, etc. *Ned Tijdschr Geneesk* 2000; 144: 1489-94.
- van Tulder MW, Ostelo R, Vlaeyen JW, Linton SJ, Morley SJ, Assendelft WJ. Behavioral treatment for chronic low back pain. A systematic review within the framework of the Cochrane Back Review Group. *Spine* 2001, 26: 270-281.
- van Tulder MW, Koes B (2003) Low back pain and sciatica: chronic. *Clin Evid*, (9).
- van Tulder MW, Malmivaara A, Esmail R, et al. (2003) Exercise therapy for low back pain., The Cochrane Library: Oxford.
- van Tulder MW, Touray T, Furlan AD, Solway S, Bouter LM (2003) Muscle relaxants for non-specific low back pain. *Cochrane Database Syst Rev*, (2): CD004252.
- van Tulder MW, Touray T, Furlan AD, Solway S, Bouter LM (2003) Muscle relaxants for nonspecific low back pain: a systematic review within the framework of the cochrane collaboration. *Spine*, 28(17): 1978-92.
- van Tulder MW, Ostelo RW, Vlaeyen JW, Linton SJ, Morley SJ, Assendelft WJ (2004) Behavioural treatment for chronic low back pain (Cochrane Review). In: The Cochrane Library, Issue 3. John Wiley & Sons, Ltd: Chichester, UK.
- van Tulder MW, Cherkin DC, Berman B, Lao L, Koes BW (2004) Acupuncture for low back pain. In The Cochrane Library, Issue 3. John Wiley & Sons, Ltd.:Chichester, UK.
- van Tulder MW, Scholten RJ, Koes BW, Deyo RA (2004) Non-steroidal anti-inflammatory drugs for low back pain. In: The Cochrane Library, Issue 3. John Wiley & Sons, Ltd: Chichester, UK.
- van Tulder, MW, Scholten, RJPM, Koes, BW and al. Non steroidal inflammatory drugs for low-back pain. [Cochrane Database of Systematic Reviews](#). 1, 2006.
- van Tulder, MW, Jellema, P, van Poppel, MNM et al. Lumbar supports for prevention and treatment of low back pain. [Cochrane Database of Systematic Reviews](#). 1, 2006.
- Videman T, Osterman K (1984) Double-blind parallel study of piroxicam versus indomethacin in the treatment of low back pain. *Ann Clin Res*, 16(3): 156-60.
- Vlaeyen JW, Kole-Snijders AM, Boeren RG, van Eek H (1995) Fear of movement/(re)injury in chronic low back pain and its relation to behavioral performance. *Pain*, 62(3): 363-72.
- Waddell G, Main CJ. Assessment of severity in low back disorders. *Spine* 1984;9:204-7.
- Waddell G (1987) 1987 Volvo award in clinical sciences. A new clinical model for the treatment of low-back pain. *Spine*, 12(7): 632-44.

- Waddell G, Sommerville D, Henderson I and al. Objective clinical evaluation of physical impairment in chronic low back pain. *Spine* 1992;17:617-28.
- Waddell G (1999) *The back pain revolution*. London, UK: Churchill Livingstone.
- Waddell G, Burton AK (2001) Occupational health guidelines for the management of low back pain at work: evidence review. *Occup Med (Lond)*, 51(2): 124-35.
- Wang 2004. Low level laser therapy. Washington State Department of Labor and Industries. Washington State Department of Labor and Industries (WSDLI) 2004: 36.
- Washington State Department of labor and Industries. Technology assessment Update-Intradiscal electrothermal Therapy (IDET). Olympia, WA: Washington State Department of labor and Industries; 2003. Available at <http://www.lni.wa.gov>.
- Watts RW, Silagy CA (1995) A meta-analysis on the efficacy of epidural corticosteroids in the treatment of sciatica. *Anaesth Intensive Care*, 23(5): 564-9.
- Weiner DK, Rudy TE, Glick RM, Boston JR, Lieber SJ, Morrow LA, Taylor S (2003) Efficacy of percutaneous electrical nerve stimulation for the treatment of chronic low back pain in older adults. *J Am Geriatr Soc*, 51(5): 599-608.
- Weishaupt D, Zanetti M, Hodler J, Boos N (1998) MR imaging of the lumbar spine: prevalence of intervertebral disk extrusion and sequestration, nerve root compression, end plate abnormalities, and osteoarthritis of the facet joints in asymptomatic volunteers. *Radiology*, 209(3): 661-6.
- Wetzel FT, McNally TA, Phillips FM (2002) Intradiscal electrothermal therapy used to manage chronic discogenic low back pain: new directions and interventions. *Spine*, 27(22): 2621-6.
- Wetzel, F. T. and R. Donelson (2003). "The role of repeated end-range/pain response assessment in the management of symptomatic lumbar discs." *Spine Journal: Official Journal of the North American Spine Society* 3(2): 146-54.
- Weyland A, Meyer G, Weyland W, Ensink FB, Haack A, Hildebrandt J (1992) Adrenal suppression following epidural corticosteroid administration for discogenic pain: influence of injection site. *Eur J Anaesthesiol*, 9: 36-7.
- Worz R, Bolten W, Heller B, Krainick JU, Pergande G (1996) [Flupirtine in comparison with chlormezanone in chronic musculoskeletal back pain. Results of a multicenter randomized double-blind study]. *Fortschr Med*, 114(35-36): 500-4.
- Yelland MJ, Del Mar C, Pirozzo S et al. Prolotherapy injections for chronic low back pain. *Cochrane Database of Systematic Reviews*. 1, 2006.

## APPENDICES OF CHAPTER V: SURVEY AMONG PHYSIOTHERAPISTS IN BELGIUM (OUTPATIENT SERVICES)

### A. DETAILED DESCRIPTION AND RESULTS OF THE SURVEY

The Belgian physiotherapy nomenclature is currently based on the type of pathology (common pathology -C list-, heavy pathology -E list-, perinatal pathology -P list-, pathology of acute FA list, and pathology of chronic FB list), the place of the rehabilitation (physiotherapist's office, hospital, patient's home, nursing home, ...), and the length of the physiotherapeutic session. This nomenclature poses several problems of administrative, access, and equity nature. First, the complexity of the nomenclature leads to an administrative overloading. Second, the imposition of a fixed and predetermined quota on the number of refundable sessions is sometimes inappropriate. Some patients need more sessions than the predetermined quota whereas other patients receive more sessions than what they need if the physiotherapist follows the entire medical prescription independently of the patient's functional status. However, when needed, wealthy patients can pay the supplementary sessions required for their recovery while less wealthy patients cannot. Ideally, a nomenclature based on the functional assessment could better share the finances out according to the actual treatment needs of the patients.

The possible adaptation of the current nomenclature requires the knowledge of the activities of physiotherapists working in ambulatory practice in Belgium. Such information is however unavailable in Belgium. Consequently, the purpose of this survey is to establish a "snapshot" of the ambulatory physiotherapeutic practice in Belgium. More specifically, the survey will deal with (1) the most frequent pathologies treated in Belgian ambulatory physiotherapy, (2) the physiotherapeutic treatment modalities applied and (3) the functional assessment tools used to determine the patient's evolution. The results of this survey will be confronted with the other parts of the project, namely, the literature review of physical therapy modalities in some common medical and musculoskeletal conditions and the literature review on functional assessment in physiotherapy.

#### 1.1. METHODOLOGY

##### 1.1.1 Population and sampling

###### *Universe of the study and sampling frame*

The universe of the study (i.e., the population of interest) concerned all ambulatory physiotherapists practising in Belgium at least one session in ambulatory care in 2004 (i.e. 15,874 physiotherapists). Ambulatory care is defined here as care that took place either at the physiotherapist's office (benefit payments of type Ia), or at the patient's home (benefit payments of type II), or at the patient's nursing home (benefit payments of type VI). In order to focus on physiotherapists having a minimum of practice in ambulatory care, the sampling frame was constituted by all physiotherapists practising in Belgium at least 1000 benefit payments per year in one of the three main ambulatory places cited above.

The exhaustive and updated database of the Institut National d'Assurance Maladie-Invalidité/Rijksinstituut voor Ziekte- en InvaliditeitsVerzekering (INAMI/RIZIV) counts 10440 physiotherapists (i.e., 66% of the universe of the study) practising in Belgium with at least 1000 benefit payments of types Ia and/or II and/or VI per year. Sampling was done by INAMI/RIZIV. Note that the 10,440 physiotherapists of the sampling frame account for 93% of all sessions billed in ambulatory care in 2004 (Source: INAMI/RIZIV). The INAMI/RIZIV information about the 10440 physiotherapists included their name, address, age, sex and linguistic role.

###### *Sampling*

We calculated that 138 respondents would be needed to estimate practices reported by 10% of the participants with a desired statistical precision of at least 5%. Given the expected low response rate, a simple random sample of 2000 physiotherapists was drawn from the sampling frame. The simple random sampling was preferred to ensure that each member of the source population would have a similar and an independent

chance to be selected in the sample. Indeed, the random property is indispensable to obtain results that are representative of the whole source population, and not merely of one part of it.

## 1.1.2 Questionnaire

### *Questionnaire development*

The design of the survey has been achieved in collaboration with two physiotherapists' associations, namely the AKRW (Association des Kinésithérapeutes de la Région de Wavre) and the WVVK (Wetenschappelijke Vereniging voor Vlaamse Kinesitherapeuten). A French first version of the questionnaire has been developed by the team of the Université catholique de Louvain and the Federal Health Care Knowledge Centre (KCE). This version has been submitted to 15 ambulatory physiotherapists of the AKRW. They were asked to fill in the questionnaire as well as a grid to assess its relevance and layout. A meeting was subsequently organised to discuss the physiotherapists' comments/suggestions. The questionnaire was then adapted and translated in Dutch. This version was submitted to ambulatory physiotherapists of the WVVK and discussed following the same procedure as described above. The French and Dutch final versions of the questionnaire are respectively presented in the appendixes 4A and 4B.

### *Nature of the collected information*

An initial page presented the purpose of the questionnaire and the guaranty that the anonymity of the respondents would be preserved. The questionnaire itself collected information of several types:

- Some demographic information of the respondents: physiotherapist's post code (to determine the Belgian province), age, sex, and date of the degree in physiotherapy and rehabilitation.
- The sessions performed by the physiotherapists during one working day (from Monday to Friday). The day was randomly imposed on each respondent to avoid that the physiotherapists choose a day with a lot of sessions or, conversely, with few sessions. Moreover, an interaction effect between days and type of pathology may be present as the Monday, Wednesday, and Friday are preferentially kept to conditions requiring a treatment 3 times a week. For each session, the following information was requested: patient's age and sex, Belgian nomenclature code of the session, and reason(s) for treatment.
- The treatment modalities applied for five common conditions requiring physical therapy as part of treatment. The following conditions were selected: acute low back pain (without radiating pain), total knee replacement, hemiplegia/hemiparesis, gait disorders in elderly people, and bronchiolitis in infants and children. These five conditions were selected as (1) they are, a priori, frequently encountered in ambulatory physiotherapy (bronchiolitis is probably less common than other conditions but was nevertheless added to include a paediatric condition), (2) they include different types of pathologies (low back pain = musculoskeletal condition / C list; total knee replacement = orthopaedic condition / FA list; hemiplegia/hemiparesis = neurological condition / E list; gait disorders in elderly people = general condition / FB list; bronchiolitis = respiratory condition / C list), and (3) they cover different age brackets (from infants and children with bronchiolitis to elderly people with gait disorders). Note that separate pages were provided for each condition. Only physiotherapists who have treated, last week, at least one patient suffering from the specified condition were asked to select among a pre-established list the treatment modalitie(s) applied for the last patient seen for this condition. The respondents had the possibility to specify the electrophysiotherapeutic modalities and other treatment modalities not included in the pre-established list. They were also asked to indicate the patient's age and sex as well as the delay between the beginning of his/her condition and the beginning of the treatment by the physiotherapist.
- The clinical tests and functional assessment tools used to determine the evolution of patients suffering from the five conditions described just above. All physiotherapists were asked to select among a pre-established list the functional tests that they are using for each specified condition. The respondents had the possibility to specify functional tests not included in the pre-established list.
- The key element on which the physiotherapists go to establish their treatment planning. The suggested responses were the medical prescription, the number of prescribed sessions, or the patient's functional status on the basis of a physiotherapeutic assessment.
- The knowledge / non-knowledge of the concepts of the International Classification of Functioning, Disability, and Health (ICF) proposed by the World Health Organization and the use / non-use of the ICF concepts in the physiotherapeutic practice (e.g., to define the objectives of the treatment or to determine the patient's evolution).



- The agreement / non-agreement of the physiotherapists to participate to another study intended to investigate the feasibility of a physiotherapeutic nomenclature based on the functional assessment. Physiotherapists that give their consent to participate to such study were asked to provide their surname, forename, address, phone number, e-mail, and the time at which they are available. This information is not considered in the present project but could be useful in the achievement of a subsequent study intended to investigate the feasibility of a physiotherapeutic nomenclature based on the functional assessment.

### *Data collection*

The questionnaire and a pre-stamped envelope were sent to the 2000 sampled physiotherapists in their own language in April 2006. Data collection was therefore obtained using a postal sending without any reminder.

### **1.1.3 Data analysis**

All information collected in the questionnaires were coded by two certified physiotherapists. Reasons for treatment were coded using two well-known international classifications, namely the International Classification of Primary Care – 2<sup>nd</sup> Edition (ICPC-2) and the International Statistical Classification of Diseases and Related Health Problems – 10<sup>th</sup> Revision (ICD-10). The data were analysed using the SigmaStat for Windows Version 3.11 computer software (Systat Software Inc.). Data analysis included descriptive statistics, tests of comparison of means (Mann-Whitney Rank Sum tests), and tests of comparison of frequencies/rates/proportions (Chi-Square tests and z-tests). The alpha level of significance was fixed at 0.05. Detailed statistical analyses are given in Appendix 4.C.

## **1.2. RESULTS**

### **1.2.1. Response rate and representativeness of the respondents**

A total of 367 completed questionnaires were returned leading to a response rate of 18%. On the contrary, 1599 questionnaires were not returned, that is, a non-response rate of 80%. Finally, 34 questionnaires (i.e., 2%) were returned but were not completed for diverse reasons: change of address ( $n = 28$ ), retired physiotherapist ( $n = 3$ ), unfit for work ( $n = 1$ ), maternity leaves ( $n = 1$ ), and in practice in another country than Belgium ( $n = 1$ ). Both non-returned questionnaires and non-completed but returned questionnaires were considered as non-respondents data. The description of respondents and non-respondents is presented in Table 4.1. No significant difference ( $p > 0.05$ ) was observed between respondents and non-respondents with regard to age, sex, linguistic role, and Belgian provinces. Figure 4.1 illustrates the distribution of physiotherapists according to Belgian provinces for both respondents and non-respondents.

Moreover, no significant difference ( $p > 0.05$ ) was observed between respondents and sampling frame (see Appendix 4.D) indicating that the respondents are similar to the sampling frame (i.e., Belgian physiotherapists having a minimum of practice in ambulatory care) with regard to age, sex, linguistic role, and geographical situation. Note that no significant difference ( $p > 0.05$ ) was observed between respondents and sample (see Appendix 4.E) nor between sampling frame and sample (see Appendix 4.F).



Table I Comparison between respondents and non-respondents

Variables	Respondents (n = 367)	Non-respondents (n = 1633)	Comparison	
			Statistic	P-value
Age (years)*	43 ± 10 (25-66)	43 ± 10 (24-82)	T = 377601	0.25
Sex**			$\chi^2 = 0.96$ , df = 1	0.33
Males	219 (60 ± 5%)	926 (57 ± 2%)		
Females	148 (40 ± 5%)	707 (43 ± 2%)		
Linguistic role**			$\chi^2 = 0.14$ , df = 1	0.71
French-speaking	153 (42 ± 5%)	661 (40 ± 2%)		
Dutch-speaking	214 (58 ± 5%)	972 (60 ± 2%)		
Province**			$\chi^2 = 4.86$ , df = 10	0.90
West-Vlaanderen	48 (13 ± 3%)	214 (13 ± 2%)		
Oost-Vlaanderen	42 (11 ± 3%)	237 (15 ± 2%)		
Antwerpen	60 (16 ± 4%)	231 (14 ± 2%)		
Limburg	27 (07 ± 3%)	129 (08 ± 1%)		
Vlaams-Brabant	40 (11 ± 3%)	180 (11 ± 2%)		
Bruxelles-Brussels	23 (06 ± 2%)	096 (06 ± 1%)		
Brabant Wallon	18 (05 ± 2%)	077 (05 ± 1%)		
Hainaut	50 (14 ± 4%)	215 (13 ± 2%)		
Namur	13 (04 ± 2%)	072 (04 ± 1%)		
Liège	35 (10 ± 3%)	147 (09 ± 1%)		
Luxembourg	11 (03 ± 2%)	035 (02 ± 1%)		
Delay since the degree (years)*	21 ± 10 (2-42)	Unavailable		

\* Mean ± SD (minimum-maximum)

\*\* Number of physiotherapists (proportion ± accuracy corresponding to the 95% confidence interval)

T = Mann-Whitney Rank Sum Test;  $\chi^2$  = Chi-Square Test; df = degree of freedom.

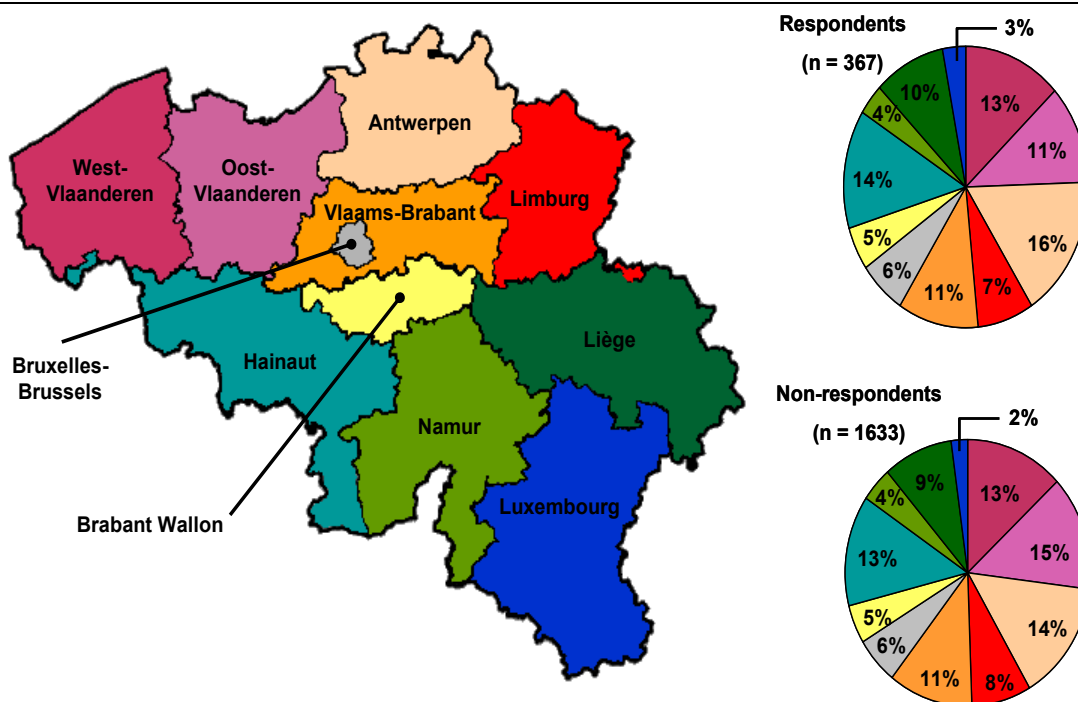


Figure 4.1 Distribution of physiotherapists according to Belgian provinces for respondents ( $n = 367$ ) and non-respondents ( $n = 1633$ ).

### 1.2.2. Pathologies treated in Belgian ambulatory physiotherapy

Pathologies treated in Belgian ambulatory physiotherapy were recorded by asking the respondents to indicate all sessions performed by them during one working day. Reason(s) for treatment (i.e., pathology/ies treated during physiotherapeutic sessions), age and sex of the patients treated during these sessions, and Belgian nomenclature code of each session were recorded. Overall, 5300 sessions were recorded in the questionnaire. However, it was not always possible to interpret the pathologies indicated by the physiotherapists because some pathologies were unreadable or too vague. As a result, only 5170 sessions were available for analysis, that is, an average of 14 sessions by respondents. The main reasons for treatment (RFT) in Belgian ambulatory physiotherapy are presented in Table 4.2.

The RFT are sorted, from top to bottom, in order of decreasing frequency. Only RFT mentioned in at least 100 out of the 5170 sessions examined in the questionnaire were considered. Eleven RFT met this requirement and represented together 48.82% of the entire set of examined sessions. Most of these RFT refer to musculoskeletal disorders (i.e., low back pain, arthrosis and polyarthrosis, cervicgia, enthesopathy and tendinitis, adhesive capsulitis of shoulder). Other common RFT include neurological (hemiplegia/hemiparesis and stroke/cerebrovascular disorders, Parkinson), orthopaedic (orthopaedic joint implants), general (gait disorders), cardiovascular (lymphoedema and edema), and respiratory (chronic obstructive pulmonary diseases) disorders. Interestingly, four of the five conditions a priori selected in the questionnaire to study treatment modalities applied by Belgian physiotherapists and functional tests used in their practice were counted among the main RFT. They represented together 21.62% of the entire set of examined sessions. Only bronchiolitis in infants and children was not included in the main RFT and explains just 0.03% ( $n = 14$ ) of the entire set of examined sessions. It is also interesting to note that the distribution of chronic obstructive pulmonary diseases (COPD) varies according to the Belgian provinces (see Appendix 4.G). Indeed, COPD are more common in Walloon area than in Flanders and Brussels, especially in the Hainaut (37% of the 137 encounters with COPD) and Liège (14% of the 137 encounters with COPD) provinces in which there were a lot of coalmines and heavy industries.

**Table 2 Main reasons for treatment in Belgian ambulatory physiotherapy**

Reason for treatment (when n ≥ 100 out of 5170 sessions)	Number	Proportion*
Hemiplegia/hemiparesis and stroke/cerebrovascular disorders	431	8.34 ± 0.75%
Low back pain	332	6.42 ± 0.67%
Presence of orthopaedic joint implants	286	5.53 ± 0.62%
Total hip replacement	134	2.59 ± 0.43%
Total knee replacement	120	2.32 ± 0.41%
Other orthopaedic joint implants	032	0.62 ± 0.21%
Arthrosis and polyarthrosis	245	4.74 ± 0.58%
Gait disorders	235	4.55 ± 0.57%
Cervicalgia	204	3.95 ± 0.53%
Lymphoedema and edema	192	3.71 ± 0.52%
Postmastectomy lymphoedema	104	2.01 ± 0.38%
Other lymphoedema and edema	088	1.70 ± 0.35%
Parkinson	174	3.37 ± 0.49%
Enthesopathy and tendinitis	169	3.27 ± 0.48%
Chronic obstructive pulmonary diseases (COPD)	137	2.65 ± 0.44%
Adhesive capsulitis of shoulder	119	2.30 ± 0.41%
Other	2646	51.18 ± 1.36%
<b>Total</b>	<b>5170</b>	<b>100 ± 0.00%</b>

\* Proportion ± accuracy corresponding to the 95% confidence interval

Pathologies treated during physiotherapeutic sessions were also classified according to two well-known classifications:

- The International Classification of Primary Care – 2<sup>nd</sup> Edition (ICPC-2) proposed by the Wonca International Classification Committee (WICC) (World Organisation of National Colleges, Academic & Academic Associations of General Practitioners / Family Physicians 1998).
- The International Statistical Classification of Diseases and Related Health Problems – 10<sup>th</sup> Revision (ICD-10) proposed by the World Health Organization (WHO) (World Health Organisation 1992).

The ICPC-2 was primarily designed for the classification of patient reasons for treatment by the primary care provider at the time of consultation. This classification is based on body systems, following the principle that localization has precedence over aetiology in primary care. Indeed, many of the conditions treated in primary care are vague, can sometimes only be diagnosed in terms of symptoms/complaints, and are not necessarily related to an underlying disease (e.g., gait disorders in elderly people). Contrary to the ICPC-2, ICD-10 has an emphasis on disease in terms of its aetiology, pathology, and morphology. The ICD-10 is the oldest and most widely recognized classification of diseases and presents the advantage of international recognition, aiding comparability of data from different countries.

### *Physiotherapeutic sessions during one working day according to the International Classification of Primary Care – 2<sup>nd</sup> Edition (ICPC-2)*

One physiotherapeutic session may be used to treat more than one condition when co-morbidity exists. In such situation, the session was divided into the number of RFT/conditions that are treated during this session if they belong to different ICPC-2 chapters. As a result, the 5170 examined sessions increased up to 5416 reasons for treatment (RFT). The number and the proportion of RFT according to each of the 17 ICPC-2 chapters are illustrated in Figure 4.2. Most of the pathologies treated in Belgium during ambulatory physiotherapeutic sessions refer to musculoskeletal ( $49.78 \pm 1.33\%$ ) and neurological ( $21.38 \pm 1.09\%$ ) disorders.

The most common RFT classified in musculoskeletal category included:

- Fracture (n = 333; 12 ± 1% of the musculoskeletal disorders)
- Low back pain (n = 332; 12 ± 1%)
- Shoulder syndrome (i.e., adhesive capsulitis of shoulder + rotator cuff syndrome + shoulder lesions; n = 240; 9 ± 1%)
- Neck symptom (i.e., cervicalgia; n = 204; 8 ± 1%)
- Spain/strain of joint (n = 177; 7 ± 1%)
- Back syndrome (i.e. lumbago with sciatica + dorsal/lumbar arthrosis + collapsed vertebra + intervertebral disc displacement; n = 174; 6 ± 1%)
- Osteoarthritis (n = 165; 6 ± 1%)
- Bursitis/tendonitis/synovitis (n = 152; 6 ± 1%)
- Neck syndrome (i.e., cervical arthrosis + cervicobrachial syndrome; n = 145; 5 ± 1%)

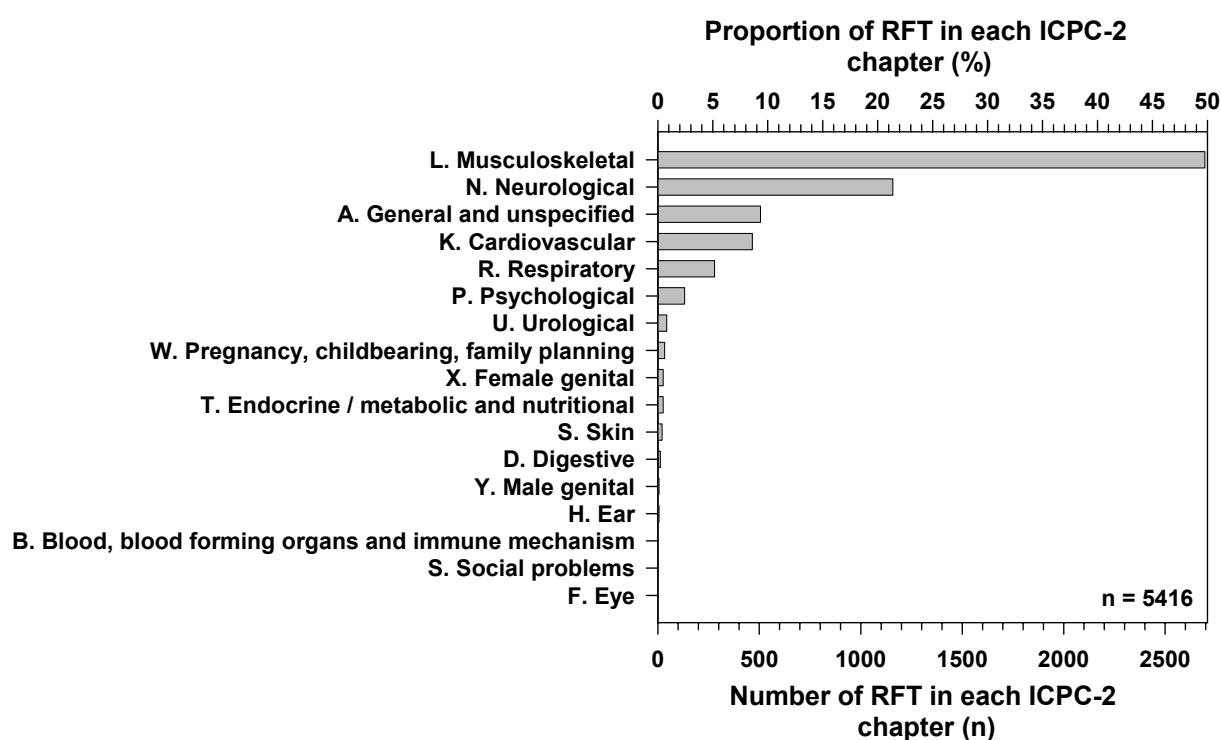


Figure 4.2 Number and proportion of reasons for treatment (RFT) according to the classification of the ICPC-2 (n = 5416).

