

EUROGIP

Musculoskeletal disorders in Europe

Definitions and statistics

Synthesis done in March 2006, updated in October 2007
Ref. Eurogip-25/E



Understanding occupational risks in Europe

I - Definition of MSD

According to the definition of the European Agency for Safety and Health at Work, work-related MSD cover a broad range of inflammatory and degenerative diseases of the locomotor apparatus, including:

- Inflammations of the tendons (tendinitis and tenosynovitis), especially in the forearm and wrist, the elbow and shoulders, in occupations involving extended periods of repetitive, static work;
- Myalgias, i.e. pains and functional disorders of the muscles, occurring primarily in the region of the neck and shoulders, in occupations involving static work postures;
- Nerve compression - entrapment neuropathy - occurring in the wrist and forearm in particular;
- Degenerative diseases of the spinal column, generally in the nape of the neck and the lumbar region, especially for workers performing manual handling or hard physical labour. This can also result in arthrosis of the hip or knees.

These disorders are chronic and the symptoms generally appear only after prolonged exposure to work-related risk factors(2) such as uncomfortable postures, repetitive and monotonous tasks, inappropriate work organisation and methods, and the lifting of heavy loads.

The European Commission recommends(3) to the Member States “to introduce into their legislative, regulatory and administrative regulations relating to diseases scientifically recognized as of occupational origin, entitled to compensation and which should be dealt with by preventive measures” the following diseases:

- Osteoarticular diseases of the hands and wrists caused by mechanical vibration
- Angioneurotic diseases caused by mechanical vibration
- Diseases of the periarticular sacs due to pressure
- Pre-patellar and sub-patellar bursitis
- Olecranon bursitis
- Shoulder bursitis
- Diseases due to overstraining of the tendon sheaths
- Diseases due to overstraining of the peritendineum
- Diseases due to overstraining of the muscular and tendonous insertions
- Meniscus lesions following extended periods of work in a kneeling or squatting position
- Paralysis of the nerves due to pressure

- Carpal tunnel syndrome
 - Avulsion due to overstraining of the spinous processes
 - Disc-related diseases of the lumbar vertebral column caused by the repeated vertical effects of whole-body vibration
- Based on the definition given by the European Agency, we have identified the MSD registered on the lists of occupational diseases of a number of countries, in order to establish the types of MSD recognized as occupational diseases.

(see tables pages 4 & 5)

Of the MSD most frequently registered on the lists of occupational diseases, the leading ones are tendinous complaints (tenosynovitis, tendinitis, epicondylitis), followed by nervous complaints (carpal tunnel syndrome), bursitis (of the knee and elbow), back pains and vascular complaints. It should be noted that MSD affecting the back are recorded on the lists of six countries out of 13: Germany, Belgium, Denmark, France, Spain and Finland.

Analysis of MSD through the lists of occupational diseases nevertheless has its limitations, and comparison between countries is difficult. In particular, the lists of occupational diseases are not organized the same way from one country to another. Some Member States define very precisely the various MSD complaints recognized by them, while others list diseases by major groups, without going into detail. However, this does not mean that the former recognize more musculoskeletal disorders than the latter.

Moreover, most of the Member States have a “complementary” or “open” system of recognition of occupational diseases. Thus, a person suffering from an affection that does not appear on the list can nevertheless obtain reparation if they can provide evidence of the work-related origin of the disease from which they suffer.

These are the limits to this summary, which is merely an overview of the question of MSD in Europe.

