



Musculoskeletal disorders: What recognition as occupational diseases?

A study on 10 European countries

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FOREWORD

In September 1998, the European Forum of the insurance against Accidents at Work and Occupational Diseases¹ set up an internal working group, coordinated by EUROGIP², consisting of legal experts and doctors from the insurance organisations against occupational risks of several European countries. Although the original assignment of this group was to collect and compare the national statistics relating to occupational diseases, it subsequently carried out work on more specific subjects. Accordingly, the following reports have been published to date³:

- Occupational diseases in Europe - Comparative study of 13 countries: Procedures and conditions of declaration, recognition and compensation (September 2000)
- Occupational diseases in 15 European countries – Figures for 1990-2000 – Legal and practical news 1999-2002 (December 2002)
- Overview of occupational cancers in Europe (December 2002)
- Survey on under-reporting of occupational diseases in Europe (December 2002)
- Lumbago and allergic asthma: Two case studies at the European level (December 2002)
- Work-related mental disorders: What recognition in Europe? (February 2004)
- Asbestos-related occupational diseases in Europe – Recognition, statistics, specific systems (March 2006)
- Occupational diseases in Europe – 1990-2006 statistical data and legal news (January 2009)
- What recognition of work-related mental disorders? A study on 10 European countries (February 2013)

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¹ The European Forum of the insurance against Accidents at Work and Occupational Diseases, founded in June

² EUROGIP is a public interest grouping set up in 1991 by the French Health-Occupational Risks Insurance to work on the European aspects of those subjects. To find out more: www.eurogip.fr

³ Most of the reports are available online at www.eurogip.fr

Acknowledgements

EUROGIP would like to thank the aforementioned colleagues who participated in this study as well as Dr Anne DELÉPINE and Jean-Pierre ZANA (National Research and Safety Institute for the prevention of accidents at work and occupational diseases, *Institut national de recherche et de sécurité pour la prévention des accidents du travail et des maladies professionnelles*, INRS - France) for their precious advice on medical aspects and the production of case studies.

Please note that only the French version is legally binding.

INTRODUCTION

Musculoskeletal disorders (MSDs) are one of the most worrying occupational health issues in Europe. According to the initial results of the sixth European survey on working conditions (Eurofound 2015), 61% of European workers tell they are exposed to repetitive hand and arm movements, 43% to painful and tiring positions, 33% to carrying and moving heavy loads and 20% to vibrations caused by machines.

MSDs are conditions due to excessive strain on the tissues (muscles, tendons, nerves and vessels) located in the vicinity of joints. They mostly take the form of pains and functional discomfort; they can be handicapping and cause problems of retention in employment, or even unemployability. The most frequent MSDs are the carpal tunnel syndrome (wrist), the rotator cuff syndrome (shoulder), epicondylitis (elbow), hygroma (knee) and lumbagos and neck pains.

And yet, given their national regulations, all European countries do not have the same propensity to classify these work-related conditions as occupational diseases (ODs). MSDs rank first among the occupational diseases recognized in some countries, but they come far behind respiratory disorders, deafness and skin diseases in others.

Apart from work-related factors (biomechanical stress, i.e. stress due to prolonged uncomfortable positions, intense efforts, forced movements, repetitive acts, vibrations, pressure, carrying loads, and psychosocial factors), MSDs are also the result of individual factors such as age, gender, obesity, diabetes, and extra-occupational activities (leisure, domestic tasks, etc.). This multifactorial dimension of MSDs introduces differences of treatment in their recognition as an occupational disease in European countries.

Undoubtedly, the prevention of MSDs by an improvement in working conditions is a major challenge, which must be met by the stakeholders in general and occupational risk insurers in particular (when they have this prerogative). But coverage of these diseases by the insurer is not without implications: recognition as an occupational disease allows better compensation for the victim (since the level of occupational injuries benefits is generally higher than for sickness and disability insurances) and provides greater visibility concerning these work-related diseases.

This study reviews the current situation regarding the recognition of MSDs as occupational diseases in 10 European countries: **Germany, Austria, Belgium, Denmark, Spain, Finland, France, Italy, Sweden and Switzerland.**

It presents an exhaustive overview of MSDs liable to be recognized as ODs and the factors, which are taken into account for this recognition (1).

Case studies then illustrate national insurance regulations and practices regarding recognition and compensation (2).

Lastly, comparative incidence rate statistics make it possible to assess the quantity of MSDs compensated by each of the countries and their evolution over the past decade (3).

ABSTRACT

This study reviews the current situation regarding the recognition of musculoskeletal disorders (MSDs) as occupational diseases in ten European countries: **Germany, Austria, Belgium, Denmark, Spain, Finland, France, Italy, Sweden** and **Switzerland**. These countries are represented in the European Forum of the insurance against Accidents at Work and Occupational Diseases.

MSDs are conditions due to excessive strain on the tissues located in the vicinity of joints (muscles, tendons, nerves and vessels). They take the form of various types of syndromes such as tendinitis, circulatory disorders of the hands, or even osteoarthritis. They are located in various places on the body (the hand, shoulder, elbow, knee, back, etc.) and result from various types of exposure: pressure or striking on part of the body, repetition of a movement, vibrations, carrying of loads, etc. MSDs can be handicapping and cause problems of retention in employment, or even unemployment.

Some MSDs can be recognized as accidents at work. But most of the cases examined by the national occupational injury insurers are examined as occupational diseases. In most of the countries studied, this examination is based on a list of the diseases, which can be recognized and the related exposures. In parallel, a so-called "complementary" system makes it possible to recognize off-list diseases; in this case, the victim must prove the link between the disease by which they are afflicted and the exercise of their occupation. Complementary systems play a minor role in the recognition of MSDs as occupational diseases.

This study aims to compare the MSDs registered on the national lists, distinguishing between osteoarticular disorders (tendinopathy, meniscopathy, bursitis and hygroma), neurological disorders of the limbs and the spinal column, and lastly vascular disorders and angioneurotic disorders (hand-arm system).

In light of this comparison, theoretically, most MSDs are covered by all the list systems, and there are no major differences between countries regarding the exposure criteria when they are set out formally. One notes, however, that recognition of disorders of the spinal column as ODs is impossible in **Austria, Finland** and **Switzerland**. Also, the carpal tunnel syndrome is not recognized in **Austria**. There is no consensus regarding several other, less common MSDs: hypothenar hammer syndrome, several lower limb tendinitis conditions, osteoarthritis of the knee, and damage to the cervical rachis.

As regards the methods of examination of claims for recognition of the occupational nature of MSDs, practices in Europe differ. Accordingly, the countries studied can be classified in three groups:

- **Germany, Austria, Switzerland, Finland, Sweden**: for each case all the risk factors (work-related and personal) that could be the cause of the disease are studied.
- **Belgium, Denmark**: when the investigation of the claim for recognition reveals that the conditions related to the disease and the precise exposure criteria (described where applicable in documents appended to the list) are met, the case is usually recognized.
- **Spain, France, Italy**: the list of occupational diseases is generally precise regarding the syndromes covered and the movements or positions which cause them; these criteria are less demanding than in the other countries.

To illustrate the regulations and practices regarding recognition of MSDs, but also to assess the benefits awarded by the occupational injury insurer in cases of permanent disability, four case studies are then proposed. These cases are representative of musculoskeletal disorders frequently affecting workers: the carpal tunnel syndrome (case 1), rotator cuff tendinopathy (case 2), lumbago (case 3) and epicondylitis (case 4).

These four case studies supply the following information:

- **Sweden** is distinguished from the other countries by the fact that the diagnostic of a loss of earning capacity is a requirement for the acceptability of claims for recognition by the social security organization.
- Those countries in which the national list of occupational diseases confers a strong presumption of occupational origin on the diseases which appear there (**Belgium, Spain, France, Italy**) are those which have most generously recognized the proposed cases.

- Cases of carpal tunnel syndrome and epicondylitis are "probably" or "definitely" recognized as occupational diseases in most countries. On the other hand, the countries are divided with regard to cases of rotator cuff tendinopathy and lumbago.
- The existence of extra-occupational factors apparently had no impact on the recognition decisions in the cases in question.
- The benefits awarded, of different kinds and levels depending on the country, clearly illustrate the priorities of the competent occupational injury insurer in the countries studied.
- In three countries (**Germany, Austria and Finland**), the occupational injury insurer currently offers the possibility of financing the adaptation of the work station or a training course for occupational redeployment if the case is recognized as an occupational disease.

The third part of the study is devoted to statistics on claims for recognition and recognized cases of MSDs, first for a given year (2014), and then over the period 2007-2014.

Regarding MSDs reported as occupational diseases, major differences can be seen: **France, Belgium and Denmark** boast high ratios per 100,000 insured (463, 263 and 257 respectively); Italy has a median ratio (150); **Germany, Finland, Sweden and Switzerland** have the lowest ratios (between 23 and 13 reports).

There are even greater differences regarding MSDs recognized as ODs. **France** is at the top of the ranking (ratio of 322 per 100,000 insured), followed by **Spain** (94), **Belgium** (82) and **Italy** (64). The lowest ratios are found in those countries which exclude certain MSDs from recognition, and/or which examine each claim on a case-by-case basis and are very demanding with regard to the causal link between occupational exposure and the disease: **Austria** (1), **Germany** (3), **Switzerland** (6) and **Sweden** (7).

The rate of recognition of MSDs, which is based on a comparison of the reporting and recognition levels, varies from 69% in **France** to 8% in **Denmark**, including a range of 30% to 50% in **Belgium, Finland, Italy, Sweden and Switzerland**.

In four of the ten countries in the study, MSDs represent a very large proportion of the total number of occupational diseases recognized: **France** (88%), **Spain** (75%), **Belgium** and **Italy** (69%). In contrast, this proportion is less than 20% in **Germany, Austria, Denmark, Finland and Switzerland**.

The study of the typology of MSDs recognized as occupational diseases shows that osteoarticular disorders (with a majority of tendinopathies) top the list in many countries: **Belgium** (1,671 out of a total of 2,498 cases), **Denmark** (381/588), **Spain** (8,620/12,860), **France** (31,329/60,018, practically equal with neurological disorders), **Italy** (5,573/13,669) and **Switzerland** (206/221).

Finally, note that the growth trends between 2007 and 2014 are very contrasting:

- **Switzerland, Sweden** (with a stabilization from 2012 on), **Finland** (with a stabilization in 2013) display a continuous and regular decline in the number of MSDs reported and recognized;
- **Denmark** and **Spain** show relatively stable curves since 2007, with a slight downward trend (since 2013 in Denmark);
- in **Italy**, MSDs have apparently stabilized since 2012, after growing continuously;
- **Belgium** has experienced a continuous increase in MSDs since 2011;
- In **France**, following a continuous increase, there has been a reversal of the trend since 2012.

Very often, these trends can be explained by changes in the regulations.

1. POTENTIAL RECOGNITION OF MSDs AS OCCUPATIONAL DISEASES

The national occupational injury insurers of European countries investigate most musculoskeletal disorders (MSDs) cases as occupational diseases, and it is these possibilities of recognition that we are interested in here.

However some MSDs can be recognized as accidents at work. One notes that, in several countries, numerous lumbago cases are recognized like accidents at work when they occur suddenly (since the occurrence of a sudden event clearly corresponds to the definition of an accident); in **Spain** and **Finland**, an accident at work is the only possibility for lumbago being compensated, since recognition as an occupational disease (OD) is legally impossible.

Finland also recognizes bursitis of the elbow and knee as a special category of accidents at work; these two conditions can also be recognized as occupational diseases since the implementation of the reform of the legislation on occupational injury insurance (early 2016).

1.1 Content of the national lists of ODs and role of the complementary system in the area of MSDs

In most of the countries examined⁴, recognition as an occupational disease is based on a mixed system. On the one hand there is a list which identifies diseases liable to be recognized, with the insurance organization being responsible for investigating the case, and on the other hand there is a complementary system which makes it possible to recognize off-list diseases on condition that the victim can prove the link between the disease by which they are affected and the performance of their job.

It is undeniable that the registration of pathology on a national list of ODs makes its recognition far easier. To evaluate the possibilities for recognition of MSDs in the various countries, it is necessary to compare the contents of the various lists.

This is a complex operation due to extreme heterogeneity of the national lists (at least as regards the form). They are drawn up very differently from one country to another: some are characterized by a high degree of precision regarding the targeted pathology and the exposure in question (**Spain, France, Italy**), thus resulting in a large number of headings; others, in contrast, are presented concisely (**Germany, Austria, Finland**), even very concisely (**Switzerland**), with as a consequence few headings in very generic terms.

Irrespective of the number of headings, they are classified differently depending on the country. While most of the lists distinguish between diseases caused by chemical, physical and biological agents, some are organized according to the location of the disorder on the body (**Denmark**), the causal agent (**Spain, Italy**), or else the chronological order of registration of diseases on the list (**France**).

The fact that the expression MSDs covers a multitude of disorders, manifested by various types of syndromes (nervous paralysis, circulatory disorders, bursitis, osteoarthritis, etc.), located at different places on the body (hand, shoulder, elbow, knee, back, etc.), resulting from various types of exposure (pressure or striking on part of the body, repetition of a gesture, vibrations, carrying of loads, etc.) merely increases the difficulty of making comparisons.

In this study, it was chosen to compare the MSDs registered on the national lists, distinguishing between osteoarticular disorders, neurological disorders and vascular disorders/angioneurotic disorders.

⁴ We may specify that **Sweden** has only a proof system (no list of occupational diseases apart from infectious diseases), and that **Spain** has no complementary system as such (an off-list disease can be legally recognized as a special category of accident at work and registered as "non-traumatic pathology").

The tables in Appendix present, based on this classification, the content of the lists regarding MSDs, i.e. the original titles and the conditions of recognition when they are documented and public.

In some countries (**France, Spain, Italy**), these recognition criteria are included in the list of occupational diseases in relatively exhaustive fashion; in other countries (**Belgium, Germany, Denmark**), they can be found (for certain diseases) in related documents accessible to the public, in which case these are recommendations followed by the doctors in charge of the recognition procedure (no legal validity).

Osteoarticular disorders

For work-related osteoarticular disorders, a distinction can be made between three categories of pathology: tendinopathies, meniscopathy complaints, bursites and hygromas.

Tendinopathies

This term covers conditions affecting the tendons, synovial sheaths, peritendinous tissues and tendinous and muscular insertions.

The **Danish, Spanish, French** and **Italian** lists classify them precisely and by location. The most common tendinopathies are mentioned there (tendinitis of the rotator cuff/shoulder, epicondylitis and epitrochleitis/elbow, tendinitis and tenosynovitis of the wrist - including De Quervain's syndrome and trigger finger), together with criteria of recognition regarding the types of tasks taken into account (or more precisely the positions/movements performed during those tasks). **France** also lists tendinitis of the Achilles heel, **Italy** tendinitis of the thigh, and **Denmark** and **France** tendinitis of the knee.

The **German, Austrian** and **Belgian** lists refer to the tendinopathies under a very generic title, which does not make it possible to know which ones are in practice "covered" by the list system. For example, one of the case studies presented in Part 3 shows that tendinitis of the rotator cuff is not recognized in **Germany** and **Austria**.

We may specify that in **Germany** the requirement of discontinuing the risky occupational activity⁵ is applicable to tendinopathies. In **Belgium**, tenosynovitis is recognized only under the complementary system⁶. In **Finland**, tendinopathies are not registered on the list, but they are recognized as an occupational disease by the law⁷.

Although work-related tendinopathies mostly concern the upper limbs, the **Danish, French** and **Italian** lists also provide explicitly for the recognition of tendinitis of the lower limbs (the knee, and tendinitis of the Achilles heel in **France**).

Statistically, there are major differences regarding the recognition of tendinopathies from one European state to another (see 3.3).

⁵ In **Germany**, recognition of certain diseases (mostly MSDs and skin diseases) is possible only on condition that the seriousness of the worker's state of health requires that he (she) discontinue all activities which have had or which may have a causal relationship with the origin, aggravation or recurrence of the disease. If this condition is not met, the recognition is in this case referred to as "informal", giving entitlement to benefits of a preventive type and financial benefits with the exception of an annuity.

⁶ For tenosynovitis conditions, only artists from the entertainment sector benefit from the list system.

⁷ In **Finland**, recognition of the work-related nature of a disease can find legal justification in law (*Worker's Compensation Act 459/2015*), in the indicative list of occupational diseases (*Government Decree on List of Occupational Diseases 769/2015*), or else under a special category of accidents at work.

Meniscopathy complaints

Meniscopathy complaints are registered on the lists of all the countries studied, except for the **Belgian** list (where they can be taken into consideration in the case of a claim for recognition of a gonarthrosis, under the complementary system), the **Finnish** indicative list (where recognition as an accident at work is possible) and the **Swiss** list (where the cases of meniscus tear can be legally regarded as accidents at work). The exposure criteria contained in the lists are similar. Statistically, the meniscopathy complaints represent a minor pathology among MSDs.

Bursites and hygromas

All the countries have registered conditions of the bursae on their list of occupational diseases, except for **Finland** where bursites of the knee only have just been included in the list and bursites of the elbow can be recognized under the complementary system.

Once again, the criteria included in the lists are similar.

Statistically, for bursitis conditions there is less contrast between countries than for other osteoarticular conditions.

Neurological disorders

Here, a distinction is made between neurological disorders at the level of the limbs and those at the level of the spinal column.

Neurological disorders of the limbs

The commonest of these, the carpal tunnel syndrome, is registered as such on the **Danish, Spanish, French** and **Italian** lists, and was recently (2015) included in the **German** list.

This syndrome is covered by more generic titles in **Belgium** ("damage to the nerve function due to pressure") and **Switzerland** ("peripheral nerve paralysis by pressure").

In **Austria**, there was a debate on a possible recognition of the carpal tunnel syndrome under the titles "nerve injuries due to compression" or "circulatory disorders of the hands due to vibrations". The conclusion being negative, the recognition of this syndrome as an occupational disease is impossible in this country.

When they are documented, the conditions relating to exposure do not fundamentally vary from one country to another.

The carpal tunnel syndrome is emblematic of the differences noted in Europe in practices for examination of claims for recognition as ODs (see 1.2): at present around 20,000 cases are recognized each year in **France**, between 2,000 and 3,000 in **Spain** and in **Italy**, about fifty in **Germany** and a dozen cases in **Switzerland**.