The most common RFT classified in neurological category included:

- Neurological symptoms (i.e., gait disorders + balance disorders; n = 262; 23 ± 2% of the neurological disorders)
- Hemiplegia/hemiparesis (n = 200; 17 ± 2%)
- Parkinson (n = 174; 15 ± 2%)
- Multiple sclerosis (n = 83; 7 ± 1%)
- Peripheral neuritis/neuropathy (n = 77; 7 ± 1%)

- Cerebral palsy ( $n = 69$ ;  $6 \pm 1\%$ )

Other significant pathology categories included general and unspecified conditions ( $9.34 \pm 0.77\%$ ), cardiovascular ( $8.60 \pm 0.75\%$ ), respiratory ( $5.15 \pm 0.59\%$ ), and psychological ( $2.44 \pm 0.41\%$ ) disorders.

The most common RFT classified in “general and unspecified conditions” category was the presence of orthopaedic joints implants ( $n = 286$ ;  $57 \pm 4\%$  of the general and unspecified conditions), especially total hip ( $n = 134$ ) and total knee replacement ( $n = 120$ ).

The most common RFT classified in cardiovascular category included stroke/cerebrovascular disorders ( $n = 231$ ;  $50 \pm 5\%$  of the cardiovascular disorders) and lymphoedema/edema ( $n = 192$ ;  $41 \pm 5\%$ ; especially postmastectomy lymphoedema ( $n = 104$ )).

The most common RFT classified in respiratory category included COPD ( $n = 137$ ;  $49 \pm 6\%$  of the respiratory disorders) and bronchitis/bronchiolitis ( $n = 66$ ;  $24 \pm 5\%$ ).

Finally, the most common RFT classified in psychological category included child behaviour symptom complaint (i.e., delayed milestone ( $n = 60$ ;  $45 \pm 8\%$  of the psychological disorders), dementia ( $n = 26$ ;  $20 \pm 7\%$ ), and specific learning problems ( $n = 22$ ;  $17 \pm 6\%$ )).

Pathologies treated during ambulatory physiotherapeutic sessions, proportion of co-morbidity, and age and sex of the patients treated during these sessions are presented in Table 4.3 according to the pathology categories of the ICPC-2. Data for the less represented pathology categories (particularly, from Urological to Eye) must be interpreted with caution.

Psychological disorders present the highest level of co-morbidity indicating that it is relatively common to treat psychological disorders with other conditions (22%), especially with musculoskeletal and neurological disorders.

**Table 3 Physiotherapeutic sessions during one working day (sessions, co-morbidity, patients' characteristics)**

Reason(s) for treatment			Patients' characteristics	
ICPC-2 Chapter	Sessions*	Co-morbidity*	Age** (years)	Sex* (males)
L. Musculoskeletal	2696 (49.78 ± 1.33%)	139 (05 ± 01%)	53 ± 20 (00-101)	1011 (38 ± 02%)
N. Neurological	1158 (21.38 ± 1.09%)	127 (11 ± 02%)	64 ± 23 (00-098)	473 (41 ± 03%)
A. General and unspecified	506 (9.34 ± 0.77%)	47 (09 ± 02%)	64 ± 18 (02-101)	168 (33 ± 04%)
K. Cardiovascular	466 (8.60 ± 0.75%)	38 (08 ± 02%)	69 ± 13 (24-099)	146 (31 ± 04%)
R. Respiratory	279 (5.15 ± 0.59%)	20 (07 ± 03%)	59 ± 29 (00-099)	150 (54 ± 06%)
P. Psychological	132 (2.44 ± 0.41%)	29 (22 ± 07%)	26 ± 31 (00-094)	77 (58 ± 08%)
U. Urological	44 (0.81 ± 0.24%)	2 (05 ± 06%)	48 ± 19 (07-081)	4 (09 ± 08%)
W. Pregnancy, childbearing, family planning	34 (0.63 ± 0.21%)	1 (03 ± 06%)	31 ± 04 (25-039)	0 (00 ± 00%)
T. Endocrine / metabolic and nutritional	26 (0.48 ± 0.18%)	2 (08 ± 10%)	28 ± 25 (01-090)	12 (46 ± 19%)
X. Female genital	26 (0.48 ± 0.18%)	2 (08 ± 10%)	53 ± 17 (21-092)	0 (00 ± 00%)
S. Skin	21 (0.39 ± 0.17%)	3 (14 ± 15%)	45 ± 25 (02-083)	9 (43 ± 21%)
D. Digestive	12 (0.22 ± 0.12%)	4 (33 ± 27%)	49 ± 23 (18-083)	6 (50 ± 28%)
H. Ear	6 (0.11 ± 0.09%)	1 (17 ± 30%)	50 ± 26 (04-079)	3 (50 ± 40%)
Y. Male genital	6 (0.11 ± 0.09%)	0 (00 ± 00%)	65 ± 07 (53-070)	6 (100 ± 00%)
B. Blood, blood forming organs and immune mechanism	3 (0.06 ± 0.07%)	1 (33 ± 53%)	54 ± 43 (04-083)	2 (67 ± 53%)
Z. Social problems	1 (0.02 ± 0.04%)	0 (00 ± 00%)	91 ± 00 (91-091)	1 (100 ± 00%)
F. Eye	0 (0.00 ± 0.00%)	-	-	-
<b>Total</b>	<b>5416 (100 ± 0.00%)</b>	<b>416 (08 ± 00%)</b>	<b>57 ± 23 (00-101)</b>	<b>1968 (36 ± 00%)</b>

\* Number (proportion ± accuracy corresponding to the 95% confidence interval)

\*\* Mean ± SD (minimum - maximum)

On average, the oldest people are treated by ambulatory physiotherapists for cardiovascular (mean age: 69 years; high prevalence of stroke/cardiovascular disorders), male genital (mean age: 65 years; high prevalence of prostatectomy), and neurological (mean age: 64 years; high prevalence of gait disorders, hemiplegia/hemiparesis, and Parkinson) disorders as well as for general and unspecified conditions (mean age: 64 years; high prevalence of orthopaedic joint implants). On the contrary, youngest people are treated for psychological (mean age: 26 years; high prevalence of delayed milestone and learning problems), endocrine/metabolic/nutritional (mean age: 28 years; high prevalence of cystic fibrosis), and pregnancy/childbearing/family planning (mean age: 31 years) conditions.

A very high prevalence of females is logically observed in pregnancy/childbearing/family planning, female genital, and urological (higher prevalence of urinary incontinence) conditions while, of course, male genital category concerns exclusively males. A higher prevalence of females is also found in the pathology categories that mainly affect older people presumably due to the higher life expectancy of females.

Information that results from Belgian nomenclature codes (i.e., place of the rehabilitation, length of the session, type of pathology treated, and fee cost of the session) is presented in Appendix 4.H.

Pathology categories primarily treated in physiotherapists' office are musculoskeletal, psychological, urological, and pregnancy/childbearing/family planning conditions. Neurological and respiratory disorders are more frequently treated in patients' home.

Overall, the mean length of a session is  $29 \pm 4$  minutes. Thirty minutes are the most frequent length observed in the questionnaire. Almost no sessions were allocated for consultative examination and written report (see Section 4.2.2.3).

A high prevalence of common pathologies is observed in musculoskeletal and urological disorders. Heavy pathologies are generally encountered in neurological (high prevalence of hemiplegia/hemiparesis, Parkinson, multiple sclerosis, and cerebral palsy) and cardiovascular (high prevalence of stroke/cardiovascular diseases) disorders. Perinatal pathologies logically concern pregnancy/childbearing/family planning conditions. Pathologies of acute FA list are frequent in general and unspecified conditions (high prevalence of orthopaedic joint implants) and, to a lesser extent, in musculoskeletal disorders (due to the prevalence of fractures, sprain/strain of knee, internal derangement of knee, and rotator cuff syndrome). Pathologies of chronic FB list are mainly encountered in psychological conditions (high prevalence of learning problems and delayed milestone) and, to a lesser extent, in neurological disorders (high prevalence of gait disorders).

Finally, fee cost for a session is on average equivalent to  $16.72 \pm 3.12$  euros; 18.00 euros being the most frequent fee cost observed in the questionnaire.

### *Physiotherapeutic Statistical Classification of Diseases and Related Health Problems – 10<sup>th</sup> Revision (ICD-10)*

As formulated in the previous section, one physiotherapeutic session may be used to treat more than one condition when co-morbidity exists. In such situation, the session was divided into the number of RFT/conditions that are treated during this session if they belong to different ICD-10 chapters. As a result, the 5170 examined sessions increased up to 5449 reasons for treatment. The number and the proportion of RFT according to each of the 21 ICD-10 chapters are illustrated in Figure 4.3. Most of the pathologies treated in Belgium during ambulatory physiotherapeutic sessions refer to diseases of the musculoskeletal system and connective tissue ( $37.62 \pm 1.29\%$ ), diseases of the nervous system ( $15.34 \pm 0.96\%$ ), and injury, poisoning and certain other consequences of external causes ( $12.48 \pm 0.88\%$ ).

The most common RFT classified in diseases of the musculoskeletal system and connective tissue included:

- Low back pain (n = 332;  $16 \pm 2\%$  of the musculoskeletal diseases)
- Arthrosis/polyarthrosis (n = 245;  $12 \pm 2\%$ )
- Cervicalgia (n = 204;  $10 \pm 1\%$ )
- Enthesopathy/tendinitis (n = 169;  $8 \pm 1\%$ )
- Adhesive capsulitis of shoulder (n = 119;  $6 \pm 1\%$ )
- Internal derangement of knee (n = 99;  $5 \pm 1\%$ )
- Dorsalgia (n = 95;  $5 \pm 1\%$ )

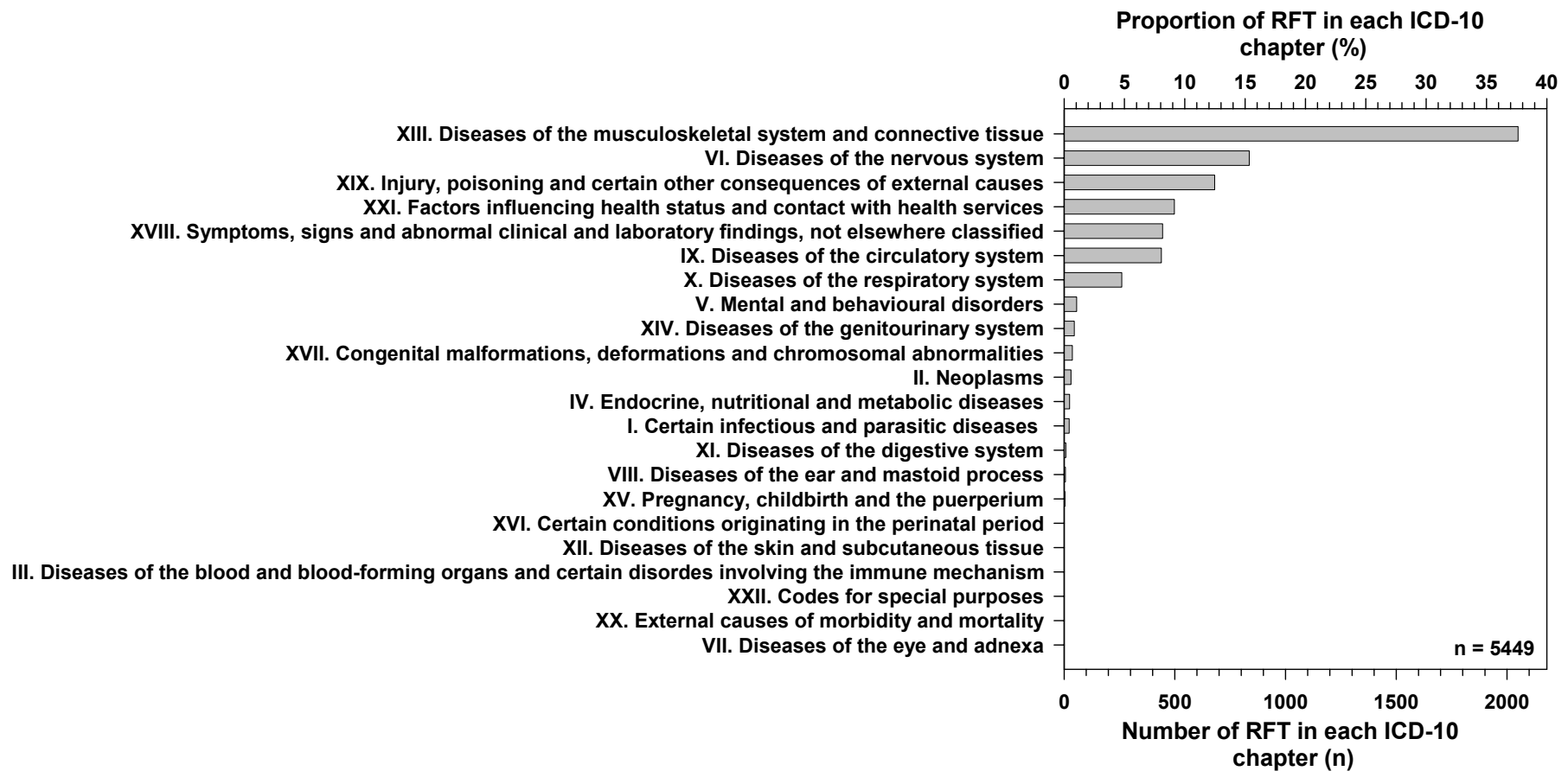


Figure 4.3 Number and proportion of reasons for treatment (RFT) according to the classification of the ICD-10 (n = 5449).



The most common RFT classified in diseases of the nervous system included:

- Hemiplegia/hemiparesis (n = 200; 24 ± 3% of the neurological diseases)
- Parkinson (n = 174; 21 ± 3%)
- Multiple sclerosis (n = 83; 10 ± 2%)
- Cerebral palsy (n = 69; 8 ± 2%)

The most common RFT classified in injury, poisoning and certain other consequences of external causes included:

- Sprain/strain of ankle (n = 58; 9 ± 2% of the injuries)
- Spain/strain involving anterior or posterior cruciate ligament of knee (n = 55; 8 ± 2%)
- Fracture of humerus (n = 52; 8 ± 2%)
- Fracture of femur (n = 52; 8 ± 2%)

Other significant pathology categories included factors influencing health status and contact with health services (9.34 ± 0.77%), symptoms/signs/abnormal clinical and laboratory findings not elsewhere classified (8.60 ± 0.74%), diseases of the circulatory system (5.15 ± 0.59%), and diseases of the respiratory system (4.77 ± 0.57%).

The most common RFT classified in “factors influencing health status and contact with health services” category was the presence of orthopaedic joints implants (n = 286; 57 ± 4% of the pathology category), especially total hip (n = 134) and total knee replacement (n = 120).

The most common RFT classified in “symptoms/signs/abnormal clinical and laboratory findings not elsewhere classified” category included gait disorders (n = 235; 53 ± 5% of the pathology category), delayed milestone (n = 60; 13 ± 3%), and balance disorders (n = 44; 10 ± 3%).

The most common RFT classified in diseases of the circulatory system included stroke/cerebrovascular disorders (n = 231; 53 ± 5% of the circulatory diseases) and lymphoedema (n = 164; 37 ± 5%; especially postmastectomy lymphoedema (n = 104)).

The most common RFT classified in diseases of the respiratory system included COPD (n = 137; 53 ± 6% of the respiratory disorders) and bronchitis/bronchiolitis (n = 66; 25 ± 5%).

Pathologies treated during ambulatory physiotherapeutic sessions, proportion of co-morbidity, and age and sex of the patients treated during these sessions are presented in Table 4.4 according to the pathology categories of the ICD-10. Data for the less represented pathology categories (particularly, from Mental/behavioural disorders to Codes for special purposes) must be interpreted with caution.

The “symptoms/signs/abnormal clinical and laboratory findings not elsewhere classified” category and mental/behavioural disorders present the highest levels of co-morbidity indicating that it is relatively common to treat them with other conditions (32% and 23%, respectively). Note that gait disorders (i.e., “symptoms/signs/abnormal clinical and laboratory findings not elsewhere classified” category) are mainly combined with diseases of the musculoskeletal system and connective tissue.

On average, the oldest people are treated by ambulatory physiotherapists for circulatory diseases (mean age: 70 years; high prevalence of stroke/cardiovascular disorders), factors influencing health status and contact with health services (mean age: 64 years; high prevalence of orthopaedic joints implants), symptoms/signs/abnormal clinical and laboratory findings not elsewhere classified (mean age: 63 years; high prevalence of gait disorders), respiratory diseases (mean age: 61 years; high prevalence of COPD), and neurological diseases (mean age: 60 years; high prevalence of hemiplegia/hemiparesis and Parkinson). On the contrary, youngest people are treated for mental/behavioural disorders (mean age: 27 years; high prevalence of developmental disorder of scholastic skills), congenital malformations/deformations/chromosomal abnormalities (mean age: 29 years; high prevalence of spina bifida and Down's syndrome), endocrine/nutritional/metabolic diseases, (mean age: 28 years; high prevalence of cystic fibrosis), certain conditions originating in the perinatal period and pregnancy/childbearing/puerperium disorders (mean age: 28 and 31 years, respectively).

A very high prevalence of females is logically observed in pregnancy/childbearing/puerperium and genitourinary (higher prevalence of urinary incontinence) diseases. A higher prevalence of females is generally found in all pathology categories except in respiratory diseases in which there were little more males.

Information that results from Belgian nomenclature codes is presented in Appendix 4.I.

Results similar to those of the ICPC-2 were observed when using the ICD-10. Pathology categories primarily treated in physiotherapists' office are musculoskeletal, injury, mental/behavioural, and genitourinary conditions. Neurological and respiratory disorders are more frequently treated in patients' home.

**Table 4 Physiotherapeutic sessions during one working day (sessions, co-morbidity, patients' characteristics)**

Reason(s) for treatment		Patients' characteristics		
ICD-10 Chapter	Sessions*	Co-morbidity*	Age** (years)	Sex* (males)
XIII. Diseases of the musculoskeletal system and connective tissue	2050 (37.62 ± 1.29%)	128 (06 ± 01%)	53 ± 20 (00-101)	746 (36 ± 02%)
VI. Diseases of the nervous system	836 (15.34 ± 0.96%)	57 (07 ± 02%)	60 ± 23 (00-098)	389 (47 ± 03%)
XIX. Injury, poisoning and certain other consequences of external causes	680 (12.48 ± 0.88%)	46 (07 ± 02%)	52 ± 22 (01-097)	282 (41 ± 04%)
XXI. Factors influencing health status and contact with health services	498 (9.14 ± 0.77%)	42 (08 ± 02%)	64 ± 18 (12-101)	163 (33 ± 04%)
XVIII. Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	445 (8.17 ± 0.73%)	101 (23 ± 04%)	63 ± 30 (00-098)	132 (30 ± 04%)
IX. Diseases of the circulatory system	439 (8.06 ± 0.72%)	32 (07 ± 02%)	70 ± 13 (34-099)	144 (33 ± 04%)
X. Diseases of the respiratory system	260 (4.77 ± 0.57%)	20 (08 ± 03%)	61 ± 29 (00-099)	143 (55 ± 06%)
V. Mental and behavioural disorders	57 (1.05 ± 0.27%)	18 (32 ± 12%)	27 ± 28 (02-093)	28 (49 ± 13%)
XIV. Diseases of the genitourinary system	46 (0.84 ± 0.24%)	1 (02 ± 04%)	51 ± 16 (21-092)	6 (13 ± 10%)
XVII. Congenital malformations, deformations and chromosomal abnormalities	37 (0.68 ± 0.22%)	6 (16 ± 12%)	29 ± 25 (00-096)	16 (43 ± 16%)
II. Neoplasms	31 (0.57 ± 0.20%)	5 (16 ± 13%)	61 ± 12 (36-083)	10 (32 ± 16%)
IV. Endocrine, nutritional and metabolic diseases	25 (0.46 ± 0.18%)	2 (08 ± 11%)	28 ± 25 (01-090)	11 (44 ± 19%)
I. Certain infectious and parasitic diseases	23 (0.42 ± 0.17%)	1 (04 ± 08%)	57 ± 22 (02-084)	6 (26 ± 18%)
XI. Diseases of the digestive system	8 (0.15 ± 0.10%)	4 (50 ± 35%)	43 ± 26 (18-083)	3 (38 ± 34%)
VIII. Diseases of the ear and mastoid process	6 (0.11 ± 0.09%)	1 (17 ± 30%)	50 ± 26 (04-079)	3 (50 ± 40%)
XV. Pregnancy, childbirth and the puerperium	4 (0.07 ± 0.07%)	1 (25 ± 42%)	31 ± 04 (27-036)	0 (00 ± 00%)
XVI. Certain conditions originating in the perinatal period	2 (0.04 ± 0.05%)	0 (00 ± 00%)	28 ± 37 (02-054)	0 (00 ± 00%)
III. Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	1 (0.02 ± 0.04%)	1 (100 ± 00%)	04 ± 00 (04-004)	0 (00 ± 00%)
XII. Diseases of the skin and subcutaneous tissue	1 (0.02 ± 0.04%)	0 (00 ± 00%)	30 ± 00 (30-030)	0 (00 ± 00%)
VII. Diseases of the eye and adnexa	0 (0.00 ± 0.00%)	-	-	-
XX. External causes of morbidity and mortality	0 (0.00 ± 0.00%)	-	-	-
XXII. Codes for special purposes	0 (0.00 ± 0.00%)	-	-	-
<b>Total</b>	<b>5449 (100 ± 0.00%)</b>	<b>466 (09 ± 00%)</b>	<b>57 ± 23 (00-101)</b>	<b>2382 (44 ± 00%)</b>

\* Number (proportion ± accuracy corresponding to the 95% confidence interval)

\*\* Mean ± SD (minimum - maximum)

Overall, the mean length of a session is  $29 \pm 4$  minutes. Thirty minutes are the most frequent length observed in the questionnaire. Almost no sessions were allocated for consultative examination and written report (see Section 4.2.2.3).

A high prevalence of common pathologies is observed in musculoskeletal and genitourinary diseases. Heavy pathologies are generally encountered in neurological (high prevalence of hemiplegia/hemiparesis, Parkinson, multiple sclerosis, and cerebral palsy) and circulatory (high prevalence of stroke/cardiovascular diseases) disorders. Perinatal pathologies are classified in “factors influencing health status and contact with health service” category (high prevalence of pre- and post-natal physiotherapy). Pathologies of acute FA list are frequent in injuries (high prevalence of fractures, sprain/strain of knee, internal derangement of knee, and rotator cuff syndrome) and factors influencing health status and contact with health service (high prevalence of orthopaedic joint implants). Pathologies of chronic FB list are mainly encountered in mental/behavioural diseases (high prevalence of developmental disorder of scholastic skills) and in symptoms/signs/abnormal clinical and laboratory findings not elsewhere classified” category (high prevalence of gait disorders).

Finally, fee cost for a session is on average equivalent to  $16.72 \pm 3.13$  euros; 18.00 euros being the most frequent fee cost observed in the questionnaire.

### *Validity of the results according to the INAMI/RIZIV*

The validity of the data relative to the physiotherapeutic sessions has been investigated by comparing the Belgian physiotherapeutic nomenclature codes recorded in the questionnaire ( $n = 5244$  out of the 5300 recorded sessions) with the benefits payments recorded by the INAMI/RIZIV during the year 2005 ( $n = 29,198,425$ ). Descriptive and comparative statistics are presented in Table 4.5.

In both the questionnaire and the INAMI/RIZIV data:

- physiotherapists' office is the most frequent rehabilitation place and nursing home is the least
- 30 minutes is the most common length of the physiotherapeutic sessions whereas there are very few codes allocated to written reports
- common pathologies are the most frequent pathology type while perinatal pathologies are the least
- 18 euros is the most regular fee cost and 16.17 euros is rarely asked.

**Table 5 Comparison between the nomenclature data of the survey and those of the INAMI/RIZIV (2004)**

Belgian nomenclature data	Survey* (n = 5 244)	INAMI/RIZIV* (n = 29 198 425)	Difference**	Comparison	
				Statistic	p-value
Place of the rehabilitation				$\chi^2 = 79.92$ , df = 2	< 0.001
Physiotherapist's office	3369 (64.24 ± 1.30%)	17030198 (58.33 ± 0.02%)	5.91%	z = 08.68	< 0.001
Patient's home	1530 (29.18 ± 1.23%)	9789962 (33.53 ± 0.02%)	4.35%	z = 06.66	< 0.001
Nursing home for elderly people	345 (6.58 ± 0.67%)	2378265 (8.15 ± 0.01%)	1.57%	z = 04.12	< 0.001
Length of the physiotherapeutic sessions				$\chi^2 = 107.26$ , df = 8	< 0.001
10 minutes	59 (1.13 ± 0.29%)	724720 (2.48 ± 0.01%)	1.35%	z = 06.27	< 0.001
15 minutes	31 (0.59 ± 0.21%)	289516 (0.99 ± 0.00%)	0.40%	z = 02.86	0.004
20 minutes	285 (5.43 ± 0.61%)	1609158 (5.51 ± 0.01%)	0.08%	z = 00.21	0.832
30 minutes	4828 (92.07 ± 0.73%)	26004000 (89.06 ± 0.01%)	3.01%	z = 06.96	< 0.001
60 minutes	26 (0.50 ± 0.19%)	123846 (0.42 ± 0.00%)	0.08%	z = 00.69	0.489
Second session	11 (0.21 ± 0.12%)	308105 (1.06 ± 0.00%)	0.85%	z = 05.92	< 0.001
Not related to the length notion	2 (0.04 ± 0.05%)	45134 (0.15 ± 0.00%)	0.11%	z = 01.97	0.049
Consultative examination	1 (0.02 ± 0.04%)	6861 (0.02 ± 0.00%)	0.00%	z = -00.24	0.809
Written report	1 (0.02 ± 0.04%)	87085 (0.30 ± 0.00%)	0.28%	z = 03.58	< 0.001
Type of pathology				$\chi^2 = 221.80$ , df = 4	< 0.001
C: common pathology	2170 (41.38 ± 1.33%)	11687511 (40.03 ± 0.02%)	1.35%	z = 01.99	0.047
E: heavy pathology	1488 (28.38 ± 1.22%)	10711831 (36.69 ± 0.02%)	8.31%	z = 12.47	< 0.001
P: perinatal pathology	36 (0.69 ± 0.22%)	224337 (0.77 ± 0.00%)	0.08%	z = 00.60	0.549
FA: pathology of acute FA list	1083 (20.65 ± 1.10%)	4737490 (16.23 ± 0.01%)	4.42%	z = 08.68	< 0.001
FB: pathology of chronic FB list	467 (8.91 ± 0.77%)	1837256 (6.29 ± 0.01%)	2.62%	z = 07.76	< 0.001

\* Number of nomenclature codes (proportion ± accuracy corresponding to the 95% confidence interval)

\*\* Proportion

 $\chi^2$  = Chi-Square Test; df = degree of freedom; z = z-test.

Table 5 Comparison between the nomenclature data of the survey and those of the INAMI/RIZIV (2004) (continued)

Belgian nomenclature data	Survey* (n = 5 244)	INAMI/RIZIV* (n = 29 198 425)	Difference**	Comparison	
				Statistic	p-value
Fees cost				$\chi^2 = 508.27$ , df = 10	< 0.001
05.39 €	102 (1.95 ± 0.37%)	1063906 (3.64 ± 0.01%)	1.69%	z = 06.53	< 0.001
06.74 €	43 (0.82 ± 0.24%)	599725 (2.05 ± 0.01%)	1.23%	z = 06.25	< 0.001
08.76 €	167 (3.18 ± 0.47%)	2324357 (7.96 ± 0.01%)	4.78%	z = 12.75	< 0.001
09.77 €	217 (4.14 ± 0.54%)	1060083 (3.63 ± 0.01%)	0.51%	z = 01.93	0.054
10.87 €	26 (0.50 ± 0.19%)	254276 (0.87 ± 0.00%)	0.37%	z = 02.85	0.004
16.17 €	0 (0.00 ± 0.00%)	616 (0.00 ± 0.00%)	0.00%	z = -01.17	0.242
16.66 €	541 (10.32 ± 0.82%)	3704836 (12.69 ± 0.01%)	2.37%	z = 05.14	< 0.001
17.00 €	798 (15.22 ± 0.97%)	5448304 (18.66 ± 0.01%)	3.44%	z = 06.38	< 0.001
18.00 €	3323 (63.37 ± 1.30%)	14532748 (49.77 ± 0.02%)	13.60%	z = 19.68	< 0.001
25.96 €	1 (0.02 ± 0.04%)	85728 (0.29 ± 0.00%)	0.27%	z = 03.55	< 0.001
30.32 €	26 (0.50 ± 0.19%)	123846 (0.42 ± 0.00%)	0.08%	z = 00.69	0.489

\* Number of nomenclature codes (proportion ± accuracy corresponding to the 95% confidence interval)

\*\* Proportion

$\chi^2$  = Chi-Square Test; df = degree of freedom; z = z-test.