(2) European Agency for Safety and Health at Work. Preventing work-related musculoskeletal disorders. Luxembourg: Office for Official Publications of the European Communities, 2000, 41 p. PDF format. Available at: <http://agency.osha.eu.int/publications/magazine/3/index.htm?language=en> - ISBN 92-95007-16-6

(3) European Commission. Recommendation of 19 September 2003. EUOJ L238 of 25/09/2003

Table 1: List of MSD registered on the lists of occupational diseases

Country	MSD registered on the national lists of occupational diseases
Germany (4)	<p>Tendovaginal conditions or conditions of the tendinous tissue as well as tendons or muscular attachments Meniscus lesions caused by physical labour either repeated or sustained over several years, straining the knee joints Conditions caused by external friction through working with pneumatic or similar tools and machines Circulatory disturbances of the hands caused by vibration) Chronic conditions of the mucous bursae caused by constant pressure Nerve damage Strain fracture of the spinous process Discogenic conditions of the lumbar spine caused by lifting or carrying heavy loads over many years or by working for many years in an extremely bent-over position Discogenic conditions of the cervical spine caused by carrying heavy loads on the shoulders for many years Discogenic conditions of the lumbar spine caused by mainly vertical vibration of the entire body for many years whilst in a sitting position.</p>
Austria (5)	<p>Diseases due to vibrations related to work involving the use of compressed-air tools or similar tools and machines (such as motor-driven saws, for example) or work performed with hammering machines Diseases due to work performed with air-powered tools Chronic injuries of the bursas, knee or wrist joints caused by constant pressure or continuous vibrations Fractures of the apophyses Injuries of the meniscus affecting miners who have worked regularly for at least three years at the coal face and other people who have worked regularly for at least three years in a kneeling or squatting position Nerve injuries due to compression</p>
Belgium (6)	<p>Osteoarticular complaints of the upper limbs caused by mechanical vibrations Angioneurotic complaints of the upper limbs caused by mechanical vibrations Diseases of the periarticular bursas due to pressure, subcutaneous cellulites Diseases due to overstraining of the tendinous sheaths, the peritendinous tissue, and muscular and tendinous insertions in those in the show business Wrenching due to overstraining of the spines of vertebrae Damage to the nerve function due to pressure Documented monoradicular or polyradicular syndrome of the sciatica type, cauda equina syndrome and syndrome from narrowing of the lumbar vertebral canal.</p>
Denmark (7)	<p>Chronic low-back disease with pain Chronic neck and shoulder pain Tendovaginitis (Inflammation of the synovial sheath) Degeneration in the rotator tendons of the shoulder joint Carpal tunnel syndrome Diseases of bones, joints, vessels, or nerves (white finger, neuropathy) Epicondylitis (tennis elbow and golf elbow) Shoulder tendinitis Meniscus disease of knee joint Inflammatory degeneration of knee bursa and other types of bursitis Degenerative arthritis of the knee joint Hip osteoarthritis.</p>

(4) HVBG. Liste der Berufskrankheiten PDF format. Available at: <http://www.hvbg.de/d/pages/statist/bk/bklist/bklist.html>

(5) AUVA. Liste der Berufskrankheiten PDF format. Available at: <http://www.auva.at/mediaDB/114461.PDF>

(6) FMP. Liste des maladies professionnelles. PDF format. Available at: <http://www.fmp.fgov.be/Pdfdocs/MedicalF/listBFR.pdf>

(7) National board of industrial injuries. List of occupational diseases. PDF format. Available at: <http://www.ask.dk/graphics/Dokumenter/English/Guides/Efortegn%20BE333%2015032007.pdf>

Country	MSD registered on the national lists of occupational diseases
Spain (8)	Tendovaginitis Bursae Hygroma Chronic tendinous disease of the rotator cuff De Quervain's tendinitis Epicondylitis and epitrochleitis Wrenching due to overstraining of the spines of vertebrae Insertion tendinitis Fractures of the spine of vertebra by wrenching and periostitis Meniscus disease Carpal tunnel syndrome Guyon's canal syndrome Serratus anterior nerve paralysis and radial nerve paralysis Sciatic nerve compression syndrome Paralysis of the sciatic nerve, paralysis of the ulnar nerve
Finland (9)	Repetitive strain injuries Tendovaginitis Peritendinitis Humeral epicondylitis Bursae
France (10)	Tenopathy of the rotator cuff (shoulder) epicondylitis (elbow) Epitrochleitis Carpal tunnel syndrome Chronic meniscus diseases Angioneurotic disorders of the hand Arthrosis of the elbow Kienböck's disease Osteonecrosis of the scaphoid bone White finger Hygroma Epitrochlear olecranon fossa syndrome Tendinitis Guyon's canal syndrome Tenosynovitis (wrist) Chronic complaints of the lumbar rachis (sciatica and radiculalgia due to herniated disc)
Ireland (11)	Bursae (elbow and knee) Cramps in the hand or forearm due to repetitive movements Inflammation of the tendons of the hand or forearm White finger Paralysis of the ulnar nerve Carpal tunnel syndrome Lateral epicondylitis

