

Work-related musculoskeletal disorders: prevalence, costs and demographics in the EU

National report: the Netherlands

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Summary

Prevalence of MSDs

- The percentage of both Dutch men and women reporting that their work affects their health is higher (48 % and 47 %, respectively) than the average levels for the 28 EU Member States (EU-28) (39 % and 35 %, respectively).
- The percentage of Dutch workers affected by back pain and muscular pain in the lower limbs is slightly below the EU-28 level, whereas the prevalence of workers affected by muscular pain in the shoulders, neck and/or upper limbs is similar to the EU-28 average.
- National data show that Dutch workers (excluding the self-employed) are particularly affected by some type of pain/discomfort linked to their back, followed by the shoulders and neck. This is generally perceived more among older workers, and there are important differences in the type of pain/discomfort felt between economic sectors (for instance, back pain particularly affects those performing trade and healthcare activities).
- National data on recognised musculoskeletal disorder- (MSD-)related occupational diseases show that the most common is repetitive strain injury of the shoulder/upper arm followed by elbow inflammation. Recognised MSD-related occupational diseases are more common among male workers and older workers, as well as among the building/construction and industry sectors.

Impact of MSDs

- With regard to the costs and other burdens related to MSDs, the available data on disability-adjusted life years (DALYs) show that the number of years of life lost and lived with disability resulting from work-related MSDs per 100,000 workers represents a lower percentage of the total number of years of life lost and lived with disability due to other reasons (cancer, circulatory problems, injuries, etc) than the EU-28 average.
- A higher percentage of Dutch employees work in companies that support employees to return to work after long-term sickness than the EU-28 average.
- Available data show that a higher percentage of people in the Netherlands have reported a period off work as a result of a work-related health problem resulting in sick leave than the average level for the EU-28. Available data also show that Dutch workers have longer periods of absenteeism than the EU-28 average.

Risk factors for MSDs

- A large percentage of Dutch employees are exposed to physical factors at work that may put them at risk of MSDs. More precisely, 78% work in establishments where employees work with computers/laptops; 71% work in establishments where employees work in sitting positions; 60% work in establishments where employees use repetitive hand/arm movements, and; 48% work in establishments where standing is required (the most important physical risk factors). A comparison with EU-level data shows that the two most important physical risk factors for workers in the Netherlands (working with computers/laptops and working in sitting positions) are much more common for Dutch workers than for their EU counterparts, and are not the same as the most important physical risk factors at EU level (work involving standing or repetitive hand/arm movements).
- National data show that the main physical health risks in companies, as suggested by company managers, include physical workload (pushing, pulling and lifting), followed by work involving visual display units (VDUs) and static working postures. There is a positive relationship between these perceived risks and the size of the company. Meanwhile, 4.3 % of Dutch workers

(excluding the self-employed) consider their job regularly dangerous, whereas 19 % say that it is sometimes dangerous. In addition, 9.5 % use equipment or machinery that causes vibrations regularly, 10.8 % regularly need to work in awkward positions and 34.2 % regularly make repetitive movements at work. These percentages are higher among men than among women and young people (aged 15-24), and agriculture and construction workers suffer the most from physical factors. Similar patterns are also evident among self-employed workers in the Netherlands.

- National data show that the main reasons for taking sick leave among Dutch workers (excluding the self-employed) include influenza or the common cold, complaints of the digestive system and back complaints. Back complaints and complaints of the hips, legs, knees or feet are particularly common among men, as well as among older workers. Construction, agriculture and transportation workers seem to be particularly affected by MSD-related health problems. With regard to the self-employed, the main reason for taking sick leave is influenza/the common cold, followed by back complaints and complaints of the neck, shoulders, arms, etc. Back complaints and complaints of the hips, legs, knees or feet are more common among self-employed men, as well as among self-employed agriculture and industry workers.
- Organisational and psychosocial risk factors also play a role as potential triggers of MSDs. The most relevant of these factors among Dutch employees relate to the pace of work being dependent on other people's demands, working at a very high speed and tight deadlines. Other relatively important risks include overall fatigue or, generally speaking, difficulties with sleep. A comparison with EU-level data shows that the general order of importance of the different organisational and psychosocial risk factors is similar to that seen in the Netherlands, although working at very high speed seems to be a more important risk factor among Dutch employees than the EU average.
- National data show that the psychosocial factors perceived most among Dutch workers are the need to get a lot of work done, followed by the need to work extra hard and the fact that the work is emotionally demanding. The scores associated with these factors are higher among female workers and among workers aged from 25 to 54 years of age. Other relevant risk factors (although perceived less) include feeling empty/numb at the end of the day, feeling tired when confronting with work and experiencing burnout symptoms. These risk factors are perceived more among women than among men, with important differences between sectors.
- Generally speaking, the self-employed perceive lower levels of psychosocial risks than employed workers, whereas the self-employed who have hired personnel are more likely to perceive these psychosocial risks than the self-employed who do not have hired personnel.
- There are a number of relevant studies available from the Health Council of the Netherlands related to the different physical and psychosocial risk factors that underpin MSDs, the main results of which are presented in this report.

Prevention of MSDs

- Surveys of enterprises suggest that Dutch employees benefit considerably from measures aimed at preventing MSDs in their workplaces, particularly the provision of equipment that helps with lifting or moving, the provision of ergonomic equipment or the rotation of tasks to reduce repetitive movements, all of which are available at higher levels in the Netherlands than the EU-28 average. However, a lower percentage of Dutch employees work in companies that provide training on various preventive activities than the average percentage for the EU-28, particularly training on the proper use and adjustment of work equipment and how to lift and move heavy loads.
- Information from national sources shows that one third of Dutch company managers suggest that no measures have been taken to improve working circumstances in the previous 2 years, whereas personal protective equipment has been introduced by 20.3 % of the companies

surveyed and 17.2 % have implemented technical measures. The likelihood that a company has introduced measures to improve working circumstances increases as the size of the company increases. Moreover, around three quarters of Dutch company supervisors hold appraisal meetings with individual workers or use a sector-specific catalogue ⁽¹⁾ on health and safety. Moreover, approximately half of company managers confirm that their companies perform risk assessments at work. These percentages also increase as company size increases.

- Information from national sources shows that 66 % offer guidance for absent workers on returning to work, 18.8 % implement job adjustments for employees returning to work and 15.3 % offer support concerning absenteeism and return to work. The percentage of companies offering these measures increases as company size increases.

⁽¹⁾ In a health and safety catalogue, employers and employees — on their own initiative — describe how they will meet target government requirements for healthy and safe workplaces. The catalogue should describe techniques and methods, good practices, standards and practical manuals for a safe and healthy work environment. More information about these catalogues is available at: <https://www.arboportaal.nl/>

1 Introduction

1.1 Background

This is the national musculoskeletal disorders (MSDs) facts and figures overview report for the Netherlands ⁽²⁾. This national report is part of a much larger project, '**MSDs facts and figures overview: prevalence, costs and demographics of MSDs in Europe**', intended to support policy-makers at EU and national levels by providing an accurate picture of the prevalence and costs of MSDs across Europe, pulling together existing data from a number of relevant and reliable official statistical sources. This national report is considered complementary to the overview report covering the EU as a whole, *Work-related musculoskeletal disorders: prevalence, costs and demographics in the EU – Final report* ⁽³⁾.

The European Agency for Safety and Health at Work (EU-OSHA), aware of the limits of EU data sources related to MSDs, decided to complement and enrich EU-level findings with national data and analyses. This national report is not intended to provide a comprehensive and exhaustive national overview of MSDs. Rather, the main criteria followed in relation to gathering national data were to identify and focus on national MSD-related information that is either not available at EU level or complementary to existing data. Moreover, EU-OSHA considers that making the information/data identified at national level accessible to the European occupational safety and health (OSH) community and Member States (by publishing it in English) is also important. By sharing this national data at EU level, EU-OSHA aims to improve knowledge on the MSD topic among policy-makers, OSH professionals and national authorities in general.

This national report is structured into five chapters, including this introductory chapter, Chapter 1. Chapter 2 presents some data on the prevalence of MSDs among national workers, as well as information on MSD-related occupational diseases. Chapter 3 analyses the impact of MSDs, presenting information on health, work and employment outcomes (including information on costs linked to MSDs). Chapter 4 identifies several risk factors underpinning MSDs, including physical as well as organisational/psychosocial and sociodemographic risk factors. Chapter 5 provides some information related to activities carried out by enterprises/establishments intended to prevent MSDs within the workforce, including training and support activities to help workers returning to work. Finally, the report lists the main national data sources on MSDs along with (when possible) links through which this information can be accessed. All chapters follow the same structure: each chapter presents national data on MSDs based on EU-level data sources and these data are subsequently complemented with information from national data sources (if any). This has been done to ensure that all reports contain a minimum level of basic information, harmonised for all the Member States analysed.

The structure of this national report is the same as that of the general European overview report (mentioned above), and readers are invited to consult the information available in the equivalent chapter of the general European report for a more comprehensive overview of the issues addressed in this national report.

From a methodological perspective, the information presented in this report comes from national data sources based either on surveys or on administrative data related to the issue of MSDs. This national information has been complemented in some cases with information from European/international data sources to allow comparisons between national and EU-level results.

⁽²⁾ Information about the occupational safety and health system in the Netherlands is available at: https://oshwiki.eu/wiki/OSH_system_at_national_level_-_Netherlands

⁽³⁾ This report is available at: <https://osha.europa.eu/en/publications/msds-facts-and-figures-overview-prevalence-costs-and-demographics-msds-europe/view>

1.2 Causes and consequences of MSDs: a framework

1.2.1 Main sources of information on MSDs

MSDs refer to impairments of bodily structures such as muscles, joints, tendons, ligaments, nerves, cartilage, bones and the localised blood circulation system (EU-OSHA, 2002) ⁽⁴⁾. If MSDs are caused or aggravated primarily by work and by the effects of the immediate environment in which work is carried out, they are known as work-related MSDs.

The two main sources of information and data regarding MSDs are surveys based on self-reporting and administrative data.

In the case of self-reporting, people are asked whether or not they suffer from an MSD (either in general or a specific type of MSD). When assessing the prevalence of MSDs through surveys, it is customary to ask about the part of the body affected by health complaints and not about the clinical nature of the complaint.

Questions regarding the prevalence of MSDs are included in different surveys. The formulation of the questions used varies between surveys, and also between different waves of these surveys. These differences are likely to result in different outcomes.

Another important source of information is administrative data. Two examples of available administrative data are:

- data on the number (and proportion) of occupational diseases recognised to be due to diseases of the musculoskeletal system and connective tissue;
- data on declared work-related accidents.

Estimates of MSD prevalence based on self-reporting may include people with relatively mild health complaints as well as people with severe health complaints. Statistics based on administrative data are likely to include only people with more severe health complaints (severe enough to result in the complaint being recognised as an occupational disease).

1.2.2 A multidimensional model of MSDs

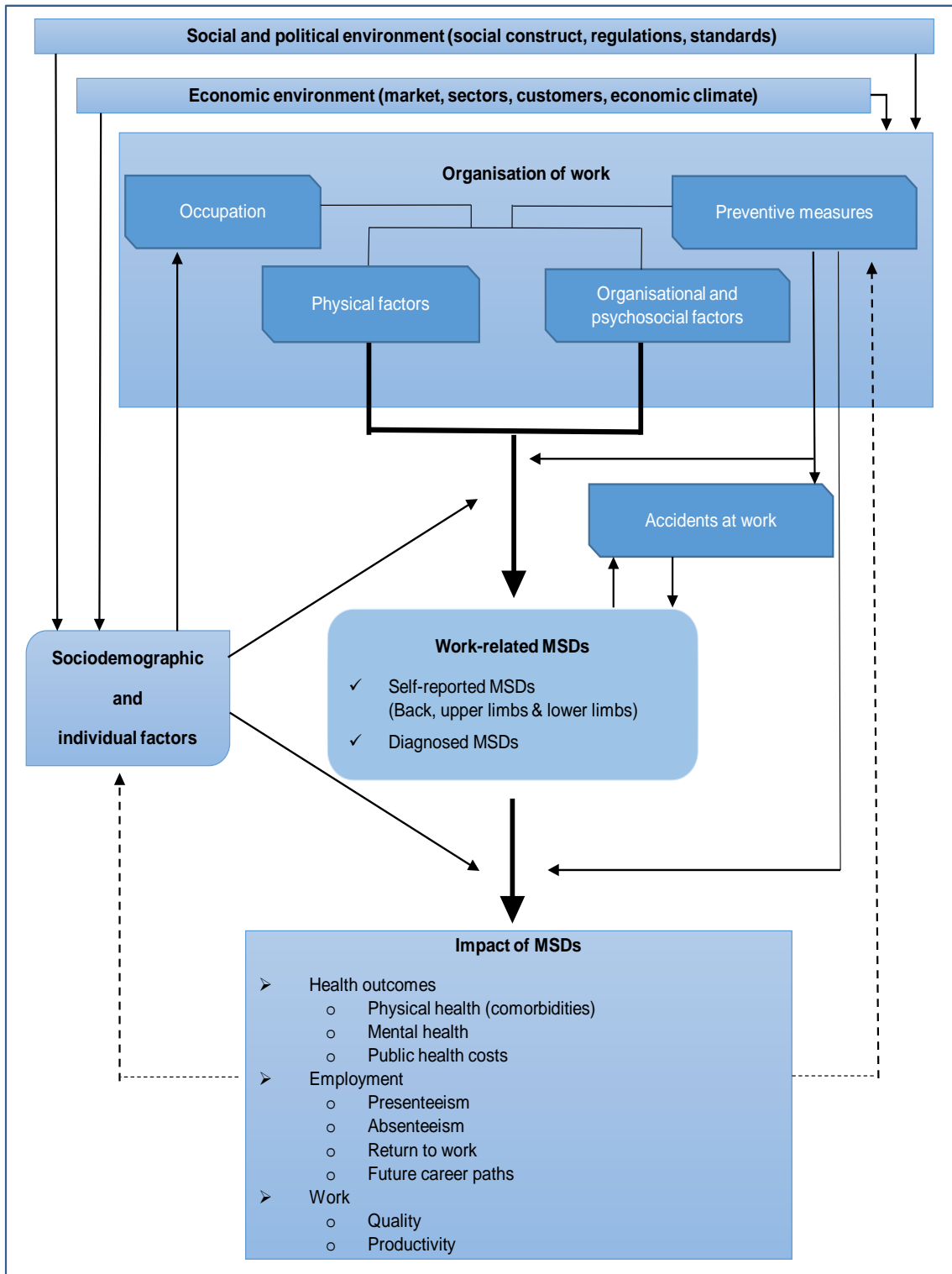
MSDs can be caused by many different (combinations of) factors and may have many different consequences. Figure 1 figure shows the main causes and consequences of MSDs that have been identified in previous studies.