Significant differences between questionnaire and INAMI/RIZIV data were observed for all variables of the Belgian nomenclature code. However, the differences of proportions seen between questionnaire and INAMI/RIZIV data are generally small. Overall, a difference of proportions equivalent to  $2.25 \pm 3.06\%$  was found. Codes relative to physiotherapists' office were more represented in the questionnaire to the detriment of patients' home and nursing home codes. There were also more codes referring to a session length of 30 minutes to the detriment of the other lengths. Heavy pathologies were less recorded in our questionnaire. On the contrary, acute and chronic pathologies of FA and FB lists were more represented. Finally, there were more codes relative to fee cost of 18 euros to the detriment of other costs.

### 1.2.3. Treatment modalities applied in Belgium ambulatory physiotherapy

Treatment modalities applied in Belgian ambulatory physiotherapy were recorded by asking the physiotherapists who have treated, last week, at least one patient suffering from the selected condition to indicate the treatment modality/ies applied for the last patient seen for this condition. The age and sex of this patient as well as the delay between the beginning of his/her condition and the beginning of the treatment by the physiotherapist were recorded. The respondents also had the possibility to specify the electrophysiotherapeutic modalities and other treatment modalities not included in the pre-established list (in this case, the treatment modality was labelled as "Added treatment: X", where X is the name of the treatment modality). Table 4.6 presents, for each condition selected in the questionnaire, the number and proportion of physiotherapists who have treated in the week preceding the receipt of the questionnaire at least one patient of the selected condition as well as the age and sex of the last patient seen for this condition.

**Table 6 Treatment modalities applied in Belgium ambulatory physiotherapy**

Conditions selected in the survey	Physiotherapists treating at least 1 case/week*	Patients' characteristics	
		Age (years)**	Sex***
Acute low back pain (without radiating pain)	255 (69 $\pm$ 05%)	46 $\pm$ 16 (05-092)	126 (50 $\pm$ 06%)
Total knee replacement	172 (47 $\pm$ 05%)	69 $\pm$ 10 (42-090)	045 (28 $\pm$ 07%)
Hemiplegia/hemiparesis	255 (69 $\pm$ 05%)	68 $\pm$ 16 (02-098)	142 (58 $\pm$ 06%)
Gait disorders in elderly people	266 (72 $\pm$ 05%)	81 $\pm$ 07 (62-100)	062 (25 $\pm$ 05%)
Bronchiolitis in infants and children	090 (25 $\pm$ 04%)	02 $\pm$ 03 (00-013)	047 (55 $\pm$ 11%)

\* Number of physiotherapists (proportion  $\pm$  accuracy corresponding to the 95% confidence interval)

\*\* Mean  $\pm$  SD (minimum-maximum)

\*\*\* Number of males (proportion  $\pm$  accuracy corresponding to the 95% confidence interval)

#### *Acute low back pain (without radiating pain)*

Overall, 255 physiotherapists out of the 367 respondents have treated, in the week preceding the receipt of the questionnaire, at least one patient suffering from acute low back pain without radiating pain (see Table 4.6). Distribution of patients' age, proportion of males and females, repartition of the delays between the beginning of the complaint and the beginning of the treatment by the physiotherapist, and distribution of treatment modalities are presented in Figure 4.4. Low back pain concerns all age brackets with a predominance in the adulthood. As shown in Table 4.6, the patients' mean age was  $46 \pm 16$  years (range: 5 – 92 years). The prevalence of males and females were similar. The delays between the beginning of the complaint and the beginning of the treatment by the physiotherapist were varied: immediate, 1 week, 2 weeks, 3 weeks, or over 1 month.

The most frequent treatment modalities applied by Belgian ambulatory physiotherapists to treat patients with acute low back pain were, from the most prevalent to the least: education of the patient (information, advices) (86  $\pm$  04%), massage (75  $\pm$  05%), mobilizations (74  $\pm$  05%), home exercises (62  $\pm$  06%), and stretching (55  $\pm$  06%). The following treatment modalities were also common: thermotherapy (46  $\pm$  06%), muscle strengthening (44  $\pm$  06%), electrophysiotherapy (39  $\pm$  06%); the most frequent electrophysiotherapeutic

modalities: TENS ( $36 \pm 08\%$ ) and US ( $29 \pm 08\%$ ), and spinal manipulations ( $38 \pm 06\%$ ) although the latter is legally not a physiotherapeutic technique.

### *Total knee replacement*

Overall, 172 physiotherapists out of the 367 respondents have treated, in the week preceding the receipt of the questionnaire, at least one patient suffering from total knee replacement (see Table 4.6). Distribution of patients' age, proportion of males and females, repartition of the delays between the discharge from hospital/rehabilitation centre and the beginning of the treatment by the physiotherapist, and distribution of treatment modalities are presented in Figure 4.5. Total knee replacement mainly concerns aged adults. As shown in Table 4.6, the patients' mean age was  $69 \pm 10$  years (range: 42 – 90 years). A higher prevalence of females was observed presumably due to their higher life expectancy. In most cases, no delay was observed between the patient's discharge from hospital/rehabilitation centre and the beginning of his/her treatment by the physiotherapist.



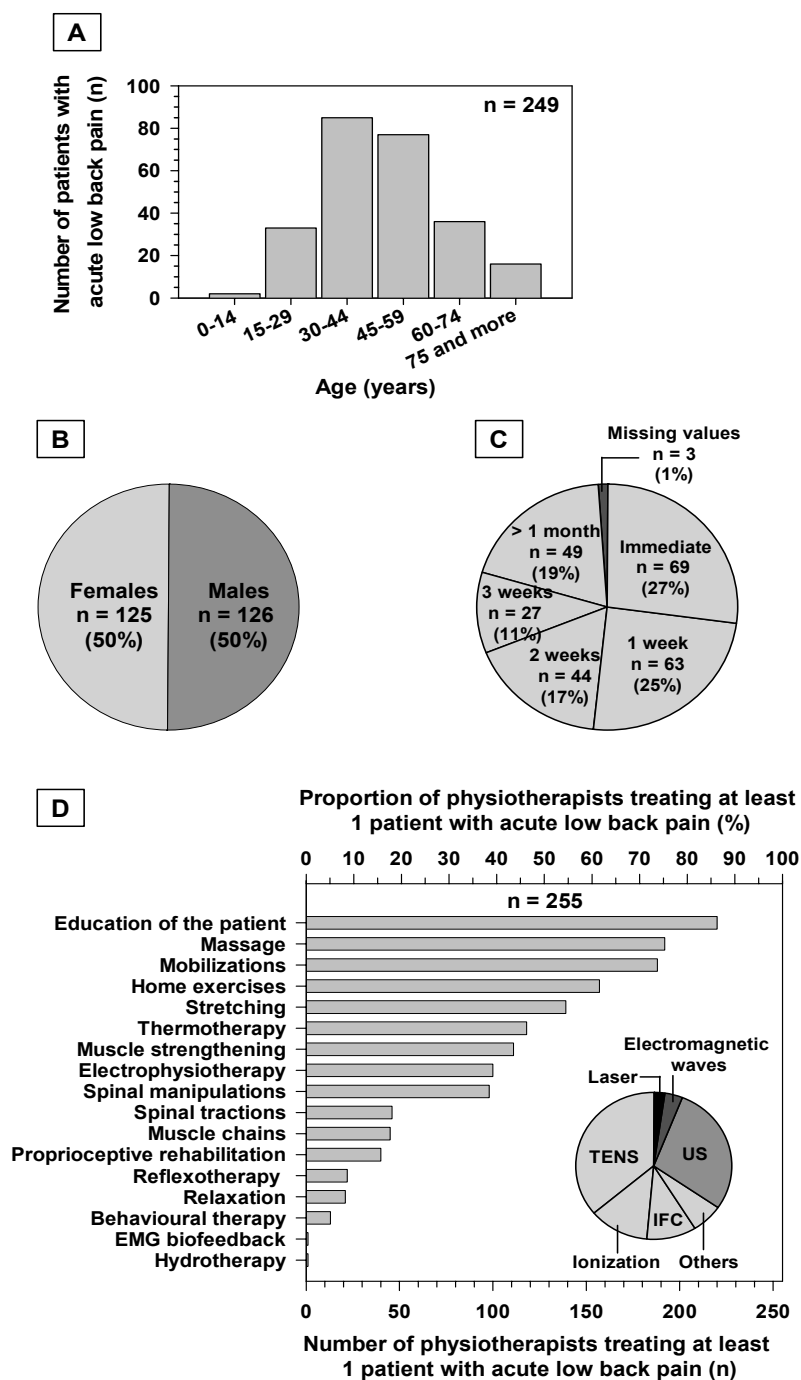


Figure 4.4 Treatment modalities of acute low back pain (without radiating pain). Panel A: distribution of patients' age. Panel B: proportion of males and females. Panel C: repartition of the delays between the beginning of the complaint and the beginning of the treatment by the physiotherapist. Panel D: distribution of treatment modalities used to treat acute low back pain and repartition of electrophysiotherapeutic modalities (TENS = transcutaneous electrical nerve stimulation; IFC = interRFTrential currents; US = ultrasounds).

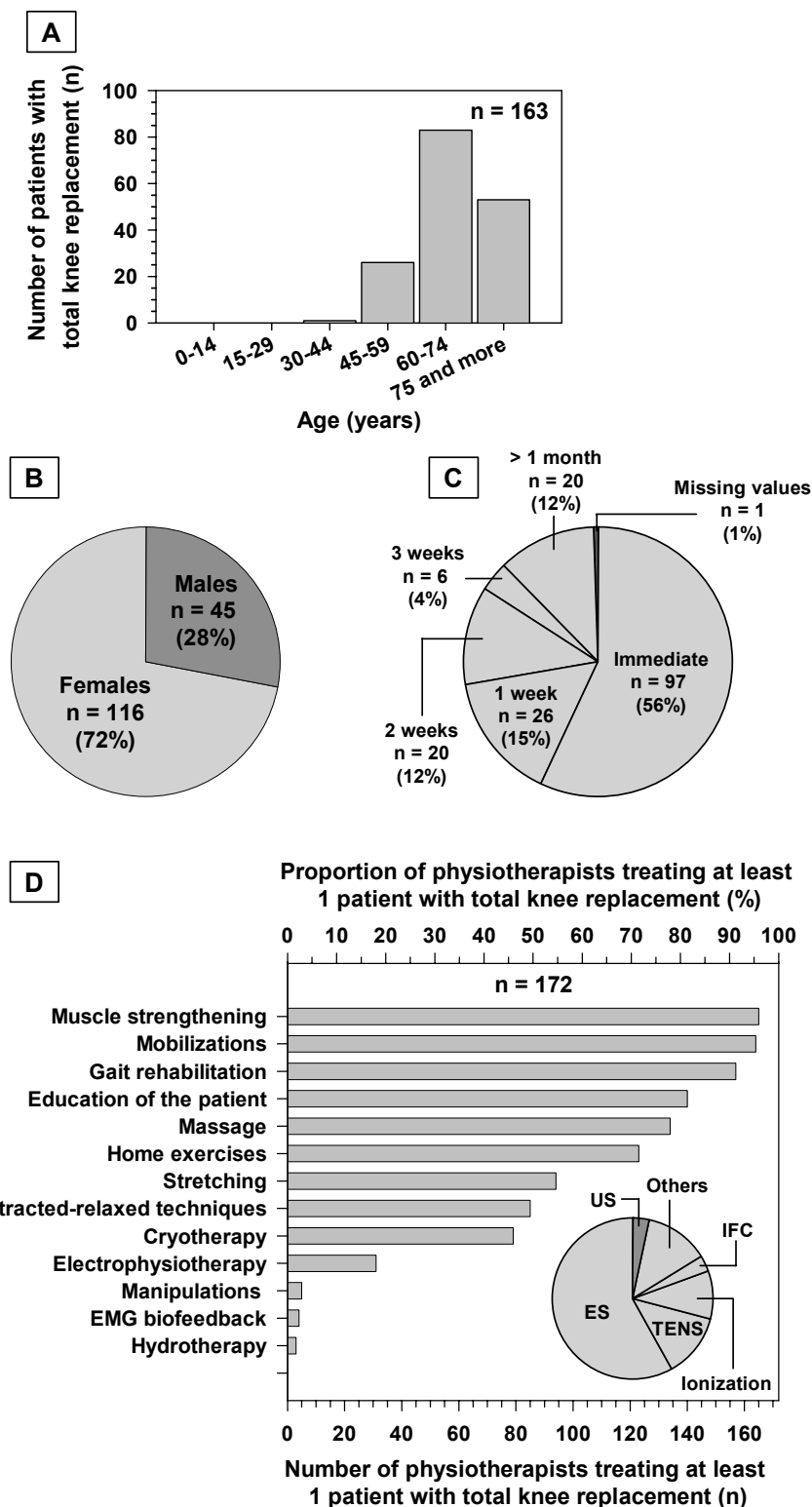


Figure 4.5 Treatment modalities of total knee replacement. Panel A: distribution of patients' age. Panel B: proportion of males and females. Panel C: repartition of the delays between the discharge from hospital/rehabilitation centre and the beginning of the treatment by the physiotherapist. Panel D: distribution of treatment modalities used to treat total knee replacement and repartition of electrophysiotherapeutic modalities (ES = electric stimulation; TENS = transcutaneous electrical nerve stimulation; IFC = interferential currents; US = ultrasounds).

The most frequent treatment modalities applied by Belgian ambulatory physiotherapists to treat patients with total knee replacement were, from the most prevalent to the least: muscle strengthening ( $96 \pm 03\%$ ), mobilizations ( $95 \pm 03\%$ ), gait rehabilitation ( $91 \pm 04\%$ ), education of the patient (information, advices) ( $81 \pm 06\%$ ), massage ( $78 \pm 06\%$ ), home exercises ( $72 \pm 07\%$ ), and stretching ( $55 \pm 07\%$ ). The following treatment modalities were also common: contracted-relaxed techniques ( $49 \pm 07\%$ ) and cryotherapy ( $46 \pm 07\%$ ). Note that the most frequent electrophysiotherapeutic modality was electric stimulation ( $58 \pm 17\%$  of the electrophysiotherapeutic modalities).

### *Hemiplegia / Hemiparesis*

Overall, 255 physiotherapists out of the 367 respondents have treated, in the week preceding the receipt of the questionnaire, at least one patient suffering from hemiplegia/hemiparesis (see Table 4.6). Distribution of patients' age, proportion of males and females, repartition of the delays since the beginning of the hemiplegia/hemiparesis, and distribution of treatment modalities are presented in Figure 4.6. Hemiplegia/hemiparesis mainly concerns aged adults. As shown in Table 4.6, the patients' mean age was  $68 \pm 16$  years (range: 2 – 98 years). The prevalence of males was slightly higher than the prevalence of females. Most of the delays since the beginning of the hemiplegia/hemiparesis are high indicating that this condition requires a chronic follow-up.

The most frequent treatment modalities applied by Belgian ambulatory physiotherapists to treat patients with hemiplegia/hemiparesis were, from the most prevalent to the least: mobilizations ( $95 \pm 03\%$ ), gait rehabilitation ( $83 \pm 05\%$ ), muscle strengthening ( $78 \pm 05\%$ ), balance rehabilitation ( $76 \pm 05\%$ ), stretching ( $70 \pm 06\%$ ), education of the patient (information, advices) ( $59 \pm 06\%$ ), and functional rehabilitation (i.e., activities of daily living (ADL)) ( $53 \pm 06\%$ ). The following specific movement therapies were moderately common: Bobath technique ( $33 \pm 06\%$ ) and Kabat technique (i.e., proprioceptive neurofacilitation (PNF)) ( $31 \pm 06\%$ ). Note that the most frequent electrophysiotherapeutic modality was electric stimulation ( $73 \pm 17\%$  of the electrophysiotherapeutic modalities). One treatment modality not included in the pre-established list of the questionnaire was considered as it was mentioned by at least 10 physiotherapists (see Appendix 4.C). It concerns massage techniques.

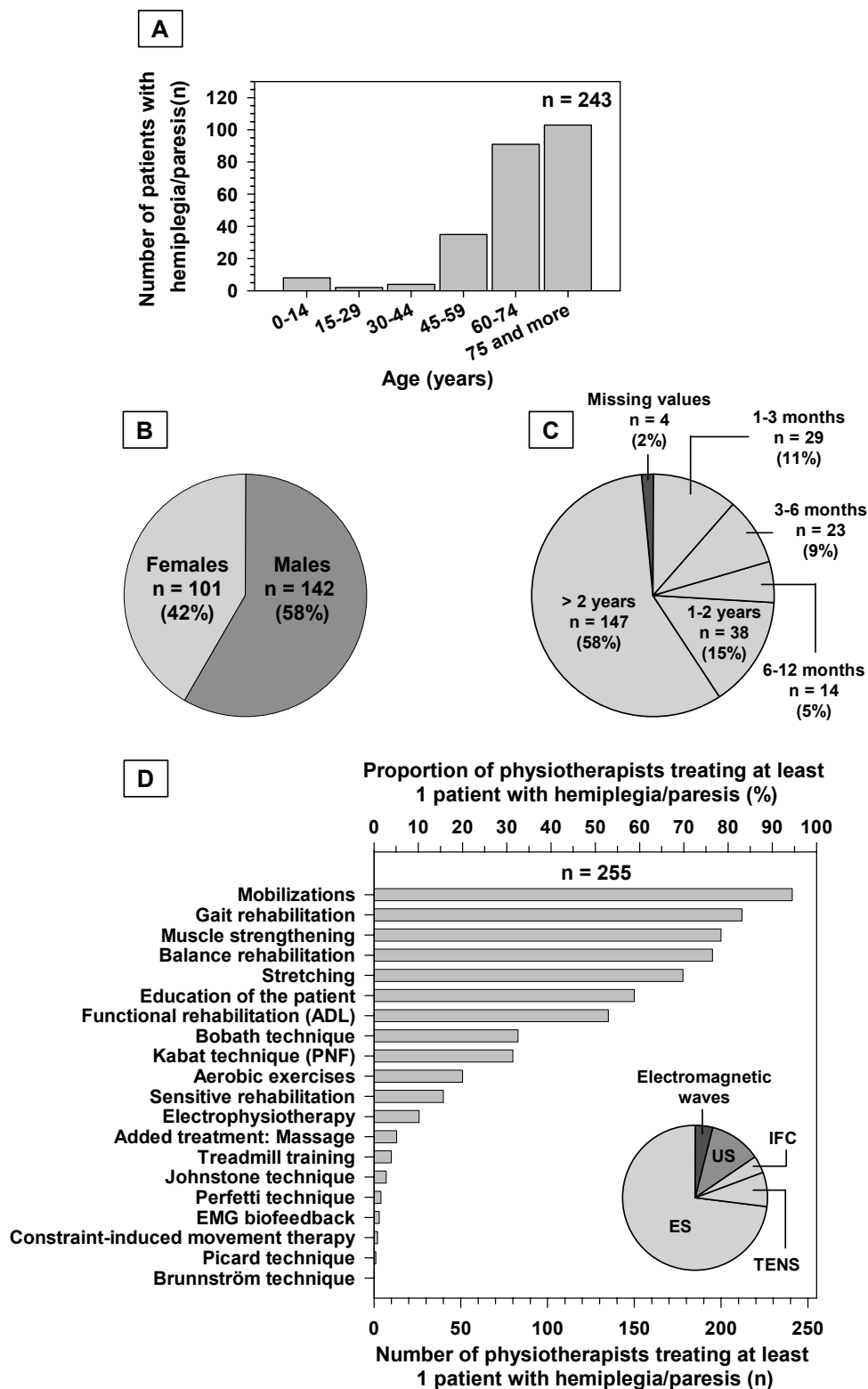


Figure 4.6 Treatment modalities of hemiplegia/hemiparesis. Panel A: distribution of patients' age. Panel B: proportion of males and females. Panel C: repartition of the delays since the beginning of the hemiplegia/hemiparesis. Panel D: distribution of treatment modalities used to treat hemiplegia/hemiparesis and repartition of electrophysiotherapeutic modalities (ES = electric stimulation; TENS = transcutaneous electrical nerve stimulation; IFC = interRFTrential currents; US = ultrasounds).

### *Gait disorders in elderly people*

Overall, 266 physiotherapists out of the 367 respondents have treated, in the week preceding the receipt of the questionnaire, at least one elderly patient with gait disorders (see Table 4.6). Distribution of patients' age, proportion of males and females, repartition of the delays between the first walking difficulties and the beginning of the treatment by the physiotherapist, and distribution of treatment modalities are presented in Figure 4.7. Gait disorders in elderly people present a peak of prevalence around 80-84 years. As shown in Table 4.6, the patients' mean age was  $81 \pm 7$  years (range: 62 – 100 years). A higher prevalence of females was observed presumably due to their higher life expectancy. In most cases, the delay between the first patient's walking difficulties and the beginning of his/her treatment by the physiotherapist is over 1 month.

The most frequent treatment modalities applied by Belgian ambulatory physiotherapists to treat elderly patients with gait disorders were, from the most prevalent to the least: muscle strengthening ( $91 \pm 03\%$ ), balance rehabilitation ( $90 \pm 04\%$ ), mobilizations ( $83 \pm 05\%$ ), education of the patient (information, advices) ( $71 \pm 05\%$ ), proprioceptive rehabilitation ( $67 \pm 06\%$ ), coordination exercises ( $59 \pm 06\%$ ), and home exercises ( $52 \pm 06\%$ ). The following treatment modalities were also common but to a lesser extent: transfer exercises ( $46 \pm 06\%$ ), stretching ( $31 \pm 06\%$ ), pick-up techniques ( $30 \pm 06\%$ ), and aerobic exercises ( $30 \pm 06\%$ ). One treatment modality not included in the pre-established list of the questionnaire was considered as it was mentioned by at least 10 physiotherapists (see Appendix 4.C). It concerns massage techniques.

### *Bronchiolitis in infants and children*

Overall, 90 physiotherapists out of the 367 respondents have treated, in the week preceding the receipt of the questionnaire, at least one infant/child with bronchiolitis (see Table 4.6). Distribution of patients' age, proportion of males and females, repartition of the delays the beginning of the complaint and the beginning of the treatment by the physiotherapist, and distribution of treatment modalities are presented in Figure 4.8. Bronchiolitis in infants and children presents a peak of prevalence during the two first years of life. As shown in Table 4.6, the patients' mean age was  $2 \pm 3$  years (range: 0 – 13 years). The prevalence of males was slightly higher than the prevalence of females. In most cases, no delay was observed between the beginning of the infant/child's complaint and the beginning of his/her treatment by the physiotherapist.

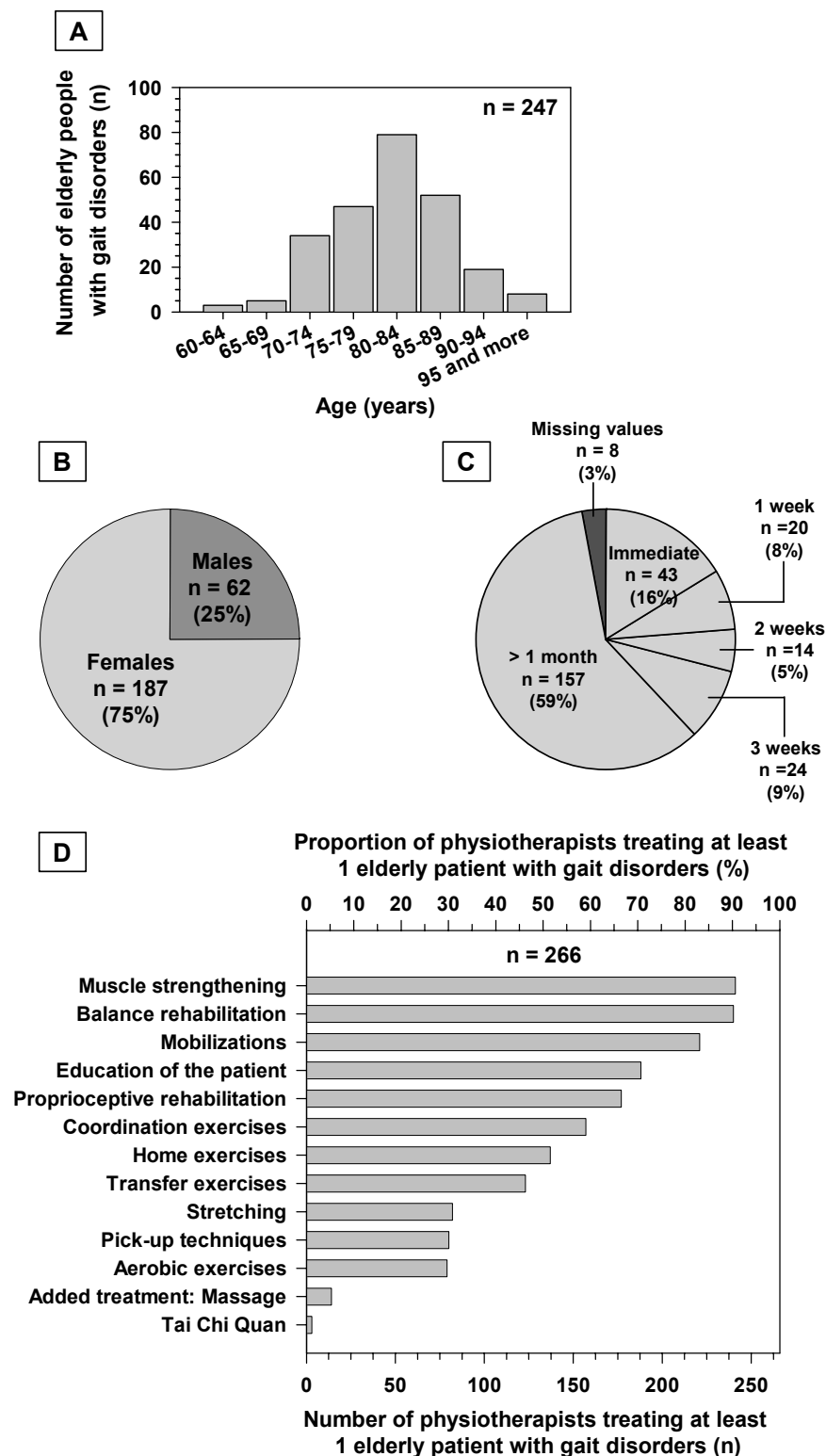


Figure 4.7 Treatment modalities of gait disorders in elderly people. Panel A: distribution of patients' age. Panel B: proportion of males and females. Panel C: repartition of the delays between the first walking difficulties and the beginning of the treatment by the physiotherapist. Panel D: distribution of treatment modalities used to treat gait disorders in elderly people.