[8] INSHT Cuadro de enfermedades profesionales. Available at: <http://www.mtas.es/insht/legislation/RD/cuadro.htm>

[9] FIOH. Occupational diseases in 2002 : new cases of occupational diseases reported to the Finnish register of occupational diseases. Helsinki : FIOH, 2004, 62 p. PDF format. Available at: <http://www.ttl.fi/NR/rdonlyres/AF1A239E-A09D-47AB-9F69-16ED2B6D12ED/0/Occupational.pdf> - ISBN 951-802-576-2

[10] INRS, MSA. Les maladies professionnelles : guide d'accès aux tableaux du régime général et du régime agricole de la Sécurité sociale. Paris : INRS, 2004, 350 p. PDF format. Available at: <http://inrs.dev.optimedia.fr/mp3/> - ISBN 2-7389-1218-4

[11] DFSA. Prescribed occupational diseases. Available at: <http://www.welfare.ie/publications/sw33.html>

Pays	MSD registered on the national lists of occupational diseases
Italy (12)	Osteoarticular and angioneurotic diseases caused by mechanical vibrations (hands, arms) and their direct consequences
Luxembourg (13)	Diseases of the synovial sheaths or peritendinous tissues Meniscal diseases Diseases caused by vibrations by pneumatic tools Chronic diseases of the bursas Nerve paralysis Fractures of the spines of vertebrae
Portugal (14)	Tendovaginitis Epicondylitis Tendinitis Kienböck's disease Osteonecrosis of the scaphoid bone meniscal diseases Nerve paralysis Bursae Arthrosis of the elbow Angioneurotic disorders of the hand
United Kingdom (15)	Carpal tunnel syndrome Tendovaginitis Episodic whitening of the phalanges Cramps in the arm and forearm Hip osteoarthritis Bursae (knee and elbow)
Czech Republic (16)	Injuries to the peripheral nerves of the upper limbs resulting in ischaemic or compressive neuropathies due to work involving the use of vibrating tools or equipment Injuries to the bones and joints of the hand, wrist or elbow due to work involving the use of vibrating tools or equipment Injuries of the tendons, tendon capsules or points of attachment of the muscles or joints of the limbs due to an excessive load exerted repeatedly over a long period of time Injuries to the peripheral nerves of the limbs resulting in compressive neuropathies due to an excessive load exerted repeatedly over a long period of time Meniscal diseases Bursae Circulation diseases of the hand

[12] ISPESL. Malattie professionali . Available at: <http://www.ispesl.it/infmp/mp93.htm>

[13] AAA. Tableaux des maladies professionnelles. Available at: <http://www.aaa.lu>

[14] Diario da Republica. Listas das doencas profissionais. Available at: <http://www.seg-social.pt/>

[15] DWP. List of prescribed diseases. PDF format. Available at: http://www.dwp.gov.uk/advisers/ifpa/techguides/2004/db1_apr.pdf

[16] Centrum pracovniho lekarstvi. Occupational diseases. Available at: http://www.szu.cz/chpnp/pages_en/NZP/NZP_en.htm

II - The statistics

2.1 The population affected in Europe

MSD are the chief work-related health problem suffered by European workers in the UE-27 [17]. In 2005, 24.7 % of them complained of back pains, 22.8 % of muscular pains in the arms and legs, and 45 % stated that they worked in painful or tiring positions. The proportion of workers exposed to repetitive movements has increased further since 2000, reaching 62.3 % in 2005.