The objective of this national report is to present additional country-specific information regarding the following aspects of the framework depicted in Figure 1:

- the prevalence of MSDs;
- the impact of MSDs;
- risk factors for MSDs;
- the prevention of MSDs.

⁽⁴⁾ EU-OSHA — European Agency for Safety and Health at Work, 'Introduction to work-related musculoskeletal disorders', *Facts 71*, 2002. Available at: https://osha.europa.eu/sites/default/files/publications/documents/en/publications/factsheets/71/Factsheet_71_-_Introduction_to_work-related_musculoskeletal_disorders.pdf

Figure 1: Theoretical framework of work-related MSDs



Note: theoretical framework developed by Panteia, vhp performance and IKEI

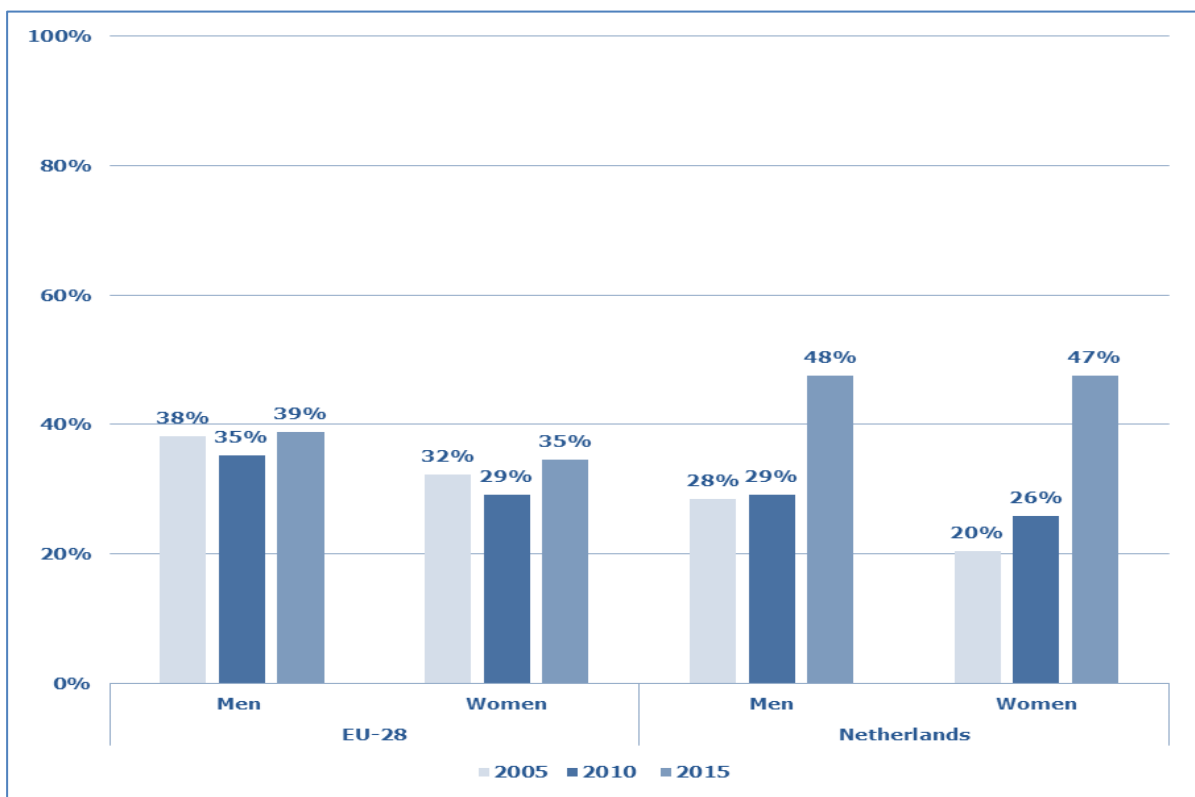
2 Prevalence of MSDs

2.1 Self-reported MSDs

In this chapter, an overview of the prevalence of MSDs in the Netherlands and in comparison with the EU-28 is presented.

First, Figure 2 illustrates the percentages of workers, by gender, in the Netherlands who report that their work affects their health. Around 48 % of men and 47 % of women report that their work affects their health (data for 2015); both percentages are higher than the corresponding EU-28 averages (39 % and 35 %, respectively).

Figure 2: Percentages of workers who reported that their work affects their health in the EU-28 and in the Netherlands, by gender, in 2005, 2010 and 2015



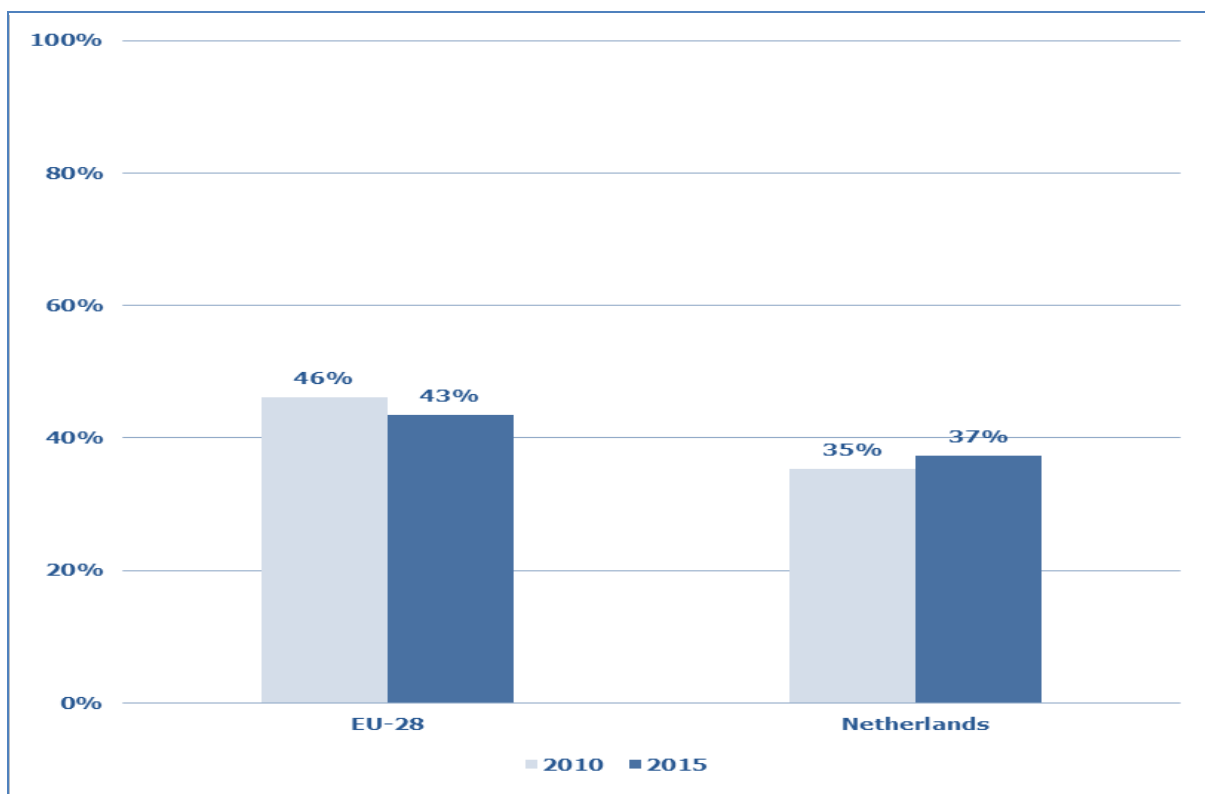
Source: Panteia, based on data from the 2005, 2010 and 2015 waves of the European Working Conditions Survey (EWCS)⁵

The main focus is on three specific categories of MSDs, namely back pain, muscular pain in the upper limbs and muscular pain in the lower limbs.

⁵ Eurofound — European Foundation for the Improvement of Living and Working Conditions, European Working Conditions Survey (EWCS). Information about the survey is available at: <https://www.eurofound.europa.eu/surveys/european-working-conditions-surveys>

Figure 3 shows the percentages of workers who reported back pain in the past 12 months in the EU-28 and in the Netherlands. According to the available information, back pain is less prevalent in the Netherlands than in the EU-28, which is confirmed by the last two waves of the European Working Condition Survey (EWCS 2010 and 2015). In 2015, 37 % of Dutch workers reported back pain in the past 12 months, whereas this percentage was 43 % in the EU-28.

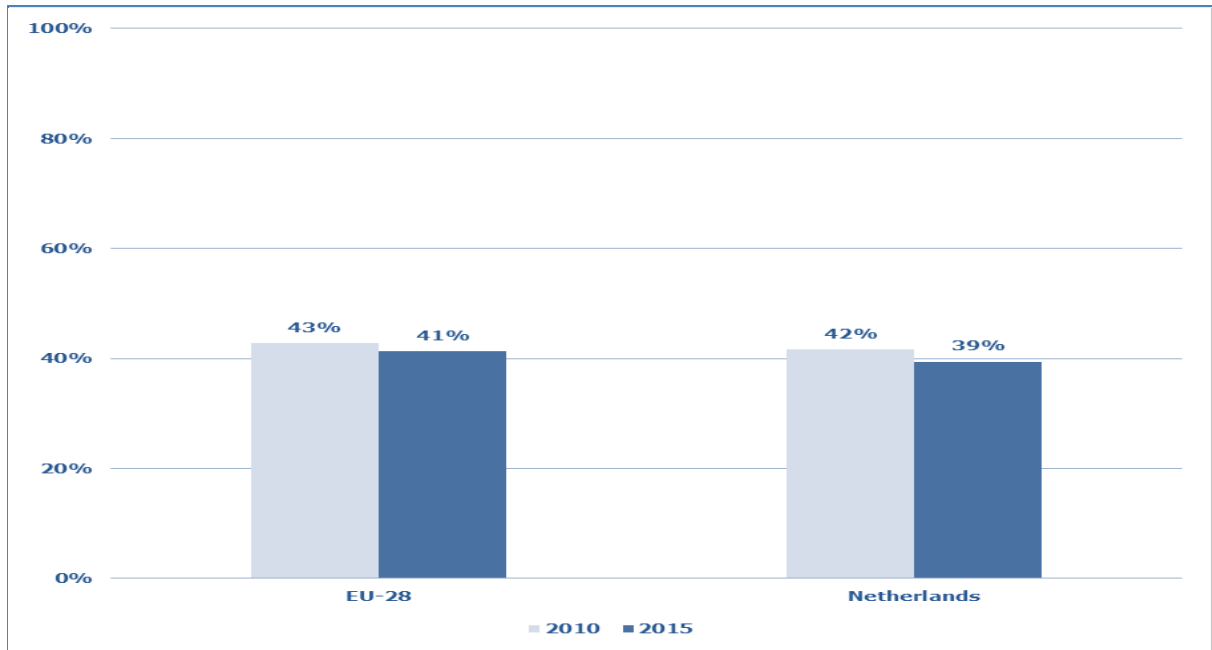
Figure 3: Percentages of workers who reported back pain in the past 12 months in the EU-28 and the Netherlands, in 2010 and 2015



Source: Panteia, based on data from the 2010 and 2015 waves of the EWCS

Figure 4 illustrates the percentages of workers who reported muscular pain in the shoulders, neck and/or upper limbs in the past 12 months in the EU-28 and in the Netherlands. According to the available data, the percentage of Dutch workers reporting this type of muscular pain was 39 % in 2015, a percentage relatively similar to that in the EU-28 (41 %). These percentages remained relatively stable between 2010 and 2015.

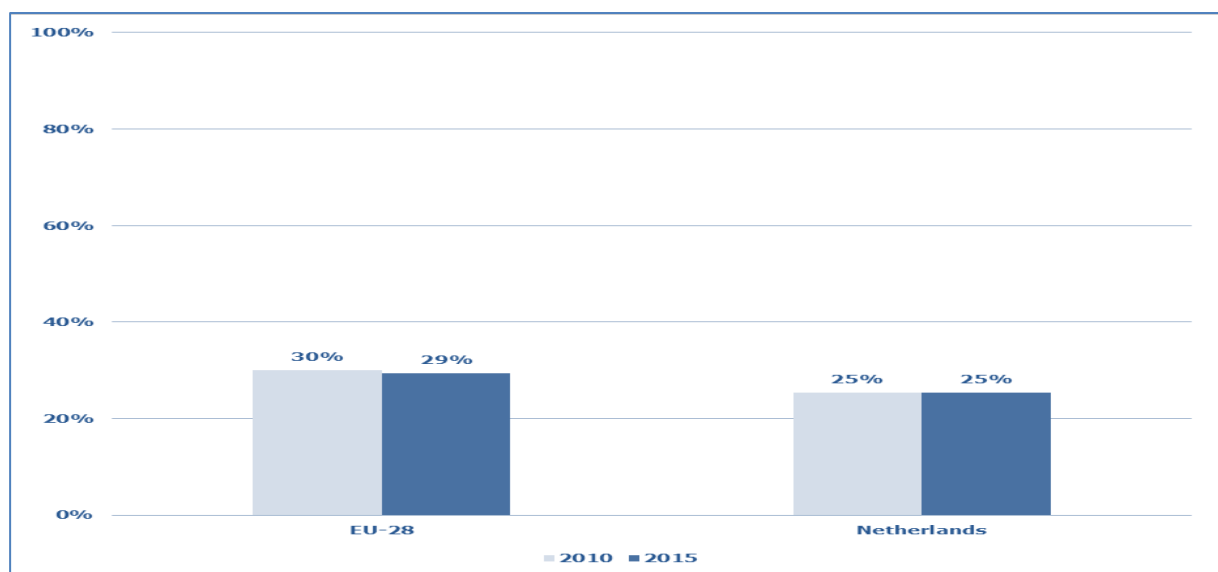
Figure 4: Percentages of workers who reported muscular pains in the shoulders, neck and/or upper limbs in the past 12 months in the EU-28 and the Netherlands, in 2010 and 2015



Source: Panteia, based on data from the 2010 and 2015 waves of the EWCS

Finally, Figure 5 presents the percentages of workers who reported muscular pain in the lower limbs in the past 12 months in the EU-28 and in the Netherlands. The available data show that the percentage of Dutch workers reporting being affected by this type of muscular pain was 25 % in 2015, slightly below the figure for the EU-28 (29 %). No significant differences in these percentages are apparent between 2010 and 2015.