As regards the other listed neurological disorders of the limbs (such as Guyon's canal syndrome or entrapment neuropathy of the ulnar nerve in the epitrochlear olecranon fossa), they are specifically referred to only in **Spain** and **France**; the other countries use more generic titles.

In most countries, it is not possible to make a distinction between these other neurological disorders of the limbs in the MSD statistics and hence assess their relative significance.

Neurological disorders of the spinal column

Whether they be caused by the carrying of heavy loads or by vibrations transmitted to the whole body, they are registered on the **French, Italian, German, Danish** and **Belgian**⁸ lists. **In Spain**, they are technically recognized and registered as "non-traumatic pathologies" but legally as accidents at work (see footnote nr4).

However, disorders of the spinal column are excluded from recognition as an occupational disease in **Austria, Finland** and **Switzerland**.

The lists including neurological disorders of the spinal column cover disorders of the lumbar rachis (lower part of the spinal column) but also, **in Germany**, disorders of the cervical rachis (neck).

The legal criteria for recognition can vary from one country to another (requirement or non-requirement of pain in addition to damage to the discs, duration of exposure), but it is rather the procedure of investigation carried out in each country (see 1-2) that will determine the quantity of lumbagos recognized there.

Statistically, there are many claims for recognition of disorders of the spinal column in all those countries offering a possibility of recognition; however, they are recognized in very different proportions depending on the country.

Vascular disorders and angioneurotic disorders (hand-arm system)

Two types of hand disorders are considered here:

- Vascular disorders (hypothenar hammer syndrome) caused by repetitive striking. These disorders are registered only on the **French** and **Spanish** lists, the **Belgian** list (since 2013) and the **German** list (since 2015).
- Angioneurotic disorders of the hand (Raynaud's syndrome) caused by vibrations transmitted by certain machines or tools; the lists and exposure criteria (when the latter are set out formally) appear homogeneous in all the countries studied, with the restriction relating to discontinuation of the dangerous activity for formal recognition **in Germany** (see footnote nr5).

Statically, vascular disorders and angioneurotic disorders of the hand do not represent a major phenomenon, even in those countries where their recognition is facilitated by a very strong presumption of origin related to the list (see 1.2).

Other MSDs included in the national lists of ODs

The other listed MSDs are mostly arthropathies affecting the hand-arm-shoulder system, caused by mechanical vibrations or shocks from vibrating or striking machines or tools. Several countries having a list of occupational diseases have included this type of pathology, either under the generic title "osteoarticular diseases caused by mechanical vibrations" or by designating localized arthropathies: elbow and wrist/hand in **Denmark** and **France**, thumb-elbow-shoulder in **Italy**.

Osteoarthritis of the knee (caused by work in a kneeling or crouching position) is registered only on the **German** and **Danish** lists, and arthrosis of the hip only on the **Danish** list.

⁸ In **Belgium**, if the medical requirements for recognition of a sciatica are not met, the pathology is classified as a "work-related disease", which gives entitlement to benefits other than financial benefits from the insurance organization (see "*Programme de prévention des maux de dos*" - Back ache prevention programme - on the website of the *Fonds des Maladies Professionnelles*: www.fmp-fbz-fgov.be).

To summarize, a fairly homogeneous content of the lists regarding MSDs

In light of this comparison, we note that, theoretically, most MSDs are covered by all the list systems, and there are no major differences between countries regarding the exposure criteria when they are set out formally.

However, we note some exceptions to this, as follows. Recognition of damage to the spinal column as an OD is impossible in three of the eight countries having a list. The same applies to the carpal tunnel syndrome in Austria. And there is no consensus regarding several other, less common MSDs (hypothenar hammer syndrome, several lower limb tendinitis conditions, osteoarthritis of the knee, and damage to the cervical rachis).

Recent changes in the lists

This relative uniformity of the lists as regards MSDs is the result of their dynamic process of change in several countries in recent years.

In the last decade, two countries have adopted a new list of occupational diseases: **Spain** in 2007 and **Italy** in 2008.

Regarding MSDs, the **Spanish** list, for example, has gone from six relatively generic headings (group of diseases and indicative or restrictive lists of tasks/jobs) to a version containing more precise indications regarding the syndromes and more explicit enumerations of exposures/tasks. Apparently this new list has not closed or opened possibilities for recognition of new MSDs.

Since the creation of a complementary system for recognition of ODs in 1988, **Italy** has seen exponential growth in the number of MSDs recognized; before 2008, 80% of claims for recognition thus concerned MSDs. Hence the need to adopt a new list of occupational diseases in 2008 which took into account these pathologies.

Other countries have included new MSDs in their list of occupational diseases.

Denmark has regularly included several MSDs together with precise conditions of recognition: osteoarthritis of the two hips (in 2006), cervicobrachial syndrome (in 2007) and patellar tendinitis (*jumper's knee*) (in 2008).

In **Germany**, gonarthrosis was added to the list of occupational diseases in 2009, and the carpal tunnel syndrome and hypothenar hammer and thenar hammer syndromes in 2015.

In **Belgium** too, the hypothenar hammer syndrome was registered on the list in 2013. The previous year, Belgium had included tendinopathies of the upper limbs which could previously be recognized only for entertainment artists.

In early 2016 **Finland** included bursitis of the knee on its list of occupational diseases.

Some countries have changed the wording of the diseases included in the lists, mostly so as to broaden the scope of recognition: this is the case for **Belgium** and **Austria**, where "nerve paralysis by compression" was replaced by "damage to the nerve function due to pressure" for **Belgium** in 2002 and "nerve injuries due to compression" for **Austria** in 2013. This makes it possible to recognize not only "motor" cases (motor nerve transmission disorder resulting in paralysis phenomena) but also more precocious cases for which only sensory conduction disorders are detected, before a paralysis occurs.

Again in the **Austrian** list, the heading dedicated to bursitis conditions of the knee and shoulder caused by constant pressure or vibrations was extended to tendinopathies, and the limitation to the knee and shoulder was removed in 2013. Finally, the heading dedicated to conditions caused by vibrations from compressed-air tools and hammering machines was extended to vascular disorders, so that it is no longer confined to skeletal pathologies.

In 2012, **Denmark**, for its part, extended the heading dedicated to disorders of the rotator cuff to the shoulder impingement syndrome (also called sub acromial impingement); since then, inflammation of the shoulder tendons is covered, and no longer merely their degeneration.

Finally, **France** (see below) has revised the conditions of recognition included in the list for certain MSDs: conditions of the shoulder (2011) and elbow (2012) underwent changes in the title of the pathologies and in the restrictive lists of tasks (introduction of quantified parameters to characterize tasks entailing exposure to risk). MSDs of the wrist-hand-finger system are undergoing revision.

Changes introduced in the French Tables

Changes in Table 57-A (Shoulder):

- Change concerning the definition of pathologies compensated and the means of diagnosis. The previous definition was not very precise, referring to "painful shoulders". Now, the terms used are acute or chronic non-calcifying unbroken tendinopathy, and partial or transfixiating rupture of the rotator cuff.
- Introduction of a minimum duration of exposure of six months for chronic tendinopathies and one year for ruptures of the rotator cuff.
- Introduction, for the first time with regard to MSDs, of daily durations of exposure: the decree requires that evidence be provided of work in abduction with an angle greater than 60° for at least six months, more than 2 hours per day.
- More stringent criteria related to the type of exposure: removal of the previous concept of "forced shoulder movements"; only movements in abduction (i.e. the arm is raised, moving away from the side of the body) are now covered, and only if the working angle exceeds 60° (the previous version accepted shoulder movements in rotation, antepulsion and retropulsion).

Changes in Table 57-B (elbow):

- The titles of the pathologies have been clarified in light of changes in the medical classifications: epicondylar muscle insertion tendinopathy (formerly called epicondylitis) and epitrochlear muscle insertion tendinopathy (formerly called epitrochleitis) are listed.
- The restrictive list of tasks that could cause such diseases has been left as is. However, tasks habitually involving repetitive movements and/or maintained forced bending positions have been added to the list for entrapment neuropathy of the ulnar nerve.

Minor role of the complementary system of recognition

With the exception of **Spain**, those countries that have a list of occupational diseases also have a so-called "complementary" or "open" system of recognition for off-list diseases.

These systems, open to all diseases not registered on the list or reserved for certain predefined pathologies, have a common feature: the proof of a direct and essential link between the disease and the work must be provided by the victim.

In **France** and in **Italy**, the complementary system is intended both for listed diseases for which the criteria (also listed) are not met, and for off-list diseases. Numerous claims are accepted in the former case.

It should be noted that in the French off-list system a prerequisite condition exists: the victim must be suffering from a (foreseeable) permanent disability of at least 25% or else be deceased.

In **Denmark**, diseases that are listed but related to an exposure not present on the list⁹ are accepted for investigation under the complementary system, as well as off-list diseases. In order to be recognized, the disease must have been caused only or mainly by work.

In **Belgium**, the MSDs recognized under the open system are mostly gonarthroses¹⁰ and root arthroses (root arthrosis of the thumb). The recognition of other MSDs is extremely rare, and yet, in this country, tendinopathies of the lower limbs (for workers other than entertainment artists) and tenosynovitis conditions can be recognized only under this open system.

In **Switzerland**, the work-related origin must be exclusive or clearly preponderant (75% of all causes), in other words scientific studies must show that for the disease in question, there are four times more cases in the occupational activity in question than in any other occupational activity. Since this condition is only very seldom met, cases of MSDs recognized under the complementary system are very rare.

In **Finland**, when a disease does not appear in the list, it can however be recognized provided that it is caused primarily by work. The private insurance companies responsible for the recognition and compensation of occupational diseases can send the dossiers to the Employment Accidents Compensation Board (TVK) for their opinion. 20% of all MSDs recognized are recognized under the complementary system.

In **Germany**, no musculoskeletal disorder is currently able to be recognized under the complementary system; the carpal tunnel syndrome and hypothenar hammer/thenar hammer syndromes were recently included in the list (in early 2015).

In this country the complementary system acts as an "antechamber" for registration on the list. An ad hoc Medical Commission, which meets four times a year, regularly publishes scientific opinions on such or such a disease and recommends that it be recognized under the complementary system, specifying on what conditions.

Generally, the diseases in question are included on the list of occupational diseases several years later, and updating is performed about every five years. For example, gonarthrosis was the subject of a scientific opinion by this Commission in 2005 and was included in the German list in 2009.

Austria also has a complementary system: the insurance organization AUVA can classify an off-list pathology as an occupational disease if it is highly likely that said disease is exclusively or predominantly the result of the use of defective equipment (or rays) in the workplace. The Ministry must approve this exceptional recognition.

Although the OD lists are now roughly similar with regard to MSDs and the complementary systems are seldom used, the statistics for recognized cases of MSDs (see Part 3) show major differences from one European country to another. It is not so much the MSDs liable to be covered which account for these differences, but the way in which the cases are investigated by the insurance organizations.

⁹ For example, the carpal tunnel syndrome and MSDs of the hand-arm-shoulder system caused by computer work are accepted under the complementary system in exceptional circumstances (since 2005 and 2006 respectively).

¹⁰ For further information on the conditions of recognition of gonarthrosis under the open system in **Belgium**: <http://www.fmp-fbz.fgov.be/web/pdfdocs/Medische-brochures/FR/La%20gonarthrose%20provoquee%20par%20surcharge%20mecanique.pdf>

1.2 Procedures for investigation of claims for recognition

The registration of a disease on the national list of ODs is not sufficient for it to be recognized, even though such a registration facilitates its recognition, in the sense that it opens up the possibility for investigation by the insurance organization without the victim bearing the onus of proof.

Other factors involved are also the recognition criteria applicable to each disease, which differ in Europe regarding both the form and the substance.

For the form, first, the medical conditions and conditions of exposure are expressed more or less formally depending on the country, in the list of occupational diseases, in related documents available to the public on the insurers' websites, or in works reserved for experts.

Concerning the substance, the lists of occupational diseases can limit recognition to precise syndromes or receive a family of syndromes in generic terms. But it is also the conditions of exposure which can vary from one country to another: mere definition of a type of movement or position, quantification of the intensity of exposure, indicative or restrictive list of tasks, etc.

Apart from their content, it is the way in which these recognition criteria are applied and the importance assigned to extra-occupational factors which make a difference between national investigation practices.

The countries studied can therefore be classified in three groups. However, this classification is very schematic. It would be more accurate to consider national investigation practices as a varying series of processes ranging from investigation of the cases both for and against the medical file and the exposures sustained by the worker to a mere verification of relatively generic criteria (often not quantified).

Germany, Austria, Switzerland, Finland, Sweden

Apart from **Sweden**, which has no list of occupational diseases, these countries all have a list with relatively brief titles and containing few or no precise criteria regarding pathologies and exposures (see Appendix).

In these countries, for each case all the risk factors that could be the cause of the disease are studied. This means not only risk factors related to the worker's occupational activity, but also exposures encountered in private life, notably during leisure activities.

With regard to MSDs, i.e. pathologies caused by repetitive movements damaging the joints, DIY activities and intense practice of sport are especially concerned. Allowance is also made for personal characteristics (gender, age, weight, etc.) and the victim's pre-existing pathologies.

Next, for recognition as an occupational disease there must be a defined causal link between the occupational exposure and the disease: the former must be the essential cause of the latter. This concept of essential or preponderant cause is expressed differently depending on the country.

In **Germany**, several causes can coexist, but the occupational exposure must have played an essential role in the occurrence of the disease, without necessarily having been able to cause the disease by itself.

In **Switzerland**, occupational causes must represent 50% of all causes. This requirement has been expressed as follows by the Federal Court: the condition must be twice as frequent for the type of work in question as for any other type of work.

In **Sweden**, the law requires that there be more serious reasons for presumption of the occupational nature of the disease than for the opposite.

In **Finland**, a disease may be recognized as an occupational disease provided that the employee is shown to have been exposed at work to an agent included in the list of ODs to such an extent that the

exposure could essentially cause the disease. Furthermore, a prerequisite is that the disease is clearly not caused by any other reason.

The person or team in charge of investigation and recognition¹¹ has substantial leeway for assessment. It has decision aid tools such as the scientific literature, guides as an aid for the investigation, or specific recommendations. In **Germany**, for example, there are appraisal recommendations (*Begutachtungsempfehlungen*) produced by the insurer in cooperation with learned societies. As regards MSDs, there is one recommendation for diseases of the spinal column and another one for gonarthrosis, recently included in the list¹².

Belgium, Denmark

In these countries, when the investigation of the claim for recognition reveals that the criteria related to the disease and those related to the exposure are met, the case is usually recognized. The impact of any extra-occupational factors is taken into account only in those cases where it is obvious that the occupational exposure could not by itself have caused the occurrence of the disease. A search for these factors is therefore not performed automatically (except for off-list diseases).

These criteria are set out relatively precisely.

In **Denmark**, they are grouped together in a single 400-page guide¹³ devoted to the most common occupational diseases, almost half of which concerns MSDs. This guide reproduces, for each disease, the conditions included on the list of occupational diseases, clarifies the diagnostics and exposures which could be taken into account, stipulates quantitative criteria where applicable (duration and intensity of the occupational exposure) and gives concrete examples of cases recognized and cases rejected.

In **Belgium**, the recognition criteria are in-house references of the Occupational Diseases Fund (FMP: Fonds des Maladies Professionnelles). For some pathologies such as tendinopathies of the upper limbs, lumbago and gonarthrosis, these criteria are covered by publications available on the insurer's website¹⁴.

¹¹ In **Germany** this is an independent doctor approved by the occupational injury insurer (*BG*) and chosen by the insured from three names. In some cases the *BG* re-examines the case and verifies the causal link. In **Switzerland**, the investigation is entrusted to a team: industrial doctor for the medical examination and the final decision, and administrative officer of the *SUVA* for the investigation of working conditions, the occupational case history and extra-occupational exposures. In **Austria**, the investigation is entrusted to a medical appraiser, who in some cases belongs to the insurance organization *AUVA*, but who is usually a self-employed doctor. In **Sweden**, a manager examines the claim and can consult an in-house medical consultant; in the case of an occupational disease or when the award of an annuity is at stake, the manager submits his assessment and his conclusions to a decision maker.

¹² Recommendation for diseases of the spinal column (in German):
<http://www.dguv.de/de/Versicherung/Berufskrankheiten/Berufskrankheiten-der-Wirbels%20C3%A4ule/index.jsp>

Recommendation for gonarthrosis (in German):
<http://www.dguv.de/medien/inhalt/versicherung/bk/empfehlungen/Begutachtung-BK2112-Stand-20140613.pdf>

¹³ *Guide to Occupational Diseases - Reported on or after 1st January 2005* available in English at:
<http://www.ask.dk/da/English/Publications/Guides.aspx>

¹⁴ Available in French and Dutch at <http://www.fmp-fbz.fgov.be/web/content.php?lang=fr&target=doctors#/documentations-medical-catalog>

Spain, France, Italy

These three countries are characterized by a list of occupational diseases that is generally precise with regard to the syndromes covered and exposures (for MSDs, these are more precisely gestures or positions), but without other more demanding criteria contained in related documents as is the case in most other countries.

In **Spain, France** and **Italy**, there exists a legal presumption of occupational origin for the diseases associated with the exposures appearing in the list of occupational diseases. For example, recognition is automatic if the requirements relating on the one hand to the syndrome on the other hand to the tasks and, where applicable, the administrative requirement (in **France** and **Italy**: maximum period of eligibility for compensation) are met.

In **Spain**, there are decision aid guides¹⁵ which clarify the requirements of the list regarding the diagnostic. Recognition can be rejected if the occupational exposure was insufficient to cause the disease. The requirements relating to exposure are limited to those included in the list of occupational diseases.

In **Italy**, recognition is automatic if the requirements of the list are met: the diagnostic (almost always checked by the insurer INAIL), the administrative requirement and the requirement relating to exposure (often assessed using the company's risk assessment document).

Where there are numerous demonstrated causes (i.e. of occupational and extra-occupational exposures), it is the principle of equivalence of causes that applies: if the occupational risk is proved, the disease is recognized as of occupational origin even where other causes exist. The only way for INAIL to challenge this principle is to demonstrate that one or more extra-occupational causes could by itself or themselves cause the occurrence of the disease, and that the occupational exposure was insufficient.