According to the survey mentioned, the Romanians, the Lithuanians, the Latvians, the Greeks, the Poles, the Finns and the Portuguese are the most exposed to the carrying of heavy loads and to repetitive movements. The Danes, the Italians, the inhabitants of Luxembourg, the Dutch, the Belgians, the Irish and the inhabitants of Malta, on the other hand, are the least exposed to this type of risk.

Moreover, women are especially affected by these risks.

2.2 Recognition of MSD as occupational diseases

2.2.1 Eurostat data

According to Eurostat [18], the most common MSD cases recognized as occupational diseases are tenosynovitis of the hand and wrist and epicondylitis (tennis elbow). In 2001, in 12 Member States (Austria, Belgium, Denmark, Spain, Finland, Ireland, Italy, Luxembourg, the Netherlands, Portugal, United Kingdom and Sweden), 5,379 cases of tenosynovitis of the hand and 4,585 cases of epicondylitis were recognized as occupational diseases. 2,483 cases of carpal tunnel syndrome were also recognized.

Extrapolating these figures to the European Union (EU of 15), we obtain approximately 8,900 cases of tenosynovitis, 7,600 cases of epicondylitis and 4,100 cases of carpal tunnel syndrome. According to Eurostat, the causes of tenosynovitis and epicondylitis are repetitive work (91 %), the work posture (1 %), mechanical vibrations (1 %) and biomechanical factors (6 %).

2.2.2 Eurogip data

In a study [19] published in 2002, Eurogip compared the diseases leading to the largest number of claims for recognition on the one hand, and on the other hand those most frequently recognized, in several European countries over the period 1990-2000. In 2000, the most-reported diseases concerned MSD and osteoarticular complaints (cited as first throughout the period – from 1994 to 2000 – by six countries out of 10).

Logically, MSD and osteoarticular complaints are again found in the classification of the occupational diseases most frequently recognized in Europe. MSD are in first position in Belgium, Spain (where in the year 2000 MSD accounted for 75% of recognized occupational diseases), Finland, France, Luxembourg and Sweden. On the other hand, MSD do not appear among the five most recognized diseases in Germany, Austria, Greece and Portugal.

2.2.3 Statistics of the national insurance organizations

In order to show the evolution of MSD as a proportion of all cases of occupational diseases recognized in recent years, we have analysed the statistics published by the occupational injury and disease insurance organizations of several Member States.

[17] PARENT-THIRION Agnès, FERNANDEZ MACIAS Enrique, HURLEY John, VERMEYLEN Greet. Fondation européenne pour l'amélioration des conditions de vie et de travail. Fourth European working conditions survey. Luxembourg : Office for official publications of the European communities, 2007, 134 p. Format PDF. Disponible sur : <http://www.eurofound.europa.eu/pubdocs/2006/98/en/2/ef0698en.pdf> - ISBN 92-897-0974-X

[18] Eurostat. Work and health in the EU : a statistical portrait. Data 1994-2002. Luxembourg : Office for official publications of the European communities, 2004, 128 p. Format PDF. Disponible sur : http://epp.eurostat.cec.eu.int/cache/ITY_OFFPUB/KS-57-04-807/EN/KS-57-04-807-EN.PDF - ISBN 92-894-7006-2

[19] Eurogip. Occupational diseases in 15 European countries. Figures for 1990-2000 - Legal and practical news 1999-2000. Paris : Eurogip, 2002, 52 p.

Table 2: MSD as a proportion of all cases of occupational diseases (OD) recognized between 2000 and 2005(20)