Figure 5: Percentages of workers who reported muscular pains in the lower limbs in the past 12 months in the EU-28 and the Netherlands, in 2010 and 2015



Source: Panteia based on data from the 2010 and 2015 waves of the EWCS

On the other hand, the Netherlands Working Conditions Survey (NEA — Nationale Enquete Arbeidsomstandigheden⁶) provides interesting information on Dutch workers (excluding the self-employed) who report suffering from some type of pain/discomfort (see Table 1). The following data are based on a scale from 1 (meaning 'never') to 5 (meaning 'multiple times, for a sustained period of time'). In general, the part of the body affected most is the back (2.43), followed by the shoulders (2.19) and neck (2.17). In all cases, figures are higher among women than among men. In all cases, figures are higher among women than among men. In terms of age, those aged 55 to 64 years old have, in general, the highest scores, although the 25-54 group, which in general has similar scores, has higher figures than the 55-64 group for neck pain (2.23 versus 2.20) and back pain (2.46 versus 2.44).

Table 1: Percentages of workers (excluding the self-employed) experiencing complaints (pain/discomfort) affecting different parts of the body in the past 12 months, by gender and age, 2017 (from 1 — never — to 5 — multiple times, for a sustained period of time)

Body part	Total	Gender		Age			
		Male	Female	15-24	25-54	55-64	65-75
Neck	2.17	1.91	2.45	1.94	2.23	2.20	1.80
Shoulders	2.19	1.92	2.48	1.87	2.25	2.28	1.85
Arms/elbows	1.58	1.52	1.65	1.34	1.59	1.78	1.49
Wrists/hands	1.71	1.60	1.83	1.55	1.71	1.87	1.58
Back	2.43	2.30	2.58	2.36	2.46	2.44	2.07
Legs/knees/feet	2.10	1.99	2.22	1.97	2.05	2.40	2.09

Source: NEA, 2017

As shown in Table 2, in terms of economic sectors, neck pain and shoulder pain particularly affect workers in the education and healthcare sectors. Arm/elbow pain is more common among workers in the construction and industry sectors, whereas wrists/hand pain occurs more frequently among workers in the industry and healthcare sectors. Finally, back pain particularly affects those who carry out trade and healthcare activities, while leg/knee/foot pain is more common among workers in the healthcare and industry sectors.

Table 2: Percentages of workers (excluding the self-employed) experiencing complaints (pain/discomfort) affecting different parts of the body in the past 12 months, by economic sector, 2017 (from 1 — never — to 5 — multiple times, for a sustained period of time)

Body part	Economic sector												
	Agriculture	Industry	Construction	Trade	Transportation	Catering Industry	IT	Financial	Business	Governance	Education	Health care	Leisure
Neck	1.93	2.03	2.03	2.09	2.02	2.02	2.11	2.23	2.16	2.30	2.33	2.37	2.20
Shoulders	2.05	2.10	2.08	2.09	2.03	2.04	2.08	2.24	2.17	2.30	2.31	2.39	2.26

⁶TNO. NEA — Netherlands Working Conditions Survey (Nationale Enquête Arbeidsomstandigheden), 2017. Available at: <https://www.cbs.nl/nl-nl/publicatie/2018/16/nationale-enquete-arbeidsomstandigheden-2017>

Body part	Economic sector												
	Agriculture	Industry	Construction	Trade	Transportation	Catering Industry	IT	Financial	Business	Governance	Education	Health care	Leisure
Arms/elbows	1.56	1.65	1.71	1.53	1.58	1.56	1.45	1.58	1.57	1.63	1.52	1.61	1.52
Wrists/hands	1.66	1.74	1.73	1.65	1.65	1.74	1.59	1.66	1.73	1.72	1.61	1.80	1.66
Back	2.38	2.42	2.43	2.45	2.39	2.43	2.26	2.32	2.38	2.43	2.42	2.55	2.39
Legs/knees/feet	2.07	2.18	2.17	2.12	2.15	2.26	1.77	1.91	1.98	2.11	2.06	2.19	2.02

Source: NEA, 2017

2.2 MSD-related occupational diseases

NCvB statistiek (Statistics of the National Office for the Registration of Occupational Diseases)⁷ contain information on the main MSD-related occupational diseases reported in the Netherlands. In 2016, the NCvB statistiek register included a total of 1,791 MSD-related occupational diseases (1,945, 2,679 and 2,381 in 2013, 2014 and 2015, respectively). As shown in Table 3, between 2013 and 2016, the most common MSD-related occupational disease was repetitive strain injury of the shoulder/upper arm (19.6 % of workers in 2016), followed by elbow inflammation (11.9 % in 2016).

Table 3: Most commonly reported MSD-related occupational diseases, 2013-2016

	2013		2014		2015		2016	
	N	%	N	%	N	%	N	%
Repetitive strain injury, shoulder/upper arm	382	19.6	504	18.8	400	16.8	351	19.6
Elbow inflammation	175	9.0	275	10.3	220	9.2	213	11.9
Repetitive strain injury, wrist/hand	97	5.0	134	5.0	120	5.0	102	5.7
Knee arthrosis	98	5.0	103	3.8	149	6.3	87	4.9
Carpal tunnel syndrome	67	3.4	114	4.3	104	4.4	84	4.7
Inflammation, shoulder joint capsule	61	3.1	88	3.3	90	3.8	72	4.0
Chronic non-specific lower back pain	154	7.9	194	7.2	114	4.8	69	3.9
Repetitive strain injury, elbow/lower arm	84	4.3	105	3.9	88	3.7	68	3.8
Herniated spine	84	4.3	128	4.8	97	4.1	66	3.7
Acute non-specific lower back pain	68	3.5	114	4.3	70	2.9	63	3.5

⁷ Netherlands Center for Occupational Diseases, NCvB statistiek — Statistics of the National Office for the Registration of Occupational Diseases (Nationale Registratie Beroepsziekten), yearly data since 2003. Available at: <https://www.beroepsziekten.nl/statistiek-introductie/ncvb-statistiek-nationale-registratie-beroepsziekten>

	2013		2014		2015		2016	
	N	%	N	%	N	%	N	%
Non-specific acute lower back pain	43	2.2	77	2.9	55	2.3	55	3.1
Generalised arthrosis	41	2.1	43	1.6	48	2.0	54	3.0
Other soft tissue overload	95	4.9	86	3.2	87	3.7	48	2.7
Lower back pain with ischialgia	40	2.1	59	2.2	62	2.6	34	1.9
Degenerative disc disease of the neck	24	1.2	40	1.5	37	1.6	28	1.6
Hip arthrosis	19	1.0	35	1.3	29	1.2	27	1.5
Vertebrae cervical injury	16	0.8	28	1.0	24	1.0	27	1.5
Leg pain	25	1.3	25	0.9	21	0.9	27	1.5
Other arthrosis	61	3.1	87	3.2	71	3.0	25	1.4
Spondylolyse/arthrosis vertebrae	41	2.1	58	2.2	46	1.9	23	1.3
Muscle tendon injury, shoulder/arm	30	1.5	20	0.7	38	1.6	22	1.2
Inflammation, elbow inner side	17	0.9	32	1.2	23	1.0	21	1.2
Knee bursitis	22	1.1	19	0.7	31	1.3	21	1.2
Chronic synovitis, hand/wrist	20	1.0	34	1.3	38	1.6	19	1.1
Carpometacarpall arthrosis, first joint	12	0.6	23	0.9	32	1.3	19	1.1
Other	169	8.7	254	9.5	287	12.1	166	9.3
Total	1,945	100.0	2,679	100.0	2,381	100.0	1,791	100.0

Source: NCvB statistiek, 2013-2016

NCvB statistiek data can also be analysed by gender, age and sector, as shown in Table 4. MSD-related occupational diseases are more common among men (66.4 %) than among women (33.6 %) (2016 data). The age groups most affected are the 51-60 age group (36.5 %) and the 41-50 age group (30.2 %). Finally, with regard to sectors, MSD-related occupational diseases are most common in the building and construction sector (35.1 % of the total), followed by the industry (16.3 %) and other (13.8 %) sectors (2016 data).

Table 4: Distribution of reported MSD-related occupational diseases, by gender, age and sector, 2013-2016

	2013	2014	2015	2016
Gender (%)				
Male	76.1	72.4	72.2	66.4
Female	23.9	27.6	27.8	33.6
Age (%)				
Less than 21 years	0.5	0.4	0.6	0.2
21-30 years	6.2	6.7	6.8	6.9
31-40 years	14.9	15.2	14.7	14.7

	2013	2014	2015	2016
41-50 years	30.7	33.1	31.2	30.2
51-60 years	39.8	37.0	37.8	36.5
More than 60 years	8.0	7.5	8.9	11.6
Sector (%)				
Building and construction	53.4	42.9	43.6	35.1
Industry	10.5	13.3	14.6	16.3
Healthcare and societal assistance sector	8.0	10.1	8.7	12.2
Transport and storage sector	7.4	11.3	6.7	10.4
Wholesale and retail sector	4.2	4.5	4.9	5.2
Agriculture, forestry and fishing sector	3.2	4.0	5.3	4.0
Public governance and defence department	2.7	3.3	5.0	3.0
Other	10.6	10.6	11.1	13.8
Total (N)	1,945	2,679	2,381	1,791

Source: NCvB statistiek, 2013-2016

Furthermore, with regard to the main occupational groups affected, the building/construction occupational group (excluding electricians) is by far the most affected (39.7 % in 2013; 24.1 % in 2016), as shown in Table 5. The second most affected occupational group is 'other' (7.2 % in 2013; 8.3 % in 2016). Other occupational groups affected by MSD-related occupational diseases are healthcare staff (7.2 % in 2016), other basic professions (7.0 % in 2016), and non-educated workers in mining, industry and transport (6.4 % in 2016).

Table 5: Main occupational groups affected by reported MSD-related occupational diseases, 2013-2016

Occupational group	2013	2014	2015	2016
Building/construction without electricians (%)	39.7	30.6	29.7	24.1
Healthcare staff (%)	4.3	5.3	5.1	7.2
Other basic professions (%)	3.9	6.3	5.4	7.0
Non-educated workers in mining, industry and transport (%)	6.5	7.6	5.9	6.4
Drivers of transportation means (%)	5.2	5.8	5.1	5.4
Metal workers, machine workers (%)	2.4	4.3	4.2	5.2
Other craftspeople (%)	2.0	4.1	4.3	4.2
Stand-alone machine handling workers (%)	3.1	3.3	4.1	4.2
Administrative workers (%)	5.4	5.3	5.0	4.2
Cleaning staff and household help (%)	2.2	2.9	3.3	4.0
Science and technics specialists (%)	3.4	3.0	3.3	3.5
Salespeople (%)	2.6	2.0	1.7	2.6
Providers of personal services (%)	2.1	2.4	1.8	2.6
Non-educated workers in agriculture, forestry and fishing (%)	1.7	2.4	3.4	2.0
Food processing assistants, tailors and craftsman (%)	2.1	0.6	1.9	1.9

Occupational group	2013	2014	2015	2016
Management in production and specialised services (%)	2.4	2.3	2.3	1.8
Healthcare specialists (%)	1.2	1.2	0.9	1.6
Assemblage workers (%)	1.2	1.2	1.6	1.4
Other administrative workers (%)	1.2	0.9	1.2	1.2
Electricians (%)	0.3	0.6	0.8	1.2
Other (%)	7.2	7.9	9.2	8.3
Total (N)	1,945	2,679	2,381	1,791

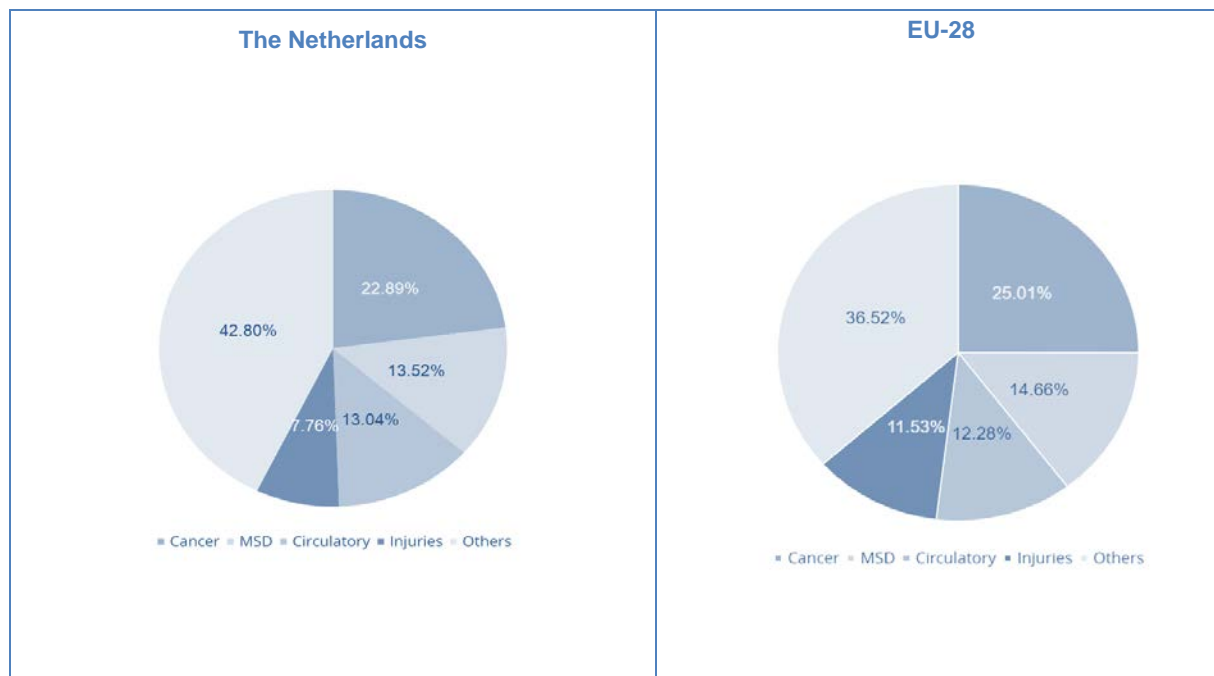
Source: NCvB statistiek, 2013-2016

3 Impact of MSDs

3.1 Health outcomes

With regard to costs and burdens related to MSDs, the available data⁽⁸⁾ on DALY rates⁽⁹⁾ show that the number of years of life lost and lived with disability resulting from work-related MSDs represent 13.52 % of the total number of years of life lost and lived with disability due to other reasons (cancer, circulatory problems, injuries, etc.), which is slightly lower than the EU-28 average (14.66 %) (see Figure 6).