In **France** compliance with the requirements registered on the list is sufficient for the claim for recognition to result in recognition as an occupational disease. The insurance organization can however provide proof to the contrary by showing that the disease is completely independent of the occupation (provided that it demonstrate the extra-occupational cause of the disease), but this procedure is very seldom used.

MSDs are revealing of the way in which European systems for recognition and compensation of occupational diseases are built.

Many countries have opted for a system based on a pragmatic assessment of the causal link between disease and work. In this case, the list has only an indicative role and the decisive factors are the scientific expertise and the appraisal by the manager in charge of the case.

Some other countries have adopted regulations in which the list of occupational diseases expresses a social consensus regarding diseases which should be covered by the insurer. The latter has little leeway to assess the reality of the link between disease and work, because the list contains the diagnostics and exposures presumed to be of occupational origin.

Although this choice between the two models has few consequences in terms of numbers of cases recognized for diseases for which the link to an occupational exposure is often confirmed, it does have consequences for multifactorial diseases such as MSDs.

¹⁵ Guidelines for the clinical decision in occupational diseases by the National Occupational Safety and Hygiene Institute INSHT (in Spanish): Chronic tendon pathology of rotator cuff, Syndrome owing to compression of the cubital nerve in the elbow, Osteoarticular affectation owing to vibrations transmitted to the hand and arm, Epicondylitis, Epitrochleitis, Guyon's canal syndrome, Carpal tunnel syndrome, Paralysis of the radial nerve owing to its compression, Chronic hygroma of the elbow, Tendinitis and tenosynovitis of the thumb

2. CASE STUDIES

To illustrate the regulations and practices regarding recognition of MSDs, but also to assess the benefits awarded by the occupational injury insurer, we present four practical cases here.

These cases are representative of musculoskeletal disorders frequently affecting workers:

- carpal tunnel syndrome (case 1),
- rotator cuff tendinopathy (case 2),
- lumbago (case 3),
- epicondylitis (case 4).

The insurance organizations¹⁶ were asked to give a valuation on the four following issues:

1) In the case presented, would the worker's condition be recognized as an occupational disease in your country?

It was not easy for the insurance organizations to give a firm and definitive opinion on the decision for recognition. This is because the investigation of claims for recognition is based on different procedures (see 1.2), depending on whether or not there exists a presumption of occupational origin due to the presence of the disease on the list of occupational diseases.

The replies in the case studies can therefore be classified as follows:

- YES
- PROBABLY (with, where appropriate, a summary of the conditions of recognition which are definitely complied with in the case in question)
- POSSIBLE (when the description of the case is not sufficiently specified for the country to adopt a position)
- NO

When the case is recognized under the complementary system, this is specified.

2) If the case is qualified for recognition, what benefit(s) would be awarded to the victim for permanent disability?

Only permanent disability is considered here, because benefits in kind (healthcare services) and benefits for temporary disability are relatively similar from one country to another and may be granted by another organization than the occupational injury insurer.

Permanent disability is evaluated at the time of medical stabilization, i.e. when the worker's state of health is no longer subject to change (after any surgical operation or medical and physiotherapeutic treatment).

Some countries indicated the amount of the benefits awarded based on a permanent disability rate considered plausible; other countries preferred to indicate a range of amounts, due to the lack of sufficiently precise information on the sequels from which the victim was suffering. In two cases, **Belgium** calculated benefits based on an average rate of permanent disability observed for the pathology in question and not on the precise cases.

We may clarify that there are lost earnings in only one of the four cases (that of rotator cuff tendinopathy, case 2), following a change of work station made necessary by the sequels of the pathology.

¹⁶ In **Sweden**, two organizations were solicited: the social insurance agency (*Forsakringskassen*) and the compulsory complementary system TFA (*Afaforsakring*). The latter compensates the physiological damages and grants a complementary benefit in case of loss of earnings.

3) In case 3 ("lumbago"): Would the insurance organization bear the costs of adapting the work station as needed for the reinstatement of the worker affected by an OD?

4) In case 4 ("epicondylitis"): Would the insurance organization take charge of the cost of training needed to redeploy the worker suffering from an OD in the enterprise?

2.1 Practical cases

Case study 1: carpal tunnel syndrome



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Suzanne is aged 52. She has always worked as a cleaning woman in a small company. Her present gross wage is €24,000 per year.

In the past three years, she has complained to her family doctor of tension and then pains in the right upper limb, which, for more than a year, have been concentrated in the wrist and hand. Paresthesias wake the patient at night; she mentions a loss of strength and great fatigue, which lead her to consult the doctor more and more often with a pressing demand for treatment.

Faced with these clinical symptoms compatible with a carpal tunnel syndrome, her doctor suggests that it could be useful to consult a surgeon. The surgeon confirms the diagnosis and recommends a surgical operation. It is at this point in time that the claim procedure for recognition as an occupational disease is started (by the competent person,

depending on the country in question).

The patient is operated on, she takes four weeks sick leave and returns to work. However, she still has a stiff wrist and residual pains.

CASE STUDY 1: CARPAL TUNNEL SYNDROME		
COUNTRY	RECOGNITION OF THE CARPAL TUNNEL SYNDROME IN THE PRESENT CASE	COMPENSATION FOR PERMANENT DISABILITY IF THE CASE IS RECOGNIZED AS AN OD
GERMANY	POSSIBLE will depend on the conditions of exposure and the causal link	No financial compensation because reduction of the working capacity very likely < 20%
AUSTRIA	NO carpal tunnel syndrome not likely to be recognized as an OD	
BELGIUM	YES if the cleaning woman was exposed to repetitive gripping movements, pressure on the wrist or extreme posture of the wrist	Annual pension of about €900 for a probable permanent disability rate of 5%
DENMARK	PROBABLY if the cleaning woman was exposed to strenuous and repeated wrist movements for more than half of her working time	<ul style="list-style-type: none"> ▪ Lump sum between €5,560 and €22,240 for permanent injury for a permanent disability rate between 5% and 20% ▪ No benefit for loss of earning capacity (because no reduction of earnings ≥ 15%)

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COUNTRY	RECOGNITION OF THE CARPAL TUNNEL SYNDROME IN THE PRESENT CASE	COMPENSATION FOR PERMANENT DISABILITY IF THE CASE IS RECOGNIZED AS AN OD
SPAIN	YES ¹⁷	Lump sum of €48,000* Case considered as a "partial permanent disability to perform the usual activity" ¹⁸
FINLAND	POSSIBLE will depend on the conditions of exposure and the causal link	<ul style="list-style-type: none"> • Lump sum of €6,800 maximum (handicap benefit class 1 or 2) • No accident pension because no reduction of earnings
FRANCE	YES if the cleaning woman performs tasks habitually involving either repeated or prolonged movements of extension of the wrist or gripping with the hand or pressing on the median nerve or prolonged or repetitive pressure on the heel of the hand	Lump sum of €1,948 for a probable permanent disability rate of 5%
ITALY	YES if the cleaning woman performs tasks non occasionally involving repeated or prolonged movements of the thumb or gripping with the hand, maintaining uncomfortable positions, prolonged pressure or repeated impacts on the carpal region	No compensation because biological damage probably < 6%
SWEDEN	<ul style="list-style-type: none"> • by the Social Security: NO no investigation of the case because no loss of earnings • by the complementary system TFA: POSSIBLE 	If recognized by TFA, compensation for permanent medical disability: lump sum of approx. €4,500 (for a 5% rate)
SWITZERLAND	PROBABLY given such manual work for several decades in the cleaning sector and a unilateral carpal tunnel syndrome on the dominant limb, an occupational causal link can be regarded as established according to the highest probability	<ul style="list-style-type: none"> • No lump sum for loss of physical integrity (sequelae < 5%) • No invalidity pension because no loss of earning capacity

* On the exceptional character of the benefit, see comment on page 31

¹⁷ Note that a decision by the Supreme Court (5 November 2014) unified the case law by asserting that the tasks and occupations registered in the list of occupational diseases are merely indicative. The case in question concerned, precisely, a maintenance officer affected by a bilateral carpal tunnel syndrome.

¹⁸ **Spain** distinguishes between three sorts of permanent disability cases:

Partial permanent disability for performance of one's customary job (a disability which results in a reduction of $\geq 33\%$ in the person's normal output in their customary job) which justifies the payment of a lump sum equivalent to two years' salary.

Total permanent disability for performance of one's customary job (inability of the worker to perform all the tasks or the essential tasks of their customary job, although without preventing them from undertaking another job), which gives entitlement to an annuity equivalent to 55% of their salary.

Total permanent disability for all jobs, with in this case the payment of an annuity equal to 100% of the salary.

Case study 2: rotator cuff tendinopathy



© Marc Josse for INRS

Pedro, a professional window washer aged 35, has a bilateral rotator cuff tendinopathy.

He has worked in the cleaning sector since the age of 18. He started with cleaning and was "promoted" window washer 12 years ago. His wage (gross, before social security contributions) is €26,400 per year.

His work involves regularly visiting enterprises to perform interior and exterior cleaning of all glazed surfaces.

This is an activity that comprises both repetitive tasks with the hands above the shoulders, and manual handling when shifting ladders and cleaning exterior glazed surfaces using poles. As regards risk factors, he is faced with stressful positions and efforts due to handling operations and repetitive work, together with articular stresses. Given the independence he enjoys, he can partly manage these stresses, but this does not resolve those due to the buildings' design, the weight of the work equipment and stresses related to work at a height.

His condition began with inflammatory syndromes in which pain was predominant. Accessorily, articular disorders and a decrease in muscular strength appeared.

Increasingly obliged to ask his colleagues for help, he decided to consult his family doctor and a rheumatologist who diagnosed bilateral rotator cuff tendinopathy with right predominance. The claim procedure for recognition was started.

A sick leave and medical and physiotherapeutic treatment enabled him to resume his work but provided only partial relief. The decision to perform remedial surgery appeared necessary one year after the first consultation and about two years after the pains appeared.

Following surgery on the right shoulder and then the left shoulder, and re-education, the pain persisted and his range of movement was still limited, preventing the worker from performing all his work. It was considered impossible for the company to keep the worker. A dismissal due to medical unfitness was therefore pronounced.

Faced with difficulties in finding another job compatible with his state of health, and after several months of job hunting, he eventually accepted a job as sorter in a household waste sorting centre, with a loss of pay, because he will now earn €21,600 per year.

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CASE STUDY 2: ROTATOR CUFF TENDINOPATHY

COUNTRY	RECOGNITION OF THE ROTATOR CUFF TENDINOPATHY IN THE PRESENT CASE	COMPENSATION FOR PERMANENT DISABILITY IF THE CASE IS RECOGNIZED AS AN OD
GERMANY	NO pathology not likely to be recognized as an OD under BK 2101*, especially because it is bilateral	
AUSTRIA	NO pathology not likely to be recognized as an OD under BK 23*	
BELGIUM	YES The worker must have his arms above the shoulders more than 25% of his working time, probable in this case	Annual pension of €1,584 for an average permanent disability rate established at 8% for this pathology
DENMARK	PROBABLY if the worker had his arm raised to at least 60° for more than half of his working time	<ul style="list-style-type: none"> Lump sum of €8,896 for permanent injury (for a permanent disability rate of 8%) Benefit for loss of earning capacity: annual pension of €4,032 converted into lump sum = €65,757.89
SPAIN	YES	Annual pension of €14,712 for "total permanent disability to perform the usual activity" (see footnote 18)
FINLAND	NO conditions of exposure not met	
FRANCE	YES if it is not a calcifying tendinopathy and if the tendon injuries are documented by MRI ➔ recognition of an OD for each shoulder	Annual pension of €5,280 (€3,696 for the dominant shoulder + €1,584 for the no dominant shoulder) for a permanent disability rate of 28% for the dominant shoulder and of 12% for the no dominant shoulder 8% of which for "occupational coefficient"
ITALY	YES	Annual pension of €3,340 (€1,440 of which for biological damage and €1,900 for professional harm) corresponding to a biological damage of 18%
SWEDEN	POSSIBLE will depend on the conditions of exposure and the causal link	<ul style="list-style-type: none"> Social Security: Annual pension of €4,800 for loss of earnings (as long as the loss of earnings persists and until the age of 65) TFA: <ul style="list-style-type: none"> - no compensation for loss of income because fully compensated by the Social Security - amount of lump sum paid for permanent medical disability not indicated
SWITZERLAND	NO (examination under the complementary system) because no scientific study proves that this disease is four times more prevalent in the occupation considered than in the rest of the working population	

* BK 2101 and BK 23 correspond respectively to the German and Austrian titles covering tendinopathies in the lists of occupational diseases (*Berufskrankheiten* - BK).

Case study 3: lumbago



© Jean-Pierre Zana for INRS

Werner, aged 53, is a worker in the chemicals industry. He is responsible for reconditioning certain products by shovel (grouping 500 kg of bulk together in a single container), replenishing a filter by handling ten 25 kg bags each day, and performing various cleaning and inspection tasks.

He has complained of lumbago since his first job in logistics, which he had to leave for his current job. Two years ago, he had 10 weeks sick leave for sciatica due to L5-S1 disc herniation. Since then, reconditioning large containers by shovel is hard to perform in addition to the handling operations and other tasks assigned to him.

He now suffers chronic lumbago, which he attributes to the stressful manual handling (distance of about 10 metres carrying heavy loads, high and especially low gripping of bags on pallets). Moreover, he suffers when carrying out numerous tasks in his everyday life, when he walks, ties up his shoes, carries loads, etc. The claim procedure for recognition as an occupational disease is started.

Redeployment on another work station is proposed by the employer by agreement with the Occupational health Service. He will perform crushing of nonconforming materials on a workstation adapted with lift tables to avoid any manual handling of loads.

He will suffer no loss of pay (€27,600 per year).

.../...

CASE STUDY 3: LUMBAGO			
COUNTRY	RECOGNITION OF THE LUMBAGO IN THE PRESENT CASE	COMPENSATION FOR PERMANENT DISABILITY IF THE CASE IS RECOGNIZED AS AN OD	FINANCING ADAPTATION OF THE WORK STATION BY OD INSURER
GERMANY	POSSIBLE will depend on the precise conditions of exposure throughout the working life and the causal link	Annual pension of €3,672 if the reduction of the working capacity amounts to 20%	Possible
AUSTRIA	NO pathology not likely to be recognized as an OD		Possible
BELGIUM	YES	Annual pension of €2,760 for a permanent disability rate of 10%	Yes if considered as a work-related disease (not an OD)
DENMARK	NO because conditions relating to the load not met		No
SPAIN	NO pathology not likely to be recognized as an OD		No
FINLAND	NO pathology not likely to be recognized as an OD		Possible
FRANCE	YES	Annual pension of €1,656 for a permanent disability rate of 12% no "occupational coefficient" because no loss of earnings	No
ITALY	YES	Lump sum of €3,746 to €11,239 for a biological damage of 6% to 12%	No
SWEDEN	<ul style="list-style-type: none"> ▪ by the Social Security: NO No investigation of the case because no loss of earnings • by the complementary system TFA: NO 		No
SWITZERLAND	NO (under the complementary system) because no scientific study proves that lumbosacral herniated discs are four times more prevalent in this type of professional activity and with this type of load than in the rest of the working population		No

Case study 4: epicondylitis



© Patrick Delapierre for INRS

Helle is a 48-year-old worker who works in a poultry cutting plant. Given her experience, she is responsible for lifting the unremoved fillets at the end of the line and removing the last edible parts from the carcass.

She has always worked in the food processing industry and for the past 15 years in poultry cutting. Although the quality of the knives has improved, the frequency of the acts generates upper-limb stresses, which in her case take the form of muscular tension and pains, at the level of the epicondyle of the right elbow. In her personal history, she mentions that she

played tennis at the regional level and, up to the age of 30, she took part actively in two training sessions per week, and in regular tournaments from May to September. She stopped all sporting activity with the arrival of her two children and admits that she suffered initial pains at tennis.

Throughout her career, several bouts of inflammation obliged her to stop work for periods of 8/15 days. But anti-inflammatory drugs, physiotherapy sessions and elastic support hose are less and less effective, and now the pain persists between bouts of inflammation; she suffers chronic epicondylitis. It is at this time that the claim procedure for recognition as an occupational disease is started.

The occupational health service proposes a conversion (with a retraining) to a supervisory or training position, which could enable Helle to share her experience while eliminating the work positions causing the epicondylitis. This proposal is accepted by the worker and by the company (for the same pay: €27,600 per year).

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CASE STUDY 4: EPICONDYLITIS			
COUNTRY	RECOGNITION OF THE EPICONDYLITIS IN THE PRESENT CASE	COMPENSATION FOR PERMANENT DISABILITY IF THE CASE IS RECOGNIZED AS AN OD	FINANCING THE COST OF CONVERSION BY OD INSURER
GERMANY	YES the condition of discontinuing the activity exposing to the risk is met	No financial compensation because reduction of the working capacity very likely < 20%	Yes
AUSTRIA	YES	No financial compensation because reduction of the working capacity very likely < 20%	Yes
BELGIUM	PROBABLY	Annual pension of €1,035 for an average permanent disability rate established at 5% for this pathology	Yes in case of definitive withdrawal from the harmful environment
DENMARK	YES except if the medical record shows that the victim already suffered from epicondylitis before starting this job	<ul style="list-style-type: none"> ▪ Lump sum of €8,896 for a permanent injury rate of 8% ▪ No compensation for loss of earning capacity (because no reduction of earnings ≥ 15%) 	No
SPAIN	YES	No compensation because reintegration without loss of earnings	No
FINLAND	NO criteria of exposure not met		Yes if the case is recognized
FRANCE	YES	Lump sum of €4,101 for a permanent disability rate of 9% maximum (likely because no limitation of flexion-extension movements and if the victim is right-handed)	No except if training takes place during sick leave
ITALY	YES except if the pathology was already chronic at the time the victim played this sport	Lump sum of €4,412 for a biological damage of 6% maximum	No
SWEDEN	<ul style="list-style-type: none"> • Social Security: NO no investigation of the case because no loss of earnings • by the complementary system TFA: NO 		No
SWITZERLAND	PROBABLY ¹⁹ (under the complementary system)	<ul style="list-style-type: none"> ▪ No lump sum for loss of physical integrity because sequelae < 5% ▪ No invalidity pension because no loss of earnings 	No

19 Several epidemiological studies show odds ratios of between 3.5 and 4.0 for lateral epicondylitis generally in blue-collar workers, and even higher figures for workers in the meat processing industry. In this case, a detailed verification of the work station and meticulous compilation of the occupational case history to estimate the actual loads and stresses would be essential before giving a decision.