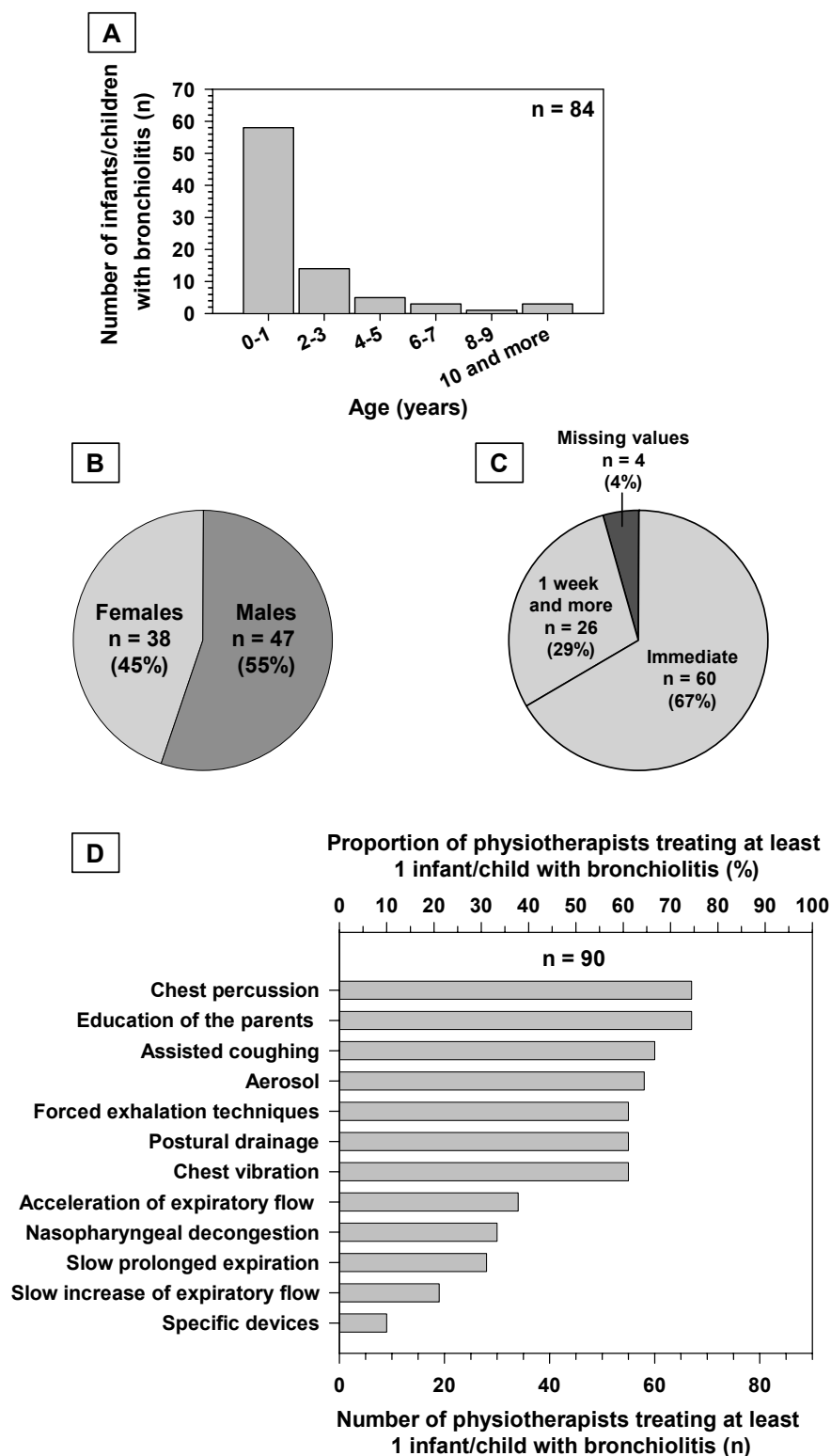


Figure 4.8 Treatment modalities of bronchiolitis in infants/children. Panel A: distribution of patients' age. Panel B: proportion of males and females. Panel C: repartition of the delays between the beginning of the complaint and the beginning of the treatment by the physiotherapist. Panel D: distribution of treatment modalities used to treat bronchiolitis in infants/children.

As in other European countries, chest physiotherapy (vibration, percussion, postural drainage ...) is used by Belgian ambulatory physiotherapists to treat acute bronchiolitis in infants/children. The most frequent treatment modalities were, from the most prevalent to the least: chest percussion ( $74 \pm 09\%$ ), education of the parents (information, advices) ( $74 \pm 09\%$ ), assisting coughing ( $67 \pm 10\%$ ), aerosol ( $64 \pm 10\%$ ), forced exhalation techniques ( $61 \pm 10\%$ ), postural drainage ( $61 \pm 10\%$ ), and chest vibration ( $61 \pm 10\%$ ). The following treatment modalities were also common but to a lesser extent: acceleration of expiratory flow ( $38 \pm 10\%$ ), nasopharyngeal decongestion ( $33 \pm 10\%$ ), and slow prolonged expiration ( $31 \pm 10\%$ ).

#### 1.2.4. Functional tests used in Belgian ambulatory physiotherapy

Clinical tests and functional assessment tools used in Belgian ambulatory physiotherapy to determine the evolution of patients suffering from the selected conditions were recorded by asking the physiotherapists to select among a pre-established list the functional tests that they use for each specified condition. The respondents also had the possibility to specify functional tests not included in the pre-established list (in this case, the functional tests was labelled as "Added functional test: Y", where Y is the name of the functional test).

##### *Acute low back pain (without radiating pain)*

Overall, 325 physiotherapists out of the 367 respondents have indicated the functional tests used to determine the evolution of patients suffering from acute low back pain without radiating pain. The distribution of functional tests is presented in Figure 4.9. One functional test not included in the pre-established list of the questionnaire was considered as it was mentioned by at least 10 physiotherapists (see Appendix 4.C). It concerns clinical tests of the spinal mobility. The most frequent functional tests used by Belgian ambulatory physiotherapists to assess patients with acute low back pain refer to clinical tests carried out by the physiotherapists as part of the clinical examination but not (or almost not) documented in the literature. The most frequent clinical tests used by Belgian ambulatory physiotherapists were, from the most prevalent to the least: anamnesis ( $94 \pm 03\%$ ), observation ( $94 \pm 03\%$ ), and palpation ( $90 \pm 03\%$ ). Muscle strengthening was also a clinical test commonly used in ambulatory practice ( $45 \pm 05\%$ ). Standardised functional assessment tools whose metric properties and quality appraisal have been pretty documented (i.e., Roland-Morris Low Back Pain and Disability questionnaire, Dallas-Pain questionnaire, SF-36 scale) are rarely used by Belgian ambulatory physiotherapists (cumulated proportion:  $03 \pm 02\%$ ).



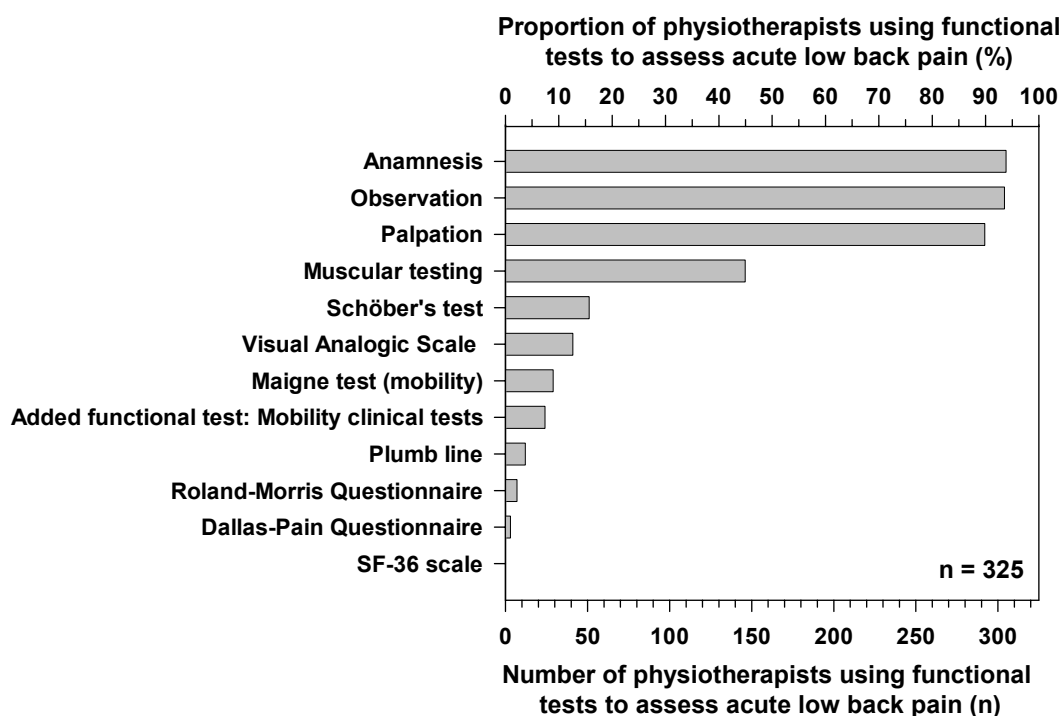


Figure 4.9 Distribution of the functional tests used by Belgian ambulatory physiotherapists to assess acute low back pain (without radiating pain).

### Total knee replacement

Overall, 263 physiotherapists out of the 367 respondents have indicated the functional tests used to determine the evolution of patients suffering from total knee replacement. The distribution of functional tests is presented in Figure 4.10. Two functional tests not included in the pre-established list of the questionnaire were considered as it was mentioned by at least 10 physiotherapists (see Appendix 4.C). They concern tape measure (to assess the muscle perimeters) and clinical functional assessments (e.g., walking, bicycling, and climbing stairs). The most frequent functional tests used by Belgian ambulatory physiotherapists to assess patients with total knee replacement refer to clinical tests carried out by the physiotherapists as part of the clinical examination but not (or almost not) documented in the literature. The most frequent clinical tests used by Belgian ambulatory physiotherapists were, from the most prevalent to the least: observation ( $98 \pm 02\%$ ), anamnesis ( $89 \pm 04\%$ ), goniometry ( $80 \pm 05\%$ ), palpation ( $76 \pm 05\%$ ), and muscular testing ( $71 \pm 05\%$ ). The Lower Extremity Functional Scale (LEFS), one of the rare functional assessment tool whose metric properties and quality appraisal has been documented is rarely used by Belgian ambulatory physiotherapists ( $03 \pm 02\%$ ).

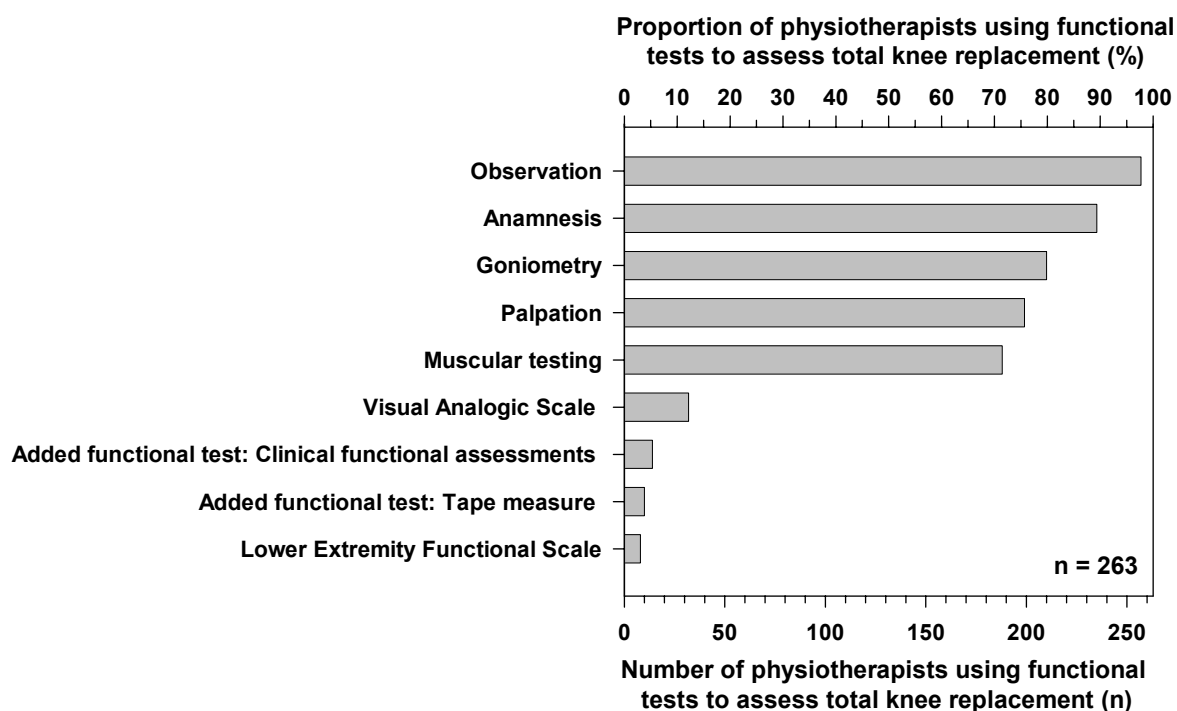


Figure 4.10 Distribution of the functional tests used by Belgian ambulatory physiotherapists to assess total knee replacement.

### *Hemiplegia / Hemiparesis*

Overall, 294 physiotherapists out of the 367 respondents have indicated the functional tests used to determine the evolution of patients suffering from hemiplegia/hemiparesis. The distribution of functional tests is presented in Figure 4.11. The most frequent functional tests used by Belgian ambulatory physiotherapists to assess patients with hemiplegia/hemiparesis refer to clinical tests carried out by the physiotherapists as part of the clinical examination but not (or almost not) documented in the literature. The most frequent clinical tests used by Belgian ambulatory physiotherapists were, from the most prevalent to the least: observation ( $95 \pm 02\%$ ), anamnesis ( $84 \pm 04\%$ ), and muscular testing ( $72 \pm 05\%$ ). Palpation and Bobath assessment were also clinical tests moderately used in ambulatory practice ( $47 \pm 06\%$  and  $26 \pm 05\%$ , respectively). Standardised functional assessment tools whose metric properties and quality appraisal have been pretty documented (i.e., Functional Independence Measure, Berg Balance Scale, Functional Assessment Measure, Fugl-Meyer Test, SF-36 scale, and Barthel Index) are rarely used by Belgian ambulatory physiotherapists (cumulated proportion:  $10 \pm 03\%$ ).

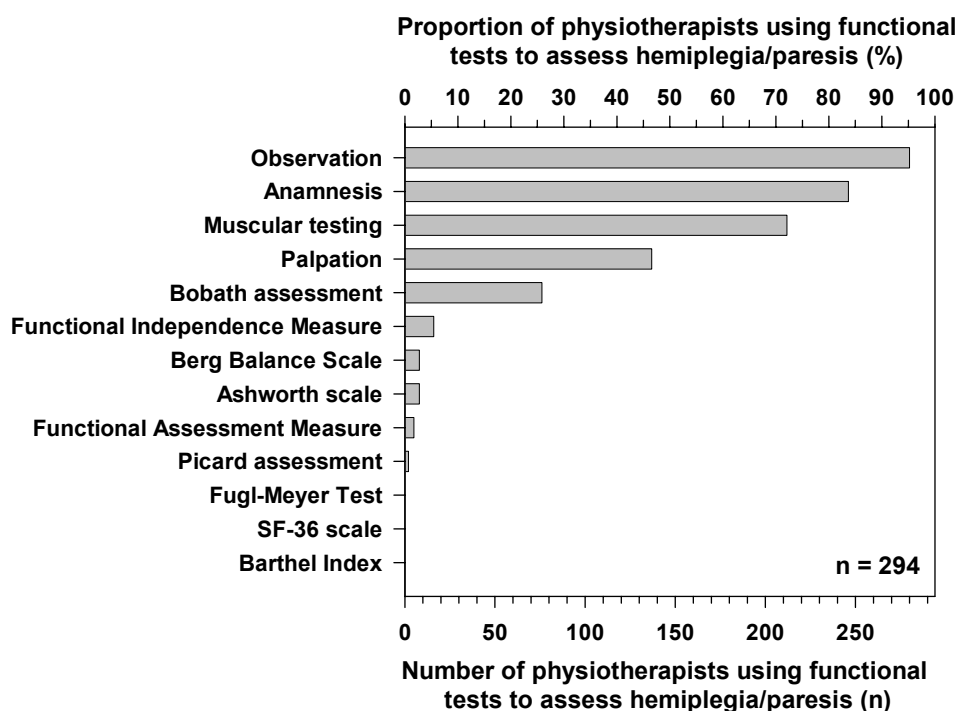


Figure 4.11 Distribution of the functional tests used by Belgian ambulatory physiotherapists to assess hemiplegia/hemiparesis.

### *Gait disorders in elderly people*

Overall, 309 physiotherapists out of the 367 respondents have indicated the functional tests used to determine the evolution of elderly patients suffering from gait disorders. The distribution of functional tests is presented in Figure 4.12. The most frequent functional tests used by Belgian ambulatory physiotherapists to assess elderly patients with gait disorders refer to clinical tests carried out by the physiotherapists as part of the clinical examination and to standardised functional assessment tools requisite by the INAMI/RIZIV (i.e., Tinetti Balance and Gait Evaluation, 6-Minutes Walk Test). The most frequent functional tests used by Belgian ambulatory physiotherapists were, from the most prevalent to the least: observation ( $96 \pm 02\%$ ), anamnesis ( $85 \pm 04\%$ ), Tinetti Balance and Gait Evaluation ( $81 \pm 04\%$ ), and muscular testing ( $53 \pm 06\%$ ). Six-Minutes Walk Test and palpation were also functional tests moderately used in ambulatory practice ( $40 \pm 05\%$  and  $35 \pm 05\%$ , respectively). Other standardised functional assessment tools not requisite by the INAMI/RIZIV (i.e., One-Leg Balance Test, Timed Get-Up-and-Go Test, "Tests d'Anticipation Posturale", Functional Reach Test, Berg Balance Scale, "Test minimum moteur", and Modified Gait Abnormality Rating Scale) are rarely used by Belgian ambulatory physiotherapists (cumulated proportion:  $29 \pm 05\%$ ).

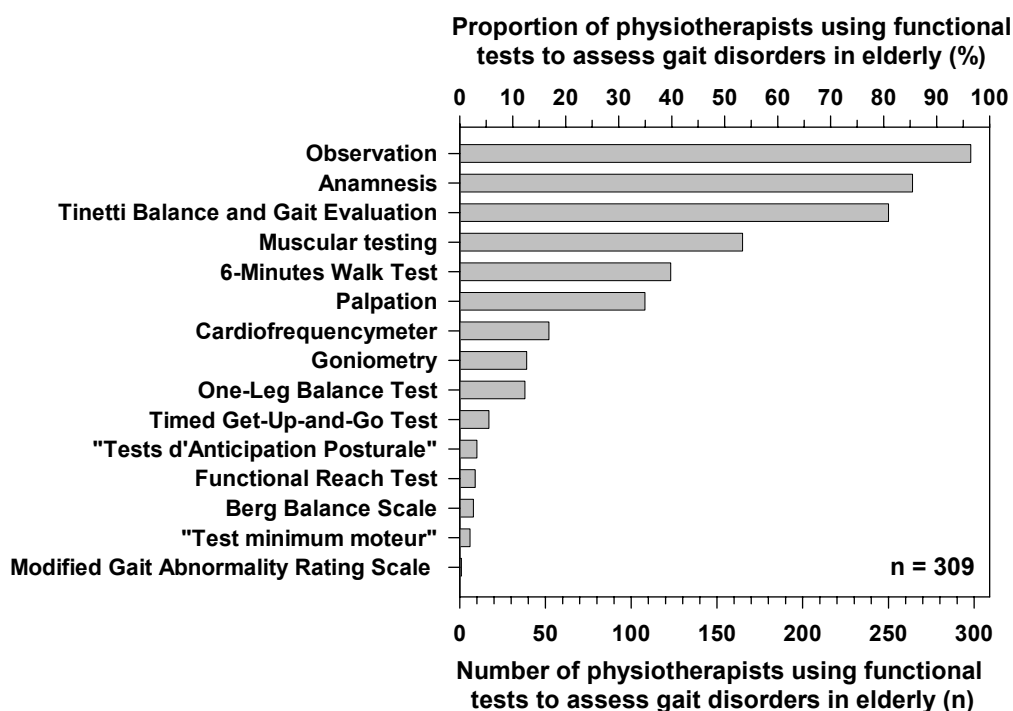


Figure 4.12 Distribution of the functional tests used by Belgian ambulatory physiotherapists to assess gait disorders in elderly people.

#### *Bronchiolitis in infants and children*

Overall, 186 physiotherapists out of the 367 respondents have indicated the functional tests used to determine the evolution of infants/children suffering from bronchiolitis. The distribution of functional tests is presented in Figure 4.13. One functional test not included in the pre-established list of the questionnaire was considered as it was mentioned by at least 10 physiotherapists (see Appendix 4.C). It concerns chest palpation. The most frequent clinical tests used by Belgian ambulatory physiotherapists to assess infants/children with bronchiolitis were, from the most prevalent to the least: anamnesis ( $82 \pm 06\%$ ) and pulmonary auscultation ( $62 \pm 07\%$ ). Observation was also a clinical test moderately used in ambulatory practice ( $28 \pm 06\%$ ). To our knowledge, no standardised functional assessment tools whose metric properties and quality appraisal have been pretty documented exist in the scientific literature.

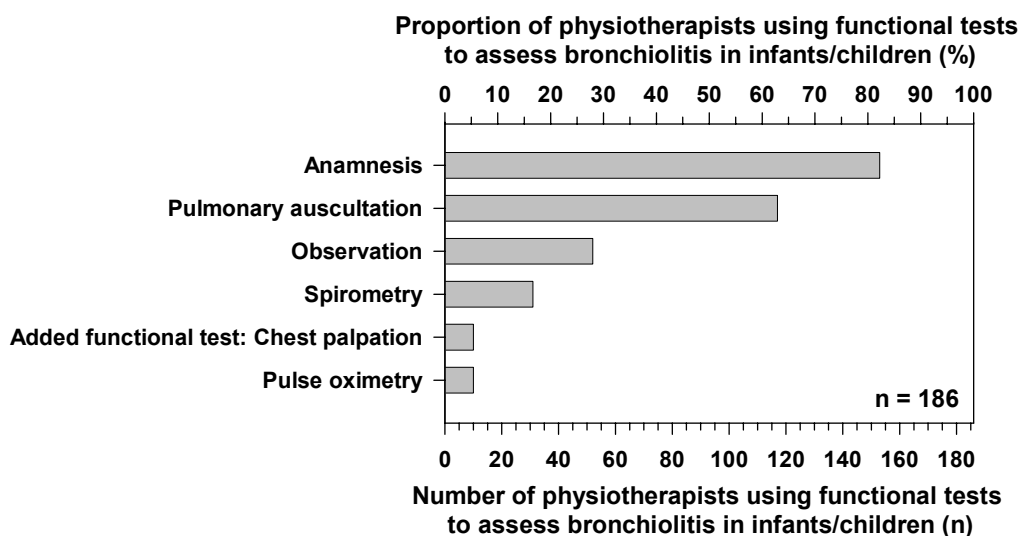


Figure 4.13 Distribution of the functional tests used by Belgian ambulatory physiotherapists to assess bronchiolitis in infants/children.

### I.2.5. Key element in the establishment of physiotherapeutic treatment planning

The key element on which the physiotherapists go to establish their treatment planning is presented in Table 4.7 and illustrated in Figure 4.14. Most of the Belgian ambulatory physiotherapists ( $89 \pm 4\%$ ) establish their treatment planning on the basis of the patient's functional status as estimated with clinical tests.

The data were also broken down into physiotherapists' age, sex, linguistic role, and delay since the degree of physiotherapy and rehabilitation (see Table 4.7). No significant difference was observed for any of the physiotherapists' characteristics.

### I.2.6. Knowledge and use of the ICF concepts

The knowledge and the use of the concepts of the International Classification of Functioning, Disability, and Health (ICF) proposed by the World Health Organization in the physiotherapeutic practice is presented in Table 4.8 and illustrated in Figures 4.15 and 4.16. Most of the Belgian ambulatory physiotherapists do not know the ICF concepts ( $85 \pm 4\%$ ). Moreover, only  $4 \pm 2\%$  of the physiotherapists knowing the ICF concepts use these concepts in their practice (e.g., to define the objectives of the treatment or to determine the patient's evolution).

Table 7 Key element in the establishment of the physiotherapeutic treatment planning

Variables	Medical prescription*	Number of prescribed sessions*	Functional status of the patient*	Satistic	p-value
General (not breaking down)	20 (07.6 ± 03.2%)	10 (03.8 ± 02.3%)	235 (88.7 ± 03.8%)	$\chi^2 = 2.38$ , df = 4	0.67**
Age					
25-39 years	07 (05.9 ± 04.3%)	03 (02.5 ± 02.8%)	108 (91.5 ± 05.0%)		
40-54 years	11 (09.5 ± 05.3%)	05 (04.3 ± 03.7%)	100 (86.2 ± 06.3%)		
55-69 years	02 (06.5 ± 08.7%)	02 (06.5 ± 08.7%)	027 (87.1 ± 11.8%)	$\chi^2 = 0.74$ , df = 2	0.69
Sex					
Males	11 (07.3 ± 04.1%)	07 (04.6 ± 03.3%)	133 (88.1 ± 05.2%)		
Females	09 (07.9 ± 05.0%)	03 (02.6 ± 02.9%)	102 (89.5 ± 05.6%)	$\chi^2 = 0.23$ , df = 2	0.89
Linguistic role					
French-speaking	09 (08.5 ± 05.3%)	04 (03.8 ± 03.6%)	093 (87.7 ± 06.3%)		
Flemish-speaking	11 (06.9 ± 03.9%)	06 (03.8 ± 03.0%)	142 (89.3 ± 04.8%)	$\chi^2 = 4.32$ , df = 4	0.36**
Delay since the degree					
00-14 years	05 (05.0 ± 04.3%)	03 (03.0 ± 03.3%)	092 (92.0 ± 05.3%)		
15-29 years	12 (10.7 ± 05.7%)	04 (03.6 ± 03.5%)	096 (85.7 ± 06.5%)		
30-44 years	02 (04.3 ± 05.8%)	03 (06.4 ± 07.0%)	042 (89.4 ± 08.8%)		

\* Number (proportion ± accuracy corresponding to the 95% confidence interval)

\*\* Chi-Square Test can be quite inaccurate as more than 20% of the expected values in the contingency table are less than 5.

$\chi^2$  = Chi-Square Test; df = degree of freedom.

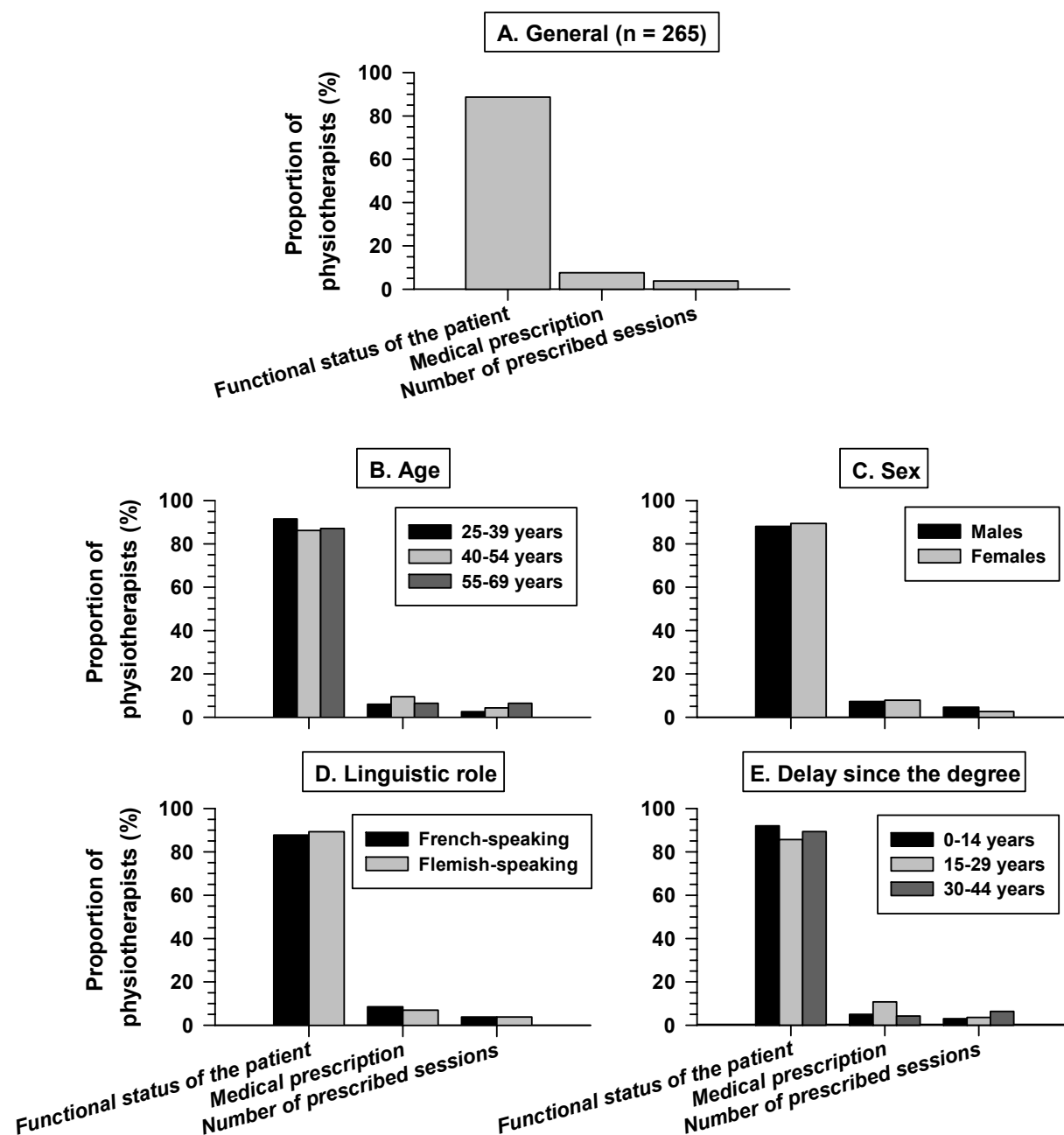


Figure 4.14 Distribution of the key elements on which Belgian ambulatory physiotherapists go to establish their treatment planning. Panel A: not breaking down data. Panel B: breaking down of the data according to physiotherapists' age. Panel C: breaking down of the data according to physiotherapists' sex. Panel D: breaking down of the data according to physiotherapists' linguistic role. Panel E: breaking down of the data according to the delay since the degree of the physiotherapists.