Figure 6: Distribution of years of life lost and lived with disability (DALYs) per 100,000 workers, by main work-related illnesses in the Netherlands and the EU-28, 2017



Source: Panteia based on EU-OSHA, Data visualisation – The economics of OSH (2017).

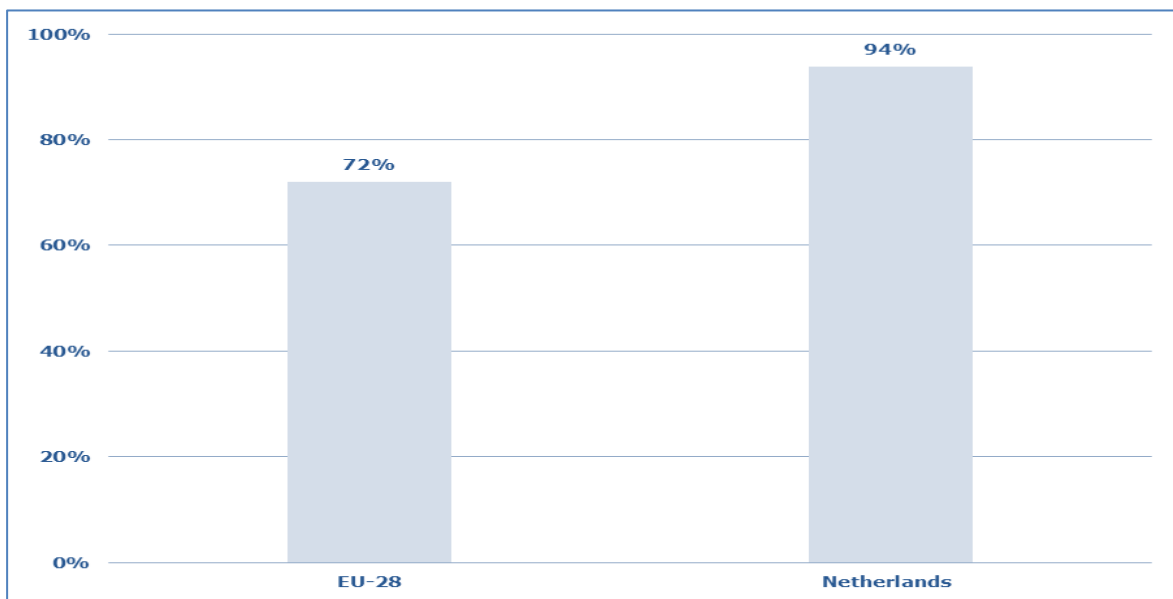
⁽⁸⁾ EU-OSHA, Data visualisation – The economics of OSH (2017). Available at: <https://visualisation.osha.europa.eu/osh-costs#!/eu-analysis-illness>

⁽⁹⁾ A DALY is the sum of years of life lost (YLL) because of work-related death and years of life lived with disability (YLD) due to work-related injury and illness. DALY rate refers to DALYs per 100,000 workers.

3.2 Employment and work outcomes

A very high proportion of Dutch companies support employees returning to work after long-term sickness: 94 % of Dutch employees work in companies where support is provided to employees returning to work after long-term sickness, whereas this percentage is much lower in the EU-28 (72 %) (data for 2014; see Figure 7).

Figure 7: Percentages of employees working in establishments with support measures for employees returning to work after long-term sickness in the EU-28 and the Netherlands, 2014



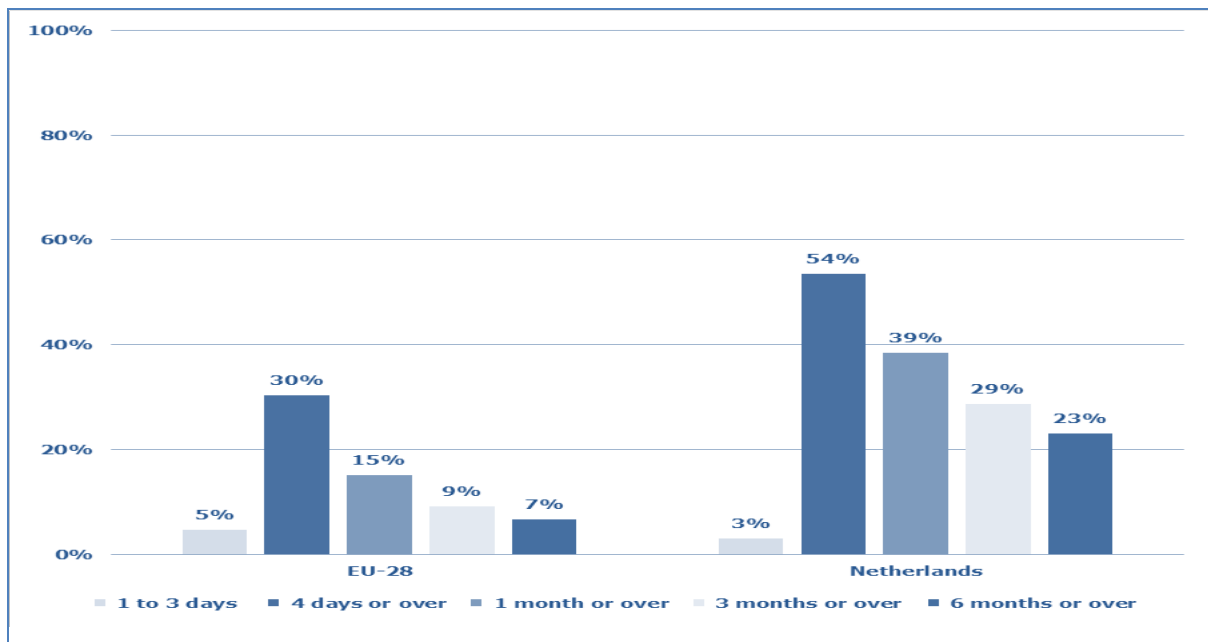
Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.

Source: Panteia based on ESENER 2 data

Figure 8 is based on publicly available data from the Labour Force Survey (LFS)¹⁰ ad hoc modules. It shows the percentages of people who reported a work-related health problem resulting in sick leave characterised by various periods off work, in the EU-28 and in the Netherlands in 2007 (no more recent data is available in the case of the Netherlands). The available data show that a higher percentage of people in the Netherlands reported longer periods off work as a result of work-related health problems that resulted in sick leave. Thus, up to 54 % of Dutch workers reported a period of 4 days or more off work, in comparison with only 30 % in the EU-28. Moreover, 23 % of Dutch workers who reported a work-related health problem resulting in sick leave had a period off work of 6 months or over, in comparison with only 7 % in the EU-28.

¹⁰ Eurostat, European Union Labour Force Survey (LFS) ad hoc module on accidents at work and other work-related health problems. Information about the survey is available at: <https://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey>

Figure 8: Percentages of people reporting a work-related health problem resulting in sick leave by period off work, in the EU-28 and the Netherlands, 2007



Source: Panteia based on LFS ad hoc module (Eurostat)

From an economic-sector perspective, the NEA shows that the construction sector has the highest percentage of workers (excluding the self-employed) suffering from back complaints (8.6 %) and complaints of the neck, shoulders, arms, wrists and hands (6.3 %) that result in a sick leave (see Table 6). Meanwhile, complaints of the hips, legs, knees or feet are experienced particularly by workers in the agriculture (7.3 %) and transportation (7.0 %) sectors. The education sector has particularly high percentages concerning psychological complaints and burnout (7.0 %), whereas the healthcare sector has higher percentages of complaints of the respiratory system (2.5 %) and digestive system (7.8 %). Finally, the sector with the highest percentage of ‘no sick leave’ is the catering industry (41 % of workers).

Table 6: Main reasons for taking sick leave the last time among workers (excluding the self-employed), by economic sector, 2017 (%)

	Economic sector												
	Agriculture	Industry	Construction	Trade	Transportation	Catering Industry	IT	Financial	Business	Governance	Education	Health care	Leisure
Back complaints	7.2	6.7	8.6	5.2	7.5	4.3	3.8	3.8	5.3	5.1	4.1	4.9	4.1
Complaints of the neck, shoulders, arms, wrists, hands	5.9	5.6	6.3	4.0	5.0	3.4	1.9	2.4	3.8	3.8	3.0	4.6	3.2

	Economic sector												
	Agriculture	Industry	Construction	Trade	Transportation	Catering Industry	IT	Financial	Business	Governance	Education	Health care	Leisure
Complaints of the hips, legs, knees or feet	7.3	5.3	6.3	4.0	7.0	4.1	1.4	1.8	2.8	3.8	2.6	3.7	3.3
Complaints of the cardiovascular system	1.3	1.7	1.5	1.1	1.4	0.3	0.7	0.6	1.0	1.3	1.2	0.9	1.0
Psychological complaints, burnout	2.6	3.9	3.7	3.6	3.3	2.7	5.1	5.6	4.1	5.2	7.0	5.7	5.1
Fatigue or lack of concentration	0.7	1.4	1.4	1.2	1.8	1.4	2.1	1.7	1.4	2.4	2.0	1.7	2.5
Conflict at work	0.1	0.5	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.5	0.5	0.4	0.5
Complaints of the respiratory system	0.7	1.8	1.1	1.3	1.8	1.1	1.0	2.4	1.3	2.2	2.2	2.5	1.8
Complaints of the digestive system	4.3	5.8	5.0	5.4	4.6	4.8	6.0	6.3	5.5	6.0	5.5	7.8	4.4
Complaints of the skin	0.0	0.7	0.6	0.4	0.6	0.4	0.4	0.1	0.4	0.5	0.5	0.4	0.2
Complaints on the ears/eyes	1.0	1.1	1.0	0.6	0.8	0.7	1.1	0.7	0.9	0.9	0.5	0.7	0.5
Influenza/the common cold	27.5	34.9	34.1	32.9	29.2	24.9	46.5	43.6	37.1	41.7	39.6	32.7	35.8
Headache	2.3	2.9	2.7	3.5	2.4	3.2	4.1	4.1	3.3	4.2	4.5	3.4	3.7
Complaints regarding pregnancy	0.4	0.3	0.2	0.6	0.4	0.5	0.2	0.8	0.8	0.6	1.4	2.5	1.1
Other	6.6	8.4	7.5	8.2	8.5	6.8	6.5	7.0	6.6	9.0	7.9	10.7	8.4
No sick leave	32.1	19.1	19.6	27.7	25.3	41.0	18.7	18.4	25.3	12.8	17.4	17.3	24.4

Source: NEA, 2017

In addition to this, data on self-employed workers are provided by the Netherlands Survey of the Self-Employed (ZEA — Zelfstandigen Enquete Arbeid¹¹) (see Table 7). According to these data, 29.1 % of self-employed workers in the Netherlands took no sick leave in 2017. The main reason for taking sick leave was influenza/the common cold (31.4 %), followed by back complaints (7.7 %) and complaints of the neck, shoulders, arms, etc. (5.5 %). Back complaints and complaints of the hips, legs, knees or feet are more common among men than among women (9.2 % and 5.4 %, respectively, for men; 5.0 % and 3.3 %, respectively, for women), whereas psychological complaints and headaches are more common among women than among men (4.2 % and 3.4 %, respectively, for women; 2.9 % and 1.3 %, respectively, for men). In terms of economic sector, self-employed agriculture and industry workers are particularly affected by back complaints (14.0 % and 10.9 %, respectively), complaints of the neck, shoulders, arms, wrists or hands (8.1 % and 6.5 %, respectively), and complaints of the hips, legs, knees or feet (8.4 % and 6.3 %, respectively). These health problems are also seen in the other sectors,

¹¹ Lautenbach, H., van der Torre, W., de Vroome, E. M. M., Janssen, B. J. M., Wouters, B. & van den Bossche, S. N. J., ZEA—Netherlands Survey of the Self-employed (Zelfstandigen Enquête Arbeid: Methodologie en globale resultaten 2017, Centraal Bureau voor de Statistiek, The Hague, 2017. Available at: https://www.monitorarbeid.tno.nl/dynamics/modules/SFIL0100/view.php?fil_id=199

although the non-commerce sector suffers more than other sectors from psychological complaints (4.0 %), and fatigue and lack of concentration (2.6 %), whereas the industry sector has a higher percentage of self-employed workers with complaints of the ears/eyes (1.3 %). The commerce sector has the highest percentage of workers reporting headaches (2.5 %).