2.2 Information learned

Recognition of the occupational nature of the diseases presented in the case studies

Eligibility of claims for recognition

Sweden is distinguished from the other countries by the fact that a loss of earning capacity is a condition of eligibility of the claim for recognition by the Social Security organization; as a consequence, this country was unable to investigate three of the four proposed cases, in which the worker affected by an MSD kept either their job (case 1), or their salary within the framework of a change of work station (cases 3 and 4), despite their permanent disability.

Note that in principle the **Swedish** complementary system TFA only investigates cases that have received a positive decision from the basic scheme. However, TFA can award benefits for cases not covered by the Social Security system if the syndrome in question is registered on the list of occupational diseases of the International Labour Organization²⁰ as is the case for the carpal tunnel (case 1).

Degree of certainty of the replies concerning the recognition decision

As was foreseeable, several countries (**Germany, Denmark, Switzerland**) were unable to give a clearly affirmative or negative reply regarding recognition of the proposed cases, due to the lack of detailed information provided concerning the exposure. As has already been explained (see 1.2), some countries, during the investigation phase of the claim, examine very precisely the exposure to which the worker was subjected: work movements and postures, duration and frequency of occupational exposure, existence of extra-occupational factors, etc. But the description of the four cases does not always enable these countries to establish a sufficiently precise occupational case history to give a definite opinion.

Consequently, the countries in which there is a presumption of occupational origin related to the diseases registered on the list (**Belgium, Spain, France, Italy**) were more able to give definite replies. It can also be observed that these same countries most widely recognized the proposed cases.

Note that the carpal tunnel syndrome case received less firm and definite replies than the other cases: **Germany** and **Finland** were unable to take a decision due to the lack of sufficiently detailed information concerning the workers' precise conditions of exposure; **Denmark** and **Switzerland** gave merely a probable positive reply.

Although the existence of a link between the carpal tunnel syndrome and work is accepted by almost all the countries (covered by all the lists of occupational diseases except in **Austria**), this link seems more tenuous and debatable than for other MSDs, so that in most countries a deeper investigation of the causal link is required for each specific case.

Uniformity of replies concerning the substance

While cases 1 (carpal tunnel syndrome) and 4 (epicondylitis) are "probably" or "certainly" recognized as occupational diseases in most of the countries that were able to give a firm reply, cases 2 (rotator cuff tendinopathy) and 3 (lumbago) divide the countries.

It is usually because the latter two diseases are neither registered on the lists of occupational diseases nor recognized under a complementary system that the countries did not recognize the cases in question; more rarely because the exposure conditions are not met (lumbago/**Denmark**).

²⁰ ILO Convention 121 of 1980:
http://www.ilo.org/dyn/normlex/fr/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C121

Specific national feature

A specific **German** feature regarding the recognition of some diseases should be emphasized, especially for certain MSDs. The list of occupational diseases indicates that for some of them (see Appendix), formal recognition, i.e. recognition giving entitlement to compensation, depends on the worker discontinuing the activity exposing them to the risk. If the disease has not reached this level of severity and the worker can continue to perform the same occupation, the recognition will be informal and will give entitlement to benefits of a preventive type (such as adaptation of the work station) and financial benefits with the exception of an annuity. In case 4 (epicondylitis), for example, the disease could be formally recognized because the worker was redeployed in another workstation.

Multifactorial nature of MSDs

The existence of extra-occupational factors apparently had no impact on the recognition decisions. In cases 3 (lumbago) and 4 (epicondylitis), the victims had suffered in the past from problems related to the disease for which they claim recognition of its occupational nature.

However, in no case did this prevent recognition.

In **Belgium** and **France** this pre-existing state was not taken into account.

In **Italy** and **Denmark**, since the two descriptions mention only pains, neither lumbago in the previous job held by Werner (case 3), nor the practice of tennis by Helle in her youth (case 4) are taken into account during the investigation. If a precise diagnostic had been given in the past and if it had corresponded to the disease for which a claim for recognition was filed, on the other hand, that could have been taken into account. In **Italy**, for example, if disc herniation had been diagnosed in Werner during his previous job, the investigation would have been problematic, because it would have had to cover the conditions of exposure during that previous job, and the case would possibly have been ineligible (statute-barred action). And if it were demonstrated that the diagnosed disease had been caused by extra-occupational factors, the case would not have been recognized.

Finally, it is not possible to know to what extent these pre-existing pains could have an impact on the **German** decision for case 3 (lumbago), because **Germany** did not have sufficiently exhaustive information to investigate it. Again in **Germany**, the intensive practice of a sport did not prevent recognition of the case 4 (epicondylitis).

Compensation for permanent disability

Diverse compensation systems

It is clear that the benefits awarded are of different kinds and levels depending on the country.

In the four cases proposed and in the event of recognition, the insurers first assessed the permanent damage sustained by the worker. This damage is assessed mostly based on a national scale and is expressed in the form of a percentage, except in **Finland** where it corresponds to a category of handicap.

We note that the permanent disability rates awarded are roughly similar.

For example, for the sequels of case 1 (carpal tunnel syndrome), 5% was awarded by **Belgium** and **France**, less than 6% by **Italy**, and a range of 5%-20% is provided for in **Denmark** (but in our specific case the rate would rather be closer to the bottom of the range). **Switzerland** and **Germany** did not perform a precise assessment to the extent that the sequels in the case in question are too minor to reach the rate giving entitlement to permanent disability benefits (5% and 20% respectively).

In case 2 (rotator cuff tendinopathy), the rate set ranges between 8% in **Denmark** and 28% in **France** for the dominant shoulder.

In the few countries which recognized case 3 (lumbago), the rate is around 10%, and in case 4 (epicondylitis) it ranges between 5% in **Belgium** and 9% in **France**. **Switzerland** and **Germany** considered that the sequels were too minor in case 4 to be compensated, like for case 1.

However, these permanent disability rates do not reflect precisely the same type of damage in all the countries: the rate corresponds to the overall harm caused by the permanent disability in **Belgium**, **Spain**, **France** and the **Germanic countries**²¹, while it reflects merely the physiological harm in **Denmark**, **Finland**, **Italy** and **Switzerland**²². In these countries, where appropriate, a second set of benefits compensates for occupational harm (only case 3 gave rise, in some of these countries, to payment of these benefits for occupational harm).

Several parameters are then applied to this rate to calculate the benefits; it is at this stage that a difference can arise between the amounts of national benefits.

For example, the victim in case 1 will receive an annuity of €900 in **Belgium**, a lump sum of approximately €2,000 in **France**, of at least €6,000 in **Denmark** and **Finland**, but no benefits in **Germany** and **Switzerland**, since there the sequels are considered too slight.

In case 2, there is no notable difference between the benefits: the victim is awarded an annuity of between €3,300 and €5,000 depending on the country, to which can be added, in **Denmark**, a lump sum payment of about €8,000 for permanent injury. Since the occupational nature of their disease is not recognized, they will receive nothing in **Germany**, **Austria**, **Finland** and **Switzerland**.

Case 3 will give rise to the payment of an annuity of €1,600 to €3,600 in the rare countries which recognise it as an OD, except in **Italy** where a lump sum payment will be awarded.

Finally, in case 4 (epicondylitis), the victim will receive a lump sum payment of about €4,000 in **Italy** and **France**, about €9,000 in **Denmark**, an annuity in **Belgium**, and like in case 1, no benefits in **Germany** and **Switzerland** despite recognition.

Generally, with regard to MSDs, usually associated with low degrees of permanent disability, the benefits are of a similar level in **France**, **Italy** and **Belgium** (in the latter country the benefit is paid in the form of an annuity even for very low degrees of permanent disability).

The amount of benefits in **Denmark** is generally higher than in the countries mentioned above. And often the insurance organization pays no compensation in **Germany**, **Austria** and **Switzerland**, either because there is a high minimum rate of permanent disability (giving entitlement to an annuity), or because the assessment of the sequels is stricter than in other countries.

As for the benefits granted by **Spain** in case studies 1 and 2, they seem exorbitant compared to those of the other countries. It is however specified that in this country the real wages for the jobs described in the practical cases are well below the wages defined in the presentation of the cases: €14,500 at best for the cleaning woman of case study 1 and €16,000 for the window washer of case study 2. Consequently, the benefits granted would in reality be more modest since they would be correlated to the wage (the method of calculation for the compensation of permanent disability is described briefly in note 18).

It is harder to draw conclusions regarding **Sweden** and **Finland**, because out of the four case studies, these countries are liable to recognize only a single case, and therefore indicate the amount of the benefit awarded for only that case. It is also well known that only cases entailing lost earnings are eligible in **Sweden**, which de facto excludes numerous cases of MSDs.

²¹ In **Germany** and **Austria**, the rate reflects more exactly the consequences of the injury on the working/earning capacity of the victim.

²² To find out more: Compensation of permanent impairment resulting from occupational injuries in Europe - Comparative analysis in ten European countries of the case studies presented at the Conference of the European Forum of Insurances Against Accidents at Work and Occupational Diseases on 23 June 2009, December 2010 - Ref. Eurogip-59/E
http://www.eurogip.fr/images/publications/Eurogip_Notecompensation_59E.pdf

Benefit payments, which illustrate the priorities of the occupational injury insurer

The benefits awarded clearly illustrate the main characteristics of the compensation systems in force in the 10 countries studied.

Some countries give priority to compensation for non-benign cases of permanent disability, via a minimum permanent disability rate giving entitlement to the payment of benefits. This rate is 20% in **Germany** and **Austria** for awarding an annuity.

In those countries which compensate physiological harm separately from the occupational harm, this minimum rate is low for physiological harm (rates taken from a national medical scale: 5% in **Denmark** and **Switzerland**, 6% in **Italy**) but higher for occupational harm (effective loss of earnings or earning capacity depending on the country: 6.66% in **Sweden**, 10% in **Finland** and **Switzerland**, 15% in **Denmark**, and 16% in **Italy**).

There is no minimum rate in **Belgium** and **France**.

Accordingly, for the MSD cases above, **Belgium**, **Denmark**, **France** and **Italy** award benefits (often a lump sum payment of a small amount) for each case recognized, even when the victims sustain only minor sequels and no loss of pay (stiffness of the wrist and residual pains in case 1, pain related to the chronic epicondylitis which is presumed to have disappeared after the change of work station).

Some compensation systems assess separately the physiological harm and the occupational harm, and this generally means that the victims of an effective loss of pay are better compensated than in those countries which pay overall compensation for the consequences of a permanent disability.

In cases 1, 3 and 4, since the sequels are only slightly or not at all incapacitating, the victims kept their job or changed occupation within the same company. But in case 2, the worker affected by a rotator cuff tendinopathy could not continue his work due to the sequels (pain and limitation of the range of movement). With his new job, he sustained an effective loss of income of €4,800.

Countries such as **Denmark**, **Finland**, **Sweden** and **Switzerland** assess *in concreto* the victim's loss of earning capacity. In case 2, an annuity of €4,800 for **Sweden** and €4,032 for **Denmark** (converted into a lump sum) is paid to the victim for their occupational harm, to which should be added the payment of a lump sum for non-pecuniary damage.

In **Belgium** and **France**, the permanent disability rate (which will be used as a factor for calculating the benefits) is based on a scale of functional harm. But it is possible to add to this initial rate a few points to allow for occupational harm (the "occupational coefficient" in **France** and "socio-economic factors" in **Belgium**). In case 2, for example, **France** awards an annuity of €5,280 and **Belgium** of €1,584.

Italy, for its part, pays compensation firstly for the physiological damage (so-called "biological" damage), then, if a threshold of 16% is reached, the economic consequences of this damage are presumed. For example, the victim in case 2 receives an annuity of €3,340, including €1,440 for biological damage and €1,900 for occupational harm.

In case 2 which describes a minor disability and moderate lost earnings, the level of benefits does not differ excessively from one country to another; but the greater the occupational harm, the more the gap can widen between those countries which assess this occupational harm *in concreto* and those in which it is covered by overall compensation for the permanent disability.

Impact of extra-occupational factors on compensation

The case studies are not exempted from extra-occupational exposures, especially case 4 (epicondylitis). However, while the victim's predispositions (age, gender) and the exposures that they have experienced previously could have an impact on the recognition decisions of some countries (it cannot be ruled out that they play a role in the few cases where countries replied "recognition possible: will depend on the conditions of exposure and the causal link"), we note that these extra-occupational factors have no impact on the victim's compensation, once their case is recognized as an OD.

However, it should be specified that a reduction in the compensation is theoretically possible in **Denmark** in one case: when diseases pre-existing or co-existing (with the disease classified as occupational) have had an impact on the victim's earning capacity and the victim has been forced to change jobs and has sustained a loss of income due to a shift to part-time work. The insurance organization first assesses the total loss of earning capacity sustained, then the weight represented by the non-occupational disease(s) in causing this loss. This "non-occupational" portion is finally deducted from the compensation for occupational harm (which is paid in the form of an annuity in this country, except if capitalization).

Benefits to be examined in an overall context

Whatever the differences noted in the benefits awarded, it should be remembered that the benefits have to be assessed in light of countries' whole national compensation system (see footnote nr 22).

Apart from the variables involved in calculating the amount of benefits, other factors must in theory be taken into account:

- Whether the annuity is for life or not (whether it provides overall compensation for permanent disability or merely for the occupational harm);
- The tax treatment applicable to this annuity;
- The possibility of a revision in the amount of this annuity.

In the case of MSDs and for moderate permanent disabilities, it is usually a lump sum payment that is made, which makes these factors quite irrelevant.

Possibility of the occupational injury insurer financing rehabilitation measures for the victim

In some countries, the occupational disease insurance organization has another prerogative than paying compensation to victims for the consequences of the loss sustained: it helps retain the worker in employment, notably by financing the adaptation of their work station or by financing a training course required for their rehabilitation in the enterprise.

This does not mean that in the other countries the victims of occupational diseases do not benefit from such aids, but only that the occupational injury insurer does not grant these aids.

Financing adaptation of the work station

Case 3 (lumbago) allows us to address the issue of the possibility of the insurer financing the adaptation of the work station required for the worker to be redeployed in the enterprise, in this case by installing lift tables to avoid his performing any manual handling of loads.

Three countries (**Germany, Austria and Finland**) currently provide this type of benefit, if the case is recognized as an occupational disease.

- In **Germany**, retention in employment and the occupational rehabilitation of injured workers is a fundamental mission of the insurance organization. In particular, the latter helps the employer comply with his obligations regarding occupational reintegration²³.
- In **Austria**, this possibility of financing the adaptation of the workstation by the insurer (AUVA) does exist but it is most often used for victims of accidents at work. It has been applied only once between 2012 and 2014 in a case of occupational disease.
- In **Finland**, the private insurance companies in charge of occupational disease insurance are authorized to contribute to financing for adaptation of the work station, if this is necessary to retain the victim in employment.

In **Italy**, an Act of 2015 (*Legge di Stabilità 2015, art.1, comma 166*) provides that the INAIL insurance organization is competent in the area of occupational rehabilitation for job injury victims (in the broadest sense). This concerns personalized plans for retention in the workplace or to search for a new job (training courses for occupational reclassification) and plans to remove barriers related to work station design (adaptation measures). These provisions are currently being defined.

In the other countries, adaptation of the workstation is payable by the employer.

In some of them, a contribution to financing by another organization is not ruled out, but paid by an organization other than the occupational injury insurer (**France, Switzerland**) or in the framework of a specific programme of the occupational injury insurer (**Belgium**).

In **France**, the worker of case 3 affected by lumbago recognized as an OD with a permanent disability rate of 12% will be recognized as a disabled worker. His employer can therefore receive aid from a fund for the integration of disabled persons (AGEFIPH) in order to finance work for adaptation of the work station.

In **Switzerland**, the insurance organization SUVA (or any other insurer according to the federal law on occupational injury insurance) does not take part in financing the adaptation of the work station, but the federal disability insurance organization capable of playing a role whatever the source of the health complaint (disease, accident at work or occupational disease), could cover, through its cantonal offices, all or part of the costs of such an adaptation.

²³ In 2013, for example, the German insurer financed such initiatives for 1,495 workers affected by ODs, and in particular 956 measures for job retention. It is not possible to know how many of them concerned victims of MSDs.

In **Belgium**, the Occupational Diseases Fund (*Fonds des Maladies Professionnelles*, FMP) is not involved in adaptation of the workstation as part of its support to victims of an occupational disease. However, if the lumbago is considered as a work-related disease (and not as an occupational disease), the worker may enrol in a programme for prevention of backaches²⁴, which, in addition to a medical aspect aiming at rehabilitation of the person, proposes an ergonomic aspect. This ergonomic aspect involves the Fund, at the employer's request, providing a maximum of €402 for an ergonomic study of the workstation. But adaptation of the workstation properly speaking is not covered.

Financing for training

Case 4 (epicondylitis) allows us to address the issue of the insurer's coverage of the training needed by the victim to change job in the enterprise or more generally to be reintegrated in the workplace.

Quite logically, the countries where the insurer can finance the adaptation of the workstation necessary for a worker to be reintegrated in the company are also likely to finance training with the same goal (**Germany, Austria, Finland**).

In **Belgium** also, the FMP covers this type of training aimed at occupational rehabilitation, on condition that the worker promise the FMP to give up the work station exposing them to the risk. If the victim of an occupational disease accepts this permanent termination of the harmful job, they may, in some cases, follow training for a change of job or a change of position.

In **Italy**, INAIL does not currently cover training for the occupational conversion of job injury victims in situations such as that described in case 4. But the Act of 2015 mentioned above provides for this type of action.

In **France**, as a general rule, the insurance organization does not pay for training. However, if the training takes place during sick leave, a contribution to its financing by the Social Security fund is possible.

In **Switzerland** like for adaptation of the workstation, it is the disability insurance organization that is competent to take charge of the cost of such training.

²⁴ To find out more: <http://www.fmp-fbz.fgov.be/prev/PREVENTIONDOS/index.html>

3. STATISTICS

In this part the insurance statistics relating to MSDs are published, i.e. claims for recognition and recognized cases. They are presented for a given year so as to compare the countries with one another, then over the period 2007-2014 in order to detect trends, and finally, insofar as possible, by type of MSD.