**Table 8 Knowledge and using of the International Classification of Functioning, Disability, and Health (ICF)**

Variables	Knowledge of the ICF			Use of the ICF		
	Knowledge* (known)	Statistic	p-value	Use* (used)	Statistic	p-value
General	54 (15.0 ± 3.7%)			15 (04.2 ± 2.1%)		
Age		$\chi^2 = 10.85$ , df = 2	<0.01		$\chi^2 = 0.34$ , df = 2	0.84
25-39 years	32 (22.5 ± 6.9%)			07 (04.9 ± 3.6%)		
40-54 years	18 (11.0 ± 4.8%)			06 (03.7 ± 2.9%)		
55-69 years	04 (07.4 ± 7.0%)			02 (03.7 ± 5.0%)		
Sex		$\chi^2 = 0.11$ , df = 1	0.74		$\chi^2 = 0.07$ , df = 1	0.79
Males	34 (15.7 ± 4.9%)			10 (04.6 ± 2.8%)		
Females	30 (13.9 ± 5.7%)			05 (03.5 ± 3.0%)		
Linguistic role		$\chi^2 = 23.34$ , df = 1	<0.001		$\chi^2 = 2.23$ , df = 1	0.14
French-speaking	06 (04.0 ± 3.1%)			03 (02.0 ± 2.2%)		
Flemish-speaking	48 (23.0 ± 5.7%)			12 (05.7 ± 3.1%)		
Delay since the diploma		$\chi^2 = 11.77$ , df = 2	<0.01		$\chi^2 = 1.38$ , df = 2	0.50**
00-14 years	28 (24.3 ± 7.8%)			07 (06.1 ± 4.4%)		
15-29 years	17 (10.8 ± 4.8%)			05 (03.2 ± 2.7%)		
30-44 years	07 (09.6 ± 6.8%)			03 (04.1 ± 4.5%)		

\* Number (proportion ± accuracy corresponding to the 95% confidence interval)

\*\* Chi-Square Test can be quite inaccurate as more than 20% of the expected values in the contingency table are less than 5.

$\chi^2$  = Chi-Square Test; df = degree of freedom.



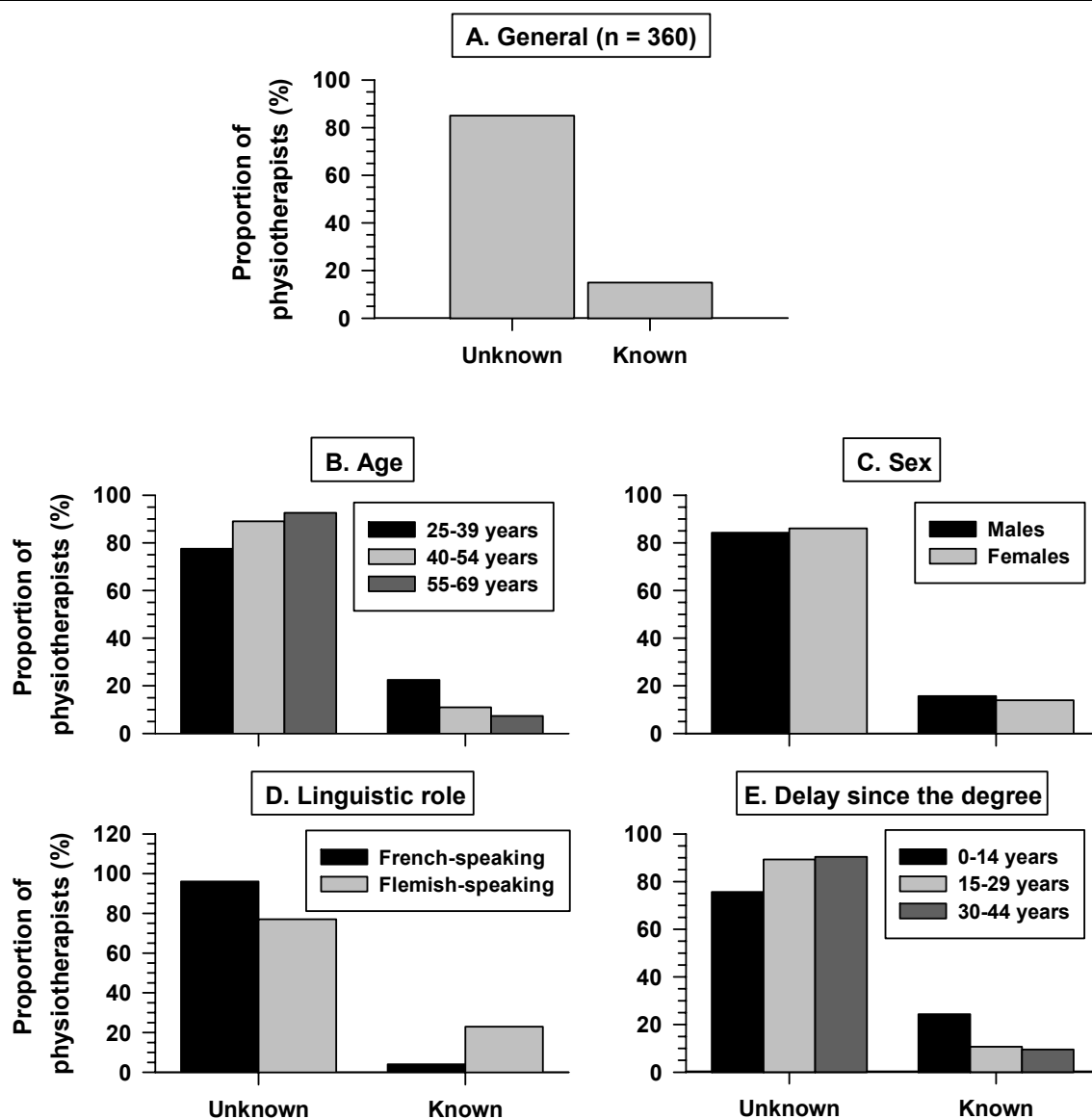


Figure 4.15 Knowledge of the International Classification of Functioning, Disability, and Health (ICF) concepts by the Belgian ambulatory physiotherapists. Panel A: not breaking down data. Panel B: breaking down of the data according to physiotherapists' age. Panel C: breaking down of the data according to physiotherapists' sex. Panel D: breaking down of the data according to physiotherapists' linguistic role. Panel E: breaking down of the data according to the delay since the degree of the physiotherapists.

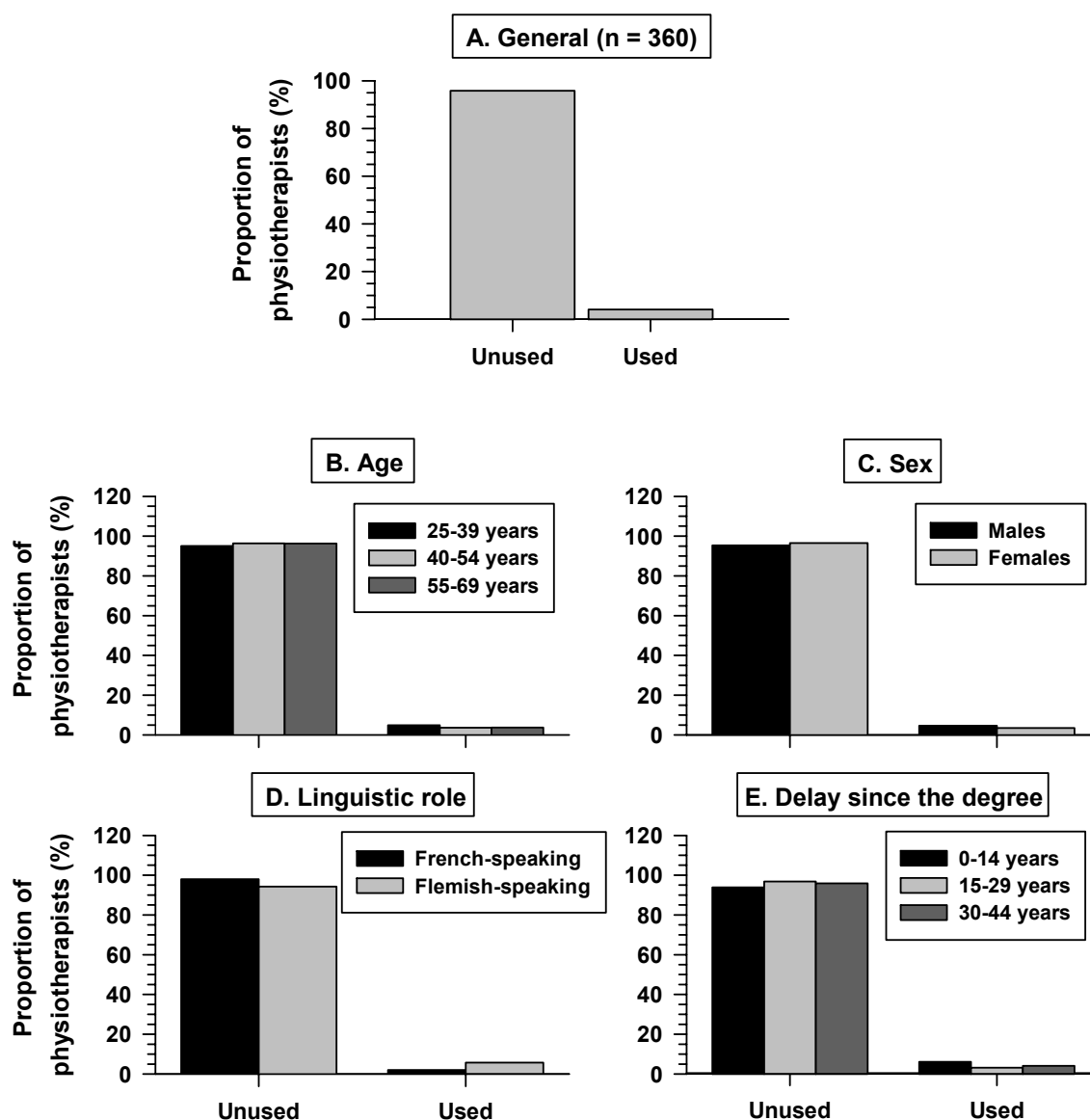


Figure 4.16 Use of the International Classification of Functioning, Disability, and Health (ICF) concepts by the Belgian ambulatory physiotherapists in their practice. Panel A: not breaking down data. Panel B: breaking down of the data according to physiotherapists' age. Panel C: breaking down of the data according to physiotherapists' sex. Panel D: breaking down of the data according to physiotherapists' linguistic role. Panel E: breaking down of the data according to the delay since the degree of the physiotherapists.

The data were also broken down into physiotherapists' age, sex, linguistic role, and delay since the degree of physiotherapy and rehabilitation (see Table 4.8). Concerning the knowledge of the ICF concepts, a significant difference was observed with regard to age, linguistic role, and delay since the degree of physiotherapy and rehabilitation. Younger physiotherapists had a significantly better knowledge of the ICF concepts than older physiotherapists. Correspondingly, physiotherapists with a recent degree also presented a significantly better knowledge of the ICF concepts than those with an old degree. A significantly higher number of Dutch-speaking physiotherapists knew the ICF concepts as compared with French-speaking physiotherapists. No significant difference was found between males and females. Contrary to the knowledge of the ICF concepts, no significant difference about the use of these concepts in the physiotherapeutic practice was observed in the questionnaire.

### 1.3. DISCUSSION

The present survey allowed a "picture" of the current state of ambulatory physiotherapeutic practice to be determined in Belgium. Indeed, such information was not yet available. The survey has identified the most frequent pathologies treated in Belgian ambulatory physiotherapy, the physiotherapeutic treatment modalities generally applied in five common conditions (i.e., acute low back pain, total knee replacement, hemiplegia/hemiparesis, gait disorders in elderly people, and bronchiolitis in infants and children), and the functional tests regularly used in these five common conditions to determine the patient's evolution. The results of the survey will be now confronted with the other parts of the project, namely, the literature review of physiotherapeutic modalities and the literature review on functional assessment in physiotherapy.

Several factors could challenge the validity of the results of the survey. First, survey data exclude less active physiotherapists (i.e., with less than 1000 sessions billed per year). They represent one third of all physiotherapists practising ambulatory care but are responsible for only 7% of all sessions in ambulatory care (Source: INAMI/RIZIV). Second, response rate was low (20%), and although respondents were similar to non-respondents as regards age, sex, language, and geographical distribution, selection bias cannot be excluded (for instance, respondents could be more dedicated physiotherapists, and on average provide a better quality of care than non-respondents). As usual in such a survey what is reported might not be what is done in practice. The proportion of heavy pathologies was less encountered in the survey than in the whole INAMI/RIZIV database (28% vs. 37%). Actually, some pathologies may be underestimated in the survey as they fall under a different funding mechanism in Belgium (e.g., cardiovascular diseases are under convention). Keeping in mind their limitations, these data can still be seen as the first ones describing the global features of community physiotherapy in Belgium, in terms of pathologies encountered, treatment modalities applied, and functional tests used in ambulatory care.

#### 1.3.1. Pathologies treated in Belgian ambulatory physiotherapy

Eleven conditions have been identified as the most common disorders treated in Belgian ambulatory physiotherapy. They represented together 48% of the examined sessions. Most of these common conditions refer to musculoskeletal disorders, the pathology category the most frequently treated by Belgian ambulatory physiotherapists. Four of the five conditions selected in the survey to investigate treatment modalities and functional tests used by physiotherapists in their practice were counted among the most common conditions. Low back pain, total knee replacement, hemiplegia/hemiparesis, and gait disorders in elderly people represented together 21% of the examined sessions. Among them, hemiplegia/hemiparesis and low back pain seem to be the more adequate pathologies that could be selected in the achievement of a subsequent study intended to examine the feasibility of a physiotherapeutic nomenclature based on the functional assessment. First, they represented together a large proportion of ambulatory physiotherapeutic sessions (i.e., 15% of the examined sessions). Second, they correspond to two different types of pathologies, respectively, heavy neurological and common musculoskeletal pathologies. Third, they are the diagnostic groups for which the largest number of evidence-based data has been identified (see the literature review of physical therapy modalities) and for which the largest number of high quality tests has been identified (see the literature review on functional assessment in physiotherapy).

Pathologies treated in Belgian ambulatory physiotherapy were also classified according to the International Classification of Primary Care – 2<sup>nd</sup> Edition (ICPC-2) and the International Statistical Classification of Diseases and Related Health Problems – 10<sup>th</sup> Revision (ICD-10). The two classifications lead to the same results:

- Most of the pathologies treated in Belgium during ambulatory physiotherapeutic sessions refer to musculoskeletal and neurological disorders.

- It is relatively common to treat psychological and gait disorders with other conditions, especially with musculoskeletal and neurological disorders.
- Oldest people are mainly treated for cardiovascular, neurological, gait disorders as well as for the presence of orthopaedic joints implants. Youngest people are mainly treated for psychological, endocrine/metabolic/nutritional, pregnancy/childbearing disorders.
- A higher prevalence of females is found in the pathology categories that mainly affect older people presumably due to their higher life expectancy.
- Pathologies usually treated in physiotherapists' office are musculoskeletal, psychological and urological disorders. On the contrary, neurological and respiratory disorders are mainly treated in patients' home.
- Almost no sessions are allocated for written report.
- A high prevalence of common pathologies is observed in musculoskeletal and urological disorders. Heavy pathologies are generally encountered in neurological and cardiovascular disorders. Perinatal pathologies logically concern pregnancy/childbearing conditions. Pathologies of acute FA list mainly refer to the presence of orthopaedic joint implants and injuries such as fractures or sprain/strain of knee. Finally, pathologies of chronic FB list primarily concern psychological and gait disorders.

Although the two classifications lead to the same results, the ICPC-2 seems easier and more adequate than the ICD-10 to classify the reasons of physiotherapeutic consultation.

First, the ICPC-2 classification has a more basic but easier structure than the more complicated ICD-10 classification. The ICPC-2 has 17 chapters, mainly based on body systems (e.g., digestive, cardiovascular, musculoskeletal etc.) with an additional chapter for broad, non-disease conditions (e.g., feeling tired, general ill feeling etc.), another for psychological problems and one for social problems. Each condition classified in a given chapter may also be specified according to seven components (i.e., process codes such as physical function test or consultation, symptoms/complaints, infections, neoplasms, injuries, congenital anomalies, and other diagnoses). The ICPC-2 is small to handle, having less than 700 condition rubrics. On the contrary, the ICD-10 has much more condition rubrics (more than 5000). Thus, it allows a higher precision to document all individual patients' diagnoses to be obtained but cannot be realistically used in the context of an everyday routine.

Second, the ICD-10 classification has 21 chapters that are sometimes based on body systems (chapters III, IV, V, VI, VII, VIII, IX, X, XI, XIII and XIV), sometimes on aetiology (chapters I, II, XVII, XIX, XX), or sometimes on other general status (chapters XV, XVI, XVIII, XXI). This mixture creates confusion since diagnostic entities can, with equal logic, be classified in more than one chapter. Instead of conforming to this format, the ICPC chapters are all based on body systems, following the principle that localization has precedence over aetiology. The ICPC-2 includes only one general and unspecified rubric for the most common conditions managed in general ambulatory practice. The less common conditions are placed into "ragbag" codes such as "other musculoskeletal diseases" or "other neurological diseases". As a result, every condition has only one logical place in the ICPC-2.

*Examples:*

- 1) *"Acromial plastic surgery following a rotator cuff rupture" may be classified in the ICD-10 as "follow-up care involving plastic surgery of upper extremity" in the "factors influencing health status and contact with health services" chapter or as "injury of tendon of the rotator cuff of shoulder" in the "injury, poisoning and certain other consequences of external causes" chapter. On the contrary, it is easily classified as "shoulder syndrome" in the ICPC-2 musculoskeletal chapter.*
- 2) *"Neoplasm of the central nervous system responsible to an hemiplegia" may be classified in the ICD-10 as "neoplasm of uncertain or unknown behaviour of brain, unspecified" in the "neoplasms" chapter or as "hemiplegia" in the "diseases of the nervous system" chapter. In such situation, the condition is classified in two different ICD-10 chapters. This occurs because ICD-10 chapters are based on both the body systems and the aetiology. The biaxial structure of the ICPC-2 (i.e., 17 chapters based on body systems and 7 inside-components) avoids this problem. Indeed, the condition would be classified in the ICPC-2 as "Neoplasm nervous system unspecified" in the neurological chapter, that is, in the same chapter than if hemiplegia was encoded.*

Third, conditions treated by ambulatory physiotherapists are sometimes vague, are not necessarily related to an underlying disease or can sometimes only be diagnosed in terms of symptoms/complaints. Classification of such conditions was easier to be performed with the ICPC-2, a classification essentially based on the high prevalence of common diagnoses in ambulatory practice. On the contrary, a certain number of symptoms/complaints and non-disease conditions recorded in the survey were hardly classified using the ICD-10 classification. Indeed, the ICD-10 is a disease-oriented classification that is mainly based on the aetiology, pathology, and morphology of the wide range of “known” diagnoses. Therefore, it lacks sufficient rubrics for the symptoms and non-disease conditions managed in ambulatory physiotherapy.

*Examples:*

- 1) *It was difficult to classify “visceral problem” or “heel complaint” with the ICD-10 because these conditions were too vague. On the contrary, “visceral problem” was easily classified using the ICPC-2 as “digestive symptom/complaint other” in the digestive chapter and “heel complaints” as “foot/toe symptom/complaint” in the musculoskeletal chapter.*
- 2) *Non-disease conditions such as “delayed milestone”, “pre-/post-natal physiotherapy”, or “impaired mobility” have been classified under broad general headings of the ICD-10 that have little relationship with the natural language of clinicians. “Delayed milestone” has been classified in “general symptoms and signs” of the “symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified” chapter although conditions referring to developmental disorders of scholastic skills are classified in the “mental/behavioural disorders” chapter. “Pre-/post-natal rehabilitation” and “impaired mobility” were respectively classified as “supervision of normal pregnancy” and “reduced mobility” in the “factors influencing health status and contact with health services” chapter. On the contrary, by using the ICPC-2, “delayed milestone” was classified as “child behaviour symptom/complaint” in the psychological chapter; “pre-/post-natal rehabilitation” as “pregnancy” in the pregnancy/childbearing/family planning chapter; and “impaired mobility” as “limited function/disability NOS” in the general and unspecified chapter.*

For all of these reasons, the ICPC-2 classification that has been specifically developed for community care seems to be easier and more adequate within the framework of ambulatory physiotherapy.

The validity of the data relative to the physiotherapeutic sessions has been investigated by comparing the Belgian physiotherapeutic nomenclature codes recorded in the survey with the benefits payments recorded by the INAMI/RIZIV during the year 2005. Significant differences were found for all variables of the Belgian nomenclature code. A slightly higher proportion of 30-minutes sessions (costing 18€) performed in the physiotherapists’ office to treat acute and chronic conditions of FA/FB lists was observed in the survey as compared with the INAMI/RIZIV data. The significant differences cannot be explained by a non-representativeness of the demographic characteristics of the respondents with regard to the sampling frame. Nevertheless, the sampling frame of the survey was exclusively constituted by physiotherapists performing at least 1000 benefit payments of types Ia and/or II and/or VI per year while the data of the INAMI/RIZIV included all benefit payments of types Ia and/or II and/or VI recorded during the year 2004. Despite the significant differences found between survey and INAMI/RIZIV data, the differences of proportions observed between them were, on the whole, small (average proportion difference:  $2.25 \pm 3.06\%$ ). Why small proportion differences are detected as significant could be explained by the very high number of sessions recorded by the INAMI/RIZIV ( $n = 29,198,425$ ). Indeed, high data size may increase type I errors resulting in the finding of a significant difference when in fact there is not. Moreover, the same general trend is observed for all variables of the Belgian nomenclature code both in survey and in INAMI/RIZIV data: 30-minutes sessions performed to treat common pathologies in the physiotherapists’ office and costing 18€ represent the most usual situation observed in Belgian ambulatory physiotherapy. However, survey data underestimate the number of heavy pathologies treated in Belgian ambulatory physiotherapy.

### 1.3.2. Treatment modalities applied in Belgian ambulatory physiotherapy

The treatment modalities applied in Belgian ambulatory physiotherapy would be now discussed for each of the five selected conditions in the light of the literature review on evidence-based physiotherapeutic modalities.

*Acute low back pain (without radiating pain)*

The most common treatment modalities applied by Belgian ambulatory physiotherapists to treat patients with acute low back pain are, from the most prevalent to the least: education of the patient, massage, mobilizations, home exercises, and stretching. The following treatment modalities are also frequent but to a lesser extent: thermotherapy, muscle strengthening, electrophysiotherapy, and spinal manipulations. The treatment modalities rarely applied by ambulatory physiotherapists include spinal tractions, muscle chains, proprioceptive rehabilitation, reflexotherapy, relaxation, behavioural therapy, EMG biofeedback, and hydrotherapy.

The treatment modalities and the proportion of physiotherapists in our survey treating at least one patient with acute low back pain are confronted in Table 4.9 with the results of the literature review on evidence-based therapeutic modalities. Note that some evidence was only found for chronic low back pain. There is strong to moderate evidence in favour of the most common treatment modalities applied by Belgian ambulatory physiotherapists to treat patients with low back pain. On the contrary, treatment modalities that are ineffective or non-safety or with weak evidence are not frequently used by Belgian physiotherapists. It is important to note that spinal manipulations, which are performed by 38% of the physiotherapists though they are not legally considered as a physiotherapeutic treatment, are efficient but dangerous since they may cause minor (e.g., headache, fatigue) or major (e.g., stroke) secondary effects.