		2000	2001	2002	2003	2004	2005
Germany	MSD	933	-	980	926	846	755
	Total OD	16,414	-	16,669	15,758	15,832	14,920
	Percentage MSD	5.68%	-	5.9%	5.9%	5.3%	5%
Belgium	MSD	-	-	1,691	1,316	747	719
	Total OD	-	-	3,624	3,340	2,358	2,358
	Percentage MSD	-	-	46.7%	39.4%	31.7%	30.5%
Denmark	MSD	-	511	437	513	526	593
	Total OD	-	2,391	2,430	3,045	2,302	5,652
	Percentage MSD	-	21.4%	18%	16.8%	22.8%	10.5%
Spain	MSD	-	-	-	22,899	24,814	26,833
	Total OD	-	-	-	26,857	28,728	30,030
	Percentage MSD	-	-	-	85%	86%	89.35%
France	MSD	-	26,060	31,428	31,181	34,461	39,040
	Total OD	-	35,695	41,581	44,575	48,039	51,830
	Percentage MSD	-	73%	75.6%	70%	71.7%	75.3%
Italy	MSD	1,016	1,371	1,651	1,524	2,025	2,316
	Total OD	7,755	8,549	8,734	8,032	7,329	7,379
	Percentage MSD	13.1%	16%	18.9%	19%	2.6%	31.4%
Czech Rep.	MSD	634	552	562	518	375	557
	Total OD	1,751	1,677	1,600	1,558	1,388	1,400
	Percentage MSD	36.2%	32.9%	35.2%	33.3%	27%	39.8%
Sweden	MSD	-	4,409	4,174	3,650	3,575	3,965
	Total OD	-	11,945	12,545	12,370	11,275	11,825
	Percentage MSD	-	36.9%	33.3%	29.5%	31.7%	33.5%

Great disparity is observed between the Member States. Germany and Denmark are exceptions. They have few cases of MSD recognized as occupational diseases by comparison with the statistics concerning the other six Member States, especially France and Spain, where the proportion of MSD is equal to or greater than 70%. In Germany(21), the number of MSD cases recognized is very small for the period 2000-2005, which was already the case between 1994 and 2000. It is true that the following special feature should be pointed out: some diseases, such as skin complaints, respiratory obstruction diseases and MSD are frequently reported but relatively seldom recognized as occupational diseases. According to the regulations relating to

the list of occupational diseases, the occupational nature of these diseases can be recognized only when they are so serious that they oblige the insured to abandon all hazardous activities. In Belgium, the number of MSD cases recognized has declined sharply in recent years. However, osteoarticular complaints due to vibrations still account for more than 30% of the total number of cases recognized in 2004. According to Prevent(22), MSD are evidently still under-reported and under-estimated. In Italy the number of MSD cases has increased in recent years. In the Czech Republic, MSD accounted for 29.8% of cases recognized in 2005, which represents a marked increase (27%) by comparison with 2004.

Spain and France, for their part, have seen a sharp increase in MSD cases in recent years. In both these countries, these diseases are by far the most frequently recognized. The increase in the number of recognitions in the 1990s, moreover, is due to the increasing occurrence of MSD and raised awareness of the problems posed by these diseases. In France, the number of claims for recognition is increasing year

after year, and MSD are also in first position among the most recognized diseases, with more than 70% of cases for 2005. In certain European Union Member States, the number of recognized cases was not available[23]. We have therefore chosen to analyse the number of cases reported to determine the evolution of MSD.

Table 3 : MSD as a proportion of all cases of occupational diseases reported in Finland and Netherlands

		1990	1999	2002
Finland	MSD	1,859	1,356	1,360
	Total OD	4,131	5,215	4,807
	Percentage MSD	45 %	26 %	28 %

		2001	2002	2003	2004
Netherlands	MSD	2,698	2,278	2,333	2,214
	Total OD	5,593	5,335	5,973	5,788
	Percentage MSD	48.2 %	42.7 %	39.1 %	38.3 %

In Finland[24] the decline in the number of MSD cases reported is very marked. There, MSD peaked in 1990, with 1859 cases, which represented 45% of new occupational disease cases. In 1999, the number was 1356, which corresponded to 26% of new cases reported. Since then, the proportion of MSD cases has remained stable, with 28% in 2002. Despite a sharp decline, musculoskeletal disorders remain the most common occupational diseases, especially tenosynovitis and peritendinitis cases.