The statistical data presented below come from the national occupational risk insurance organizations that are members of the working group that produced this report (except for the statistics for **Spain** and **Finland** that come from the Ministry of Labour and the Finnish Institute of Occupational Health respectively).

Methodological notes

Insured population

Here the insured population comprises the workers insured by these organizations during the reference period (per capita, except in **France** where the number is expressed in full-time equivalents).

Its scope does not necessarily cover the same population depending on the country: all workers in **Denmark**, private-sector employees in **France**, workers in the private and public sectors except for a few special regimes **in the other countries**²⁵. Farmers are not covered by the statistics except in **Finland**.

Moreover the structure of the working population varies from one country to another: its demographic features (age, gender), the breakdown between the manufacturing and service sectors and the proportion of part-time work contracts for insured workers as a whole are all factors that impact exposure to the risk of contracting an occupational disease.

Reference period

For the comparison in Part 3.1, 2014 served as reference year. It is the reports received that year and the cases recognized the same year that were processed. But the cases are not necessarily the same because the processing of a claim for recognition may require more than a year. This detail does not concern the **Italian** statistics, whose presentation depends on the year of reporting and the outcome for these reported cases irrespective of the year of the decision, nor those countries in which the reported cases in fact correspond to the cases processed (**France, Sweden**).

We may also specify that since the 2014 data are not yet available or consolidated in all the countries, some of them provided statistics from prior years.

The reported case concept

By reported case is generally meant the claim for recognition received by the insurance organization during the reference year.

In **Sweden**, however, it is not a claim for recognition properly speaking but a claim for benefits for a permanent disability, since recognition of the work-related nature of the disease is merely one stage in the process.

²⁵ However, the insured population **in Germany** has been adjusted, by subtracting school pupils and students and persons insured for purposes other than work.

For **Sweden** and **France**, the cases reported here correspond to the number of decisions (positive and negative) handed down during the reference period.

Finally, the data for reported cases are not available in either **Austria** or **Spain**.

The recognized case concept

These are decisions for recognition, counted for each disease (diagnosis), except for the **Belgian** statistics where this concerns the number of victims whose disease(s) has/have been recognized.

We may specify that by recognition decision is meant:

- In **Sweden**, any decision to allocate benefits for permanent disability;
- In **Germany**, any decision confirming a causal link between the disease (in this case the MSD) and the work. It should be specified that in this country, recognition of certain diseases (mostly MSDs and skin diseases) is possible only on condition that the seriousness of the worker's state of health requires that he (she) discontinue all activities which have had or which may have a causal relationship with the origin, aggravation or recurrence of the disease. If this condition is not met, then the recognition is referred to as "informal", giving entitlement to benefits of a preventive type (individual measures on the work station, measures for retention in employment, occupational retraining) and financial benefits with the exception of an annuity. Here, it is all cases recognized formally or informally that are taken into account.

3.1 General data on MSDs

The following data represent MSDs reported and recognized as occupational diseases. MSDs reported and recognized as accidents at work (mostly back aches) do not appear in this study.

The data relating to MSDs cover, for each country, all the MSDs registered on the national list and those covered by the off-list system²⁶, with the exception:

- of the **Swedish** data which include only the diseases coded as ICD-10 under "diseases of the musculoskeletal system and connective tissue" (M00-M99)
- and the **Finnish** data which include the same M00-M99 diseases and the diseases coded as G56 "mononeuropathies of the upper limb".

²⁶ In nearly all the countries studied, the OD statistics are organized according to the classification of the list of occupational diseases (the cases examined under the off-list system being covered by a separate classification). This is not the case in **Sweden**, where there is no list of occupational diseases liable for recognition, nor in **Finland** where the list of occupational diseases serves merely as a guide for the personnel in charge of processing claims for recognition.

MSDS IN ABSOLUTE TERMS, FOR THE YEAR 2014				
COUNTRY	INSURED POPULATION	CLAIMS FOR RECOGNITION	RECOGNIZED CASES	TOTAL RECOGNIZED ODs
GERMANY	42,861,173	10,009	1,240	36,436
AUSTRIA	3,411,138	not available	40	1,129
BELGIUM	3,059,833	8,062	2,498	3,609
DENMARK	2,720,661	6,982	588	3,756
SPAIN	13,647,833	not available	12,860	17,260
FINLAND (2013)	2,197,000	454	209	1,811
FRANCE (2013)	18,632,122	86,382	60,018	68,556
ITALY (2012)	21,200,000	31,823	13,669	19,841
SWEDEN	4,647,314	Eligible cases: 710	344	1,089
SWITZERLAND	3,944,691	505	221	2,152

In the following table, the above data are expressed in the form of ratios per 100,000 insured²⁷, so as to be able to compare countries with one another irrespective of the country's size/number of insured. The proportion of MSDs in all recognized occupational diseases and the rate of recognition of MSDs are also presented there.

MSDS IN RATIOS (RELATIVE TO THE INSURED POPULATION) AND PERCENTAGES, FOR THE YEAR 2014				
COUNTRY	PER 100,000 INSURED PERSONS		PROPORTION OF MSDs IN THE TOTAL OF RECOGNIZED OCCUPATIONAL DISEASES	RECOGNITION RATE OF MSDs
	REPORTED	RECOGNIZED		
GERMANY	23	3	3%	12%
AUSTRIA	not available	1	3%	not available
BELGIUM	263	82	69%	31%
DENMARK	257	22	16%	8%
SPAIN	not available	94	75%	not available
FINLAND (2013)	21	10	12%	46%
FRANCE (2013)	463	322	88%	69%
ITALY (2012)	150	64	69%	43%
SWEDEN	15	7	32%	48%
SWITZERLAND	13	6	10%	44%

²⁷ These ratios per 100,000 insured are not incidence rates in the epidemiological sense of the term; an incidence rate is a ratio between the number of new cases of a disease detected (during a given period) and a population at risk. But our ratios per 100,000 insured compare the number of new cases of MSDs in 2014 with the insured population in that year. Now, this population is not necessarily that which was exposed to the risk, because it is well known that MSDs (especially discopathy complaints) are often the result of long-term exposure to stress, and biomechanical stress in particular. Also, the risk of contracting an MSD differs greatly from one country to another according to the structure of the insured population (see Methodological notes / Insured population).

We must be very cautious in trying to draw conclusions from statistical comparisons between countries. This is not only because the data do not necessarily represent the same things (see Methodological notes, page 35), but also because various parameters not related to occupational exposure impact these data.

However, the above ratios and percentages are relevant indicators for illustrating the insurance choices outlined in the first part of the report.

Quantity of MSDs reported as occupational diseases

We note significant differences from one country to another regarding the number of MSDs reported: **Germany, Finland, Sweden** and **Switzerland** post the lowest ratios (between 13 and 23 reports per 100,000 insured), **Italy** a median ratio at 150, while **Denmark, Belgium** and **France** all have high ratios, of 257, 263 and 463 respectively.

There is no reason to believe that the performance of the national reporting systems plays a role, because the countries in which the reporting procedure is open to several parties (the victim, but also, and above all the doctors) and for which it could be imagined that this would encourage the procedure²⁸, are not necessarily those which have the highest ratios.

For the countries covered in this report, we also rule out explaining these ratio differences by different levels of awareness of MSD issues among the general public and workers. At present, all the countries in question are conducting information campaigns on this occupational health issue, and said issue is a priority for all the national organizations in charge of occupational risk prevention.

Therefore, the more or less attractive consequences of reporting probably impact the ratios of reported cases.

Attractiveness can be understood as the claimant's knowledge of the chances of the disease being recognized as work-related. And in that case, it is undeniable that the claimant's perception of the propensity of the insurance organization to recognize the reported disease has an influence on the number of reports. The factors taken into account are firstly the content of the list of occupational diseases in force in the country in question, but also the force of presumption associated with that list, and the recognition criteria used to investigate each case of disease.

Attractiveness also corresponds to the interest for the victim of having the work-related origin of their disease recognized, given the benefits offered by the specific insurance organization. To assess the relative attractiveness for the victims, we should ideally take into account the disease and disability compensation systems in force in each of these countries. However, it is well known that, everywhere in Europe, the benefits awarded for occupational injuries are generally more favourable than those paid by health/disability insurances.

Based solely on the systems of compensation for occupational diseases in force in the countries in question²⁹ and the above reporting ratios, it is hard to make an overall assessment of the impact of this factor on the number of reports.

²⁸ To find out more about the subject, read "Reporting of occupational diseases: Issues and good practices in five European countries", Eurogip, 102/E, January 2015
http://eurogip.fr/images/documents/3933/Report_DeclarationMP_EUROGIP_102EN.pdf

²⁹ To find out more about the compensation of occupational injury victims: "Accidents at work and occupational diseases: flat rate or full reparation? European survey on the conditions of compensation for the victims" (June 2005), Eurogip, 21-E <http://eurogip.fr/images/documents/131/Eurogip%2021E.pdf>

However, it may be assumed that the interest for the victim of obtaining compensation varies depending on the country and depending on whether:

- They are afflicted by this or that pathology (e.g., discopathy complaints cannot be recognized as ODs in **Austria, Finland, Spain and Switzerland**);
- They sustain permanent damage or not (the existence of permanent damage is a condition of recognition in **Denmark** and **Sweden**);
- They think they could be assigned this or that degree of permanent disability (many countries require a minimum rate to give entitlement to compensation).

We also cannot completely rule out the impact of the quality of working conditions and the actions of prevention taken by each country. Because although it is impossible to correlate this impact to national reporting levels, it is clear that in some countries with constant regulations regarding the recognition and compensation of MSDs, the level of reporting has tended to decline in the recent period (see 3.2).

Quantity of MSDs recognized as occupational diseases

Regarding recognized cases, here again the ratios per 100,000 insured show major differences, even larger than for reported cases.

These differences are not unrelated to the differences already observed in reporting levels: the countries with a low reporting ratio cannot logically have a high recognition ratio.

But it is the procedures for recognition of occupational diseases in general, and MSDs in particular, which account for most of these differences:

- The content of the national list of occupational diseases (more or less precise titles which mean that some MSDs may be included or excluded) and the tendency of the off-list system to accept unlisted MSDs (see 1.1);
- The recognition criteria included in the list or in appended documents (see appendix, third column), more or less demanding with regard to the titles of diseases and the exposure conditions;
- The force of presumption related to the list and the method of examining claims for recognition (see 1.2).

It is therefore not surprising to find **France** at the head of the classification (ratio of 322), then far behind it **Spain** (94)³⁰, **Belgium** (82) and **Italy** (64). And the lowest ratios are found in those countries which exclude certain MSDs from recognition, and/or which examine each claim on a case-by-case basis and are very demanding with regard to the causal link between occupational exposure and the disease: **Austria** (1), **Germany** (3), **Sweden** (7) and **Switzerland** (6).

MSDs as a proportion of occupational diseases as a whole

In five of the ten countries covered by the study (**Germany, Austria, Denmark, Finland** and **Switzerland**), MSDs represent less than 20% of the total number of recognized occupational diseases. In these countries, hearing loss and skin diseases, which correspond to more "conventional" risks, represent a large proportion of the total number of recognized ODs (of the total number of the "cases where the causal link with work has been confirmed" for **Germany**).

In contrast, MSDs account for a very large proportion of the total number of ODs in **Belgium** (69%), **Italy** (69%), **Spain** (75%) and **France** (88%). These countries are also those in which they have the highest levels of reporting and recognition.

³⁰ Note that in **Spain** there is no complementary system. But off-list ODs can be recognized as "non-traumatic conditions caused or aggravated by work", which have the legal status of an accident at work. Non-listed MSDs concern conditions of the spinal column and shoulder, and numerous other diseases of the locomotor apparatus; if these non-traumatic conditions (3,775 cases in 2014) were counted in the recognized cases, the Spanish "recognized MSDs" ratio would be 122.

MSD recognition rate

This rate is merely the result of comparing the reporting and recognition levels for each country.

In half of the countries covered by the study (**Belgium, Finland, Italy, Sweden** and **Switzerland**) the recognition rate is between a 30%-50% range. In contrast, it is far lower in **Denmark** (8%) and **Germany** (12%), and far higher in **France** (69%).

These rates partly reflect how demanding is the investigation and recognition procedure in each country.

However, these rates should be qualified by taking into account factors specific to each system.

In **France**, the number of reports corresponds to the number of positive and negative decisions, i.e. the number of claims for recognition investigated; de facto, cases that are not eligible, i.e. rejected for administrative reasons such as a missing document, are not counted among the reports. If they were, the "MSD reports" ratio would be even higher than it is already, but the recognition rate would be inevitably lower.

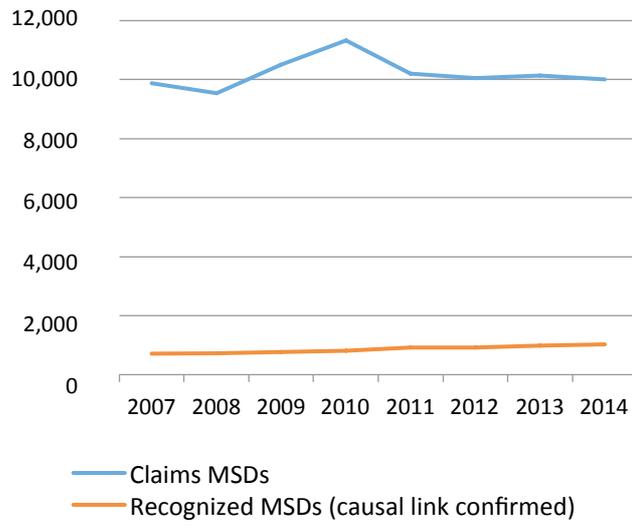
In **Sweden**, like for France, the number of reports corresponds to the number of positive and negative decisions; now in Sweden, only those cases for which a permanent disability is certified can undergo investigation and receive recognition. If cases filed and not cases processed were taken into account, the "MSD reports" ratio would be multiplied by two and the recognition rate divided by two.

In **Denmark**, the situation is rather similar, because only cases of ODs resulting in a permanent disability can be recognized. This means that in this country, as in Sweden, the number of MSDs recognized (as it is the case for all ODs recognized) does not include the numerous cases of MSDs for which only non-specific treatments and/or compensation for temporary disability are awarded (by another entity than the occupational diseases insurer); but in the other countries these cases are counted among recognized cases.

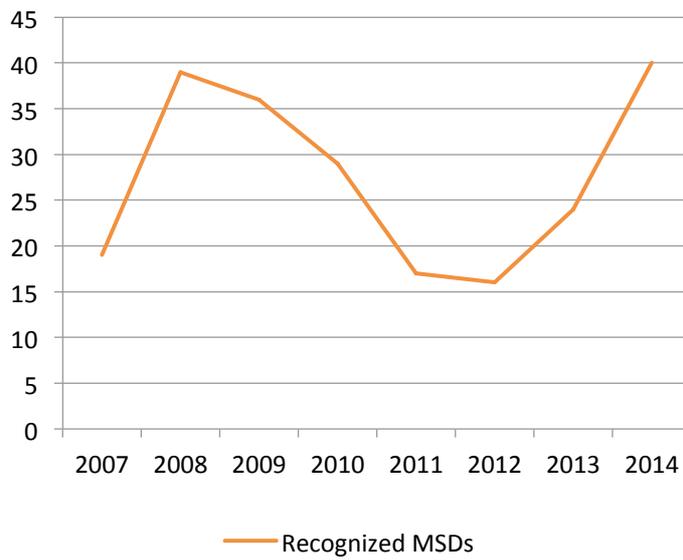
3.2 MSD trends between 2007 and 2014

Changes were made in the statistical information systems of several countries prior to 2007, so this is the year that has been chosen as a reliable starting point for series concerning claims for recognition and recognized cases.