**Table 9 Acute low back pain: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of acute low back pain (LBP)
Education of the patient	86 ± 4%	Evidence for (moderate to strong)	<ul style="list-style-type: none"> <li>There is moderate to strong evidence that educational interventions are effective to reduce disability and increase return to work but are ineffective to reduce pain level.</li> <li>Concerning back schools: There is moderate evidence suggesting that back schools are effective in reducing pain, improving function and return to work rate during short and intermediate-terms follow-up. There is moderate evidence suggesting that back schools have better short- and intermediate-terms effects on pain and function in patients with recurrent or chronic low back pain than other traditional treatments. Back schools programs usually include education, exercise and interventions on movement and postures ergonomics in proportions and quantities that may considerably vary. More studies should be conducted to identify the optimal proportion of the different components of back schools programs as well as the characteristics of the total program in terms of number, frequency, duration and composition of the sessions.</li> <li>Concerning advice to stay active: Educating the patient with acute low back pain on the importance to stay active and to resume normal activities of daily life as soon as possible is effective.</li> <li>Concerning bed rest: There is strong evidence that bed rest is ineffective in acute low back pain and may induce undesirable effects.</li> </ul>
Massage	75 ± 5%	Evidence for (moderate)	<ul style="list-style-type: none"> <li>There is moderate evidence that massage has a superior positive effect on low back pain as compared to passive therapeutic modalities such as relaxation, acupuncture and self-care education.</li> </ul>
Mobilizations	74 ± 5%	? Evidence for ? (moderate to strong)	<ul style="list-style-type: none"> <li>Adopted under the term “Exercise therapy” (COST B13 Working Group 2004).</li> <li>There is a moderate to strong evidence supporting a positive but modest short-term effect of exercise therapy. There is no clear evidence on the type of exercises that should be recommended. Although low intensity exercises seem ineffective, there is no clear evidence on the frequency, duration and intensity of exercises that should be recommended.</li> </ul>

**Table 9 Acute low back pain: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of acute low back pain (LBP)
Home exercises	62 ± 6%	? Evidence for ? (moderate to strong)	<ul style="list-style-type: none"> <li>Adopted under the term “Exercise therapy” (COST B13 Working Group 2004).</li> <li>There is a moderate to strong evidence supporting a positive but modest short-term effect of exercise therapy. There is no clear evidence on the type of exercises that should be recommended. Although low intensity exercises seem ineffective, there is no clear evidence on the frequency, duration and intensity of exercises that should be recommended.</li> </ul>
Stretching	55 ± 6%	Evidence for (moderate to strong)	<ul style="list-style-type: none"> <li>Adopted under the term “Exercise therapy” (COST B13 Working Group 2004).</li> <li>There is a moderate to strong evidence supporting a positive but modest short-term effect of exercise therapy. There is no clear evidence on the type of exercises that should be recommended. Although low intensity exercises seem ineffective, there is no clear evidence on the frequency, duration and intensity of exercises that should be recommended.</li> <li>Stretching exercises may improve pain and function.</li> </ul>
Thermotherapy	46 ± 6%	Evidence for (weak)	<ul style="list-style-type: none"> <li>There is weak evidence that heat therapy in patients with acute and subacute low back pain slightly reduce pain and disability at short-term.</li> <li>There is no evidence available for or against the effectiveness of cold therapy.</li> </ul>
Muscle strengthening	44 ± 6%	Evidence for (moderate to strong)	<ul style="list-style-type: none"> <li>Adopted under the term “Exercise therapy” (COST B13 Working Group 2004).</li> <li>There is a moderate to strong evidence supporting a positive but modest short-term effect of exercise therapy. There is no clear evidence on the type of exercises that should be recommended. Although low intensity exercises seem ineffective, there is no clear evidence on the frequency, duration and intensity of exercises that should be recommended.</li> <li>Although muscle strengthening is a common component of exercise programmes, it is no more effective than other types of exercises.</li> <li>Muscle strengthening may improve pain and function.</li> </ul>



**Table 9 Acute low back pain: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of acute low back pain (LBP)
Electrophysiotherapy	39 ± 6%	Conflicting evidence (only chronic LBP)	<ul style="list-style-type: none"> <li>TENS: There is conflicting evidence that TENS as an isolated intervention is effective in patients with chronic low back pain. Some studies support a limited effect of TENS in reducing pain and improving function. However, more studies of sufficient power are needed before definitive conclusions can be drawn.</li> </ul>
		?	<ul style="list-style-type: none"> <li>Ionization / inteRFTrential currents: There is very little evidence available in the literature on the effectiveness of electrotherapy (ionization, inteRFTrential currents ...). The effectiveness of such physical therapy modalities remains unknown. Such treatment modalities should thus not be recommended.</li> </ul>
		Evidence against (weak)	<ul style="list-style-type: none"> <li>Ultrasounds: There is weak evidence that ultrasounds are ineffective to treat low back pain. However very little good quality studies on this topic are available in the literature. Based on the available evidence, ultrasounds should not be recommended.</li> </ul>
		?	<ul style="list-style-type: none"> <li>Electromagnetic waves: There is no evidence available in the literature on the effectiveness of electromagnetic waves.</li> </ul>
Spinal manipulations	38 ± 6%	Evidence against (weak)	<ul style="list-style-type: none"> <li>Laser: There is weak evidence that laser therapy is ineffective to treat low back pain. However very little good quality studies on this topic are available in the literature. Based on the available evidence, laser therapy should not be recommended.</li> </ul>
		Evidence for (moderate) but not safety	<ul style="list-style-type: none"> <li>There is moderate evidence that spinal manipulations are more effective than no treatment to treat low back pain.</li> <li>There is moderate evidence that spinal manipulations are as effective as more traditional physiotherapeutic treatments.</li> <li>There is little and sometimes conflicting evidence on safety of manipulative treatment for low back pain. Minor secondary effects (headache, fatigue sensation, general transient unwellness state and/or pain enhancement) seem frequent and self-limiting. Major complications (stroke due to vertebro-basilar artery dissection, herniated discs, cauda equina syndrome) seem very uncommon but potentially dramatic.</li> </ul>

**Table 9 Acute low back pain: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of acute low back pain (LBP)
Spinal tractions	18 ± 5%	Evidence against (moderate to strong)	<ul style="list-style-type: none"> <li>There is moderate to strong evidence that intermittent and continuous traction is ineffective to treat low back pain in general, with or without sciatica.</li> </ul>
Muscle chains	18 ± 5%	?	<ul style="list-style-type: none"> <li>No information available in the literature review.</li> </ul>
Proprioceptive rehabilitation	16 ± 4%	?	<ul style="list-style-type: none"> <li>No information available in the literature review.</li> </ul>
Reflexotherapy	09 ± 4%	? (only chronic LBP)	<ul style="list-style-type: none"> <li>Reflexotherapy seems efficient at short- (5 minutes) and intermediate- (30 to 45 days) terms. Other studies are however required as the available literature is based on the scientific work of only one team.</li> <li>Effectiveness of reflexotherapy is less clear for patients with subacute low back pain.</li> </ul>
Relaxation	08 ± 3%	?	<ul style="list-style-type: none"> <li>There is moderate evidence that massage has a superior positive effect on low back pain as compared to passive therapeutic modalities such as relaxation, acupuncture and self-care education.</li> </ul>
Behavioural therapy	05 ± 3%	No evidence for nor against (only chronic LBP)	<ul style="list-style-type: none"> <li>There is strong evidence that most behavioural interventions are more effective than no treatment in reducing pain and improving function in patients with chronic low back pain.</li> <li>There is weak evidence that behavioural interventions are equivalent in terms of effectiveness as compared with exercise therapy.</li> <li>There is moderate evidence that adding a behavioural intervention to more traditional treatments is not effective in improving function as compared to the traditional treatment alone.</li> </ul>
Biofeedback (EMG)	00 ± 0%	Evidence against (moderate to strong) (only chronic LBP)	<ul style="list-style-type: none"> <li>There is a moderate to strong evidence that EMG biofeedback is not effective in patients with chronic low back pain.</li> </ul>

**Table 9 Acute low back pain: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of acute low back pain (LBP)
Hydrotherapy	00 ± 0%	Evidence for (weak)	<ul style="list-style-type: none"> <li>There is weak evidence that hydrotherapy improves the function and is as efficient as floor exercises.</li> </ul>

**Table 10 Total knee replacement: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of total knee replacement
Muscle strengthening	96 ± 3%	? Evidence for ? (weak)	<ul style="list-style-type: none"> <li>No information was available in the literature review about general muscle strengthening.</li> <li>There is weak evidence that low-velocity submaximal eccentric exercises of the hamstring muscles allow better recovery of full knee extension.</li> </ul>
Mobilizations	95 ± 3%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review about general mobilizations.</li> <li>There is weak evidence that continuous passive mobilization (i.e., the use of the Kinetec) as an adjunct to physiotherapy is effective in improving short-term active knee flexion and reducing length of hospital stay and need for postoperative manipulation. However, its effects are clinically small.</li> </ul>
Gait rehabilitation	91 ± 4%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Education of the patient	81 ± 6%	Evidence for (weak)	<ul style="list-style-type: none"> <li>There is weak evidence that advices encouraging the patient to remain physically active (such as swimming, cycling, power walking) are beneficial to general health and quality of the bones.</li> </ul>
Massage	78 ± 6%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Home exercises	72 ± 7%	Evidence for (moderate)	<ul style="list-style-type: none"> <li>There is moderate evidence that patients who completed a home exercise program performed similarly to patients who completed regular outpatient clinic sessions in addition to the home exercises. However, this result should be interpreted with caution in our country where financing of hospital day duration is limited by national regulations.</li> </ul>
Stretching	55 ± 7%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Contracted-relaxed techniques	49 ± 7%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Cryotherapy	46 ± 7%	Evidence for (weak)	<ul style="list-style-type: none"> <li>There is weak evidence that compression combined with cryotherapy is an effective, risk-free and well-tolerated physical therapy modality that allows pain reduction and decreases analgesics consumption after total knee replacement.</li> </ul>

**Table 10 Total knee replacement: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of total knee replacement
Electrophysiotherapy	18 ± 6%	<p>Evidence for (weak)</p> <p>Evidence against (moderate)</p>	<ul style="list-style-type: none"> <li>▪ The paucity of evidence that has been found in electrophysiotherapeutic modalities suggests that they should not be recommended on a routine basis as their effectiveness has not been sufficiently well established.</li> <li>▪ Electric stimulation: there is weak evidence that electric stimulation results in a statistically significant improvement in patient's walking speed and in a reduction of extensor lag and length of hospital stay.</li> <li>▪ TENS: there is moderate evidence that TENS is not effective in reducing pain in the postoperative management after total knee replacement.</li> </ul>
Manipulations	03 ± 3%	?	<ul style="list-style-type: none"> <li>▪ No information was available in the literature review.</li> </ul>
EMG biofeedback	02 ± 2%	?	<ul style="list-style-type: none"> <li>▪ No information was available in the literature review.</li> </ul>
Hydrotherapy	02 ± 2%	?	<ul style="list-style-type: none"> <li>▪ No information was available in the literature review.</li> </ul>

Transcutaneous electrical nerve stimulation (TENS) and ultrasounds (US) are the two electrophysiotherapeutic modalities the most frequently used by ambulatory physiotherapists. However, the effectiveness of both TENS and US to treat patients with low back pain has not been demonstrated.

### *Total knee replacement*

The most common treatment modalities applied by Belgian ambulatory physiotherapists to treat patients with total knee replacement were, from the most prevalent to the least: muscle strengthening, mobilizations, gait rehabilitation, education of the patient, massage, home exercises, and stretching. The following treatment modalities are also frequent but to a lesser extent: contracted-relaxed techniques and cryotherapy. The treatment modalities rarely applied by ambulatory physiotherapists include electrophysiotherapy, manipulations, EMG biofeedback, and hydrotherapy.

The treatment modalities and the proportion of physiotherapists in our survey treating at least one patient with total knee replacement are confronted in Table 4.10 with the results of the literature review on evidence-based therapeutic modalities. Only a small number of evidence was available in the literature relative to the physiotherapeutic modalities applied in total knee replacement. Overall, weak evidence was only demonstrated for education of the patient, home exercises, cryotherapy, and electric stimulation, which is the most frequent electrophysiotherapeutic modality used in ambulatory practice. On the contrary, moderate evidence was found for the TENS electrotherapeutic modality which seems ineffective in reducing pain consecutive to total knee replacement.

### *Hemiplegia / Hemiparesis*

The most common treatment modalities applied by Belgian ambulatory physiotherapists to treat patients with hemiplegia/hemiparesis were, from the most prevalent to the least: mobilizations, gait rehabilitation, muscle strengthening, balance rehabilitation, stretching, education of the patient, and functional rehabilitation (i.e., activities of daily life (ADL)). Numerous specific movement therapies have been developed: Bobath (normal movement approach), Kabat (PNF = proprioceptive neuro facilitation), Johnstone, PeRFTtti, Picard, and Brunnström techniques. Among these specific movement therapies, Bobath and Kabat were the techniques the most applied in Belgian ambulatory physiotherapy.

**Table II Hemiplegia/hemiparesis: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

<b>Treatment modality</b>	<b>Frequency (proportion ± accuracy)</b>	<b>Type of evidence</b>	<b>Evidence available in the literature on physiotherapy of hemiplegia/hemiparesis due to stroke</b>
Mobilizations	95 ± 3%	Evidence for (weak to moderate)	<ul style="list-style-type: none"> <li>Patients with stroke should clearly be mobilized as soon as possible after stroke (moderate evidence).</li> <li>There is weak evidence that mobilizations are useful to treat and prevent shoulder pain in the affected upper limb.</li> <li>Antispastic positioning, range of motion exercises, and stretching performed several times daily are recommended to treat spasticity (experts' consensus).</li> </ul>
Gait rehabilitation	83 ± 5%	Evidence for (strong)	<ul style="list-style-type: none"> <li>Strong evidence has been found in the literature supporting implementation of gait rehabilitation techniques.</li> <li>Task-specific techniques should be preferred to impairment-focused approaches (weak to strong evidence).</li> </ul>
Muscle strengthening	78 ± 5%	Evidence for (strong to moderate)	<ul style="list-style-type: none"> <li>There is strong to moderate evidence in favour of strengthening exercises of targeted weakened muscle groups.</li> <li>There is moderate evidence that strengthening exercises improve independence in activities of daily life.</li> </ul>
Balance rehabilitation	76 ± 5%	Evidence for (moderate)	<ul style="list-style-type: none"> <li>Moderate evidence has been found in favour of coordination and balance exercises as they improve level of safety in activities of daily life.</li> <li>Strong evidence exists in favour of task-oriented exercise training to improve balance.</li> </ul>
Stretching	70 ± 6%	Evidence for (weak)	<ul style="list-style-type: none"> <li>Stretching exercises are recommended to improve range of motion and to prevent contractures (low evidence).</li> <li>There is weak evidence that stretching is useful to treat and prevent shoulder pain in the affected upper limb.</li> <li>Antispastic positioning, range of motion exercises, and stretching performed several times daily are recommended to treat spasticity (experts' consensus).</li> </ul>

**Table II Hemiplegia/hemiparesis: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

<b>Treatment modality</b>	<b>Frequency (proportion ± accuracy)</b>	<b>Type of evidence</b>	<b>Evidence available in the literature on physiotherapy of hemiplegia/hemiparesis due to stroke</b>
Education of the patient	59 ± 6%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Functional rehabilitation (ADL)	53 ± 6%	Evidence for (moderate to strong)	<ul style="list-style-type: none"> <li>There is moderate to strong evidence that, for the specific objectives of improving reaching for objects, a task-specific approach should be used rather than an impairment-focused approach.</li> <li>Strong evidence exists in favour of task-oriented exercise training to restore balance and gait and for strengthening the lower paretic limb.</li> <li>There is strong evidence in favour of task-specific training to improve performance of selected tasks.</li> </ul>
Bobath technique	33 ± 6%	Evidence for (weak)	<ul style="list-style-type: none"> <li>Adopted under the term “specific movement therapies”.</li> <li>No specific movement therapy should be assumed to be more efficacious than others.</li> <li>Comparisons of the Bobath concept with other approaches do not demonstrate superiority of one approach over the other at improving upper limb impairment, activity or participation.</li> <li>The Bobath concept was found to reduce shoulder pain better than cryotherapy and to reduce tone better than no intervention or PNF.</li> <li>There is weak evidence that Bobath technique is beneficial to improve gait in relatively high-level patients.</li> </ul>
Kabat technique (PNF)	31 ± 6%	No evidence for nor against	<ul style="list-style-type: none"> <li>Adopted under the term “specific movement therapies”.</li> <li>No specific movement therapy should be assumed to be more efficacious than others.</li> <li>Comparisons of the Bobath concept with other approaches do not demonstrate superiority of one approach over the other at improving upper limb impairment, activity or participation.</li> <li>The Bobath concept was found to reduce shoulder pain better than cryotherapy and to reduce tone better than no intervention or PNF.</li> </ul>



**Table II Hemiplegia/hemiparesis: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

<b>Treatment modality</b>	<b>Frequency (proportion ± accuracy)</b>	<b>Type of evidence</b>	<b>Evidence available in the literature on physiotherapy of hemiplegia/hemiparesis due to stroke</b>
Aerobic exercises	20 ± 5%	Evidence for (strong)	<ul style="list-style-type: none"> <li>There is strong evidence in favour of cardiovascular training to improve aerobic fitness through large muscle exercises (e.g., walking, treadmill, stationary cycling). Aerobic exercises is thus recommended to increase independence in activities of daily living, walking speed and efficiency, to improve tolerance to prolonged physical activity and to reduce risk of cardiovascular disease.</li> </ul>
Sensitive rehabilitation	16 ± 4%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Electrophysiotherapy	10 ± 4%	Evidence against except to treat shoulder pain (strong to moderate)  Conflicting evidence	<ul style="list-style-type: none"> <li>TENS: Strong evidence is available suggesting that TENS is not recommended in post-stroke patients. However, one exception occurs for high-intensity TENS that seems effective to treat shoulder pain (strong to moderate evidence).</li> <li>Functional electric stimulation (FES): Conflicting evidence was found in the literature about FES. There is weak to moderate evidence that FES is effective in patients with paretic muscles, shoulder subluxation and for gait training. However, FES must not be assumed to have sustained effects. Consequently, FES should not be used on a routine basis.</li> </ul>
Massage	05 ± 3%	Evidence for (weak)	<ul style="list-style-type: none"> <li>Weak evidence was found in the literature supporting massage to treat shoulder pain in the affected upper limb.</li> </ul>
Treadmill training	04 ± 2%	Conflicting evidence	<ul style="list-style-type: none"> <li>Conflicting evidence was found about treadmill training with or without partial body weight support.</li> <li>Although, it will have positive cardiovascular effects, further trials are required to confirm findings of a positive effect on gait function of treadmill with partial bodyweight support. Consequently, treadmill training should not be used on a routine basis.</li> </ul>

**Table 11 Hemiplegia/hemiparesis: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

<b>Treatment modality</b>	<b>Frequency (proportion ± accuracy)</b>	<b>Type of evidence</b>	<b>Evidence available in the literature on physiotherapy of hemiplegia/hemiparesis due to stroke</b>
Johnstone technique	03 ± 2%	No evidence for nor against	<ul style="list-style-type: none"> <li>Adopted under the term “specific movement therapies”.</li> <li>No specific movement therapy should be assumed to be more efficacious than others.</li> <li>Comparisons of the Bobath concept with other approaches do not demonstrate superiority of one approach over the other at improving upper limb impairment, activity or participation.</li> </ul>
PeRFTtti technique	02 ± 2%	No evidence for nor against	<ul style="list-style-type: none"> <li>Adopted under the term “specific movement therapies”.</li> <li>No specific movement therapy should be assumed to be more efficacious than others.</li> <li>Comparisons of the Bobath concept with other approaches do not demonstrate superiority of one approach over the other at improving upper limb impairment, activity or participation.</li> </ul>
EMG biofeedback	01 ± 1%	No evidence for nor against	<ul style="list-style-type: none"> <li>There is insufficient evidence to support the routine use of EMG biofeedback in the rehabilitation of movement and function after stroke.</li> </ul>
Constraint-induced movement therapy	01 ± 1%	Evidence for (weak) but for a small subset of patients and difficult to implement	<ul style="list-style-type: none"> <li>Constraint-induced movement therapy may prove beneficial for a small subset of stroke patients (weak evidence).</li> <li>Constraint-induced movement therapy is not recommended as the high intensity constraint-induced therapy delivered in research trials may be difficult to deliver in routine practice and has only been proven for the upper limb in certain well-defined situations.</li> </ul>
Picard technique	00 ± 0%	No evidence for nor against	<ul style="list-style-type: none"> <li>Adopted under the term “specific movement therapies”.</li> <li>No specific movement therapy should be assumed to be more efficacious than others.</li> <li>Comparisons of the Bobath concept with other approaches do not demonstrate superiority of one approach over the other at improving upper limb impairment, activity or participation.</li> </ul>

**Table II Hemiplegia/hemiparesis: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

<b>Treatment modality</b>	<b>Frequency (proportion ± accuracy)</b>	<b>Type of evidence</b>	<b>Evidence available in the literature on physiotherapy of hemiplegia/hemiparesis due to stroke</b>
Brunnström technique	00 ± 0%	No evidence for nor against	<ul style="list-style-type: none"> <li>▪ Adopted under the term “specific movement therapies”.</li> <li>▪ No specific movement therapy should be assumed to be more efficacious than others.</li> <li>▪ Comparisons of the Bobath concept with other approaches do not demonstrate superiority of one approach over the other at improving upper limb impairment, activity or participation.</li> </ul>

The treatment modalities more rarely applied by ambulatory physiotherapists include aerobic exercises, sensitive rehabilitation, electrophysiotherapy, massage, treadmill training, Johnstone and Perfetti techniques, EMG biofeedback, constraint-induced movement therapy, Picard and Brunnström techniques.

The treatment modalities and the proportion of physiotherapists in our survey treating at least one patient with hemiplegia/hemiparesis are confronted in Table 4.11 with the results of the literature review on evidence-based therapeutic modalities. Overall, there is moderate evidence in favour of the most common treatment modalities applied by Belgian ambulatory physiotherapists to treat patients with hemiplegia/hemiparesis, with the exception of patient's education treatment modality for which no information was available in the literature review. On the contrary, the treatment modalities more rarely used by Belgian physiotherapists present conflicting evidence, no evidence for nor against, are not feasible on a routine basis or are ineffective. Weak to strong evidence was just demonstrated for aerobic exercises, massage, and Bobath technique. Although Bobath and Kabat techniques were the most specific movement therapies applied by Belgian physiotherapists, they do not demonstrated superiority with regard to other specific movement therapies. However, one study has shown that the Bobath concept seems to reduce shoulder pain better than cryotherapy and to reduce tone better than no intervention or Kabat technique. Another study has also found weak evidence in favour of Bobath technique in improving gait in relatively high-level patients. More studies investigating other specific movement therapies than Bobath therapy are however required before drawing any conclusion about the evidence/non-evidence of specific movement therapies. Finally, it is interesting to note that there is only conflicting evidence for the most frequent electrophysiotherapeutic modality used in ambulatory practice, namely electric stimulation.

### *Gait disorders in elderly people*

The most common treatment modalities applied by Belgian ambulatory physiotherapists to treat elderly patients with gait disorders were, from the most prevalent to the least: muscle strengthening, balance rehabilitation, mobilizations, education of the patient, proprioceptive rehabilitation, coordination exercises, and home exercises. The following treatment modalities were also common but to a lesser extent: transfer exercises, stretching, pick-up techniques, and aerobic exercises. The treatment modalities rarely applied by ambulatory physiotherapists include massage and Tai Chi Quan.

**Table 12 Gait disorders in elderly people: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of gait rehabilitation in the elderly
Muscle strengthening	91 ± 3%	Evidence for (weak to moderate)	<ul style="list-style-type: none"> <li>There is weak to moderate evidence that muscle strengthening has a beneficial effect in gait ability.</li> </ul>
Balance rehabilitation	90 ± 4%	Evidence for (weak)	<ul style="list-style-type: none"> <li>Weak evidence exists in favour of balance training in elderly people in improving gait and balance both objectively and subjectively. After balance training, gait ability is improved at least for a few months.</li> </ul>
Mobilizations	83 ± 5%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Education of the patient	71 ± 5%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Proprioceptive rehabilitation	67 ± 6%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Coordination exercises	59 ± 6%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Home exercises	52 ± 6%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Transfer exercises	46 ± 6%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Stretching	31 ± 6%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Pick-up techniques	30 ± 6%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Aerobic exercises	30 ± 6%	Evidence for (weak to moderate)	<ul style="list-style-type: none"> <li>There is weak to moderate evidence that aerobic exercises have a beneficial effect in gait ability.</li> </ul>
Massage	05 ± 3%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>

**Table 12 Gait disorders in elderly people: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion ± accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of gait rehabilitation in the elderly
Tai Chi Quan	01 ± 1%	Evidence for (weak to moderate)	<ul style="list-style-type: none"> <li>There is weak to moderate evidence that Tai Chi Quan preserves a high-automated level of motor control necessary for the gait regularity.</li> </ul>

The treatment modalities and the proportion of physiotherapists in our survey treating at least one elderly patient with gait disorders are confronted in Table 4.12 with the results of the literature review on evidence-based therapeutic modalities. Only a small number of evidence was available in the literature relative to the physiotherapeutic modalities used to treat gait disorders in elderly people. Indeed, gait disorders in the elderly are generally studied in the context of specific conditions rather than in a more general context. Weak to moderate evidence was demonstrated for muscle strengthening and balance rehabilitation, the two most common treatment modalities applied by Belgian ambulatory physiotherapists to treat gait disorders in elderly people. The literature review has found that exercise programs in general seem efficacious in improving walking performance and more specifically gait speed, walking independence and step height. Exercise programs usually include muscle strengthening, balance exercises, mobilizations, stretching, coordination exercises, transfer exercises, etc. Thus, these types of exercises could be effective in improving gait in elderly people. Studies are however required to identify which of these exercises are actually effective in the treatment of gait disorders in the elderly. Weak to moderate evidence was also found for aerobic exercises and Tai Chi Quan. This latter is almost not used in ambulatory physiotherapy as it is not really a physiotherapeutic modality treatment. Thus, Tai Chi Quan is probably not a technique within physiotherapists' province.

### *Bronchiolitis in infants and children*

The most frequent treatment modalities applied by Belgian ambulatory physiotherapists to treat infants and children with bronchiolitis were, from the most prevalent to the least: chest percussion, education of the parents, assisting coughing, aerosol, forced exhalation techniques, postural drainage, and chest vibration. The following treatment modalities were also common but to a lesser extent: acceleration of expiratory flow, nasopharyngeal decongestion, and slow prolonged expiration. The treatment modalities rarely applied by ambulatory physiotherapists include slow increase of expiratory flow and use of specific devices.

The treatment modalities and the proportion of physiotherapists in our survey treating at least one infant/child with bronchiolitis are confronted in Table 4.13 with the results of the literature review on evidence-based therapeutic modalities. A paucity of evidence was available in the literature relative to the physiotherapeutic modalities used to treat bronchiolitis in infants and children.

**Table 13 Bronchiolitis in infants and children: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

Treatment modality	Frequency (proportion $\pm$ accuracy)	Type of evidence	Evidence available in the literature on physiotherapy of bronchiolitis in infants and children
Chest percussion	74 $\pm$ 09%	No evidence for nor against	<ul style="list-style-type: none"> <li>There is weak to moderate evidence that chest percussion should not be recommended as it has not been found to be helpful.</li> </ul>
Education of the parents	74 $\pm$ 09%	Evidence for (weak)	<ul style="list-style-type: none"> <li>Weak evidence was found in educating the family on basic pathophysiology and expected clinical course of bronchiolitis, on limiting exposure to contagious settings and siblings, and on importance on hand washing in all settings.</li> <li>Education of the family on calling the primary care provider when objective signs of worsening clinical status are present is also recommended by an experts' consensus.</li> <li>Educating the family on eliminating exposure to tobacco smoke is also recommended.</li> </ul>
Assisted coughing	67 $\pm$ 10%	No evidence for nor against	<ul style="list-style-type: none"> <li>There is weak to moderate evidence that assisting coughing should not be recommended as it has not been found to be helpful.</li> <li>Assisting coughing is however recommended by experts' consensus from French-speaking European countries.</li> </ul>
Aerosol	64 $\pm$ 10%	<p>Evidence against (moderate to strong) except in specific situations</p> <p>No evidence for nor against</p>	<ul style="list-style-type: none"> <li>There is moderate to strong evidence that scheduled or serial albuterol aerosol therapies should not be routinely used. However, single administration trial inhalation of epinephrine or albuterol may be considered when there is a family history of allergy, asthma or atopy.</li> <li>Inhalation therapy should not be repeated nor continued in absence of clinical improvement between 15 to 30 minutes after the first trial inhalation.</li> <li>Aerosol therapy with saline and cool mist therapy should not be recommended as they have not been found to be helpful.</li> </ul>
Forced exhalation techniques	61 $\pm$ 10%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>



**Table 13 Bronchiolitis in infants and children: treatment modalities applied by Belgian ambulatory physiotherapists and evidence-based literature**

<b>Treatment modality</b>	<b>Frequency (proportion ± accuracy)</b>	<b>Type of evidence</b>	<b>Evidence available in the literature on physiotherapy of bronchiolitis in infants and children</b>
Postural drainage	61 ± 10%	No evidence for nor against	<ul style="list-style-type: none"> <li>There is weak to moderate evidence that postural drainage should not be recommended as it has not been found to be helpful.</li> </ul>
Chest vibration	61 ± 10%	No evidence for nor against	<ul style="list-style-type: none"> <li>There is weak to moderate evidence that chest vibration should not be recommended as it has not been found to be helpful.</li> </ul>
Acceleration of expiratory flow	38 ± 10%	?	<ul style="list-style-type: none"> <li>No information was available in the literature review.</li> </ul>
Nasopharyngeal decongestion	33 ± 10%	Experts' consensus	<ul style="list-style-type: none"> <li>Nasopharyngeal decongestion combined with local instillation of saline is recommended by an experts' consensus as an upper airway clearance method that can be performed by physiotherapists.</li> </ul>
Slow prolonged expiration	31 ± 10%	Experts' consensus	<ul style="list-style-type: none"> <li>Slow prolonged expiration is recommended as one of the preferred techniques in the treatment of bronchiolitis in infants and children by experts' consensus from French-speaking European countries.</li> </ul>
Slow increase of expiratory flow	21 ± 08%	Experts' consensus	<ul style="list-style-type: none"> <li>Slow increase in expiratory flow is recommended as one of the preferred techniques in the treatment of bronchiolitis in infants and children by experts' consensus from French-speaking European countries.</li> </ul>
Specific devices	10 ± 06%	No evidence for nor against	<ul style="list-style-type: none"> <li>There is insufficient evidence from the literature to conclude that specific devices such as CPAP (non invasive Continuous Positive Airway Pressure) and CNEP (Continuous Negative Extrathoracic Pressure) are beneficial in acute hypoxemic respiratory failure in paediatric patients.</li> <li>Potential risks of CPAP and CNEP have not been studied.</li> </ul>

The evidence for and against physiotherapeutic modalities applied to treat bronchiolitis in infants and children are very weak. As other European countries, chest physiotherapy (e.g., vibration, percussion, postural drainage, assisted coughing, forced exhalation techniques) is widely used by Belgian ambulatory physiotherapists. They are generally recommended by experts' consensus from French-speaking European countries although they have not been found to be helpful to treat bronchiolitis. Moreover, the safety of chest physiotherapy (as well as of specific devices as CPAP and CNEP) should in further studies to be addressed as it has never been really studied. However, in the absence of other effective treatment modalities and evidence against, it is hazardous to give up chest physiotherapy. Weak evidence has only been demonstrated in education of the parents/family, a treatment modality frequently applied by Belgian ambulatory physiotherapists (74%).

### *Conclusion about the effectiveness of treatment modalities applied by Belgian ambulatory physiotherapists*

Among the five selected conditions, enough evidence relative to physiotherapeutic modalities was only available in low back pain and hemiplegia/hemiparesis conditions. Overall, evidence has been found in the literature for the most common treatment modalities applied by Belgian ambulatory physiotherapists to treat these two conditions. More studies investigating the evidence level of physiotherapeutic modalities applied in total knee replacement, gait disorders in the elderly, and bronchiolitis in infants and children are required before drawing any conclusion about the effectiveness of treatment modalities applied by Belgian ambulatory physiotherapists to treat these conditions.