Table 7: Main reasons for taking a sick leave the last time among the self-employed, by type of self-employed worker, gender, age and economic sector, 2017 (%)

	Total	Type of self-employed worker		Gender		Age			Economic sector			
		With hired personnel	Without hired personnel	Male	Female	15-44	45-54	55+	Agriculture	Industry	Commerce	Non-commerce
Back complaints	7.7	8.5	7.5	9.2	5.0	6.6	8.6	8.2	14.0	10.9	6.7	5.4
Complaints of the neck, shoulders, arms, wrists, hands	5.5	6.7	5.1	5.6	5.3	5.1	5.9	5.6	8.1	6.5	4.6	5.8
Complaints of the hips, legs, knees or feet	4.6	6.5	4.1	5.4	3.3	3.5	4.4	6.3	8.4	6.3	4.1	3.2
Complaints of the cardiovascular system	1.6	2.0	1.5	2.0	1.1	0.4	1.2	3.7	2.0	2.2	1.6	1.2
Psychological complaints, burnout	3.4	2.5	3.6	2.9	4.2	4.3	3.1	2.5	1.3	3.1	3.5	4.0
Fatigue or lack of concentration	1.7	1.4	1.8	1.4	2.4	1.8	2.0	1.3	0.3	1.2	1.7	2.6
Conflict at work	0.1	0.2	0.1	0.1	0.3	0.1	0.2	0.2	0.0	0.1	0.1	0.3
Complaints of the respiratory system	1.6	1.0	1.8	1.4	2.0	0.9	1.8	2.2	1.6	1.6	1.4	1.9
Complaints of the digestive system	2.8	3.4	2.6	2.5	3.3	2.8	2.7	2.8	3.2	1.9	2.8	3.1
Complaints of the skin	0.3	0.2	0.3	0.3	0.3	0.2	0.5	0.2	0.4	0.3	0.2	0.4
Complaints on the ears/eyes	0.5	0.5	0.5	0.6	0.4	0.4	0.4	0.8	0.0	1.3	0.5	0.3
Influenza/the common cold	31.4	27.7	32.8	32.4	29.7	36.7	31.2	24.9	23.9	30.4	31.7	34.2
Headache	2.0	2.0	2.0	1.3	3.4	2.3	2.5	1.3	1.6	1.3	2.5	1.7
Complaints regarding pregnancy	1.0	0.8	1.1	0.0	2.8	2.5	0.1	0.1	0.9	0.0	0.7	2.4
Other	6.5	5.7	6.7	5.9	7.7	4.7	7.5	7.9	6.1	7.1	6.0	7.4
No sick leave	29.1	30.8	28.4	29.3	28.8	27.9	27.8	31.9	28.1	25.7	31.9	26.1

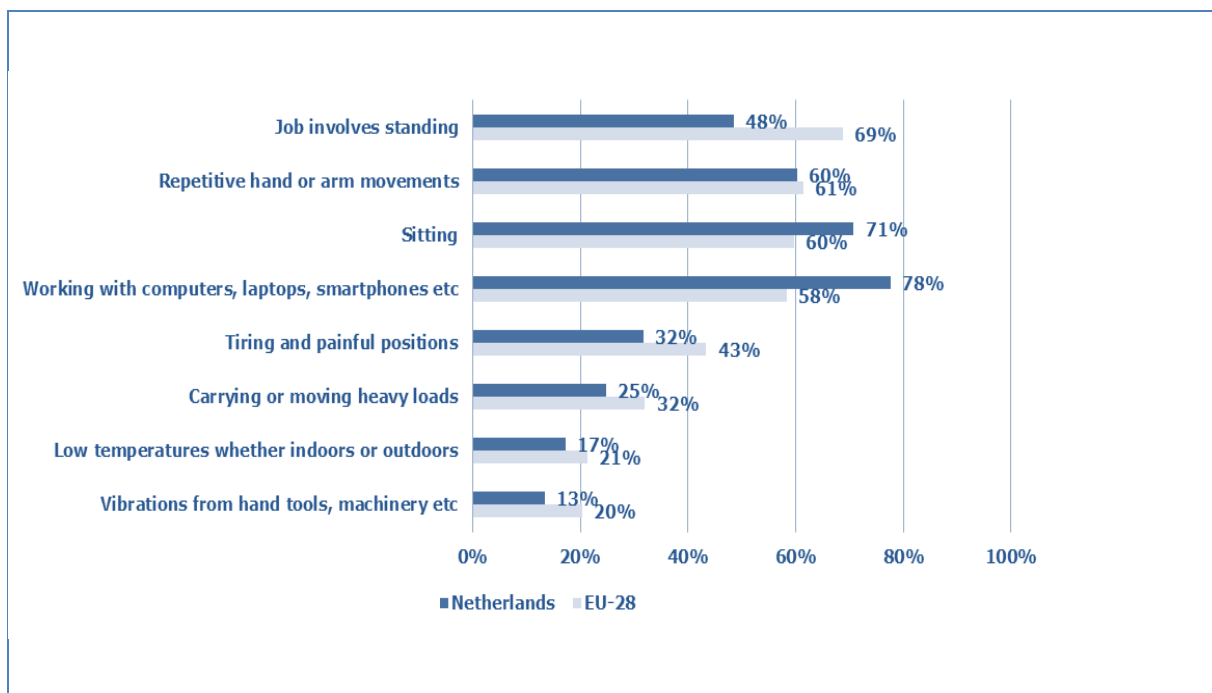
Source: ZEA, 2017 Risk factors for MSDs

4 Risks factors for MSDs

4.1 Physical factors at work

A large percentage of Dutch employees are exposed to physical factors at work that may have an influence on MSDs (see Figure 9). More precisely, 78 % and 71 % of employees work in establishments where employees work with computers/laptops and in sitting positions, respectively. Moreover, 60 % work in establishments where employees use repetitive hand/arm movements and 48 % in establishments where standing is required. Other physical risk factors are less apparent, particularly tiring/painful positions, carrying/moving heavy loads, low temperatures and the presence of vibrations.

Figure 9: Percentages of employees working in establishments where there are certain physical risk factors in the Netherlands and the EU-28, 2015 (2010 for standing)



Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.

Source: Panteia based on ESENER 2 data

A comparison with EU-level data shows that the two most important physical risk factors for workers in the Netherlands (working with computers/laptops and working in sitting positions) are much more common for Dutch workers than for their EU counterparts, and are not the same as the most important physical risk factors at EU level (work involving standing or repetitive hand/arm movements). In fact, Dutch employees seem to be less exposed to all physical risk factors than their EU counterparts, with the exception of working with computers/laptops and working in sitting positions.

In addition, the Dutch National Survey for Employers (WEA — Werkgevers Enquete Arbeidsomstandigheden¹²) provides information on the main physical health risks to workers in companies in the Netherlands as suggested by company managers (2016 data) (see Table 8). The main

¹² TNO, WEA — National Survey for Employers (Werkgevers Enquête Arbeidsomstandigheden), Leiden, 2008-2016. Available at: https://www.monitorarbeid.tno.nl/dynamics/modules/SFIL0100/view.php?fil_id=195

risk factor is physical workload (pushing, pulling and lifting), identified by 34.6 % of company managers, followed by work involving VDUs (mentioned by 28.6 % of managers) and static working postures (mentioned by 14.1 % of managers). Of the managers surveyed, 15.9 % did not identify any risks. The percentages of managers identifying the various physical risk factors are lowest among the smallest companies, whereas they are highest among companies with 50-99 workers, together with companies of 100 or more workers.

Table 8: Main physical health risks to workers in companies in the Netherlands, as suggested by company managers, 2016 (%)

Physical risk factor	Total	Enterprise size				
		2-4 workers	5-9 workers	10-49 workers	50-99 workers	100+ workers
Physical workload (pushing, pulling, lifting)	34.6	28.3	41.9	42.1	52.8	48.5
VDU use	28.6	24.7	27.0	36.7	47.2	51.8
Static working posture	14.1	11.9	15.7	17.7	18.4	18.2
Noise	12.3	10.4	14.6	15.5	15.6	11.6
Hazards, crushing and cutting	5.7	3.3	9.4	8.0	8.0	9.0
Hazards, falls	5.3	4.2	6.3	7.2	8.8	7.2
Hazards, collision with vehicles	5.8	3.8	6.6	10.1	11.1	9.6
Chemical or biological materials	3.9	3.2	3.7	5.4	7.3	7.5
Radiation	1.1	1.0	1.5	0.7	0.4	1.6
Other risks	3.1	2.9	3.5	3.1	5.3	3.2
No risks	15.9	21.5	10.2	8.4	4.3	1.8
DK/NA	5.6	7.3	5.5	2.0	1.0	0.6

Source: WEA, 2016

The NEA provides data on physical factors affecting work among Dutch workers (see Table 9). From an economic-sector perspective, workers in the IT and financial sectors devote the highest number of hours on a daily basis to VDU work (6.91 and 6.64 hours, respectively). Agriculture seems to be the sector in which workers suffer the most from physical factors: 36.1 % of workers in the agriculture sector regularly need to apply a lot of force during their job, and 54.3 % make repetitive movements regularly. In addition, 28.8 % of workers in the agriculture sector consider that their job is sometimes dangerous, 20.7 % state that they sometimes use equipment that causes vibrations and 36.2 % sometimes need to work in awkward positions. A high percentage of workers in the construction sector also report the regular use of equipment causing vibrations (29.1 %) and regularly working in awkward positions (22.3%). Finally, 8.6 % of workers in the transportation sector consider that their job is regularly dangerous, whereas 39.3 % of workers in the catering sector sometimes have to apply a lot of force during their job.

Table 9: Physical factors affecting work among Dutch workers (excluding the self-employed), by economic sector, 2017

	Economic sector												
	Agriculture	Industry	Construction	Trade	Transportation	Catering	IT	Financial	Business	Governance	Education	Health care	Leisure
Is your job dangerous? (%)													
Yes, regularly	3.6	6.8	9.5	2.6	8.6	4.1	0.2	0.4	3.7	8.4	1.1	3.6	2.4
Yes, sometimes	28.8	25.2	34.4	14.8	28.1	25.3	3.4	2.7	14.4	17.	7.8	26.8	12.6
Do you regularly need to apply a lot of force during your job? (%)													
Yes, regularly	36.1	25.2	33.7	29.5	27.0	26.4	2.3	1.5	14.0	6.9	4.6	29.9	13.8
Yes, sometimes	33.7	23.7	21.7	27.7	23.2	39.3	7.9	2.9	13.4	11.9	13.3	21.5	20.8
Do you use any equipment, machines or vehicles that cause vibrations? (%)													
Yes, regularly	20.9	18.2	29.1	10.0	22.9	6.8	0.7	1.1	7.4	6.2	2.2	3.7	5.4
Yes, sometimes	20.7	15.3	18.7	9.7	11.0	8.9	1.9	0.8	6.6	6.0	3.9	4.8	7.9
Do you need to work in awkward positions? (%)													
Yes, regularly	16.3	12.3	22.3	10.8	12.1	10.0	1.9	2.2	8.5	5.8	3.7	17.5	8.5
Yes, sometimes	36.2	29.8	30.0	28.0	25.3	28.8	11.9	9.0	18.6	18.1	19.6	36.3	23.9
Does your job involve repetitive movements? (%)													
Yes, regularly	54.3	39.0	40.7	42.7	44.5	48.7	23.7	24.5	30.7	25.2	13.1	31.8	32.2
Yes, sometimes	26.1	23.6	24.7	22.5	21.2	25.9	15.1	14.5	17.7	17.3	16.5	21.7	20.4
In your work place, is there so much noise that you need to speak loudly to make yourself understood? (%)													
Yes, regularly	13.3	19.9	15.7	5.8	10.9	9.3	1.5	2.0	5.4	3.8	5.5	2.6	6.4
Yes, sometimes	31.0	26.4	33.8	16.1	23.4	26.4	9.3	8.1	14.3	16.8	21.3	11.8	16.8
What number of hours in a day do you do VDU work?													
	1.82	3.78	3.48	3.30	3.32	1.56	6.91	6.64	4.99	5.63	4.13	3.36	3.96

Source: NEA, 2017

According to data extracted from the 2017 ZEA (see Table 10), 33.4 % of self-employed workers say that their jobs involve regular repetitive movements, and 22.7 % say that they need to apply a lot of force during their jobs. Furthermore, 33.4 % consider that they work in awkward positions sometimes, and 23.5 % sometimes apply a lot of force during their job. Regarding gender differences, self-employed men are generally more exposed to physical factors than self-employed women. Finally, from an economic-sector perspective, self-employed industry and agriculture workers are the most affected by physical factors of any of the economic sectors.

Table 10: Physical factors affecting the work of the self-employed, 2017

	Total	Type of self-employed worker		Gender		Age			Economic sector			
		With hired personnel	Without hired personnel	Male	Female	15-44	45-54	55+	Agriculture	Industry	Commerce	Non-commerce
Is your job dangerous? (%)												
Yes, regularly	2.7	2.9	2.6	3.8	0.8	3.1	2.8	2.1	4.0	6.1	2.1	1.4
Yes, sometimes	19.8	19.4	19.8	25.3	9.9	20.8	19.7	18.6	38.8	42.1	12.7	13.5
Do you regularly need to apply a lot of force during your job? (%)												
Yes, regularly	22.7	25.2	21.9	28.3	12.7	25.4	23.1	19.0	39.6	51.5	15.2	13.9
Yes, sometimes	23.5	30.8	21.8	25.6	20.0	22.3	24.4	24.2	41.3	29.1	20.9	19.2
Do you use any equipment, machines or vehicles that cause vibrations? (%)												
Yes, regularly	13.1	11.7	13.4	17.7	4.8	13.5	14.3	11.2	24.6	36.6	6.9	6.6
Yes, sometimes	15.8	19.0	14.9	20.5	7.4	15.0	16.9	15.8	40.0	33.0	10.2	7.8
Do you need to work in awkward positions? (%)												
Yes, regularly	12.0	10.3	12.7	14.5	7.5	13.4	11.6	10.7	13.9	27.5	7.0	11.8
Yes, sometimes	33.4	36.0	32.3	35.0	30.4	34.5	35.1	30.2	52.1	48.3	25.2	33.9
Does your job involve repetitive movements? (%)												
Yes, regularly	33.4	35.0	33.0	35.5	29.6	36.5	32.6	30.3	46.5	49.0	26.3	33.4
Yes, sometimes	25.4	30.6	23.9	26.1	24.3	24.4	27.6	24.6	35.7	33.4	22.9	21.9
In your work place, is there so much noise that you need to speak loudly to make yourself understood? (%)												
Yes, regularly	6.0	4.9	6.3	7.9	2.7	7.8	5.6	4.2	7.8	16.6	3.1	4.7
Yes, sometimes	20.0	20.7	19.7	25.4	10.3	21.7	19.9	17.9	38.6	44.3	12.8	12.7

Source: ZEA, 2017

In addition to previous statistical data, the Health Council of the Netherlands has conducted several concrete studies intended to examine various occupational risks covered by the Dutch Working Conditions Act and its associated regulations. Summaries of some selected MSD-related studies are presented below:

- Study 1 ⁽¹³⁾: this study examined the question of whether there are current or longer term options for deriving concrete health-related or safety-related occupational exposure limits for repetitive movements at work. According to the results of this study:
 - Employees who regularly perform repetitive movements can experience health-related complaints. This concerns specific and non-specific health conditions that affect the upper extremities. Negative health effects not only can have an impact on people's well-being in daily life, but can also lead to a decrease in productivity at work and sick leave.
 - Repetitive movements at work form a health risk as far as specific disorders of the upper extremities, such as carpal tunnel syndrome and lateral epicondylitis ('tennis elbow'),

⁽¹³⁾ Health Council of the Netherlands, *Repeterende handelingen tijdens werk [Repetitive actions during work]*, 2013. Available at: https://www.gezondheidsraad.nl/binaries/gezondheidsraad/documenten/adviezen/2013/04/19/repeterende-handelingen-tijdens-werk-risicos-voor-de-gezondheid/dossier-repeterende-handelingen-tijdens-werk-risico_s-voor-de-gezondheid.pdf

are concerned. There are also indications that repetitive movements represent a health risk for some types of non-specific complaints of the upper extremities.