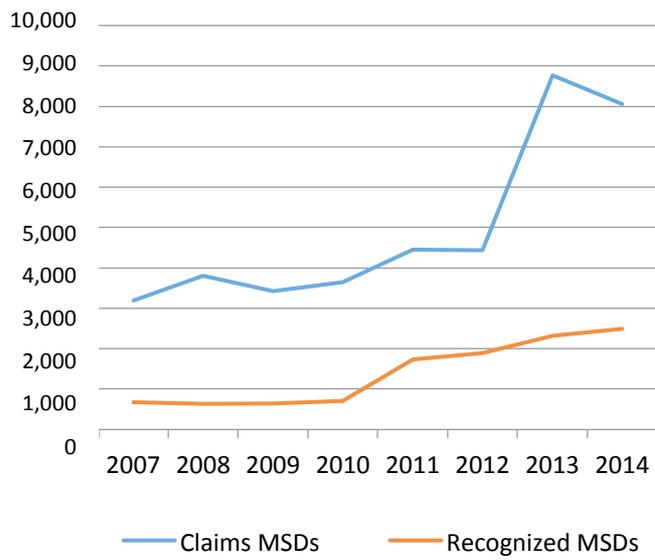
Germany



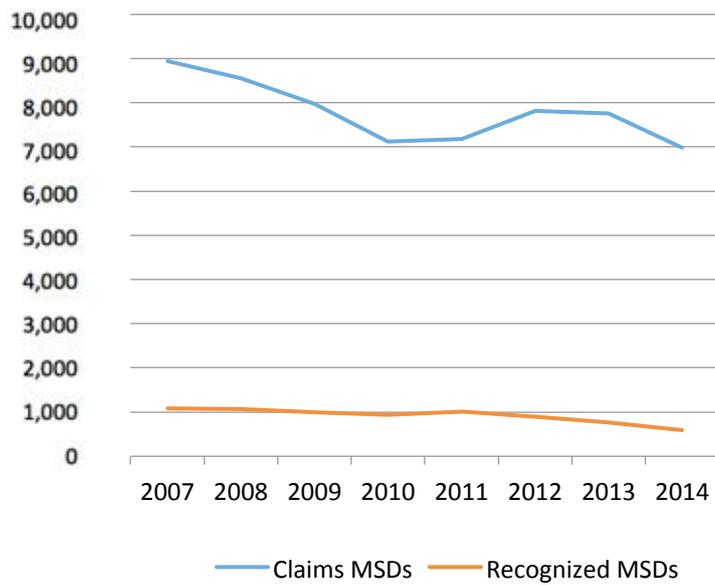
Austria



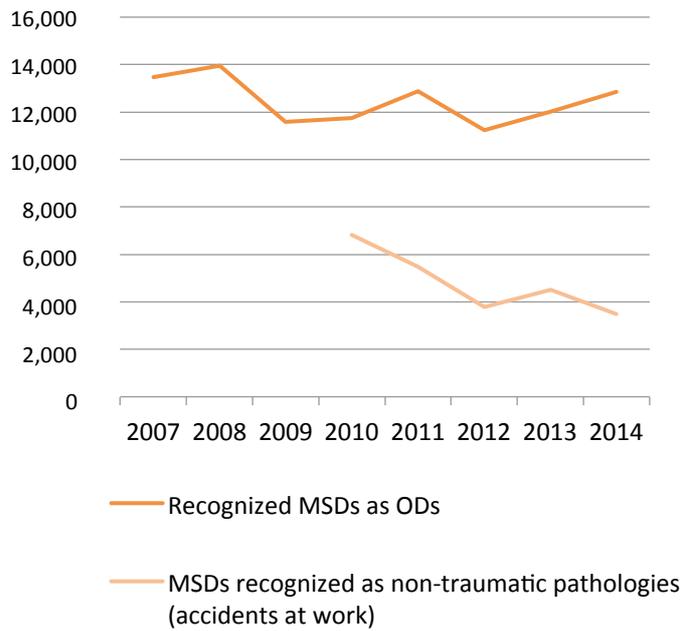
Belgium



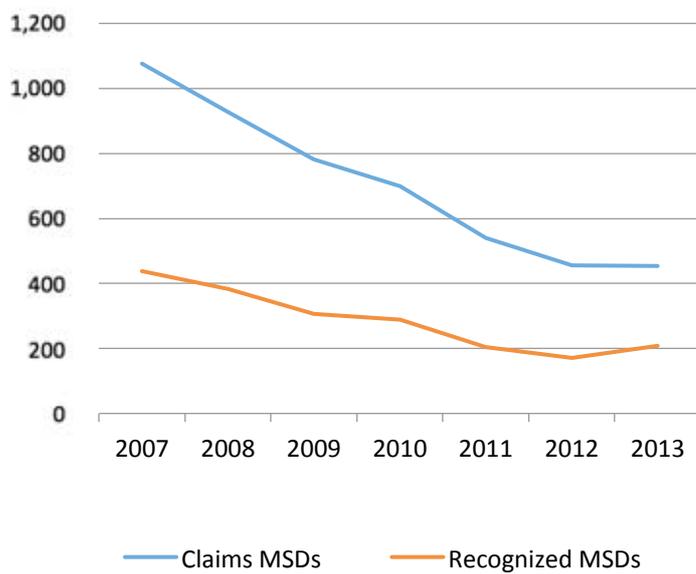
Denmark



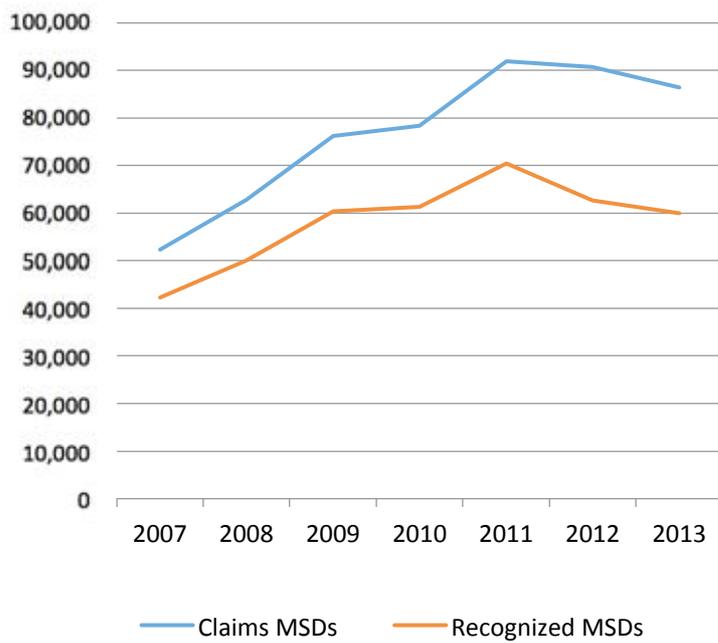
Spain



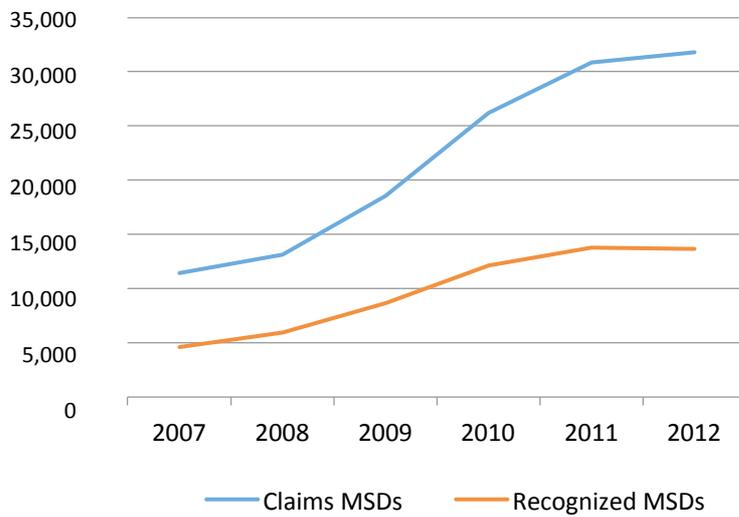
Finland



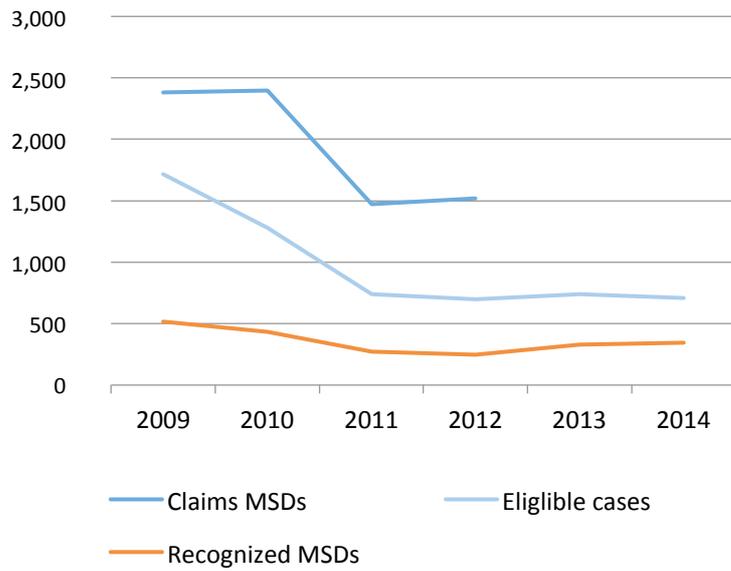
France



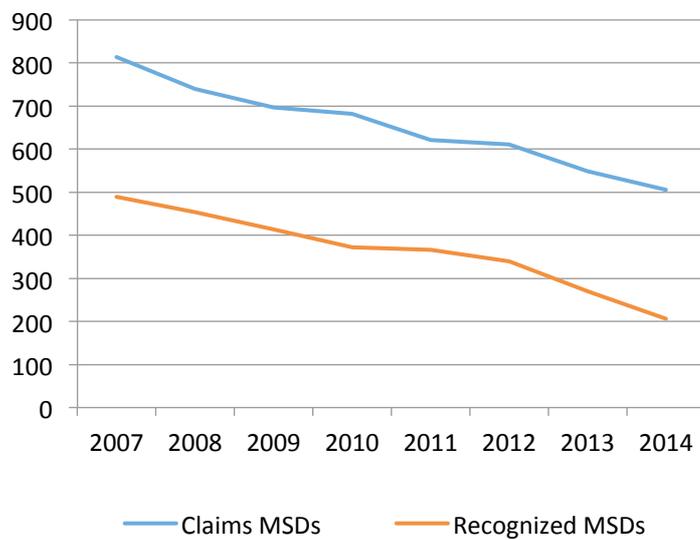
Italy



Sweden



Switzerland



The trends are very contrasting:

- Over the reference period, some countries post a continual, regular fall in the number of MSDs reported and recognized: **Switzerland**, **Sweden** (with a stabilization since 2012) and **Finland** (with a stabilization in 2013);
- Other countries have relatively stable curves since 2007, with a slight trend to decline in **Denmark** (since 2013) and **Spain**;
- MSDs are apparently stabilizing after increasing continually in **Italy**;
- **Austria** recognizes quantities of MSDs that are too small to be able to determine any trend;
- **Belgium** has seen a continual increase in MSDs since 2011;
- **France** has seen a reversal of the trend since 2012 after a continuous upward trend.

Very often, these trends can be explained by changes in the regulations.

In **Italy**, the sharp and continual increase in MSDs reported and recognized until 2011 can be attributed to the registration of MSDs on the new list of occupational diseases adopted in 2008, whereas until then MSDs could be recognized only under the complementary system;

In **Belgium**, the sharp increase in the number of claims for recognition of MSDs noted in 2013 is a consequence of the registration, at end 2012, of tendinopathies of the upper limbs on the list of occupational diseases (+350% compared with the previous year). This increase in the number of reports went hand-in-hand, in smaller proportions, with an increase in the number of cases recognized. This trend to increase had begun as of 2011 for all MSDs (except lumbar conditions), especially for carpal tunnel cases.

In **Germany**, without considering it as an upward trend, the few dozen of additional cases recognized since 2010 can be correlated to the 2009 inclusion of gonarthrosis in the list of occupational diseases, which resulted in more than a thousand claims for recognition. And for 2015 and the following years an increase is expected in the number of carpal tunnel cases reported and recognized. This syndrome was included in the German list of occupational diseases in January 2015, and doctors (the main providers of reports/claims for recognition in this country) are subject to a legal obligation of reporting only for the diseases appearing on this list.

In **France**, after rising continually for a long period, MSDs started to decline in 2012, and this trend was confirmed in 2013. One of the explanations for this trend turnaround is that the conditions of recognition of MSDs of the shoulder were revised in 2011, and for MSDs of the elbow in 2012.

For constant regulations or regulations having little impact³¹, the countries stress various factors to explain the trends to a decline or an increase.

For **France** and **Italy** (both until 2011), during the reference period and prior years MSDs were the subject of information campaigns targeting the general public, and this had the effect of encouraging a larger number of claims for recognition and accordingly a larger number of cases recognized.

The countries in which the number of MSDs has decreased explain that the population exposed to the risk of contracting an MSD is decreasing:

- We noted a decline in the number of workers insured due to the economic crisis (in **Spain**, **France** since 2012).
- The number of MSDs probably declined due to risk prevention efforts made by enterprises, which resulted in an improvement in ergonomics at the work station and in an increased mechanization (**Finland**, **France** since 2012, **Switzerland**).

³¹ When the disease for which the conditions of recognition are changed represents a small quantity irrespective of the exposed population, e.g. angioneurotic disorders of the hand

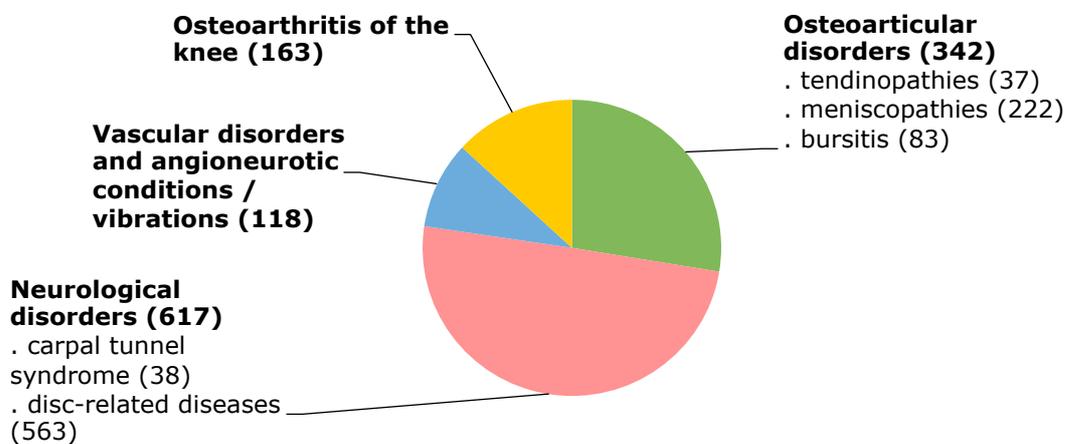
3.3 Types of MSDs recognized as occupational diseases

The MSD statistics are not organized according to the same classification for all the countries, which makes it difficult to produce a comparison by type of disease.

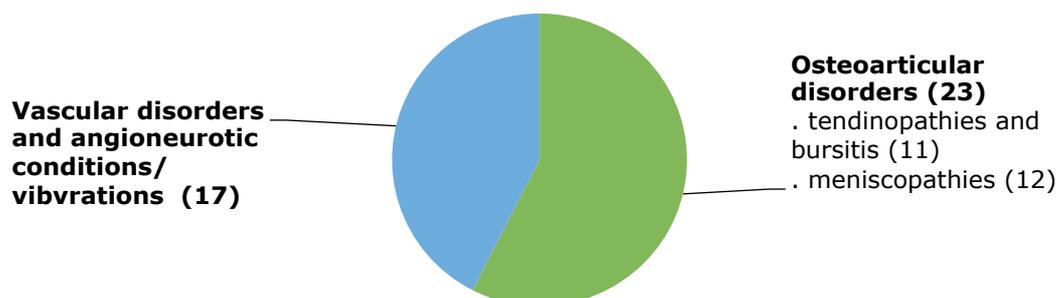
The data as provided by the countries were processed in order to present them, insofar as possible, according to the classification (by kind of disorders) adopted in Part 1 of the study and in the appendix: osteoarticular disorders, neurological disorders, vascular disorders and angioneurotic disorders, osteoarthritis, other MSDs. Whenever possible, the details by disease are presented in the groups of disorders.

Given that the ICD-10 coding of the **Finnish** and **Swedish** statistics makes this processing work difficult, these countries are not included in the charts below.