### **1.3.3. Functional tests used in Belgium ambulatory physiotherapy and key element in the establishment of physiotherapeutic treatment planning**

Although most of the Belgian ambulatory physiotherapists (89%) consider the patient's functional status as the key element to establish their treatment planning, they do not use in their practice standardised functional assessment tools (i.e., functional tests whose metric properties and quality appraisal have been pretty documented in the literature) to determine the evolution of their patients. One exception however occurs in the assessment of gait disorders in elderly people. Indeed, two standardised functional assessment tools (i.e., Tinetti Balance and Gait Evaluation, 6-Minutes Walk Test) are regularly used by Belgian ambulatory physiotherapists as they are requisite by the INAMI/RIZIV but other standardised tools are rarely carried out. The non-use of standardised functional assessment tools in physiotherapeutic practice has been demonstrated for only the five conditions selected in the survey but it can be assumed that the same trend would be found in other conditions requiring a physiotherapeutic treatment.

Unlike standardised functional assessment tools, clinical tests are regularly carried out by Belgian ambulatory physiotherapists as part of the patients' clinical examination. Ambulatory physiotherapists seem to appraise the evolution of the patients on an everyday basis using observation, anamnesis, palpation, muscular testing, and goniometry. Although these clinical tests can be useful in the physiotherapeutic management, they can hardly be used as a rationale for financing physiotherapy since their metric properties and quality appraisal have not (or almost not) been documented in the literature.

Discussions with the physiotherapists' associations that have collaborated to the development of the survey have highlighted some interesting points about the implementation of standardised assessment tools as a rationale for financing physiotherapy:

- The implementation of standardised assessment tools as a rationale for financing physiotherapy should not increase the physiotherapists' administrative workload.
- Some time allocated to perform the functional assessment should be planned to avoid harming the patients, especially for those requiring more refundable sessions than the predetermined quota.
- A functional assessment carried out during one single session is not always representative of the actual treatment needs of the patients.
- In addition to the functional assessment of motor and physical problems, psychological, mental, behavioural, and social aspects should be taken into account.
- The implementation of a functional cut-off within the framework of the refunding of physiotherapeutic sessions (e.g., patients with a score > x would be eligible for only Y refundable sessions) is dangerous as it is difficult to entirely cover all dimensions representative of the actual treatment needs of the patients.

These points highlighted by some ambulatory physiotherapists could be used as thinking basis in the possible implementation of standardised assessment tools as rationale for financing physiotherapy.

#### I.3.4. Knowledge and use of the ICF concepts

Most of the Belgian ambulatory physiotherapists do not know the concepts of the International Classification of Functioning, Disability, and Health (85%). Youngest Dutch-speaking physiotherapists with a recent degree had the better knowledge of the ICF concepts. This probably indicates that Universities/Colleges, especially those belonging to the Flemish community, currently participate to the dissemination of the ICF knowledge. However, only 4% of the physiotherapists knowing the ICF concepts use these concepts in their ambulatory practice (e.g., to define the objectives of the treatment or to determine the patient's evolution).

## B. FRENCH VERSION OF THE SURVEY

Madame, Monsieur,

L'unité de Réadaptation et de Médecine Physique de l'Université catholique de Louvain et le Centre Fédéral d'Expertise des Soins de Santé vous invitent à participer à une étude sur les activités professionnelles en Belgique des kinésithérapeutes travaillant en milieu ambulatoire.

Cette étude fait suite à une demande du Conseil Technique de la Kinésithérapie qui a émis le souhait de réévaluer la nomenclature actuelle afin d'éventuellement l'adapter en tenant compte des besoins réels du patient. Ce projet demande la réalisation d'une enquête préliminaire afin de formuler des propositions concrètes en rapport avec la réalité du terrain.

L'objectif de l'enquête ci-jointe est d'identifier les pathologies les plus fréquemment traitées en kinésithérapie ambulatoire, les traitements les plus appliqués, et les outils d'évaluation fonctionnelle éventuellement utilisés. Les informations recueillies donneront ainsi une vue d'ensemble sur l'état actuel de la pratique de la kinésithérapie ambulatoire en Belgique.

Il va de soi que la qualité des résultats dépend de la collaboration des praticiens. **Votre participation à cette enquête est donc essentielle.** L'enquête proposée nécessite l'encodage des prestations d'une journée et ne prendra pas plus de 30 minutes. **Toutes les informations recueillies dans l'enquête seront bien sûr traitées de façon anonyme. Vos coordonnées ne sont en effet utilisées que pour vous contacter.** Si vous souhaitez connaître les résultats de cette enquête, il vous suffit de prendre contact avec Mme Arnould, Université catholique de Louvain, Unité READ, Avenue Mounier 53 (READ 5375), 1200 Bruxelles, tél.: 02/764.53.74, fax: 02/764.53.60, e-mail: carlyne.arnould@read.ucl.ac.be. Madame Arnould reste à votre disposition pour toute information complémentaire.

Par ailleurs, une étude ultérieure visera à étudier la faisabilité de l'utilisation d'outils d'évaluation fonctionnelle dans le cadre de la nomenclature. Si vous souhaitez contribuer activement à cette seconde phase, veuillez compléter la dernière page de ce document.

Nous vous remercions de bien vouloir nous retourner ce questionnaire complété dans l'enveloppe pré-affranchie ci-jointe dans les deux semaines de la réception de la présente lettre.

Dans l'espoir de votre participation active à cette étude, nous vous vous prions d'agréer, Madame, Monsieur, l'expression de notre entière considération.

Prof. J-L. Thonnard

Dr C. Arnould

Indiquez votre code postal: \_\_/\_\_/\_\_ Age: ..... Sexe: F / M Année du diplôme: \_\_\_\_

Enregistrement des prestations ambulatoires (! uniquement les prestations effectuées en **cabinet**, au **domicile** du bénéficiaire, ou en **maison de repos** pour personnes âgées !).

**Complétez le tableau pour les séances effectuées le premier ..... suivant la réception de cette enquête, et ce, quelque soit le volume d'activités effectuées** (si vous n'exercez pas votre profession ce jour-là, veuillez compléter le tableau pour les séances effectuées le premier jour de travail qui suit le jour indiqué).

Le jour est imposé pour des raisons de moyennage statistique.

**Date du jour encodé :** \_\_ / \_\_ / \_\_\_\_

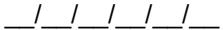
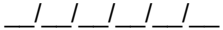
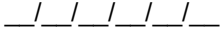
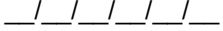
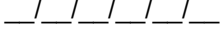
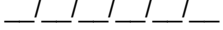
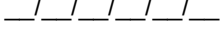
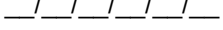
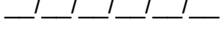
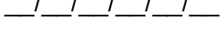
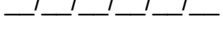
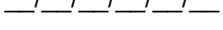
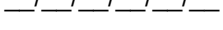
**Instructions:**

**Age:** âge accompli, si moins de 1 an, mettre 0

**Code nomenclature:** code de la prestation effectuée (afin de connaître le lieu et la durée de la séance)

**Motif de consultation:** pathologie/affection pour laquelle le patient est traité (Ecrire en majuscules et pas d'abréviation SVP)

No	Age	Sexe (F/M)	Code nomenclature	Motif de consultation
1			__/_/_/_/_/_/_	
2			__/_/_/_/_/_/_	
3			__/_/_/_/_/_/_	
4			__/_/_/_/_/_/_	
5			__/_/_/_/_/_/_	
6			__/_/_/_/_/_/_	
7			__/_/_/_/_/_/_	
8			__/_/_/_/_/_/_	
9			__/_/_/_/_/_/_	
10			__/_/_/_/_/_/_	
11			__/_/_/_/_/_/_	
12			__/_/_/_/_/_/_	
No	Age	Sexe (F/M)	Code nomenclature	Motif de consultation

13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

**I. Avez-vous traité, la semaine passée, au moins UN patient souffrant de lombalgie aiguë sans irradiations?:**

I.I.I.I OUI / NON

**Si OUI, cochez le(s) traitement(s) appliqué(s) pour le dernier patient que vous avez vu pour ce problème. Si NON, passez à la question suivante.**

**Âge du patient : ..... Sexe du patient: F / M**

**Délai entre le début de l'affection et le début de la prise en charge kinésithérapeutique de votre patient:**

☐ immédiat

☐ après 1 semaine

☐ après 2 semaines

☐ après 3 semaines

☐ > 1 mois

Tractions vertébrales <input type="checkbox"/>	Relaxation <input type="checkbox"/>	Physiothérapie / Électrothérapie (à spécifier): ..... .....
Manipulations vertébrales <input type="checkbox"/>	Thermothérapie (chaleur/froid) <input type="checkbox"/>	
Mobilisations <input type="checkbox"/>	Hydrothérapie <input type="checkbox"/>	Autres traitements (à spécifier): ..... ..... ..... ..... ..... .....
Renforcement musculaire <input type="checkbox"/>	Biofeedback (EMG) <input type="checkbox"/>	
Etirements/ Stretching <input type="checkbox"/>	Thérapie comportementale <input type="checkbox"/>	
Education du patient (information, conseils) <input type="checkbox"/>	Rééducation proprioceptive <input type="checkbox"/>	
Programme d'exercices à domicile <input type="checkbox"/>	Réflexothérapie (points gâchettes) <input type="checkbox"/>	
Massage <input type="checkbox"/>	Chaînes musculaires <input type="checkbox"/>	

**2. Comment déterminez-vous l'évolution des patients souffrant de lombalgie aiguë sans irradiations?**

**Cochez les types d'évaluation que vous réalisez dans votre pratique.**

Anamnèse <input type="checkbox"/>	Croix de Maigne <input type="checkbox"/>	Autres outils d'évaluation (à spécifier): ..... ..... ..... ..... ..... .....
Observation <input type="checkbox"/>	Echelle SF-36 <input type="checkbox"/>	
Palpation <input type="checkbox"/>	Roland-Morris Low Back Pain and Disability Questionnaire (questionnaire EIFEL) <input type="checkbox"/>	
Testing musculaire <input type="checkbox"/>	Dallas Pain Questionnaire <input type="checkbox"/>	
Fil à plomb <input type="checkbox"/>	Echelle visuelle analogue (EVA) <input type="checkbox"/>	
Test de Schöber <input type="checkbox"/>		

**3. Avez-vous traité, la semaine passée, au moins UN patient ayant une prothèse totale du genou?:**

1.1.1.2 OUI / NON

**Si OUI, cochez le(s) traitement(s) appliqué(s) pour le dernier patient que vous avez vu pour ce problème. Si NON, passez à la question suivante.**

**Âge du patient : .....** **Sexe du patient: F / M**

**Délai entre la sortie de l'hôpital/centre de révalidation et le début de la prise en charge kinésithérapeutique de votre patient:**

☐ immédiat

☐ après 1 semaine

☐ après 2 semaines

☐ après 3 semaines

☐ > 1 mois

Manipulations <input type="checkbox"/>	Programme d'exercices à domicile <input type="checkbox"/>	Physiothérapie / Électrothérapie (à spécifier): ..... .....
Mobilisations <input type="checkbox"/>	Massage <input type="checkbox"/>	
Renforcement musculaire <input type="checkbox"/>	Thermothérapie (chaleur/froid) <input type="checkbox"/>	Autres traitements (à spécifier): ..... ..... ..... ..... .....
Etirements/ Stretching <input type="checkbox"/>	Hydrothérapie <input type="checkbox"/>	
Techniques contracté/relâché <input type="checkbox"/>	Biofeedback (EMG) <input type="checkbox"/>	
Education du patient (information, conseils) <input type="checkbox"/>	Rééducation à la marche <input type="checkbox"/>	

**4. Comment déterminez-vous l'évolution des patients ayant une prothèse totale du genou?**

**Cochez les types d'évaluation que vous réalisez dans votre pratique.**

Anamnèse <input type="checkbox"/>	Autres outils d'évaluation (à spécifier): ..... ..... ..... ..... ..... .....
Observation <input type="checkbox"/>	
Palpation <input type="checkbox"/>	
Testing musculaire <input type="checkbox"/>	
Goniomètre <input type="checkbox"/>	
Lower extremity Functional Scale (LEFS) <input type="checkbox"/>	



**5. Avez-vous traité, la semaine passée, au moins UN patient souffrant d'hémiplégie ou hémiparésie?:**

I.1.1.3 OUI / NON

**Si OUI, cochez le(s) traitement(s) appliqué(s) pour le dernier patient que vous avez vu pour ce problème. Si NON, passez à la question suivante.**

**Âge du patient : .....** **Sexe du patient: F / M**

**Délai depuis le début de l'hémiplégie/hémiparésie:**

☐ 0-3 mois ☐ 3-6 mois ☐ 6-12 mois ☐ 1-2 ans ☐ > 2 ans

Mobilisations <input type="checkbox"/>	« Constraint-induced therapy » <input type="checkbox"/>	Physiothérapie / Électrothérapie (à spécifier): ..... ..... .....
Renforcement musculaire <input type="checkbox"/>	Biofeedback (EMG) <input type="checkbox"/>	
Etirements/ Stretching <input type="checkbox"/>	Entraînement sur tapis roulant <input type="checkbox"/>	Autres traitements (à spécifier): ..... ..... ..... ..... ..... .....
Exercices d'aérobie (endurance) <input type="checkbox"/>	Technique Bobath <input type="checkbox"/>	
Rééducation de l'équilibre <input type="checkbox"/>	Technique Kabat (PNF) <input type="checkbox"/>	
Rééducation de la sensibilité <input type="checkbox"/>	Technique Perfetti <input type="checkbox"/>	
Rééducation à la marche <input type="checkbox"/>	Technique Picard <input type="checkbox"/>	
Rééducation fonctionnelle (AVJ) <input type="checkbox"/>	Technique Johnstone <input type="checkbox"/>	
Education du patient (information, conseils) <input type="checkbox"/>	Technique Brunnström <input type="checkbox"/>	

**6. Comment déterminez-vous l'évolution des patients souffrant d'hémiplégie ou hémiparésie? Cochez les types d'évaluation que vous réalisez dans votre pratique.**

Anamnèse <input type="checkbox"/>	Echelle MIF (Mesure d'Indépendance Fonctionnelle) <input type="checkbox"/>	Autres outils d'évaluation (à spécifier): ..... ..... ..... ..... ..... .....
Observation <input type="checkbox"/>	Indice de Barthel <input type="checkbox"/>	
Palpation <input type="checkbox"/>	Mesure d'adaptation fonctionnelle (MAF) <input type="checkbox"/>	
Testing musculaire <input type="checkbox"/>	Echelle SF-36 <input type="checkbox"/>	
Echelle d'Ashworth <input type="checkbox"/>	Test de Fugl-Meyer <input type="checkbox"/>	
Bilan Bobath <input type="checkbox"/>	Echelle d'évaluation de l'équilibre de Berg (BBS) <input type="checkbox"/>	
Bilan Picard <input type="checkbox"/>		

**7. Avez-vous traité, la semaine passée, au moins UNE personne âgée nécessitant une rééducation à la marche ?**

I.1.1.4 OUI / NON

**Si OUI, cochez le(s) traitement(s) appliqué(s) pour le dernier patient que vous avez vu pour ce problème. Si NON, passez à la question suivante.**

**Âge du patient : ..... Sexe du patient: F / M**

**Délai entre les premières difficultés à la marche de la personne âgée et le début de sa prise en charge kinésithérapique:**

☐ immédiat

☐ après 1 semaine

☐ après 2 semaines

☐ après 3 semaines

☐ > 1 mois

Mobilisations <input type="checkbox"/>	Exercices de coordination <input type="checkbox"/>	Autres traitements (à spécifier): ..... ..... ..... ..... ..... ..... .....
Renforcement musculaire <input type="checkbox"/>	Exercices de transferts <input type="checkbox"/>	
Etirements/ Stretching <input type="checkbox"/>	Techniques de relever du sol <input type="checkbox"/>	
Exercices d'aérobic (endurance) <input type="checkbox"/>	Education du patient (information, conseils) <input type="checkbox"/>	
Rééducation de l'équilibre <input type="checkbox"/>	Programme d'exercices à domicile <input type="checkbox"/>	
Rééducation proprioceptive <input type="checkbox"/>	Tai Chi Quan <input type="checkbox"/>	

**8. Comment déterminez-vous l'évolution des patients âgés nécessitant une rééducation à la marche? Cochez les types d'évaluation que vous réalisez dans votre pratique.**

Anamnèse <input type="checkbox"/>	Echelle d'évaluation de l'équilibre de Berg (BBS) <input type="checkbox"/>	Autres outils d'évaluation (à spécifier): ..... ..... ..... ..... ..... ..... .....
Observation <input type="checkbox"/>	Test minimum moteur <input type="checkbox"/>	
Palpation <input type="checkbox"/>	Tests d'Anticipation Posturale <input type="checkbox"/>	
Testing musculaire <input type="checkbox"/>	Timed Get-Up-and-Go Test <input type="checkbox"/>	
Goniomètre <input type="checkbox"/>	One-Leg Balance Test <input type="checkbox"/>	
Cardiofréquencemètre <input type="checkbox"/>	Functional Reach Test <input type="checkbox"/>	
Test d'équilibre et de marche de Tinetti <input type="checkbox"/>	Modified Gait Abnormality Rating Scale (GARS-M) <input type="checkbox"/>	
Test de marche de 6 minutes <input type="checkbox"/>		

**9. Avez-vous traité, la semaine passée, au moins UN enfant souffrant de bronchiolite?:**

I.1.1.5 OUI / NON

**Si OUI, cochez le(s) traitement(s) appliqué(s) pour le dernier enfant que vous avez vu pour ce problème. Si NON, passez à la question suivante.**

**Âge du patient : ..... Sexe du patient: F / M**

**Délai entre le début de l'affection et le début de sa prise en charge kinésithérapeutique de l'enfant:**

☐ immédiat

☐ après 1 semaine

☐ après 2 semaines

☐ après 3 semaines

☐ > 1 mois

Percussions <input type="checkbox"/>	Expiration lente prolongée <input type="checkbox"/>	Autres traitements (à spécifier): ..... ..... .....
Vibrations <input type="checkbox"/>	Toux provoquée <input type="checkbox"/>	
Drainage postural <input type="checkbox"/>	Désobstruction rhino-pharyngée <input type="checkbox"/>	Appareils spécifiques (à spécifier): ..... ..... .....
Expirations forcées <input type="checkbox"/>	Aérosolthérapie <input type="checkbox"/>	
Accélération rapide du flux expiratoire <input type="checkbox"/>	Education des parents (information, conseils) <input type="checkbox"/>	
Augmentation lente du flux expiratoire <input type="checkbox"/>		

**10. Comment déterminez-vous l'évolution des enfants souffrant de bronchiolite? Cochez les types d'évaluation que vous réalisez dans votre pratique.**

Anamnèse <input type="checkbox"/>	Spiromètre <input type="checkbox"/>	Autres outils d'évaluation (à spécifier): ..... ..... .....
Observation <input type="checkbox"/>	Saturomètre à l'O2 <input type="checkbox"/>	
Auscultation pulmonaire <input type="checkbox"/>		

**11. Cochez l'élément le plus important sur lequel vous vous basez pour établir le plan d'un traitement : (Cochez un seul élément)**

☐ la prescription médicale

☐ le nombre de séances prescrites

☐ l'état fonctionnel du patient sur base d'un examen kinésithérapeutique

**12. Connaissez-vous les concepts de la Classification Internationale du Fonctionnement, du Handicap, et de la Santé (CIF) proposée par l'Organisation Mondiale de la Santé ?**

I.1.1.6 OUI / NON

**Si OUI, utilisez-vous ces concepts dans votre pratique (par ex. pour définir les objectifs du traitement ou pour déterminer l'évolution du patient) ?**

I.1.1.7 OUI / NON

**13. Seriez-vous d'accord de participer à une enquête destinée à étudier la faisabilité d'une nomenclature de kinésithérapie basée sur l'évaluation fonctionnelle?**

☐ **Oui** : merci de compléter le talon-réponse ci-dessous et de nous le renvoyer par poste, e-mail, ou fax.

☐ **Non**

✂.....

TALON - REPONSE à envoyer par poste, e-mail, ou fax

Oui, je suis d'accord de participer à une enquête destinée à étudier la faisabilité d'une nomenclature de kinésithérapie basée sur l'évaluation fonctionnelle.

Nom : .....

Prénom : .....

Adresse : .....

.....

Téléphone : .....

E-mail : .....

A quelle heure pouvons-nous vous contacter ? .....

**A envoyer à :**

Mme Carlyne Arnould  
Université catholique de Louvain  
Unité de Réadaptation et de Médecine Physique (READ5375)  
Avenue Mounier, 53  
1200 Bruxelles

ou par e-mail: [carlyne.arnould@read.ucl.ac.be](mailto:carlyne.arnould@read.ucl.ac.be)

ou par fax: 32/2/764.53.60

**Nous vous remercions pour votre collaboration**

## DUTCH VERSION OF THE SURVEY

Mevrouw, Mijnheer,

De Dienst Fysische Geneeskunde en Revalidatie van de Universit  catholique de Louvain en het Federaal Centrum voor Expertise in Gezondheidszorg nodigen U uit om mee te werken aan een studie over de praktijk van de kinesitherapeuten die in de ambulante gezondheidszorg werken in Belgi .

Deze studie werd aangevraagd door de Technische Raad van Kinesith rapie die graag de huidige nomenclatuur wou herevalueren om eventueel aanpassingen door te voeren in functie van de re le noden van de pati nten. Om concrete voorstellen te formuleren in verband met de werkelijkheid op het terrein is het nodig een enqu te door te voeren alvorens het project te starten.

De doelstelling van bijgevoegde enqu te is de meest frequent behandelde aandoeningen en de meest toegepaste behandelingsmethoden, in de ambulante kinesith rapie te identificeren. De informatie die zal worden samengebracht zal ons een globaal overzicht geven van de huidige toestand van de ambulante kinesith rapie in Belgi .

Natuurlijk hangt de kwaliteit van deze enqu te in hoge mate af van de medewerking van de kinesitherapeuten op het terrein. **Uw medewerking is dan ook essentieel.** Het invullen van deze enqu te neemt 30 min in beslag en veronderstelt het invullen van uw prestaties gedurende   n dag. **De informatie die verzameld wordt in deze enqu te blijft anoniem. Uw persoonlijke gegevens worden enkel gebruikt om contact met U op te nemen.** Indien de resultaten van deze enqu te U interesseren, kan U contact opnemen met Mevr Arnould, Universit  catholique de Louvain, Unit  READ, Avenue Mounier 53 (READ 5375), 1200 Bruxelles, tel.: 02/764.53.74, fax: 02/764.53.60, e-mail: carlyne.arnould@read.ucl.ac.be. Ze staat ter Uwer beschikking voor elke bijkomende vraag.

Een volgende studie zal uitmaken of het gebruik van functionele evaluatiemethoden in het kader van de nomenclatuur, haalbaar is in de klinische praktijk. Indien U graag actief zou meewerken aan deze 2e fasestudie, gelieve dan het laatste blad van dit document in te vullen.

Graag vragen wij U om ons de vragenlijst terug te zenden in de bijgevoegde voorgefrankeerde enveloppe binnen de twee weken na ontvangst.

In de hoop dat U actief zal bijdragen tot deze studie, zenden we U , Mevrouw, Mijnheer, onze meest achtingsvolle groeten,

Prof. J-L. Thonnard

Dr C. Arnould

Uw postcode: \_/\_/\_/\_/\_ Leeftijd: ..... Geslacht: V / M Jaar van diploma: \_ \_ \_ \_ \_

Invullen van uw ambulante prestaties (! Enkel de prestaties uitgevoerde in **kabinet**, op de **verblijfplaats** van de patiënt, of in een **rusthuis**!).

**Vul de volgende tabel in met de zittingen uitgevoerd de eerste ..... na het ontvangen van deze enquête, wat uw volume van activiteit ook moge zijn** (indien U die dag niet werkt, kan U de eerstvolgende werkdag gebruiken om uw zittingen in te vullen).

De dag van invullen is opgelegd omwille van statistische redenen.

**Datum van invullen van de enquête :** \_ \_ \_ / \_ \_ \_ / \_ \_ \_ \_ \_

**Instructies:**

**Leeftijd van de patiënt:** huidige leeftijd, indien minder dan 1 jaar: noteer 0

**Code nomenclatuur:** code van de uitgevoerde prestatie (om de plaats en de duur van de prestatie te kennen)

**Motief van raadpleging:** pathologie/aandoening waarvoor de patiënt wordt behandeld (in hoofdletters en zonder afkortingen te gebruiken a.u.b)

Nr	Leeftijd	Geslacht (V/M)	Code nomenclatuur	Motief van raadpleging
1			_/_/_/_/_/_/_	
2			_/_/_/_/_/_/_	
3			_/_/_/_/_/_/_	
4			_/_/_/_/_/_/_	
5			_/_/_/_/_/_/_	
6			_/_/_/_/_/_/_	
7			_/_/_/_/_/_/_	
8			_/_/_/_/_/_/_	
9			_/_/_/_/_/_/_	
10			_/_/_/_/_/_/_	
11			_/_/_/_/_/_/_	
12			_/_/_/_/_/_/_	

Nr	Leeftijd	Geslacht (V/M)	Code nomenclatuur	Motief van raadpleging
13			___/___/___/___/___	
14			___/___/___/___/___	
15			___/___/___/___/___	
16			___/___/___/___/___	
17			___/___/___/___/___	
18			___/___/___/___/___	
19			___/___/___/___/___	
20			___/___/___/___/___	
21			___/___/___/___/___	
22			___/___/___/___/___	
23			___/___/___/___/___	
24			___/___/___/___/___	
25			___/___/___/___/___	

**I. Heeft U in de loop van de voorbijaande week minstens ÉÉN patiënt behandeld met acute lumbale pijn (zonder uitstraling)?:**

I.1.1.8 JA / NEEN

Indien JA, kruis de gebruikte behandelingsmethode(n) aan voor de laatste patiënt die U voor dit probleem hebt behandeld. Indien NEEN, ga naar de volgende vraag.

Leeftijd patiënt : ..... Geslacht patiënt : V / M

Tijdspanne tussen het begin van de symptomen en het begin van de kinesitherapeutische behandeling:

☐ onmiddellijk

☐ na 1 week

☐ na 2 weken

☐ na 3 weken

☐ > 1 maand

Vertebrale tractie <input type="checkbox"/>	Relaxatie <input type="checkbox"/>	Fysiotherapie / Electrotherapie (te specificëren): ..... .....
Vertebrale manipulatie <input type="checkbox"/>	Thermotherapie (koud/warm) <input type="checkbox"/>	
Mobilisatie <input type="checkbox"/>	Hydrotherapie <input type="checkbox"/>	Andere behandelingen (te specificëren): ..... ..... ..... ..... ..... ..... ..... ..... .....
Spierversterkende oefeningen <input type="checkbox"/>	Biofeedback (EMG) <input type="checkbox"/>	
Rekoefeningen / Stretching <input type="checkbox"/>	Gedragstherapie <input type="checkbox"/>	
Informatie aan de patiënt (raad, uitleg) <input type="checkbox"/>	Proprioceptieve oefeningen <input type="checkbox"/>	
Programma met oefeningen voor thuis <input type="checkbox"/>	Reflexotherapie (drukpunten) <input type="checkbox"/>	
Massage <input type="checkbox"/>	Spierketting therapie <input type="checkbox"/>	

**2. Hoe bepaalt U het verloop van de lumbale acute pijn (zonder uitstraling)?**  
evaluatie methoden aan die U gebruikt in uw dagelijkse praktijk.

**Kruis de**

Anamnese <input type="checkbox"/>	Maigne kruis (mobiliteit) <input type="checkbox"/>	Andere evaluatie methoden (te specificëren): ..... ..... ..... ..... ..... ..... ..... ..... .....
Observatie <input type="checkbox"/>	SF-36 schaal <input type="checkbox"/>	
Palpatie <input type="checkbox"/>	Roland-Morris Low Back Pain and Disability Questionnaire (vragenlijst EIFEL) <input type="checkbox"/>	
Spiertesting <input type="checkbox"/>	Dallas Pain Questionnaire <input type="checkbox"/>	
Lood <input type="checkbox"/>	VAS pijn score <input type="checkbox"/>	
Schöbertest <input type="checkbox"/>		



### 3. Hebt U vorige week minstens ÉÉN patiënt behandeld met een totaal prothese van de knie?:

I.1.1.9 JA / NEEN

Indien JA, kruis de gebruikte behandelingsmethode(n) aan voor de laatste patiënt die U voor dit probleem hebt behandeld. Indien NEEN, ga naar de volgende vraag.