- Study 2 ⁽¹⁴⁾: this study examined the question of whether there are current or longer term options for deriving concrete health-related or safety-related occupational limits for applying force, pushing and pulling in work situations. According to the results of this study:
 - The consequences of applying force, pushing and pulling include locomotor system complaints, particularly lower back pain and shoulder complaints. Many studies have investigated the onset of lower back or shoulder pain during the preceding 12 months. It is known that nearly a quarter of people affected are likely to develop chronic complaints with clear adverse health effects.
 - There are signs that applying force, pushing and pulling put workers at risk of developing lower back pain. Furthermore, there are signs that applying force, pushing and pulling put workers at risk of developing shoulder complaints.
- Study 3 ⁽¹⁵⁾: this study investigated whether there are current or longer term options for deriving concrete health-based or safety-based occupational exposure limits for computer use. According to the results of this study:
 - Workers using a computer may develop health complaints. One in three Dutch people states that they experience arm, wrist, hand, shoulder or neck complaints 'regularly' or 'persistently'. These complaints are described as pain, stiffness and tingling/numbness. It is known that a proportion of these people may develop chronic complaints with clear adverse health effects. This may not only affect daily well-being, but also result in a decrease in productivity at work and sick leave.
 - Computer use not only leads to physical complaints. Sleeping disorders, psychological complaints and eye complaints are also reported by workers who use computers. However, there are no suitable studies available that quantify these complaints.
- Study 4 ⁽¹⁶⁾: this study investigated whether there are current or longer term options for deriving concrete health-based or safety-based occupational exposure limits for manual lifting. According to the results of this study:
 - The relationship between manual lifting and lower back pain has been investigated. This shows that (regularly) lifting 23 kilograms increases the number of workers with lower back pain by 3.3 per 100 workers per year. In nearly a quarter of these workers, the complaints will develop into chronic lower back pain.
 - In addition to lower back pain, complaints of the hips, knees, neck and shoulder region or arms might develop as a result of occupational lifting.
- Study 5 ⁽¹⁷⁾: in this study, at the request of the Minister of Social Affairs and Employment, the Health Council of the Netherlands investigated whether at the time of the study there were any

⁽¹⁴⁾ Health Council of the Netherlands, *Kracht zetten, duwen en trekken in werksituaties* [Pushing, pulling and applying force in work situations], 2012. Available at:

<https://www.gezondheidsraad.nl/binaries/gezondheidsraad/documenten/adviezen/2012/12/20/kracht-zetten-duwen-en-trekken-in-werksituaties/dossier-kracht-zetten-duwen-en-trekken-in-werksituaties.pdf>

⁽¹⁵⁾ Health Council of the Netherlands, *Beeldschermwerken* [Computer use at work], 2012. Available at:

<https://www.gezondheidsraad.nl/binaries/gezondheidsraad/documenten/adviezen/2012/12/20/beeldschermwerken/dossier-beeldschermwerken.pdf>

⁽¹⁶⁾ Health Council of the Netherlands, *Tillen tijdens werk* [Manual lifting at work], 2012. Available at:

<https://www.gezondheidsraad.nl/binaries/gezondheidsraad/documenten/adviezen/2012/12/20/tillen-tijdens-werk/dossier-tillen-tijdens-werk.pdf>

⁽¹⁷⁾ Health Council of the Netherlands, *Staan, gekniel en gehurkt werken* [Standing, kneeling and squatting at work], 2011.

Available at: <https://www.gezondheidsraad.nl/binaries/gezondheidsraad/documenten/adviezen/2011/12/23/staand-gekniel-en-gehurkt-werken/dossier-staand-gekniel-en-gehurkt-werken.pdf>

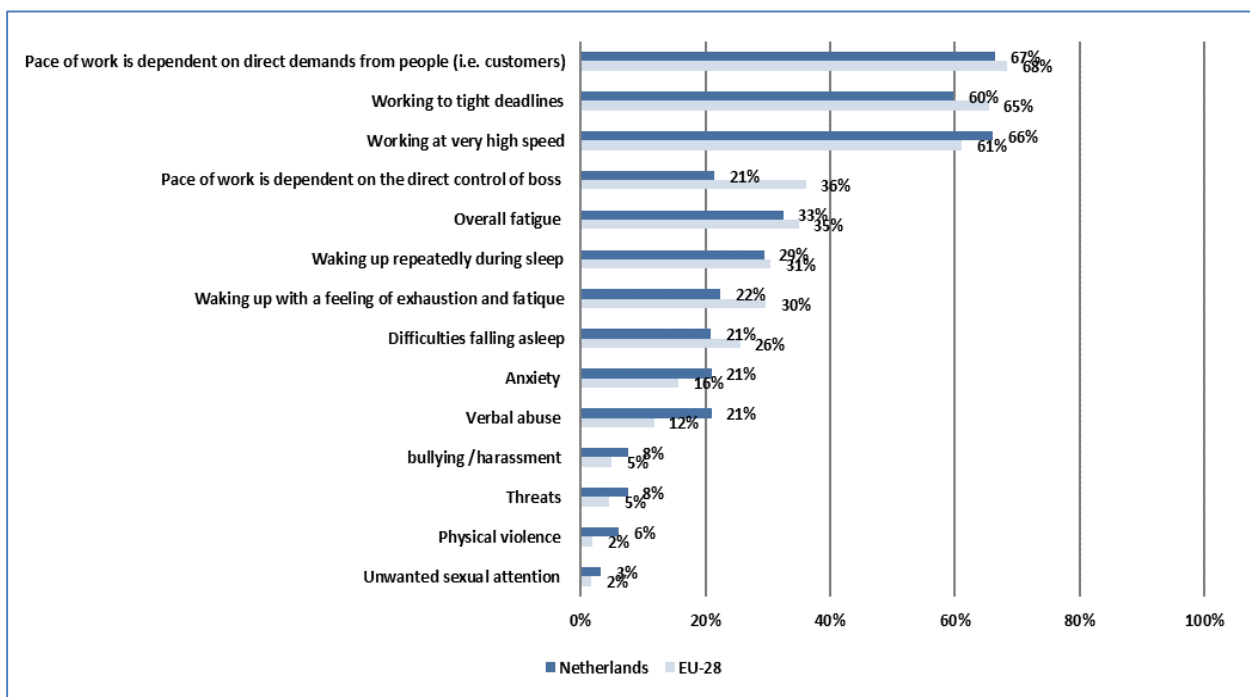
new scientific insights into health-based or safety-based limit values for work performed while standing, kneeling or squatting. According to the results of the study:

- o Working in a standing position can result in pain in the lower back, legs, knees and feet. Working in a standing position can also lead to varicose veins in the legs. Pregnant women who stand for sustained periods at work have a higher risk of premature birth.
- o Working in a squatting position can cause lower back pain and pain in the knees.
- o Working in a kneeling position can also lead to lower back pain. Another adverse effect of working in this position is osteoarthritis of the knee joint.

4.2 Organisational and psychosocial risk factors

Organisational and psychosocial risk factors also play a role as potential triggers of MSDs (see Figure 10). The most relevant of these factors among Dutch employees relate to the pace of work being dependent on other people’s demands, working at a very high speed and tight deadlines (more than 60 % of employees work in establishments where these risks are present). Other relatively important risks include overall fatigue or, generally speaking, difficulties with sleep.

Figure 10: Percentages of employees working in establishments where the following organisational/psychosocial risk factors are present in the Netherlands and the EU-28, 2015



Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis - Source: Panteia based on ESENER 2 data

A comparison with EU-level data shows that the general order of importance of the different organisational and psychosocial risk factors is similar to that seen in the Netherlands, although working at very high speed seems to be a more important risk factor among Dutch employees than the EU average. The available data show that Dutch employees are generally less exposed than their EU counterparts to the organisational and psychosocial risk factors identified, with the exceptions of being made to work at a very high speed, anxiety and verbal abuse.

The NEA provides interesting data concerning psychosocial factors (2017 data) (see Table 11). More precisely, 59.5 % of Dutch workers (excluding the self-employed) regularly decide how their work is done; 60.6 % regularly decide the order in which their tasks are performed; 55.1 % are regularly able to control their own work pace; 67.8 % regularly need to find solutions to do their jobs; 48.7 % are regularly able to take leave when they want; and 24.5 % are regularly able to determine their own working hours. These percentages are higher among male workers than among female workers. Moreover, the percentages of workers answering 'regularly' to these questions increase as worker age increases, whereas the percentages of workers answering 'sometimes' increase as worker age decreases.

In addition to this, the NEA also includes some interesting questions that require answers to be provided on a scale of 1 (meaning never) to 4 (meaning always), or on a scale of 1 (meaning never) to 7 (meaning every day). On a scale of 1 to 4, workers' average score when asked if they need to get a lot of work done is 2.51, the average score when asked if they need to work extra hard is 2.26 and the average score for a question about work being emotionally demanding is 1.70. These scores are higher among female workers and among workers aged from 25 to 54 years.

On a scale of 1 to 7, workers' average score when asked about experiencing burnout symptoms is 2.13, the average score when asked about feeling empty/numb at the end of the day is 2.72, the average score when asked about feeling tired when confronted with work is 2.19 and the average score when asked about feeling completely exhausted because of work is 1.96. These scores are higher among women than among men.

Table 11: Psychosocial factors affecting work among Dutch workers (excluding the self-employed), by gender and age, 2017

	Total	Gender		Age			
		Male	Female	15-24	25-54	55-64	65-75
Do you get to decide how your work is done? (%)							
Yes, regularly	59.5	64.9	53.6	32.3	63.6	67.0	69.6
Yes, sometimes	27.7	25.2	30.5	45.7	25.7	20.6	17.4
Do you get to decide the order in which your tasks are performed? (%)							
Yes, regularly	60.6	63.3	57.7	33.3	65.2	66.9	65.9
Yes, sometimes	24.9	23.9	26.0	38.5	23.5	19.3	16.1
Are you able to control your own work pace? (%)							
Yes, regularly	55.1	60.3	49.4	35.1	57.8	61.2	69.9
Yes, sometimes	29.2	27.7	30.8	40.4	28.5	23.5	16.9
Do you need to find solutions yourself to do your job? (%)							
Yes, regularly	67.8	71.7	63.5	42.7	73.0	70.9	63.8
Yes, sometimes	27.4	24.0	31.2	46.3	23.6	24.8	28.6
Are you able to take a leave when you want? (%)							
Yes, regularly	48.7	54.8	41.9	41.1	48.7	53.0	67.4
Yes, sometimes	33.7	32.4	35.2	42.5	33.6	27.9	21.2

	Total	Gender		Age			
		Male	Female	15-24	25-54	55-64	65-75
Are you able to determine your own working hours?							
Yes, regularly	24.5	26.9	21.9	21.0	24.5	26.0	40.4
Yes, sometimes	26.0	26.1	25.8	31.3	26.2	21.3	19.1
Do you need to work really fast? (1 = never, 4 = always)							
Average	2.37	2.34	2.39	2.36	2.39	2.34	2.01
Do you need to get a lot of work done? (1 = never, 4 = always)							
Average	2.51	2.47	2.56	2.29	2.58	2.52	2.08
Do you need to work extra hard? (1 = never, 4 = always)							
Average	2.26	2.23	2.30	2.11	2.32	2.23	1.80
Is your work emotionally demanding (1 = never, 4 = always)?							
Average	1.70	1.63	1.78	1.37	1.77	1.77	1.51
Do you experience burnout symptoms? (1 = never, 7 = every day)							
Average	2.13	2.08	2.17	1.82	2.20	2.20	1.57
At the end of the day, I feel empty/numb (1 = never, 7 = every day)							
Average	2.72	2.72	2.72	2.19	2.81	2.92	2.00
When I get up in the morning and am confronted with my work I feel tired (1 = never, 7 = every day)							
Average	2.19	2.17	2.22	2.00	2.27	2.14	1.47
I feel completely exhausted because of my work (1 = never, 7 = every day)							
Average	1.96	1.92	2.00	1.78	2.00	2.03	1.43

Source: NEA, 2017

According to 2017 data from the NEA, from an economic-sector perspective, the IT sector is the economic sector with the highest percentages of workers who report having the capacity to decide and control several work factors, whereas the catering sector generally has the lowest percentages (see Table 12). More precisely, 77.7 % of Dutch workers in the IT sector can regularly decide how their work is carried out (38.8 % in the catering sector); 76.9 % can regularly decide the order in which tasks are performed (42.7 % in the catering sector); 71.9 % can control their own work pace (37.3 % in the catering sector); 87.9 % can find solutions themselves to do their jobs (47.3 % in the agriculture sector); 68.5 % are able to take leave when they want (21.6 % in the education sector); and 43.7 % can determine their own working hours (17.3 % in the healthcare sector).