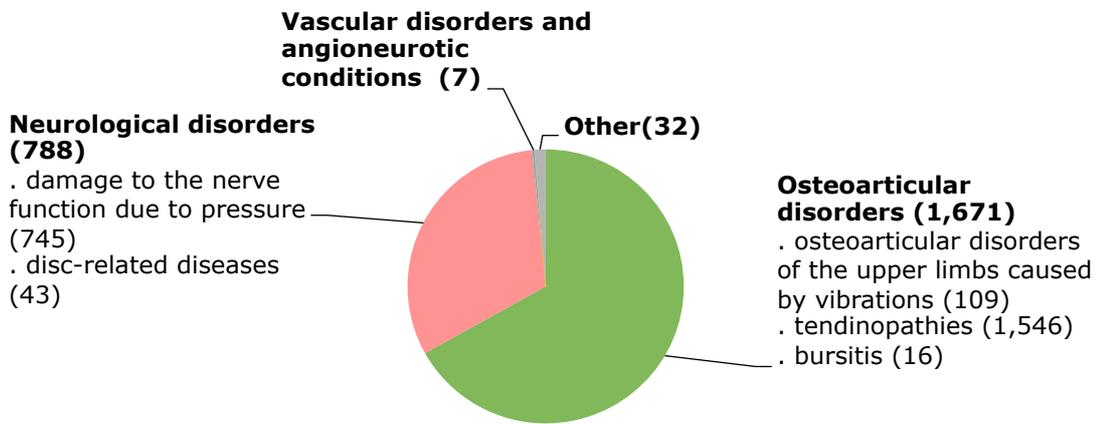
Germany (2014): 1,240 cases



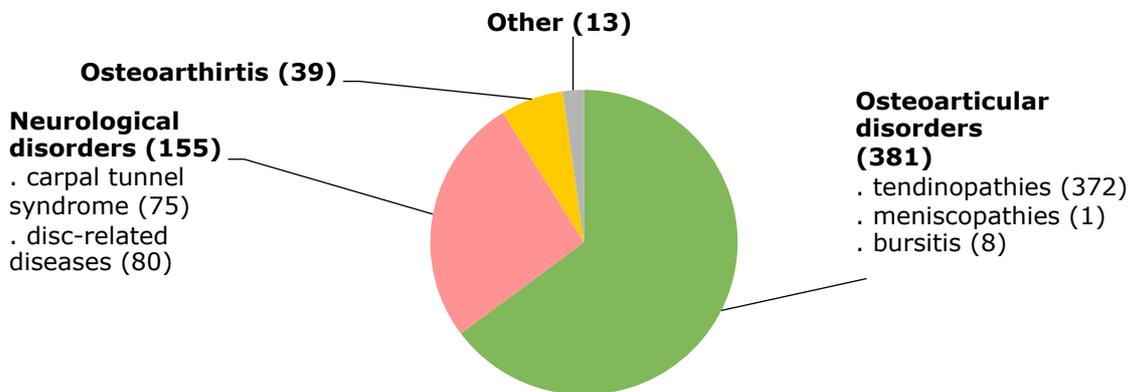
Austria (2014): 40 cases



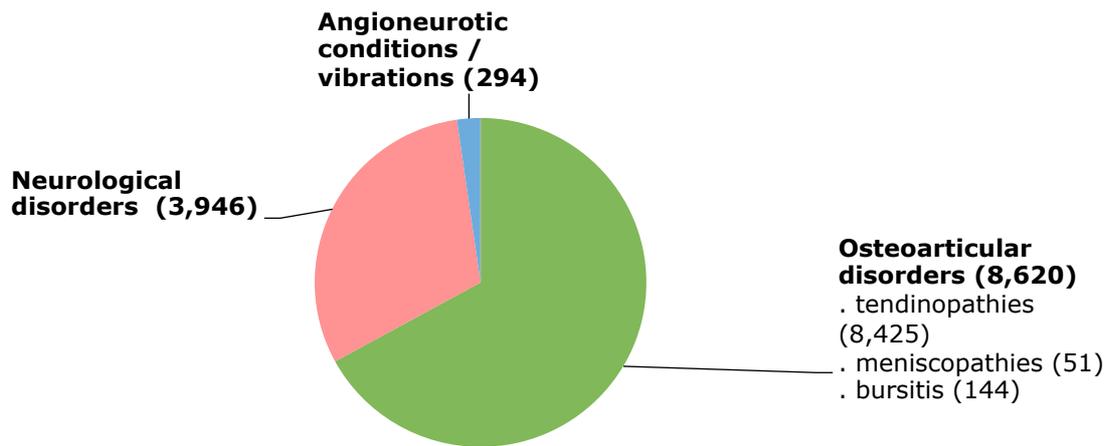
Belgium (2014): 2,498 cases



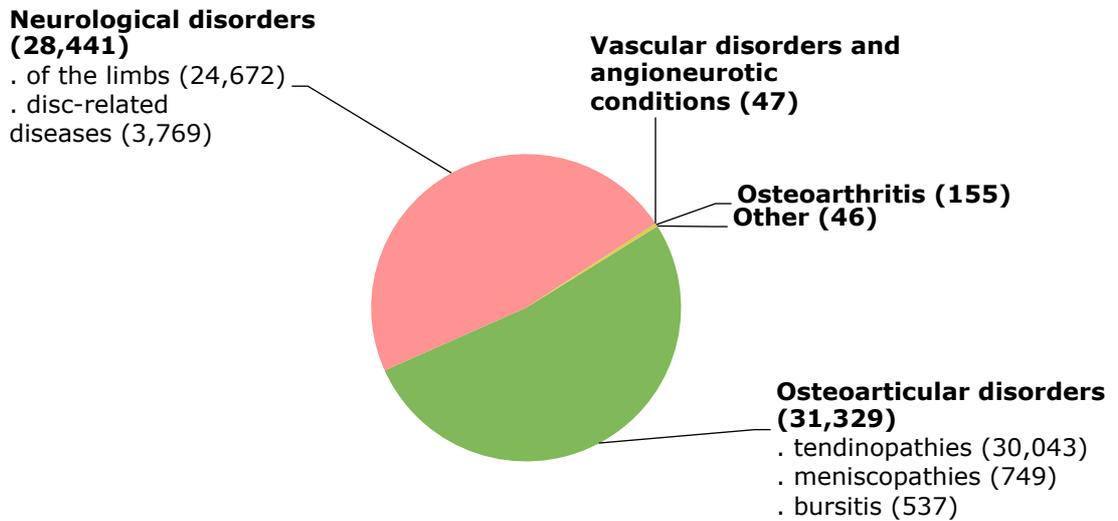
Denmark (2014): 588 cases



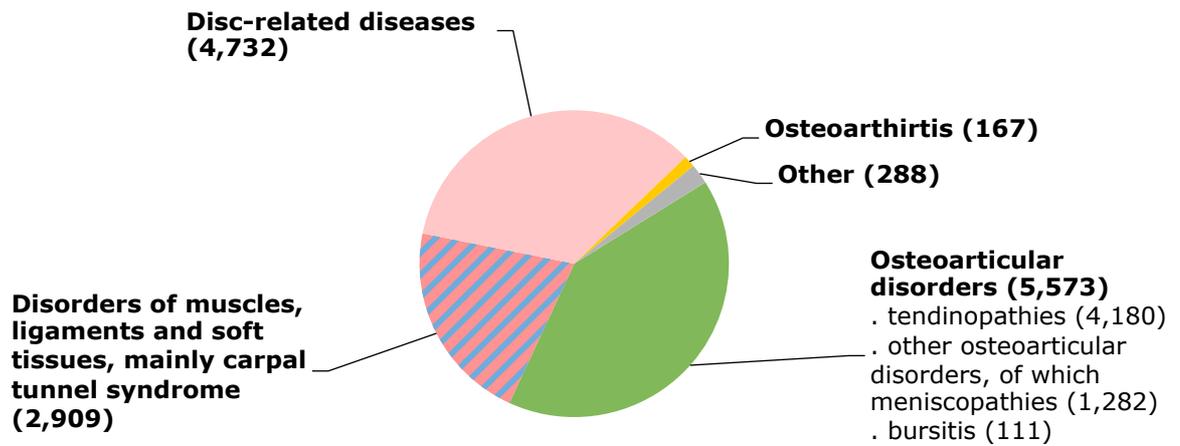
Spain (2014): 12,860 cases



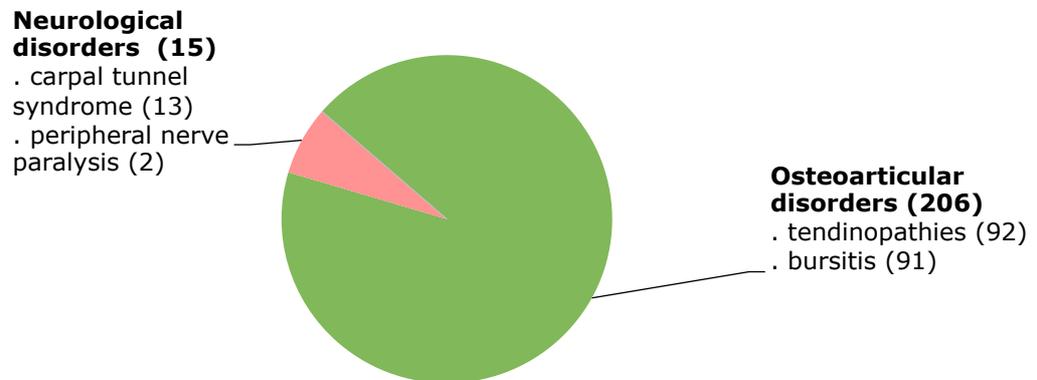
France (2013): 60,018 cases



Italy (2012): 13,669 cases



Switzerland SUVA (2014): 221 cases



The types of recognized MSDs represented above have a similar structure in **Belgium, Austria, Denmark, Spain** and **Switzerland**: osteoarticular disorders predominate (between 57% of recognized cases in **Austria** and 93% in **Switzerland**), with a majority of tendinopathies. They are followed by neurological disorders, i.e. mostly carpal tunnel syndromes and discopathy complaints.

In **France**, the osteoarticular disorders and the neurological disorders represent in equal proportions nearly all the MSDs recognized.

In contrast, the breakdown between types of disorders is more evenly balanced in **Germany** and **Italy**.

The breakdown of MSDs for each country mostly reflects the potential for recognition of each type of disorder (see Part 1 and appendix). Accordingly, neurological disorders are absent from the recognized cases in **Austria**, where neither discopathy complaints nor the carpal tunnel syndrome can be recognized as an occupational disease.

It would be rash to comment further on these graphs given that:

- It was not always possible to statistically separate and graphically represent all types of disorders according to the classification chosen;
- In **Denmark**, vascular disorders and angioneurotic disorders are missing in the statistics;
- In **Austria**, where the quantity of recognized cases is small, the breakdown between types of disorders is not really significant.

As regards the proportion represented by MSDs recognized off-list, the national statistics, when they make it possible to isolate them among all the recognized MSDs, confirm that the complementary system plays only a minor role.

For 2014, 49 cases were counted in **Germany**, none in **Austria** and **Switzerland**, 32 cases in **Belgium**, 79 in **France** and 1 case in **Denmark** (a figure which has ranged between 10 and 20 during the past decade).

This information is not available in **Finland** and **Italy**, and there is no complementary system in either **Spain** or **Sweden**.

These figures obviously depend on the content of the list of occupational diseases (more precisely on the MSDs which are excluded from it in each country) on the one hand, on the capacity of the complementary system for receiving off-list MSDs on the other hand.

APPENDIX: comparative tables of MSDs registered on the national lists of ODs

The tables hereafter list the musculoskeletal disorders registered on the national lists of occupational diseases of the following countries: **Germany, Austria, Belgium, Denmark, Spain, Finland, France, Italy** and **Switzerland**, and on the European list of ODs (contained in the annexes to Recommendation 2003/670/EC³²).

These comparative tables are organized as follows:

- Osteoarticular disorders (tendinopathy, meniscopathy, bursitis and hygroma complaints)
- Neurological disorders (at the level of the limbs, at the level of the rachis)
- Vascular disorders and angioneurotic disorders
- Other MSDs.

The headings are carried over as they appear in each national list. Accordingly, some headings may appear several times if their wording is sufficiently generic to cover disorders present in several comparative tables (**Austria**).

Each table has three columns:

- The first column corresponds to the heading code in each national list.
- The second is dedicated to the pathology and, where applicable, to the medical conditions related to the diagnostic.
- The third replicates the conditions related to occupational exposure as indicated in each list; where applicable, the particular legal conditions of recognition are also mentioned (**Germany**), and the documents used by insurance organizations to examine cases corresponding to the pathology described.

2012

This symbol, when it is in the first, second or third column, indicates the year during which a change occurred if it occurred in the last 6 years: registration on the list of ODs, a change in the disease's title or the medical criteria, or a change in the recognition criteria related to occupational exposure.

References of the national lists of ODs:

Germany (in English):

Occupational Diseases Ordinance, Annex 1 (As amended by the 3rd Ordinance Amending the Occupational Diseases Ordinance of 22 December 2014)

BaUA Website, <http://goo.gl/W0i1xH>

Austria (in German):

§ 177 und Anlage 1 des Allgemeinen Sozialversicherungsgesetzes (ASVG)

AUVA Website, <http://goo.gl/pDohLh>

Belgium (in French, Dutch and German):

FMP Website, <http://goo.gl/mOg340>

Denmark (in English):

Administrative order N° 12 of January 13, 2015

aes.dk, <http://goo.gl/nE4cyX>

³² <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32003H0670>

Spain (in Spanish):

Real decreto 1299/2006, de 10 de noviembre, por el que se aprueba el cuadro de enfermedades profesionales en el sistema de la Seguridad Social y se establecen criterios para su notificación y registro. BOE nº 302 19/12/2006:

INSHT Website: <http://goo.gl/J1tUvi>

Finland (in Finnish):

Government Decree on List of Occupational Diseases 769 dated 11.6.2015

<http://finlex.fi/fi/laki/alkup/2015/20150769>

France (in French):

General scheme (employees of private sector)

<http://www.inrs-mp.fr/mp/cgi-bin/mppage.pl?>

Italy (in Italian):

for workers of Industry & Services: Decreto 9 aprile 2008, (*GU n. 169 del 21-7-2008*)

INAIL website, <http://goo.gl/PGcU22>

Switzerland (in French):

Annexe 1 de l'Ordonnance sur l'assurance-accidents (OLAA): <http://goo.gl/R4os4L>

OSTEOARTICULAR DISORDERS - TENDINOPATHIES

HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
GERMANY		
BK 2101	Diseases of the tendon sheaths or diseases of the peritendinous tissues or of the insertions of the tendons or muscles	Legal requirement on the list: which have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease
AUSTRIA		
BK 23	Chronic conditions of [the bursae], tendinous sheaths and tendon slipping tissues and tendinous or muscular insertions 	caused by a constant pressure or continuous vibrations
BELGIUM		
1.606.21	Diseases due to overstraining of the tendinous sheaths, the peritendinous tissues, and muscular and tendinous insertions in entertainment artists	
1.606.22 	Conditions affecting the tendons, the tendinous sheaths and the muscular and tendinous insertions of the upper limbs	due to excessive strain of these structures by movements of a repetitive nature requiring strength, or by unfavourable positions Criteria for diagnosis and assessment of exposure to occupational risk on the FMP website (in French): http://goo.gl/ExosTr
DENMARK		
C.1	Tendovaginitis (inflammation of the synovial sheath) and inflammatory degeneration of tendon or tissue surrounding the tendon (tendinitis and peritendinitis)	Strenuous and repetitive work movements, in combination with an assessment of the working posture of the hand in connection with the load
C.4.1	Tennis elbow (epicondylitis lateralis)	(a) Strenuous and repetitive work movements
C.4.2	Golfer's elbow (epicondylitis medialis)	(b) Strenuous work movements in awkward positions
D.4	Jumper's knee (tendinitis/tendinosis patellaris)	(c) Strenuous static work
C.5.1	Impingement syndrome/ Rotator cuff syndrome 	Jumping/running with frequent starts and stops (acceleration/deceleration) while flexing and extending the knee
C.5.2	Symptoms from or degeneration in the long biceps tendon (biceps tendinitis, tendinitis caput longum musculus bicipitis brachii)	(a) Repetitive and strenuous shoulder movements, in combination with an assessment of the position of the arm in connection with the load (b) Static lifting of upper arm to about 60 degrees or more
SPAIN		
2D0101	Shoulder: chronic tendon pathology of rotator cuff	Tasks carried out with the elbows in raised position or which tauten the tendons or subacromial pouch, being associated with the actions of lifting and reaching; continued use of the arm abducted or bent, e.g. by painters, plasterers and structure fitters

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HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
2D0201	Elbow and forearm: epicondylitis and epitrochleitis	Tasks requiring impact movements or jolts, repeated pronation and supination of the arm against resistance as well as forced flexion-extension movements of the wrist, e.g. the work performed by butchers, fishmongers, tanners, athletes, mechanics, sheet metal workers, boilermakers, bricklayers
2D0301	Wrist and hand: tendinitis of the abductor pollicis longus muscle and extensor pollicis brevis muscle (De Quervain's tendinitis), digital stenosing tenosynovitis (trigger finger), tenosynovitis of the extensor hallucis longus muscle	Tasks requiring firm grasping with turns or repeated ulnar and radial deviations of the hand as well as repeated or maintained wrist stretching movements
FINLAND		
Law on ODS (section 4a)	Tendinitis Tenosynovitis Epicondylitis	Before the onset of the symptoms the employee has regularly performed in the course of work repetitive motions that were monotonous or new to him/her
FRANCE		
57A (shoulder)	Acute non-calcifying unbroken tendinopathy with or without enthesopathy of the rotator cuff 	Tasks involving shoulder movements or maintaining the shoulder without support in abduction with an angle greater than or equal to 60° for at least three-and-a-half hours per day on a cumulative basis 
57A (shoulder)	Chronic non-calcifying unbroken tendinopathy with or without enthesopathy of the rotator cuff documented by MRI Partial or transfixiating rupture of the rotator cuff documented by MRI	Tasks involving shoulder movements or maintaining the shoulder without support in abduction:  - with an angle greater than or equal to 60° for at least two hours per day on a cumulative basis or - with an angle greater than or equal to 90° for at least one hour per day on a cumulative basis
57B (elbow)	Epicondylar muscle insertion tendinopathy associated or not with a radial tunnel syndrome 	Tasks habitually involving repeated gripping or extension movements of the hand on the forearm or movements of pronosupination
57B (elbow)	Epitrochlear muscle insertion tendinopathy 	Tasks habitually involving repeated adduction or flexion and pronation movements of the hand and wrist or pronosupination movements
57C (wrist-hand-finger)	Tendinitis	Tasks habitually involving repeated or prolonged movements of the flexor or extensor tendons of the hand and fingers
57C (wrist-hand-finger)	Tenosynovitis	Tasks habitually involving repeated or prolonged movements of the flexor or extensor tendons of the hand and fingers
57D (knee)	Subquadriceptal or rotulian tendinitis Crow's foot tendinitis	Tasks habitually involving repeated movements of prolonged extension or flexion of the knee
57E (ankle & foot)	Achilles tendinitis	Tasks habitually involving efforts made in a prolonged standing position on tiptoes

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HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
ITALY		
78 (upper limb)	Conditions due to biomechanical overloading	
a	Supraspinatus tendinitis (M75.1)	Tasks, carried out non-occasionally, which involve repeated movements or maintaining uncomfortable positions affecting the shoulder
b	Tendinitis of the long head of the biceps (M75.2)	Ditto
c	Calcifying tendinitis (Duplay's disease M75.3)	Ditto
e	Epicondylitis (M77.0)	Tasks, carried out non-occasionally, involving repeated movements of the forearm, and/or gripping movements of the hand requiring strength
f	Epitrochleitis (M77.1)	Ditto
h	Tendinitis and peritendinitis of the flexors/extensors (thumb-finger) (M65.8)	Tasks, carried out non-occasionally, involving repeated movements and/or gripping movements and/or painful positions of the hand and fingers
i	De Quervain's syndrome (M65.4)	Ditto
79 b (knee)	Tendinopathy of the femoral quadriceps (M76.8)	Tasks, carried out non-occasionally, which involve repeated movements of extension or flexion of the knee and/or maintaining painful positions
SWITZERLAND		
List	"Tendovaginites" (Peritendinitis crepitans)	
EU		
506.21 506.22 506.23	Diseases due to overstraining - of the tendon sheaths - of the peritendineum - of the muscular and tendinous insertions	

OSTEOARTICULAR DISORDERS - MENISCOPATHIES		
HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
GERMANY		
BK 2102	Meniscus lesions	caused by excessive physical load on the knee joints either sustained or repeated over several years
AUSTRIA		
BK 25	Meniscus lesions	- for miners who have worked regularly for at least three years at the mine face; - for other workers who have worked regularly for at least three years in a kneeling or squatting position
DENMARK		
D.3	Meniscus disease of knee joint	Work in a squatting position under cramped conditions for days or longer
SPAIN		
2G0101	Meniscus lesions owing to associated compression and wrenching mechanisms, giving rise to fissures or complete ruptures	Tasks requiring knee hyperflexion positions whilst squatting for lengthy periods: Work by underground miners, electricians, floor-layers, wooden floor layers, plumbers
FRANCE		
79	Chronic lesions of the meniscus of a degenerative nature, and their complications: cracking or rupture of the meniscus	confirmed by additional examinations or during curative operations
ITALY		
79 c	Degenerative meniscopathy	Tasks, carried out non-occasionally, involving repeated movements of extension or flexion of the knee and/or maintaining painful positions
EU		
506.30	Meniscus lesions	following extended periods of work in a kneeling or squatting position