Leeftijd patiënt : ..... Geslacht patiënt : V / M

Tijdspanne tussen het ontslag uit ziekenhuis/revalidatiecentrum en het begin van de kinesitherapeutische behandeling:

☐ onmiddellijk

☐ na 1 week

☐ na 2 weken

☐ na 3 weken

☐ > 1 maand

Manipulatie <input type="checkbox"/>	Oefenprogramma voor thuis <input type="checkbox"/>	Fysiotherapie / Electrotherapie (te specificeren): ..... .....
Mobilisatie <input type="checkbox"/>	Massage <input type="checkbox"/>	
Spierversterkende oefeningen <input type="checkbox"/>	Thermotherapie (warm/koud) <input type="checkbox"/>	Andere behandelingen (te specificeren): ..... ..... ..... ..... ..... .....
Rekoefeningen / Stretching <input type="checkbox"/>	Hydrotherapie <input type="checkbox"/>	
Span-Ontspan techniek <input type="checkbox"/>	Biofeedback (EMG) <input type="checkbox"/>	
Informatie aan de patiënt (uitleg, raad) <input type="checkbox"/>	Gangrevalidatie <input type="checkbox"/>	

### 4. Hoe bepaalt U het verloop van de toestand van uw patiënten die een totaal prothese van de knie ondergaan hebben?

Kruis de evaluatiemethoden aan die U gebruikt in uw dagelijkse praktijk.

Anamnese <input type="checkbox"/>	Andere evaluatie methoden (te specificeren): ..... ..... ..... ..... ..... ..... ..... ..... ..... .....
Observatie <input type="checkbox"/>	
Palpatie <input type="checkbox"/>	
Spiertesting <input type="checkbox"/>	
Goniometrie <input type="checkbox"/>	
Lower extremity Functional Scale (LEFS) <input type="checkbox"/>	

**5. Heeft U in de loop van de voorbijaande week minstens ÉÉN patiënt met een hemiplegie of hemiparesie ?:**

I.I.I.I0 JA / NEEN

**Indien JA, kruis de gebruikte behandelingsmethode(n) aan voor de laatste patiënt die U voor dit probleem hebt behandeld. Indien NEEN, ga naar de volgende vraag.**

**Leeftijd patiënt : ..... Geslacht patiënt : V / M**

**Tijd verlopen sinds het begin van de hemiplegie/hemiparese:**

☐ 0-3 maanden ☐ 3-6 maanden ☐ 6-12 maanden ☐ 1-2 jaren ☐ > 2 jaren

Mobilisatie <input type="checkbox"/>	« Constraint-induced therapy » <input type="checkbox"/>	Fysiotherapie / Electrotherapie (te specificeren): ..... ..... .....
Spierversterkende oefeningen <input type="checkbox"/>	Biofeedback (EMG) <input type="checkbox"/>	
Rekoefeningen / Stretching <input type="checkbox"/>	Training op roltaaijt <input type="checkbox"/>	
Uithoudings-oefeningen (aerobie) <input type="checkbox"/>	Bobath techniek <input type="checkbox"/>	Andere behandelingen (te specificeren): ..... ..... ..... ..... .....
Evenwichtsoefeningen <input type="checkbox"/>	Kabat techniek (PNF) <input type="checkbox"/>	
Gevoeligheids-oefeningen <input type="checkbox"/>	Perfetti techniek <input type="checkbox"/>	
Gangrevalidatie <input type="checkbox"/>	Picard techniek <input type="checkbox"/>	
Functionele revalidatie (activiteiten uit het dagelijkse leven) <input type="checkbox"/>	Johnstone techniek <input type="checkbox"/>	
Informatie aan de patiënt (raad, uitleg) <input type="checkbox"/>	Brunnström techniek <input type="checkbox"/>	

**6. Hoe bepaalt U het verloop van de toestand van de patiënten die lijden aan een hemiplegie of hemiparesie? Kruis de evaluatiemethoden aan die U gebruikt in uw dagelijkse praktijk.**

Anamnese <input type="checkbox"/>	FIM (Functional Independence Measure) <input type="checkbox"/>	Andere evaluatie methoden (te specificeren): ..... ..... ..... ..... ..... ..... .....
Observatie <input type="checkbox"/>	Barthel index <input type="checkbox"/>	
Palpatie <input type="checkbox"/>	FAM (Functional Assessment Measure) <input type="checkbox"/>	
Spiertesting <input type="checkbox"/>	SF-36 schaal <input type="checkbox"/>	
Ashworth schaal <input type="checkbox"/>	Fugl-Meyer Test <input type="checkbox"/>	
Bobath evaluatiebilan <input type="checkbox"/>	Berg Balans Schaal (BBS) <input type="checkbox"/>	
Picard evaluatiebilan <input type="checkbox"/>		

**7. Heeft U in de loop van de voorbijgaande week minstens ÉÉN patiënt behandeld voor gangrevalidatie?:**

I.I.I.I.I JA / NEEN

Indien JA, kruis de gebruikte behandelingsmethode(n) aan voor de laatste patiënt die U voor dit probleem hebt behandeld. Indien NEEN, ga naar de volgende vraag.

Leeftijd patiënt : ..... Geslacht patiënt : V / M

Tijdspanne tussen de eerste gangmoeilijkheden van de patiënt en het begin van de kinesitherapeutische behandeling:

☐ onmiddellijk

☐ na 1 week

☐ na 2 weken

☐ na 3 weken

☐ > 1 maand

Mobilisatie <input type="checkbox"/>	Coördinatie oefeningen <input type="checkbox"/>	Andere behandelingen (te specificeren): ..... ..... ..... ..... ..... ..... .....
Spierversterkende oefeningen <input type="checkbox"/>	Transfer oefeningen <input type="checkbox"/>	
Rekoefeningen / Stretching <input type="checkbox"/>	Technieken om van de grond op te staan <input type="checkbox"/>	
Uithoudings-oefeningen (aerobie) <input type="checkbox"/>	Informatie aan de patiënt (raad, uitleg) <input type="checkbox"/>	
Evenwichtsoefeningen <input type="checkbox"/>	Oefenprogramma voor thuis <input type="checkbox"/>	
Proprioceptieve oefeningen <input type="checkbox"/>	Tai Chi Quan <input type="checkbox"/>	

**8. Hoe bepaalt U het verloop van de oudere patiënten die een gangrevalidatie nodig hebben? Kruis de evaluatiemethoden aan die U gebruikt in uw dagelijkse praktijk.**

Anamnese <input type="checkbox"/>	Berg Balans Schaal (BBS) <input type="checkbox"/>	Andere evaluatie methoden (te specificeren): ..... ..... ..... ..... ..... ..... .....
Observatie <input type="checkbox"/>	« Test minimum moteur » <input type="checkbox"/>	
Palpatie <input type="checkbox"/>	« Tests d'Anticipation Posturale » <input type="checkbox"/>	
Spiertesting <input type="checkbox"/>	Timed Get-Up-and-Go Test <input type="checkbox"/>	
Goniometer <input type="checkbox"/>	One-Leg Balance Test <input type="checkbox"/>	
Hartslagmeter <input type="checkbox"/>	Functional Reach Test <input type="checkbox"/>	
De gang- en evenwichtsschaal van Tinetti <input type="checkbox"/>	Modified Gait Abnormality Rating Scale (GARS-M) <input type="checkbox"/>	
6-minuten looptest <input type="checkbox"/>		

**9. Heeft U vorige week minstens één kind behandeld voor bronchiolitis?:**

I.I.I.I.12 JA / NEEN

Indien **JA**, kruis de gebruikte behandelingsmethode(n) aan voor het laatste kind die U voor dit probleem hebt behandeld. Indien **NEEN**, ga naar de volgende vraag.

Leeftijd patiënt : ..... Geslacht patiënt : V / M

Tijdspanne tussen het begin van de ziekte en het begin van de kinesitherapeutische behandeling:

☐ onmiddellijk

☐ na 1 week

☐ na 2 weken

☐ na 3 weken

☐ > 1 maand

Tapotage <input type="checkbox"/>	Trage verlengde expiratie <input type="checkbox"/>	Andere behandelingen (te specificeren): ..... ..... ..... .....
Vibratie <input type="checkbox"/>	Geassisteerde hoest <input type="checkbox"/>	
Houdingsdrainage <input type="checkbox"/>	Vrijmaken van de nasofaryngeale luchtwegen <input type="checkbox"/>	
Geforceerd uitademen <input type="checkbox"/>	Aerosoltherapie <input type="checkbox"/>	Specifieke apparatuur (te specificeren): ..... ..... .....
« Expiratory Flow Acceleration » <input type="checkbox"/>	Informatie aan de ouders (uitleg, raad) <input type="checkbox"/>	
« (Slow) Increase of Expiratory Flow » <input type="checkbox"/>		

**10. Hoe bepaalt U het verloop van de bronchiolitis? Kruis de evaluatiemethoden aan die U gebruikt in uw dagelijkse praktijk.**

Anamnese <input type="checkbox"/>	Spirometer <input type="checkbox"/>	Andere evaluatie methoden (te specificeren): ..... ..... .....
Observatie <input type="checkbox"/>	Zuurstofsaturatiemeter <input type="checkbox"/>	
Longauscultatie <input type="checkbox"/>		

**11. Kruis aan wat voor het belangrijkste element is dat Uw behandelingsmethode bepaalt: (één enkel antwoord a.u.b.)**

☐ het medisch voorschrift

☐ het aantal voorgescheven zittingen

☐ de functionele status van de patiënt op basis van een kinesitherapeutisch onderzoek

**12. Kent U de « International Classification of Functioning, Disability, and Health » (ICF) voorgesteld door de Wereld Gezondheidsorganisatie (WGO)?**

I.I.I.13 JA / NEEN

**Indien JA, gebruikt U deze concepten in uw dagelijkse praktijk (bv. Om doelstellingen vast te leggen of de evolutie van de patiënt te bepalen)?**

I.I.I.14 JA / NEEN

**13. Zou U akkoord gaan om mee te werken aan een onderzoek over het gebruik van functionele evaluatiemethoden in de nomenclatuur van de kinesitherapie?**

☐ **JA** : gelieve bijgevoegd antwoordcoupon in te vullen en terug te sturen via post, e-mail of fax

☐ **NEEN**

✂.....  
ANTWOORDCOUPON terug te sturen via post, e-mail of fax

Ja, ik ben akkoord om mee te werken aan een onderzoek over het gebruik van functionele evaluatiemethoden in de nomenclatuur van de kinesitherapie.

Familienaam : .....

Voornaam : .....

Adres : .....

.....

Telefoon : .....

E-mail : .....

Uren waarop we U kunnen contacteren? .....

**Terug te sturen naar:**

Mevr Carlyne Arnould  
Université catholique de Louvain  
Unité de Réadaptation et de Médecine Physique (READ5375)  
Avenue Mounier, 53  
1200 Bruxelles

of per e-mail: [carlyne.arnould@read.ucl.ac.be](mailto:carlyne.arnould@read.ucl.ac.be)

of per fax: 32/2/764.53.60

**Wij danken U voor Uw medewerking**

## C. DETAILS OF STATISTICAL ANALYSES

The details of statistical analyses are presented as described in the result section.

### Response rate and representativeness of the respondents

#### **Response rate**

Descriptive statistics: number (proportion)

#### **Respondents vs. non-respondents**

Descriptive statistics:

- Physiotherapists' age (years), delay since the degree (years): mean  $\pm$  SD (standard deviation) (minimum – maximum)
- Physiotherapists' sex, linguistic role, Belgian province: number (proportion)

Comparative statistics:

- Physiotherapists' age (years): Mann-Whitney Rank Sum test
- Physiotherapists' sex, linguistic role, Belgian province: Chi-Square tests

Missing values (MV) for the respondents group (n = 367):

- Age, sex, linguistic role, Belgian province: no missing values
- Delay since the degree: 16 MV

Missing values (MV) for the respondents group (n = 1633):

- Sex, linguistic role, Belgian province: no missing values
- Age: 6 MV

#### **Respondents vs. source population**

Comparative statistics:

- Physiotherapists' age (years): Mann-Whitney Rank Sum test
- Physiotherapists' sex, linguistic role, Belgian province: Chi-Square tests

Missing values (MV) for the respondents group (n = 367):

- Age, sex, linguistic role, Belgian province: no missing values
- Delay since the degree: 16 MV

Missing values (MV) for the source population (n = 10440):

- Sex, linguistic role, Belgian province: no missing values
- Age: 43 MV

### Pathologies treated in Belgian ambulatory physiotherapy

#### **Most common conditions treated in Belgian ambulatory physiotherapy**

Descriptive statistics:

- A condition was only considered if it appears in at least 100 out of the 5210 sessions examined in the survey.
- Number (proportion)

Missing values (MV):

- 90 MV out of the 5300 recorded sessions.

#### **Physiotherapeutic sessions during one working day according to the International Classification of Primary Care – 2nd Edition (ICPC-2)**

Descriptive statistics:

- Patients' age (years), length of the physiotherapeutic sessions (minutes), cost of the physiotherapeutic sessions (euros): mean  $\pm$  SD (standard deviation) (minimum – maximum)
- Sessions, co-morbidity, patients' sex, place of the rehabilitation, type of pathology: number (proportion)

Missing values (MV):

- Chapter A – General and unspecified (n = 506):
  - Sessions, co-morbidity, age: no missing values
  - Sex: 1 MV
  - Place of the rehabilitation: 6 MV
  - Length the physiotherapeutic sessions: 8 MV + 1 data encoded as “second session”
  - Cost of the physiotherapeutic sessions: 8 MV
  - Type of pathology: 3 MV

- Chapter B – Blood, blood forming organs and immune mechanism (n = 3):
  - no missing values
- Chapter D – Digestive (n = 12):
  - Sessions, co-morbidity, age, sex: no missing values
  - Place of the rehabilitation, length and cost of the physiotherapeutic sessions, type of pathology: 1 MV
- Chapter F – Eye (n = 0):
  - no data, no missing values
- Chapter H – Ear (n = 6):
  - no missing values
- Chapter K – Cardiovascular (n = 466):
  - Sessions, co-morbidity, sex: no missing values
  - Age: 3 MV
  - Place of the rehabilitation, cost of the physiotherapeutic sessions: 7 MV
  - Length of the physiotherapeutic sessions: 7 MV + 2 data encoded as “second session”
  - Type of pathology: 4 MV
- Chapter L – Musculoskeletal (n = 2696):
  - Sessions, co-morbidity: no missing values
  - Age: 18 MV
  - Sex: 2 MV
  - Place of the rehabilitation: 24 MV
  - Length of the physiotherapeutic sessions: 26 MV + 1 data encoded as “not related to the length notion” + 1 data encoded as “consultative examination”
  - Type of pathology: 8 MV
  - Cost of the physiotherapeutic sessions: 26 MV
- Chapter N – Neurological (n = 1158):
  - Sessions, co-morbidity, sex: no missing values
  - Age: 1 MV
  - Place of the rehabilitation: 8 MV
  - Length of the physiotherapeutic sessions: 14 MV + 6 data encoded as “second session” + 1 data encoded as “not related to the length notion” + 1 data encoded as “written report”
  - Type of pathology: 4 MV
  - Cost of the physiotherapeutic sessions: 14 MV
- Chapter P – Psychological (n = 132):
  - Sessions, co-morbidity, age, sex: no missing values
  - Place of the rehabilitation, type of pathology: 1 MV
  - Length and cost of the physiotherapeutic sessions: 3 MV
- Chapter R – Respiratory (n = 279):
  - Sessions, co-morbidity, age, sex, type of pathology: no missing values
  - Place of the rehabilitation, cost of the physiotherapeutic sessions: 1 MV
  - Length of the physiotherapeutic sessions: 1 MV + 2 data encoded as “second session”
- Chapter S – Skin (n = 21):
  - no missing values
- Chapter T – Endocrine/metabolic and nutritional (n = 26):
  - Sessions, co-morbidity, age, sex, type of pathology, place of the rehabilitation, cost of the physiotherapeutic sessions: no missing values
  - Length of the physiotherapeutic sessions: 1 data encoded as “second session”
- Chapter U – Urological (n = 44):
  - no missing values
- Chapter W – Pregnancy, childbearing, family planning (n = 34):
  - no missing values
- Chapter X – Female genital (n = 26):
  - Sessions, co-morbidity, age, sex, type of pathology: no missing values
  - Place of the rehabilitation, length and cost of the physiotherapeutic sessions: 1 MV
- Chapter Y – Male genital (n = 6):
  - no missing values
- Chapter Z – Social problems (n = 1):
  - no missing values

### **Physiotherapeutic Statistical Classification of Diseases and Related Health Problems – 10th Revision (ICD-10)**

#### **Descriptive statistics:**

- Patients' age (years), length of the physiotherapeutic sessions (minutes), cost of the physiotherapeutic sessions (euros): mean  $\pm$  SD (standard deviation) (minimum – maximum)

- Sessions, co-morbidity, patient's sex, place of the rehabilitation, type of pathology: number (proportion)

Missing values (MV):

- Chapter I – Certain infectious and parasitic diseases (n = 23):
  - no missing values
- Chapter II – Neoplasms (n = 31):
  - no missing values
- Chapter III – Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (n = 1):
  - Sessions, co-morbidity, age, sex: no missing values
  - Place of the rehabilitation, length and cost of the physiotherapeutic sessions, type of pathology: 1 MV
- Chapter IV – Endocrine, nutritional and metabolic diseases (n = 25):
  - Sessions, co-morbidity, age, sex, type of pathology, place of the rehabilitation, cost of the physiotherapeutic sessions: no missing values
  - Length of the physiotherapeutic sessions: 1 data encoded as “second session”
- Chapter V – Mental and behavioural disorders (n = 57):
  - Sessions, co-morbidity, age, sex: no missing values
  - Place of the rehabilitation, type of pathology: 1 MV
  - Length and cost of the physiotherapeutic sessions: 2 MV
- Chapter VI – Diseases of the nervous system (n = 836):
  - Sessions, co-morbidity, sex: no missing values
  - Age: 1 MV
  - Place of the rehabilitation: 7 MV
  - Length of the physiotherapeutic sessions: 10 MV + 5 data encoded as “second session” + 1 data encoded as “not related to the length notion”
  - Type of pathology: 3 MV
  - Cost of the physiotherapeutic sessions: 10 MV
- Chapter VII – Diseases of the eye and adnexa (n = 0):
  - no data, no missing values
- Chapter VIII – Diseases of the ear and mastoid process (n = 6):
  - no missing values
- Chapter IX – Diseases of the circulatory system (n = 439):
  - Sessions, co-morbidity, sex: no missing values
  - Age: 3 MV
  - Place of the rehabilitation, cost of the physiotherapeutic sessions: 7 MV
  - Length of the physiotherapeutic sessions: 7 MV + 2 data encoded as “second session”
  - Type of pathology: 4 MV
- Chapter X – Diseases of the respiratory system (n = 260):
  - Sessions, co-morbidity, age, sex, type of pathology: no missing values
  - Place of the rehabilitation, cost of the physiotherapeutic sessions: 1 MV
  - Length of the physiotherapeutic sessions: 1 MV + 2 data encoded as “second session”
- Chapter XI – Diseases of the digestive system (n = 8):
  - no missing values
- Chapter XII – Diseases of the skin and subcutaneous tissue (n = 1):
  - no missing values
- Chapter XIII – Diseases of the musculoskeletal system and connective tissue (n = 2050):
  - Sessions, co-morbidity: no missing values
  - Age: 16 MV
  - Sex: 2 MV
  - Place of the rehabilitation: 19 MV
  - Length of the physiotherapeutic sessions: 20 MV + 1 data encoded as “not related to the length notion” + 1 data encoded as “consultative examination”
  - Type of pathology: 6 MV
  - Cost of the physiotherapeutic sessions: 20 MV
- Chapter XIV – Diseases of the genitourinary system (n = 46):
  - Sessions, co-morbidity, age, sex, type of pathology: no missing values
  - Place of the rehabilitation, length and cost of the physiotherapeutic sessions: 1 MV
- Chapter XV – Pregnancy, childbirth and the puerperium (n = 4):
  - no missing values
- Chapter XVI – Certain conditions originating in the perinatal period (n = 2):
  - no missing values
- Chapter XVII – Congenital malformations, deformations and chromosomal abnormalities (n = 37):
  - Sessions, co-morbidity, age, sex, type of pathology: no missing values



- Place of the rehabilitation, cost of the physiotherapeutic sessions: 1 MV
- Length of the physiotherapeutic sessions: 1 MV + 1 data encoded as “second session”
- Chapter XVIII – Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (n = 445):
  - Sessions, co-morbidity, age, sex: no missing values
  - Place of the rehabilitation, type of pathology: 1 MV
  - Length of the physiotherapeutic sessions: 5 MV + 1 data encoded as “written report”
  - Cost of the physiotherapeutic sessions: 5 MV
- Chapter XIX – Injury, poisoning and certain other consequences of external causes (n = 680):
  - Sessions, co-morbidity, sex: no missing values
  - Age: 2 MV
  - Place of the rehabilitation: 6 MV
  - Length and cost of the physiotherapeutic sessions: 7 MV
  - Type of pathology: 3 MV
- Chapter XX – External causes of morbidity and mortality (n = 0):
  - no data, no missing values
- Chapter XXI – Factors influencing health status and contact with health services (n = 498):
  - Sessions, co-morbidity, age: no missing values
  - Sex: 1 MV
  - Place of the rehabilitation: 5 MV
  - Length of the physiotherapeutic sessions: 7 MV + 1 data encoded as “second session”
  - Type of pathology: 3 MV
  - Cost of the physiotherapeutic sessions: 7 MV
- Chapter XXII – Codes for special purposes (n = 0):
  - no data, no missing values

### **Validity of the results according to the INAMI**

#### **Descriptive statistics:**

- Place of the rehabilitation, length of the physiotherapeutic sessions (minutes), type of pathology, cost of the physiotherapeutic sessions (euros): number (proportion)

#### **Comparative statistics:**

- Place of the rehabilitation, length of the physiotherapeutic sessions (minutes), type of pathology, cost of the physiotherapeutic sessions (euros): Chi-Square tests and z-tests

#### **Missing values (MV) of the nomenclature data:**

- 56 MV out of the 5300 recorded sessions

## **Treatment modalities applied in Belgium ambulatory physiotherapy**

### **Descriptive statistics:**

- Patients' age (years): mean  $\pm$  SD (standard deviation) (minimum – maximum)
- Physiotherapists treating  $\geq 1$  case/week, patients' sex, delay between the beginning of patients' condition and the beginning of the treatment by the physiotherapist: number (proportion)

#### Acute low back pain (without radiating pain)

- Number of respondents: 255
- Missing values (MV):
  - Age: 6 MV
  - Sex: 4 MV
  - Delay: 3 MV

#### Total knee replacement

- Number of respondents: 172
- Missing values (MV):
  - Age: 9 MV
  - Sex: 11 MV
  - Delay: 1 MV

#### Hemiplegia / Hemiparesis

- Number of respondents: 255
- Missing values (MV):
  - Age, sex: 12 MV
  - Delay: 4 MV

#### Gait disorders in elderly people

- Number of respondents: 266

- Missing values (MV):
  - Age: 19 MV
  - Sex: 17 MV
  - Delay: 8 MV

#### Bronchiolitis in infants and children

- Number of respondents: 90
- Missing values (MV):
  - Age: 6 MV
  - Sex: 5 MV
  - Delay: 4 MV

#### ***Analysis of the data concerning the electrophysiotherapy modalities specified by some physiotherapists (only for acute low back pain, total knee replacement, and hemiplegia / hemiparesis):***

Electrophysiotherapy modalities were classified according to the following groups: (1) electric currents including transcutaneous electrical nerve stimulation (TENS), ionization, electric stimulation (ES), interferential currents (IFC), and others electric currents; (2) ultrasounds (US); (3) electromagnetic waves; and (4) laser.

#### ***Analysis of the data concerning the treatment modalities not included in the pre-established list but specified by some physiotherapists:***

A treatment modality not included in the pre-established list of the survey was only considered if at least 10 physiotherapists mention it. In such a case, the treatment modality was labelled as “Added treatment: X”, where X is the name of the treatment modality.

### **Functional tests used in Belgium ambulatory physiotherapy**

**Descriptive statistics:** number (proportion)

#### Acute low back pain (without radiating pain)

- Number of respondents: 325

#### Total knee replacement

- Number of respondents: 263

#### Hemiplegia / Hemiparesis

- Number of respondents: 294

#### Gait disorders in elderly people

- Number of respondents: 309

#### Bronchiolitis in infants and children

- Number of respondents: 186

#### ***Analysis of the data concerning the functional tests not included in the pre-established list but specified by some physiotherapists:***

A functional test not included in the pre-established list of the survey was only considered if at least 10 physiotherapists mention it. In such a case, the treatment modality was labelled as “Added functional test: Y”, where Y is the name of the functional test.

### **Key element in the establishment of physiotherapeutic treatment planning**

**Descriptive statistics:**

- The data about the key element in the establishment of physiotherapeutic treatment planning were broken down into physiotherapists' age, sex, linguistic role, and delay since the degree of physiotherapy and rehabilitation.
- Physiotherapists' ages were put together by age bracket of 15 years: 25-39 years, 40-54 years, and 55-69 years.
- Delays since the degree of physiotherapy and rehabilitation were also put together by age bracket of 15 years: 0-14 years, 15-29 years, and 30-44 years.
- Descriptive statistics were expressed as numbers (proportions).

**Comparative statistics:**

- Chi-Square tests

**Missing values (MV):**

- Age, sex, linguistic role: 102 MV out of 367
- Delay since the degree of physiotherapy and rehabilitation: 102 MV out of 351

### **Knowledge and use of the ICF concepts**

**Descriptive statistics:**

- The data about the knowledge and use of the ICF concepts were broken down into physiotherapists' age, sex, linguistic role, and delay since the degree of physiotherapy and rehabilitation.
- Physiotherapists' ages were put together by age bracket of 15 years: 25-39 years, 40-54 years, and 55-69 years.
- Delays since the degree of physiotherapy and rehabilitation were also put together by age bracket of 15 years: 0-14 years, 15-29 years, and 30-44 years.
- Descriptive statistics were expressed as numbers (proportions).

Comparative statistics:

- Chi-Square tests

Missing values (MV) of data about the knowledge of the ICF concepts:

- Age, sex, linguistic role: 7 MV out of 367
- Delay since the degree of physiotherapy and rehabilitation: 7 MV out of 351

Missing values (MV) of data about the use of the ICF concepts:

- Age, sex, linguistic role: 7 MV out of 367
- Delay since the degree of physiotherapy and rehabilitation: 7 MV out of 351

## D. DESCRIPTION AND COMPARISON BETWEEN RESPONDENTS AND SAMPLE

Comparison between respondents and sample				
Variables	Respondents (n = 367)	Sample (n = 1633)	Comparison	
			Statistic	P-value
Age (years)*	43 ± 10 (25-66)	43 ± 10 (24-82)	T = 443686	0.39
Sex**			$\chi^2 = 0.68$ , df = 1	0.41
Males	219 (60%)	1144 (57%)		
Females	148 (40%)	0856 (43%)		
Linguistic role**			$\chi^2 = 0.10$ , df = 1	0.75
French-speaking	153 (42%)	0813 (41%)		
Dutch-speaking	214 (58%)	1187 (59%)		
Province**			$\chi^2 = 3.37$ , df = 10	0.97
West-Vlaanderen	48 (13%)	262 (13%)		
Oost-Vlaanderen	42 (11%)	279 (14%)		
Antwerpen	60 (16%)	291 (15%)		
Limburg	27 (07%)	156 (08%)		
Vlaams-Brabant	40 (11%)	221 (11%)		
Bruxelles-Brussels	23 (06%)	119 (06%)		
Brabant Wallon	18 (05%)	095 (05%)		
Hainaut	50 (14%)	264 (13%)		
Namur	13 (04%)	085 (04%)		
Liège	35 (10%)	182 (09%)		
Luxembourg	11 (03%)	046 (02%)		
Delay since the degree (years)*	21 ± 10 (2-42)	Unavailable		

\* Mean ± SD (minimum-maximum)

\*\* Number of physiotherapists (proportion)

T = Mann-Whitney Rank Sum Test;  $\chi^2$  = Chi-Square Test; df = degree of freedom.

## 5. DISTRIBUTION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASES ACCORDING TO BELGIAN PROVINCES

Distribution of COPD according to Belgian provinces		
Provinces	Number	Proportions
<b>Flanders</b>	<b>35</b>	<b>25.55%</b>
West-Vlaanderen	10	07.30%
Oost-Vlaanderen	05	03.65%
Antwerpen	10	07.30%
Limburg	03	02.19%
Vlaams-Brabant	07	05.11%
<b>Bruxelles-Brussels</b>	<b>09</b>	<b>06.57%</b>
<b><u>Walloon area</u></b>	<b>93</b>	<b>67.88%</b>
Brabant Wallon	03	02.19%
<u>Hainaut</u>	51	37.23%
Namur	10	07.30%
<u>Liège</u>	19	13.87%
Luxembourg	10	07.30%