Table 12: Psychosocial factors affecting Dutch workers (excluding the self-employed), by economic sector, 2017

	Economic sector												
	Agriculture	Industry	Construction	Trade	Transportation	Catering	IT	Financial	Business	Governance	Education	Health care	Leisure
Do you get to decide how your work is done? (%)													
Yes, regularly	47.7	63.3	70.5	51.6	52.2	38.8	77.7	70.4	63.8	71.0	64.6	52.8	66.5
Yes, sometimes	32.3	24.5	24.5	31.6	26.9	41.9	19.1	20.3	24.1	22.1	27.3	32.8	23.9
Do you get to decide the order in which your tasks are performed? (%)													
Yes, regularly	43.7	63.1	70.5	54.3	45.4	42.7	76.9	76.2	67.2	75.4	60.9	54.2	65.0
Yes, sometimes	23.7	22.8	23.7	27.5	25.8	35.0	19.1	16.4	20.9	17.7	25.8	30.7	22.5
Are you able to control your own work pace? (%)													
Yes, regularly	54.6	61.8	64.6	51.5	49.1	37.3	71.9	67.4	62.3	66.9	48.9	42.8	59.7
Yes, sometimes	29.9	26.7	27.5	30.9	29.7	35.7	21.8	23.0	26.3	25.1	31.7	34.2	26.8
Do you need to find solutions yourself to do your job? (%)													
Yes, regularly	47.3	67.1	77.5	58.5	58.4	47.9	87.9	78.4	69.5	78.7	76.9	68.3	70.5
Yes, sometimes	38.3	27.0	20.2	34.3	34.7	42.0	10.9	19.3	25.4	19.4	21.3	28.9	25.3
Are you able to take leave when you want? (%)													
Yes, regularly	57.5	58.3	58.8	46.1	45.5	39.2	68.5	62.7	55.7	64.6	21.6	35.2	53.6
Yes, sometimes	31.4	31.5	34.4	38.3	34.9	42.3	25.6	27.8	31.6	27.4	24.4	39.5	33.1
Are you able to determine your own working hours?													
Yes, regularly	23.0	21.6	18.3	19.4	20.6	19.5	43.7	44.0	29.2	45.2	17.4	17.3	29.0
Yes, sometimes	27.1	20.9	22.4	27.6	21.2	29.9	33.5	30.7	29.9	28.6	22.3	23.2	29.7
Do you need to work really fast? (1 = never, 4 = always)													
Average	2.37	2.29	2.38	2.40	2.31	2.68	2.32	2.40	2.38	2.24	2.31	2.40	2.25
Do you need to get a lot of work done? (1 = never, 4 = always)													
Average	2.40	2.46	2.49	2.45	2.35	2.54	2.48	2.57	2.51	2.44	2.73	2.62	2.42

Economic sector													
	Agriculture	Industry	Construction	Trade	Transportation	Catering	IT	Financial	Business	Governance	Education	Health care	Leisure
Do you need to work extra hard? (1 = never, 4 = always)													
Average	2.10	2.17	2.23	2.23	2.16	2.38	2.24	2.32	2.25	2.17	2.46	2.36	2.20
Is your work emotionally demanding (1 = never, 4 = always)?													
Average	1.42	1.56	1.51	1.49	1.56	1.50	1.68	1.71	1.61	1.78	2.04	2.09	1.72
Do you experience burnout symptoms? (1 = never, 7 = every day)													
Average	1.87	2.13	2.03	2.01	1.98	2.00	2.17	2.19	2.11	2.12	2.45	2.26	2.00
At the end of the day, I feel empty/numb (1 = never, 7 = every day)													
Average	2.38	2.78	2.71	2.53	2.57	2.47	2.78	2.81	2.66	2.77	3.16	2.86	2.49
When I get up in the morning and am confronted with my work I feel tired (1 = never, 7 = every day)													
Average	1.98	2.22	2.10	2.13	2.04	2.06	2.31	2.31	2.22	2.18	2.37	2.23	2.09
I feel completely exhausted because of my work (1 = never, 7 = every day)													
Average	1.85	2.03	1.95	1.92	1.87	2.01	1.95	1.94	1.96	1.84	2.14	1.98	1.80

Source: NEA, 2017

On a scale of 1 to 4, the average score for the question about the need to work really fast is 2.68 for the catering sector, the average score for the question about the need to get a lot of work done is 2.73 for the education sector, the average score for the question about the need to work extra hard is 2.46 for the education sector and the average score for the question about work being emotionally demanding is 2.09 for healthcare professionals.

Finally, on a scale of 1 to 7, the education sector has the highest average scores for questions about the following four issues: experiencing burnout symptoms (2.45), feeling empty/numb at the end of the day (3.16), feeling tired when confronted with work (2.37) and feeling completely exhausted because of work (2.14).

Finally, with regard to the main psychosocial health risk factors in companies as suggested by managers, according to 2016 WEA data 48.4 % of managers highlight the presence of mental workload and 10.7 % suggest the fact that working at night and/or in shifts is a risk factor (see Table 13). The percentage of managers highlighting these risks is higher as company size increases.

Table 13: Most common psychosocial health risk factors in companies as suggested by company managers, 2016 (%)

	Total	Enterprise size				
		2-4 workers	5-9 workers	10-49 workers	50-99 workers	100+ workers
Mental workload	48.4	43.2	48.9	57.8	65.9	76.9
Emotional workload	7.3	6.4	7.6	7.1	15.0	18.0
Aggression and violence	4.8	3.6	4.7	5.5	11.3	17.7
Working at night and/or in shifts	10.7	7.9	10.4	16.1	22.1	27.5
Repetitive work	6.0	3.8	6.8	10.0	13.4	13.8

Source: WEA, 2016

4.3 Sociodemographic risk factors

The NEA provides data on physical factors affecting work among Dutch workers (excluding the self-employed). As shown in Table 14, 4.3 % of workers consider that their job is regularly dangerous, whereas 19 % say that it is sometimes dangerous; 21 % of Dutch workers say that they have to apply a lot of force regularly, and 20.3 % say that they have to do so sometimes. Furthermore, 9.5 % use equipment or machinery that causes vibrations regularly (8.4 % sometimes); 10.8 % need to work in awkward positions regularly (25.7 % sometimes); 34.2 % make repetitive movements at work regularly (20.6 % sometimes); and 7.5 % regularly need to speak loudly to be understood (18.1 % sometimes). On average, Dutch workers spend 4.01 hours a day doing VDU work.

From a gender perspective, these percentages are higher among men than among women. With regard to age, in most cases it is the youngest workers (15-24 age group) who are more likely to be exposed to the abovementioned physical factors, such as having to apply a lot of force, vibrations, making repetitive movements, etc. However, working in awkward positions or having to speak loudly is more common among workers aged 25-54 and 55-64 years.

Table 14: Physical factors affecting Dutch workers (excluding the self-employed), by gender and age, 2017

	Total	Gender		Age			
		Male	Female	15-24	25-54	55-64	65-75
Is your job dangerous? (%)							
Yes, regularly	4.3	6.4	1.9	3.6	4.7	3.6	2.3
Yes, sometimes	19.0	22.8	14.9	20.7	18.9	18.7	12.6

	Total	Gender		Age			
		Male	Female	15-24	25-54	55-64	65-75
Do you regularly need to apply a lot of force during your job? (%)							
Yes, regularly	21.0	23.2	18.5	30.9	19.5	18.9	12.0
Yes, sometimes	20.3	21.3	19.3	33.0	17.6	19.2	21.0
Do you use any equipment, machine or vehicle that causes vibrations? (%)							
Yes, regularly	9.5	15.2	3.1	9.7	9.4	9.8	7.5
Yes, sometimes	8.4	12.2	4.2	10.1	7.9	8.6	9.2
Do you need to work in awkward positions? (%)							
Yes, regularly	10.8	11.6	9.9	9.6	11.1	11.2	6.8
Yes, sometimes	25.7	25.4	26.0	29.2	24.8	26.6	18.9
Does your job involve repetitive movements? (%)							
Yes, regularly	34.2	33.7	34.7	46.8	31.4	34.6	25.6
Yes, sometimes	20.6	22.3	18.8	25.2	19.9	19.7	17.2
In your workplace, is there so much noise you need to speak loudly to make yourself understood? (%)							
Yes, regularly	7.5	10.6	4.0	7.0	7.6	8.2	4.1
Yes, sometimes	18.1	21.9	14.0	20.4	17.7	18.4	14.3
What number of hours in a day do you do VDU work?							
	4.01	3.98	4.05	2.04	4.54	3.93	2.82

Source: NEA, 2017

According to the 2017 ZEA, 91.0 % of self-employed workers in the Netherlands regularly decide how work is done; 89.1 % decide the order of their tasks; 84.2 % are able to control their own work pace; 88.7 % can find solutions themselves to do their job; and 60.5 % are able to take leave when they want (see Table 15).

On a scale of 1 (meaning never) to 4 (meaning always), the question about the need to work really fast has an average score of 2.19 among self-employed workers in the Netherlands; the question about the need to get a lot of work done has a score of 2.39; and question about the need to work extra hard has a score of 2.19. These scores are higher particularly among the self-employed with hired personnel (than among those without hired personnel).

Finally, on a scale of 1 (meaning never) to 7 (meaning everyday), the question about experiencing burnout symptoms has an average score of 1.84 among the self-employed in the Netherlands; the question about feeling empty/numb at the end of the day has a score of 2.29; the question about feeling tired when confronted with work has a score of 1.85; and the question about feeling completely exhausted because of work has a score of 1.61. These scores are higher among the self-employed with hired personnel (than among those without hired personnel). No significant differences or trends can be detected in terms of age or gender, but there are differences concerning economic sector: scores for these questions are higher among workers in the non-commerce sector.

Table 15: Psychosocial factors affecting work of the self-employed, 2017 (Source: ZEA, 2017)

	Total	Type of self-employed worker		Gender		Age			Economic sector			
		With hired personnel	Without hired personnel	Male	Female	15-44	45-54	55+	Agriculture	Industry	Commerce	Non-commerce
Do you get to decide how your work is done? (%)												
Yes, regularly	91.0	89.5	91.6	91.0	91.1	88.4	91.5	93.9	88.7	90.4	91.7	90.9
Yes, sometimes	7.6	9.4	7.1	7.8	7.4	9.9	7.5	4.9	9.5	8.3	6.8	8.3
Do you get to decide the order in which your tasks are performed? (%)												
Yes, regularly	89.1	89.3	89.1	88.9	89.5	86.3	90.3	91.5	88.0	87.9	89.9	88.8
Yes, sometimes	8.9	9.0	8.9	9.2	8.4	10.8	8.1	7.2	10.4	10.3	7.9	9.4
Are you able to control your own work pace? (%)												
Yes, regularly	84.2	80.4	85.0	85.0	82.7	79.7	85.1	88.9	88.1	87.1	83.6	81.9
Yes, sometimes	13.6	16.6	13.0	13.1	14.3	17.6	12.7	9.3	10.5	10.7	13.	15.6
Do you need to find solutions yourself to do your job? (%)												
Yes, regularly	88.7	88.9	88.8	89.6	87.1	88.2	89.8	88.3	81.6	88.9	89.5	89.6
Yes, sometimes	10.0	9.9	10.0	9.5	11.0	10.7	8.9	10.3	16.4	9.7	9.2	9.7
Are you able to take leave when you want? (%)												
Yes, regularly	60.5	42.7	65.3	60.8	60.1	56.6	61.2	64.9	49.5	62.1	60.7	63.1
Yes, sometimes	29.8	40.9	26.9	30.6	28.4	33.9	29.3	25.2	36.8	32.1	29.2	27.2
Do you need to work really fast? (1 = never, 4 = always)												
Average	2.19	2.40	2.14	2.25	2.09	2.27	2.21	2.07	2.22	2.27	2.23	2.06
Do you need to get a lot of work done? (1 = never, 4 = always)												
Average	2.39	2.67	2.32	2.45	2.28	2.48	2.42	2.24	2.50	2.44	2.39	2.31
Do you need to work extra hard? (1 = never, 4 = always)												
Average	2.19	2.45	2.12	2.24	2.09	2.30	2.22	2.01	2.22	2.21	2.20	2.15
Do you experience burnout symptoms? (1 = never, 7 = every day)												
Average	1.84	1.96	1.80	1.84	1.83	1.96	1.83	1.68	1.77	1.82	1.78	1.99
At the end of the day, I feel empty/numb (1 = never, 7 = every day)												
Average	2.29	2.44	2.25	2.34	2.21	2.38	2.34	2.14	2.24	2.43	2.20	2.41
When I get up in the morning and am confronted with my work I feel tired (1 = never, 7 = every day)												
Average	1.85	1.96	1.82	1.86	1.83	2.03	1.83	1.64	1.83	1.83	1.82	1.95
I feel completely exhausted because of my work (1 = never, 7 = every day)												
Average	1.61	1.69	1.59	1.64	1.56	1.73	1.58	1.50	1.63	1.71	1.55	1.66

The NEA provides information on the main reasons for taking sick leave among Dutch workers (excluding the self-employed) (2017 data; see Table 16). The main reason by far, given by 35.2 % of workers, was influenza or the common cold. Other reasons mentioned are 'other' (8.3 %), complaints of the digestive system (5.8 %) and back complaints (5.4 %), and 22.2 % of Dutch workers stated that they had not taken sick leave at all. From a gender perspective, back complaints (6.4 %) and complaints of the hips, legs, knees or feet (4.5 %) are particularly common among men, whereas psychological complaints (5.4 %), complaints of the digestive system (6.6 %) and headache (4.2 %) are more frequent among women. Finally, considering age differences, workers from the 55-64 year age group are more likely to suffer from complaints of the back, neck, arms, hips, legs, etc., of the respiratory system or of the ears/eyes, whereas workers in the 25-54 year age group experience more psychological complaints, fatigue or complaints of the digestive system, among others. Meanwhile, workers aged 15-24 or 65-75 are those with the highest percentages of 'no sick leave' (43.1 % and 40.9 %, respectively).