OSTEOARTICULAR DISORDERS - BURSITIS AND HYGROMAS

HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
GERMANY		
BK 2105	Chronic diseases of the mucous bursae	caused by constant pressure
AUSTRIA		
BK 23	Chronic conditions of the bursae, [tendinous sheaths and tendon slipping tissues and tendinous or muscular insertions]	caused by a constant pressure or continuous vibrations
BELGIUM		
1.606.11	Diseases of the periarticular bursae, subcutaneous cellulites	due to pressure
DENMARK		
D.2	Inflammatory degeneration of knee bursa (bursitis)	Persistent, external pressure for days or longer
J.1	Inflammatory degeneration of a bursa other than in the knee (bursitis)	Persistent, external pressure for days or longer
SPAIN		
C	Diseases of the serous cavities owing to pressure, subcutaneous cellulitis	
2C0101	Chronic bursitis of the synovial tissues or of the subcutaneous tissues of the knee pressing areas	Tasks habitually requiring the knees be maintained in the same position such as mining, construction, domestic service, and work by parquet and tile layers, gardeners, stonemasons, polishers, farmworkers and similar
2C0201	Gluteal and retrocalcaneal bursitis and spinous process of the C7 and subacromial subdeltoid bursitis	Mining work and tasks requiring pressure maintained in the aforementioned anatomical areas
2C0301	Bursitis of the anterior compartment of the thigh	Cobblers' work and tasks requiring pressure maintained on the anterior surface of the thigh
2C0401	External malleolar bursitis	Tailoring and tasks requiring pressure maintained on the external malleolar region
2C0501	Presternal bursitis	Carpentry and work requiring pressure maintained on the pre-sternal region
2C0601	Chronic hygroma of the elbow	Tasks requiring prolonged pressing on the posterior surface of the elbow
FINLAND		
List	Bursitis of the knee	

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HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
FRANCE		
57B (elbow)	Hygromas: effusion of the bursae or inflammatory disorders of the subcutaneous tissues in elbow pressing regions	Tasks habitually involving prolonged pressing on the posterior surface of the elbow
57D (knee)	Acute hygroma of the bursae or inflammatory disorder of the subcutaneous tissues in knee pressing regions Chronic hygroma of the bursae	Tasks habitually involving prolonged pressing on the knee
ITALY		
78d (upper limb)	Bursitis (M75.5)	Tasks, carried out non-occasionally, involving repeated movements or prolonged maintenance of painful positions affecting the shoulder
78g	Olecranon bursitis (M70.2)	Tasks, carried out non-occasionally, involving prolonged pressing on the posterior surface of the elbow
79a (lower limb)	Bursitis (M70.4)	Tasks, carried out non-occasionally, involving prolonged pressing on the knee
SWITZERLAND		
	Chronic bursitis	due to constant pressure
UE		
506.11	Pre-patellar and sub-patellar bursitis	
506.12	Olecranon bursitis	
506.13	Shoulder bursitis	

NEUROLOGICAL DISORDERS AT THE LEVEL OF THE LIMBS

HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
GERMANY		
BK 2106	Pressure-induced nerve damage	
 BK 2113	Pressure damage of the median nerve in the carpal tunnel (carpal tunnel syndrome)	caused by repetitive manual tasks with bending and stretching of the wrist, by elevated effort of hands, or by hand-arm-vibration For a detailed description of the exposure requirements (in German): http://goo.gl/Io49Je
AUSTRIA		
BK 22	 Nerve damage due to compression	
BELGIUM		
1.606.51	Damage to the nerve function due to pressure	
DENMARK		
C.2	Carpal tunnel syndrome	(a) Work with heavily vibrating hand tools for a considerable amount of time (hand-arm vibration) (b) A combination of quickly repeated, strenuous and/or awkward, wrist-loading work movements for a considerable amount of time (c) Work with objects leading to direct and persistent pressure on the median nerve of the carpal tunnel for a considerable amount of time (d) As a complication to tendovaginitis on the flexion side of the wrist qualifying for recognition on the basis of this list
C.3.2	Peripheral neuropathy of hands/fingers (<i>morbus alius nervorum periphericorum</i>)	
SPAIN		
F	Paralysis of the nerves due to pressure	Tasks in which there is prolonged, repeated, direct and indirect pressing on anatomical slides which cause nervous lesions owing to compression. Extreme hyperflexion and hyperextension movements
2F0101	Epitrochlear-olecranon channel syndrome owing to compression of the cubital nerve in the elbow	Tasks requiring prolonged pressing on the elbow
2F0201	Carpal tunnel syndrome owing to compression of the median nerve in the wrist	Tasks requiring repeated or maintained movements involving the hyperflexion and hyperextension of the wrist, gripping with the hand such as laundry works, cutting of fabrics and plastic material and similar, assembly works (electronics, mechanics), textile industry, slaughterhouses (butchers, slaughterers), catering (waiters, chefs), welders, carpenters, polishers, painters
2F0301	Guyon's canal syndrome owing to compression of the cubital nerve in the wrist	Tasks involving prolonged compression of the wrist or repeated or maintained pressure on the heel of the hand such as milking cows, engraving, cutting and polishing glass, shoemaking work, as well as loggers, blacksmiths, furriers, shot putters, discus and javelin throwers

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HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
2F0401	External popliteal peroneal nerve compression syndrome owing to the compression thereof at the neck of the fibula	Tasks requiring prolonged squatting such as the work of quarrymen, floor-layers, parquet layers, gardeners and similar
2F0501	Paralysis of the nerves of the serratus anterior, angular, rhomboids, circumflex	Tasks requiring repeated back loading with heavy, rigid objects e.g. the work performed by movers, loading and unloading staff and similar
2F0601	Paralysis of the radial nerve owing to its compression	Tasks involving repeated contraction of the long supinator muscle such as car driving and chronic pressure owing to the use of scissors
FINLAND		
List (section 3)	Polyneuropathy of the upper limb	caused by vibrations
OD Act (section 4a)	Carpal tunnel syndrome	Prolonged movements which significantly deviate from the centre position of the wrist and strain the wrist
FRANCE		
57B (elbow)	Entrapment neuropathy of the ulnar nerve in the epitrochlear olecranon fossa confirmed by electroneuromyography (EMG)	Tasks habitually involving repetitive movements and/or maintained forced bending positions. Tasks habitually involving prolonged pressing on the posterior surface of the elbow. Duration of exposure of at least 90 days
57C (wrist-hand-finger)	Carpal tunnel syndrome	Tasks habitually involving either repeated or prolonged movements of extension of the wrist or gripping with the hand, or pressing on the median nerve, or prolonged or repetitive pressure on the heel of the hand
57C (wrist-hand-finger)	Guyon's canal syndrome	Tasks habitually involving either repeated or prolonged movements of extension of the wrist or gripping with the hand, or pressing on the median nerve, or prolonged or repetitive pressure on the heel of the hand
57D (knee)	External popliteal sciatic nerve compression syndrome	Tasks habitually involving a prolonged squatting position
ITALY		
78 l	Carpal tunnel syndrome (G56.0); other	Tasks carried out non-occasionally, involving repeated or prolonged movements of the thumb or gripping with the hand, maintaining uncomfortable positions, prolonged pressure or repeated impacts on the carpal region
76 c	Conditions caused by mechanical vibrations transmitted to the hand-arm system: peripheral neuropathies (median nerve and ulnar nerve)	Tasks carried out non-occasionally involving the use of tools, equipment, machines and devices which transmit vibrations to the hand-arm system
SWITZERLAND		
	Peripheral nerve paralysis by pressure	
EU		
506.40	Paralysis of the nerves due to pressure	
506.45	Carpal tunnel syndrome	

2012

NEUROLOGICAL DISORDERS AT THE LEVEL OF THE SPINE		
HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
GERMANY		
BK 2108	Disc-related diseases of the lumbar spine	caused by the lifting or carrying of heavy loads over many years or by performance of work in an extremely bent posture over many years
BK 2110	Disc-related diseases of the lumbar spine	caused by the predominately vertical impact of whole-body vibrations in a seated position over many years Legal requirement on the list: which have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease For a detailed description of the exposure conditions (in German): http://goo.gl/YTvLaS http://goo.gl/X0I1sp
BK 2109	Disc-related diseases of the cervical spine	caused by the carrying of heavy loads on the shoulder over many years Legal requirement on the list: which have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease
BELGIUM		
1.605.03	Documented monoradicular or polyradicular syndrome of the sciatica type, cauda equina syndrome or syndrome from narrowing of the lumbar vertebral canal	- following a degenerative disc hernia caused by carrying heavy loads or by mechanical vibrations transmitted to the body by the seat, provided that the radicular syndrome occur during the exposure to the occupational risk or at the latest one year after the end of said exposure, or - following a precocious degenerative spondylosis-spondyloarthrosis at level L4-L5 or L5-S1, caused by carrying heavy loads or by mechanical vibrations transmitted to the body by the seat Criteria for diagnosis and assessment of exposure to occupational risk: http://goo.gl/iNHFBd
DENMARK		
B.1	Chronic low-back disease with pain (lumbago/sciatica, lumbar prolapsed disc, degenerative low-back disease)	(a) Back-loading lifting work involving lifting/upward pulling of heavy objects and a total daily lifting quantity of many tonnes for a considerable number of years (b) Back-loading lifting work with generally occurring, extremely heavy and awkward single lifts and a total daily lifting quantity of several tonnes for a considerable number of years (c) Back-loading care work with many daily handlings of adults or older handicapped children for a considerable number of years (d) Back-loading, daily exposure to whole-body vibrations from heavily vibrating vehicles for a considerable number of years

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HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
FRANCE		
tab 97	Chronic complaints of the lumbar rachis - Sciatica due to L4-L5 or L5-S1 disc herniation with radicular injury of concordant topography - Crural radiculalgia by L2-L3 or L3-L4 or L4-L5 disc hernia, with radicular injury of concordant topography	caused by low- and medium-frequency vibrations transmitted to the whole body Five years' exposure Restrictive list of tasks: Tasks habitually causing exposure to low- and medium-frequency vibrations transmitted to the whole body: - through using or driving all-terrain machines and vehicles: loader, mechanical shovel, shovel loader, grader, vibratory roller, dumper truck, scraper, lift truck, wheeled or tracked loader, bulldozer, agricultural or forestry tractor; - through using or driving industrial machines and equipment: self-propelled rider type truck, gantry crane, overhead travelling crane, worksite crane, screener, crusher, grinder; - through driving a road tractor or rigid truck
tab 98	Chronic complaints of the lumbar rachis: - Sciatica due to L4-L5 or L5-S1 disc herniation with radicular injury of concordant topography - Crural radiculalgia by L2-L3 or L3-L4 or L4-L5 disc hernia, with radicular injury of concordant topography	caused by manual handling of heavy loads Five years' exposure Restrictive list of tasks: Work involving regular manual handling of heavy loads performed: - in road, sea, rail and air freight transport; - in the building, structural work and public works sectors; - in mines and quarries; - in the collection of household refuse and industrial wastes; - in removals and furniture storage; - in slaughterhouses and quartering firms; - in loading and unloading during manufacturing, in delivery, including for third parties, and the storage and distribution of industrial and food products and agricultural and forestry products; - as part of medical and paramedical healthcare services including the handling of persons; - as part of stretcher bearing and the transport of patients; - in funeral work
ITALY		
77	Lumbar disc herniation	a) Tasks carried out non-occasionally with machines causing exposure to vibrations transmitted to the whole body: machines for materials transport, tractors, port cranes, lift trucks, and coastal or deep-sea fishing vessels b) Tasks carried out non-occasionally of manual handling of loads without appropriate helping devices
EU		
2.502*	Disc-related diseases of the lumbar vertebral column	caused by the repeated vertical effects of whole-body vibrations

* Additional list of diseases suspected of being occupational in origin which should be subject to notification and which may be considered at a later stage for inclusion in Annex I to the European schedule

VASCULAR DISORDERS AND ANGIONEUROTIC CONDITIONS

HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
GERMANY		
BK 2103	Diseases caused by vibrations	during work with pneumatic or similar tools or machines
BK 2104	Circulatory disturbances of the hands	caused by vibrations Legal requirement on the list: which have forced the person to discontinue all activities that caused or could cause the development, worsening or recurrence of the disease
2015 BK 2114	Vascular damage of the hand (hypothener hammer syndrome and thenar hammer syndrome)	by percussion-like force effect
AUSTRIA		
BK 20	Circulatory disturbances of the hands due to vibrations and other conditions caused by vibrations	related to work involving the use of compressed-air tools or tools and machines having similar effects (such as motor-driven saws, for example) or work performed with hammering machines
BELGIUM		
1.605.02	Angioneurotic conditions of the upper limbs	caused by mechanical vibrations
2013 1.608	Thrombosis or aneurysm of the ulnar artery at the level of the hypothener eminence, accompanied by an angioneurotic syndrome or ischemia (hypothener hammer syndrome)	caused by repetitive striking with or on the hypothener eminence
DENMARK		
C.3.1	Vibration-induced white finger (Raynaud's syndrome, Raynaud's disease)	caused by work with heavily vibrating hand tools (hand-arm vibrations)
SPAIN		
2B0101 2B0102 2B0103	Vascular/angioneurotic disorders	<ul style="list-style-type: none"> • Tasks in which they are caused: vibrations transmitted to the hand and arm by a great number of machines or by objects held on a vibrating surface (frequency range from 25 to 250 Hz) such as pneumatic drills, punches, drills, percussion drills, borers, polishers, grinders, power saws, brush cutters • Use of riveters and sealing guns • Tasks repeatedly causing exposure to pressing of the heel of the hand, striking a fixed, rigid plane such as the shocks transmitted to the hypothener eminence by a striking tool
FINLAND		
List (section 3)	White finger syndrome	caused by vibrations

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HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
FRANCE		
69 C	Unilateral ulnar-palmar vascular disorder (hypothenar hammer syndrome) resulting in Raynaud's syndrome or ischemic manifestations of the fingers confirmed by the arteriogram aimed at discovering an aneurysm or a thrombosis of the cubital artery or the superficial palmar arch	Tasks habitually causing exposure to use of the heel of the hand repeatedly striking directly on a fixed plane or the shocks transmitted to the hypothenar eminence by a struck or striking tool
69 A 2)	Angioneurotic disorders of the hand, predominantly on the index and middle finger, which may be accompanied by cramps of the hand and prolonged sensitivity disorders and confirmed by functional tests aimed at discovering Raynaud's syndrome	Five years' exposure Tasks habitually causing exposure to vibrations transmitted by: a) Hand-held machine tools, and in particular: - percussive machines, such as pneumatic drills, chippers, bush hammers and rammers; - rotary-percussive machines, such as hammer drills, pressure drills and impact wrenches; - rotary machines, such as polishers, grinders, chain saws and brush cutters; - reciprocating machines, such as sanders and jig saws b) Hand-held tools combined with some of the machines mentioned above, especially in chipping work c) Hand-held objects during shaping, especially in grinding and polishing work and work on swaging machine
ITALY		
76 a	Conditions caused by mechanical vibrations transmitted to the hand-arm system: Raynaud's syndrome	Tasks carried out non-occasionally involving the use of tools, equipment, machines and devices which transmit vibrations to the hand-arm system
SWITZERLAND		
	Conditions caused by vibrations	(only actions demonstrable from the radiological viewpoint on the bones and joints, and actions on the peripheral circulation)
EU		
505.02	Angioneurotic diseases	Caused by mechanical vibrations

OTHER MSDs		
HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
GERMANY		
BK 2112	Osteoarthritis of the knee	caused by occupational kneeling or comparable occupational load with a cumulative exposure of at least 13,000 hours and a minimum exposure time of one hour per shift
BELGIUM		
1.605.01	Osteoarticular conditions of the upper limbs	caused by mechanical vibrations
DENMARK		
C.3.3	Degenerative arthritis of elbow or wrist (arthrosis primaria/other specified forms of arthrosis)	
D.1	Degenerative arthritis of the knee joint	Kneeling or squatting work for many years
B.3	Degenerative arthritis of both hip joints	Hip-loading lifting work involving many heavy single lifts and a total daily lifting quantity of several tonnes for a considerable number of years
B.2	Chronic neck and shoulder pain (cervicobrachial syndrome)	Quickly repeated movements of shoulder/upper arm, perhaps in combination with bending of the neck and/or a static load on the neck and shoulder girdle, for a considerable number of years
SPAIN		
2B0201 2B0202 2B0203	Osteoarticular disorders	Works in which they are caused: <ul style="list-style-type: none"> Vibrations transmitted to the hand and arm by a great number of machines or by objects kept on a vibrating surface (frequency range from 25 to 250 Hz) such as those in which machinery is handled which transmits vibrations such as pneumatic drills, punches, drills, percussion drills, borers, polishers, grinders, power saws, brush cutters Use of riveters and sealing guns Works repeatedly exposing to the support of the heel of the hand, striking a fixed, rigid plane such as the shocks transmitted to the hypothenar eminence by a striking tool
FRANCE		
69 A & B	Osteoarthritis of the elbow including radiological signs of osteophytoses Osteonecrosis of the lunate (Kienböck's disease) Osteonecrosis of the scaphoid bone (Kölher's disease) Conditions confirmed by X-ray examinations	Tasks habitually causing exposure to vibrations transmitted by: <ol style="list-style-type: none"> Hand-held machine tools, and in particular: - percussive machines, such as pneumatic drills, chippers, bush hammers and rammers; - rotary-percussive machines, such as hammer drills, pressure drills and impact wrenches; - rotary machines, such as polishers, grinders, chain saws and brush cutters; - reciprocating machines, such as sanders and jig saws Hand-held tools combined with some of the machines mentioned above, especially in chipping work Hand-held objects during shaping, especially in grinding and polishing work and work on swaging machine Tasks habitually causing exposure to shocks caused by the manual use of percussive tools: - hammering work, such as work on the forge, panelwork, sheet metal working and leather work; - earthmoving and demolition work; - use of stud guns; - use of nailing and riveting guns

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HEADING CODE	PATHOLOGY	CONDITIONS RELATED TO OCCUPATIONAL EXPOSURE
ITALY		
76 b	Conditions caused by mechanical vibrations transmitted to the hand-arm system: Osteoarthropathy (thumb, elbow, shoulder)	Tasks, carried out non-occasionally, involving the use of tools, equipment, machines and devices which transmit vibrations to the hand-arm system
SWITZERLAND		
	Conditions caused by vibrations	(only actions demonstrable from the radiological viewpoint on the bones and joints, and actions on the peripheral circulation)
EU		
505.01	Osteoarticular diseases of the hands and wrists	caused by mechanical vibrations

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Musculoskeletal disorders: What recognition as occupational diseases? A study on 10 European countries

Paris: EUROGIP - Ref. Eurogip-120/E - 2016 - 21 x 29,7 cm - 70 pages - 979-10-91290-79-1

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