The Netherlands have no specific insurance for occupational injuries and diseases, but a national register lists the cases reported by doctors specialised in industrial medicine. The number of MSD cases was halved between 2000 and

2005[25]. In 2001, MSD cases accounted for 48.2% of the occupational diseases registered, 42.7% in 2002, 39.1% in 2003 and 38.3% in 2004. The reasons for this decline are hard to analyse, but it would seem that, at least for back problems, this is due to improvements made to work stations. Tables 2 and 3 show that in recent years the number of people affected by MSD has increased greatly in Europe, and in most of the countries studied they represent a major proportion of diseases reported or recognized. However, there is a great disparity between the few states that are apparently able to contain this phenomenon and even observe a sharp decline in the number of cases, and those that are now facing a veritable epidemic.

[20] All these figures appear in documents produced by the insurance organizations for occupational injuries and diseases.

[21] Eurogip. Occupational diseases in 15 European countries. Figures for 1990-2000 - Legal and practical news 1999-2000. Paris : Eurogip, 2002, 52 p.

[22] Prevent. Maladies professionnelles. Les tendances en 2004 . Prevent Actua, 18/05/2005, n°14, p. 5

[23] Finland does not have this information in English.

[24] FIOH. Occupational diseases in 2002 : new cases of occupational diseases reported to the Finnish register of occupational diseases. Helsinki : FIOH, 2004, 62 p. PDF format. Available at: <http://www.ttl.fi/NR/rdonlyres/AF1A239E-A09D-47AB-9F69-16ED2B6D12ED/O/Occupational.pdf>

[25] Nederlands centrum voor Beroepsziekten. Alert report on occupational diseases. Amsterdam : Nederlands centrum voor Beroepsziekten, 2005

Conclusion

Despite a sharp decline in MSD in certain Member States, these diseases remain the chief work-related diseases in Europe, which is why they are now one of the priorities for occupational risk prevention, at both the European level and in the Member States. However, the multifactorial causes (biomechanical, organisational and psychosocial) of MSD make it hard to implement effective preventive measures in enterprises, because this very often entails bringing into question the entire work organisation.

At the European level, a number of initiatives have already been conducted. From the regulatory viewpoint, several directives endeavour to prevent the risk:

- the 89/391 framework directive provides a general framework for the identification and prevention of risks in the workplace;
- the 90/269 directive concerns the identification and prevention of risks related to manual handling;
- the 90/270 directive concerns the identification and prevention of risks related to work on screen display equipment;
- the 89/654 directive contains minimum requirements for the layout of work stations, the seat, temperature and lighting.

Moreover, in 2000, the European Agency for Safety and Health at Work organised its annual information campaign on the subject of MSD with the slogan "Turn your back on musculoskeletal disorders". This is again the theme of the 2007 campaign. In 2004, the European Commission, aware of the human and financial implications of the scale of MSD, initiated an enquiry on this subject with the social partners, calling on them to possibly work out a binding legislative tool to better prevent MSD at work. The social partners reported their conclusions at the start of 2007, indicating that the employers' representatives are generally unfavourable to the preparation of an individual directive on MSD, contrary to the workers' representatives. The Commission will report its decision by 2008.

Finally, in November 2005, a European agreement on the reduction of workers' exposure to the risks of MSD in agriculture was signed between the social partners in the agriculture sector of the European Union (EFFAT, GEOPA-COPA). Meanwhile, the number of workers affected by MSD continues to increase in Europe and more generally in all the industrialised countries.

Eurogip is the link between the French Social Security system and Europe in the area of occupational risks: it analyses developments at the community level and in the other EU countries and puts forward the viewpoint of the Social Security system.

Since 1991, the men and women of this public interest grouping have informed the social partners and Social Security personnel, performed comparative surveys, taken part in projects of community interest and acted energetically to make the occupational risk prevention voice heard both in the standardisation bodies and by the notified bodies.

All these initiatives aim to help the “accident at work and occupational diseases” Branch understand the issues at stake and take action.

Reproduction rights: Eurogip reserves the right to grant or refuse permission to reproduce all or part of the results of the present study. In any case, permission is required in advance in writing.