Table 16: Main reasons for the last sick leave taken among Dutch workers (excluding the self-employed), by gender and age, 2017 (%)

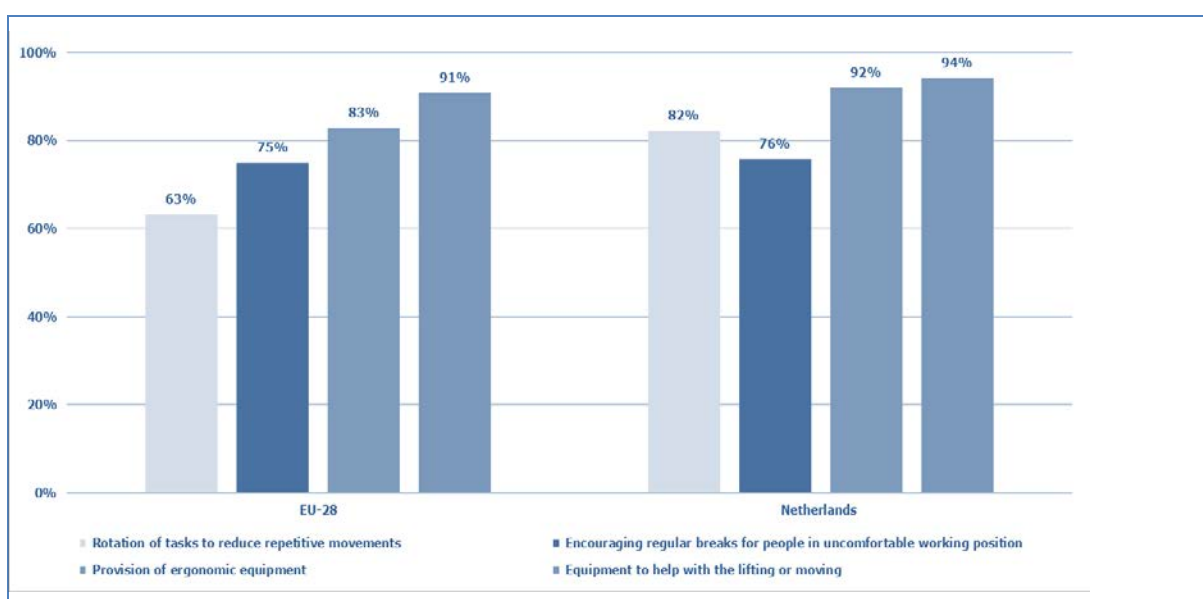
	Total	Gender		Age			
		Male	Female	15-24	25-54	55-64	65-75
Back complaints	5.4	6.4	4.3	2.7	5.4	7.7	4.4
Complaints of the neck, shoulders, arms, wrists, hands	4.2	4.1	4.3	2.3	4.1	6.3	3.9
Complaints of the hips, legs, knees or feet	3.9	4.5	3.3	2.9	3.3	6.8	6.3
Complaints of the cardiovascular system	1.1	1.5	0.7	0.2	0.7	2.9	4.2
Psychological complaints, burnout	4.5	3.7	5.4	1.7	5.1	4.9	2.3
Fatigue of lack of concentration	1.6	1.4	1.9	1.6	1.7	1.6	0.8
Conflict at work	0.4	0.4	0.4	0.1	0.4	0.6	0.2
Complaints of the respiratory system	1.7	1.5	2.0	0.7	1.7	2.8	0.9
Complaints of the digestive system	5.8	5.2	6.6	4.7	6.3	5.4	3.8
Complaints of the skin	0.5	0.5	0.4	0.4	0.4	0.6	0.6
Complaints on the ears/eyes	0.8	0.8	0.7	0.4	0.8	1.2	1.0
Influenza/the common cold	35.2	36.3	34.0	28.4	39.0	28.7	20.4
Headache	3.4	2.7	4.2	4.6	3.5	2.3	1.4
Complaints regarding pregnancy	0.9	0.0	2.0	0.3	1.4	0.0	0.0
Other	8.3	7.1	9.6	5.9	8.1	11.1	8.7
No sick leave	22.2	23.9	20.4	43.1	18.1	17.0	40.9

Source: NEA, 2017

5 Prevention of MSDs

A high proportion of Dutch companies report implementing measures to prevent MSDs within their establishments: 94 % of employees work in companies where equipment to help with lifting or moving is provided, and 92 % work in companies where ergonomic equipment is provided. Moreover, 82 % of employees work in companies that have introduced the rotation of tasks to reduce repetitive movements and 76 % work in companies that encourage regular breaks for people who work in uncomfortable positions (data for 2014; see Figure 11). In all cases, these percentages are higher than EU-28 average levels, particularly in the case of the provision of ergonomic equipment and the rotation of tasks to reduce repetitive movements (83 % and 63 %, respectively, for the EU-28).

Figure 11: Percentages of employees working in establishments where the following preventive measures are in place, EU-28 and the Netherlands, 2014

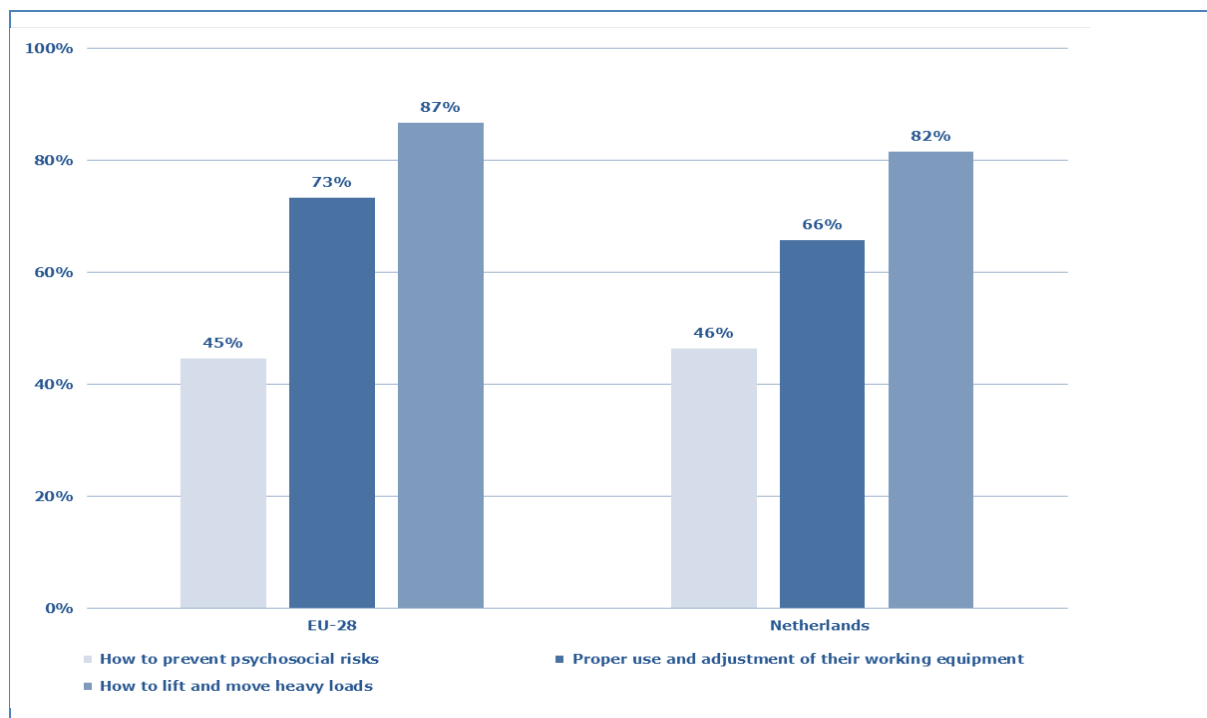


Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.

Source: Panteia based on ESENER 2 data

As shown in Figure 12, 82 % of Dutch employees work in companies where training on how to lift and move heavy loads is provided, 66 % work in companies where training on the proper use and adjustment of work equipment is provided and 46 % work in companies where training on how to prevent psychosocial risks is provided (data for 2014). These percentages are slightly lower than EU-28 levels, particularly in the cases of training on how to lift and move heavy loads and the proper use and adjustment of work equipment (87 % and 73 %, respectively, in the EU-28).

Figure 12: Percentages of employees working in establishments where training is provided, in the EU-28 and the Netherlands, 2014



Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.

Source: Panteia based on ESENER 2 data

National data for 2016 from the WEA suggest that 35.1 % of company managers state that no measures have been taken to improve working circumstances in their companies in the previous 2 years (see Table 17). Meanwhile, personal protective equipment has been introduced by 20.3 % of companies, 17.2 % have implemented technical measures and 14.8 % have introduced organisational measures. The introduction of measures to improve working circumstances increases as the size of the company increases. However, in some cases, the percentage of companies with 50-99 workers implementing measures is higher than the percentage of companies with 100 workers or more implementing these measures (for instance 33.5 % of companies with 50-99 workers have introduced personal protective equipment in the past 2 years, compared with only 28.8 % of companies with 100 or more workers).

Table 17: Measures implemented to improve working circumstances in the past 2 years as suggested by company managers, 2016 (%)

Measure	Total	Enterprise size				
		2-4 workers	5-9 workers	10-49 workers	50-99 workers	100+ workers
Organisational	14.8	9.7	14.4	24.2	37.3	42.4
Technical	17.2	10.2	26.4	25.8	28.8	29.7
Personal protective equipment	20.3	13.1	29.4	30.2	33.5	28.8
More research on risks and complaints	12.1	7.7	10.5	19.3	36.7	45.5
Encouraging of more healthy lifestyle	10.8	8.0	7.3	14.8	31.9	45.7
General policy on work and life improvement	13.6	9.0	14.9	21.0	32.8	36.0
Focus on reducing absenteeism	12.5	7.3	14.2	20.8	29.0	38.7
Information, training	13.4	10.1	11.6	19.5	28.1	41.2
Other measures	6.7	7.0	4.5	7.3	10.9	8.1
No measures	35.1	47.3	25.0	15.5	7.5	5.6
DK/NA	4.2	5.1	4.7	1.7	2.2	1.0

Source: WEA, 2016

The 2016 WEA also provides information concerning measures implemented to reduce risks at work (see Table 18). A large number of Dutch company supervisors hold appraisal meetings with individual workers (as confirmed by 73.7 % of company managers), and many use a sector-specific catalogue on health and safety (as stated by 68.2 % of managers). Moreover, 48.3 % of company managers confirm that their companies perform risk assessments at work, and 20.7 % say that their sector has a sector-specific catalogue on health and safety that includes information, agreements and solutions. These percentages increase as company size increases. For instance, 65.5 % of companies with 2-4 workers hold appraisal meetings with individual workers, compared with 97.8 % of companies with 100 or more workers.

Table 18: Measures implemented to reduce risks at work in the past 2 years as suggested by company managers, 2016 (%)

Measure	Total	Enterprise size				
		2-4 workers	5-9 workers	10-49 workers	50-99 workers	100+ workers
We perform risk assessments at work	48.3	34.0	56.4	73.2	87.2	91.7
Our sector has a sector-specific catalogue on health and safety including information, agreements and solutions	20.7	16.3	23.3	27.2	31.4	40.3
Our company uses the sector-specific catalogue on health and safety	68.2	62.5	71.5	74.2	71.1	74.9

Measure	Total	Enterprise size				
		2-4 workers	5-9 workers	10-49 workers	50-99 workers	100+ workers
Each worker has a personal budget for improving his work and/or lifestyle	7.1	5.6	5.3	10.2	14.4	23.7
We have arrangements related to vitality and sustainable employability for our workers	12.5	8.5	12.2	15.9	34.5	51.8
Our supervisors hold appraisal meetings with individual workers	73.7	65.5	79.2	87.6	94.7	97.8

Source: WEA, 2016

Information from the same source shows that 69.4 % of companies have educational programmes in place for their workers, whereas 66 % offer guidance for absent workers on returning to work. In addition to this, 18.8 % implement job adjustments and 15.3 % offer accompaniment concerning absenteeism and reintegration at work (see Table 19). Generally speaking, and looking at differences based on company size, the percentage of companies offering such measures increases as company size increases.

Table 19: Measures implemented to reduce risks at work in the past 2 years as suggested by company managers, 2016 (%)

	Total	Enterprise size				
		2-4 workers	5-9 workers	10-49 workers	50-99 workers	100+ workers
Guidance for absent workers on returning to work	66.0	58.9	69.5	69.5	80.3	78.2
Accompaniment concerning absenteeism and reintegration at work	15.3	7.2	14.8	32.2	45.0	53.4
Job adjustments	18.8	15.8	20.2	24.9	23.0	27.4
Other measures concerning absenteeism and reintegration at work	6.7	7.0	4.5	7.3	10.9	8.1
Educational programmes for workers	69.4	62.0	72.4	82.3	93.3	97.8

Source: WEA, 2016

6 Main national data sources on MSDs

- Data source 1: TNO. NEA — Netherlands Working Conditions Survey (Nationale Enquête Arbeidsomstandigheden), 2015. Available at: <http://www.monitorarbeid.tno.nl/publicaties/nea-2015>
- Data source 2: TNO. NEA — Netherlands Working Conditions Survey (Nationale Enquête Arbeidsomstandigheden), 2016. Available at: <https://www.cbs.nl/nl-nl/publicatie/2017/19/nationale-enquete-arbeidsomstandigheden-2016>
- Data source 3: TNO. NEA — Netherlands Working Conditions Survey (Nationale Enquête Arbeidsomstandigheden), 2017. Available at: <https://www.cbs.nl/nl-nl/publicatie/2018/16/nationale-enquete-arbeidsomstandigheden-2017> (brief explanation in English available at: <http://www.monitorarbeid.tno.nl/publicaties/netherlands-working-conditions-survey>).
- Data source 4: Janssen BJM, van der Torre W, de Vroome EMM, Mol M, Janssen B, van den Bossche SNJ, ZEA — Netherlands Survey of the Self-employed (Zelfstandigen Enquête Arbeid), Centraal Bureau voor de Statistiek, The Hague, 2015. Available at: https://www.monitorarbeid.tno.nl/dynamics/modules/SFIL0100/view.php?fil_Id=136
- Data source 5: Lautenbach, H., van der Torre, W., de Vroome, E. M. M., Janssen, B. J. M., Wouters, B. & van den Bossche, S. N. J., ZEA— Netherlands Survey of the Self-employed (Zelfstandigen Enquête Arbeid: Methodologie en globale resultaten 2017, Centraal Bureau voor de Statistiek, The Hague, 2017. Available at: https://www.monitorarbeid.tno.nl/dynamics/modules/SFIL0100/view.php?fil_Id=199 (brief explanation in English available at: <https://www.monitorarbeid.tno.nl/english/our-surveys/zea>).
- Data source 6: TNO, WEA — National Survey for Employers (Werkgevers Enquête Arbeidsomstandigheden), Leiden, 2008-2016. Available at: https://www.monitorarbeid.tno.nl/dynamics/modules/SFIL0100/view.php?fil_Id=195
- Data source 7: Netherlands Center for Occupational Diseases, NCvB statistiek — Statistics of the National Office for the Registration of Occupational Diseases (Nationale Registratie Beroepsziekten), yearly data since 2003. Available at: (<https://www.beroepsziekten.nl/statistiek-introductie/ncvb-statistiek-nationale-registratie-beroepsziekten>)
- Data source 8: Netherlands Center for Occupational Diseases, NCvB statistiek — Statistics of the National Office for the Registration of Occupational Diseases (Nationale Registratie Beroepsziekten), 2018. Available at: https://www.beroepsziekten.nl/sites/default/files/documents/NCVB_Beroepsziekten_in-cijfers-2018.pdf
- Data source 9: RIVM — National Institute for Public Health and the Environment (Rijksinstituut voor Volksgezondheid en Milieu), 'Information on work accidents, 2018'. Available at: <https://www.rivm.nl/veilig-werken/infographic-veilig-werken>

The European Agency for Safety and Health at Work (EU-OSHA) contributes to making Europe a safer, healthier and more productive place to work. The Agency researches, develops, and distributes reliable, balanced, and impartial safety and health information and organises pan-European awareness raising campaigns. Set up by the European Union in 1994 and based in Bilbao, Spain, the Agency brings together representatives from the European Commission, Member State governments, employers' and workers' organisations, as well as leading experts in each of the EU Member States and beyond.

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