

European Agency for Safety and Health at Work

Prolonged static sitting at work

Health effects and good practice advice

Executive Summary

Authors: Kees Peereboom and Nicolien de Langen (vhp human performance, the Netherlands) in cooperation with Alicja Bortkiewicz (Nofer Institute of Occupational Medicine, Łódź, Poland).

Sarah Copsey (EU-OSHA)

Reviewed by Jacqueline Snijders (Panteia, the Netherlands).

This report was commissioned by the European Agency for Safety and Health at Work (EU-OSHA). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect the views of EU-OSHA.

Project management: Sarah Copsey (EU-OSHA)

**Europe Direct is a service to help you find answers to your
questions about the European Union**

Freephone number (*):

00 800 6 7 8 9 10 11

(*) Certain mobile telephone operators do not allow access to 00 800 numbers, or these calls may be billed.

More information on the European Union is available on the Internet (<http://europa.eu>).

Cataloguing data can be found on the cover of this publication.

Luxembourg: Publications Office of the European Union, 2021

© European Agency for Safety and Health at Work, 2021

Reproduction is authorised provided the source is acknowledged.

EXECUTIVE SUMMARY

Introduction

As many jobs become more sedentary, there is mounting evidence linking ill health to a sedentary lifestyle, which has increased the importance of tackling prolonged static sitting in the workplace. This report explores the issue of prolonged sitting at work. This includes the extent of sitting at work, the health effects of prolonged sitting, recommendations for time limits for sitting, and good practical advice and examples on how to avoid and reduce prolonged sitting at work and make work more active and dynamic. It also includes conclusions and pointers for policy-makers. The report aims to take into account the needs of micro and small enterprises (MSEs), and looks at both office and non-office work, gender and ageing issues, and prolonged sitting and schools. The report defines prolonged sitting as being sedentary for more than 2 hours at a time.

A second report, linked to this one, covering prolonged standing ⁽¹⁾ and three OSHwiki articles ⁽²⁾ ⁽³⁾ ⁽⁴⁾ provide further information on prolonged sitting, prolonged standing and promoting moving at work.

Policy background

Although there is no specific occupational safety and health (OSH) policy on sitting at work in the European Union (EU), the general challenge of work-related musculoskeletal disorders (MSDs) has been recognised and prioritised in the EU OSH strategy ⁽⁵⁾. There are also a number of EU directives on OSH, implemented by EU Member States, that are relevant to preventing risks from prolonged sitting. Linked to an increase in sedentary working, the EU has formulated policy recommendations on promoting physical activity, including at work ⁽⁶⁾. These recommendations include indicators for Member State actions in the working environment, based on the EU's physical activity guideline ⁽⁷⁾.

What is prolonged sitting?

Prolonged sitting can be defined as being sedentary for 2 hours or longer at a time. It has three main characteristics:

- low energy expenditure;
- a seated body posture;
- static loading (physical exertion to maintain the same position).

How much sitting do we do at work?

According to Eurobarometer data from 2013 ⁽⁸⁾, in the EU 18 % of adults sit for more than 7.5 hours in total during the day, with higher levels typically seen in Scandinavian countries and lower levels in countries such as Italy, Portugal and Spain. A French survey found that adults, on average, sat for

⁽¹⁾ EU-OSHA (European Agency for Safety and Health at Work), *Prolonged constrained standing at work: Health effects and good practice advice*, 2021. Available at: <https://osha.europa.eu/en/themes/musculoskeletal-disorders/research-work-related-msds>

⁽²⁾ https://oshwiki.eu/wiki/Musculoskeletal_disorders_and_prolonged_static_sitting

⁽³⁾ https://oshwiki.eu/wiki/Musculoskeletal_disorders_and_prolonged_static_standing

⁽⁴⁾ https://oshwiki.eu/wiki/Promoting_moving_and_exercise_at_work_to_avoid_prolonged_standing_and_sitting

⁽⁵⁾ European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions — 'Safer and healthier work for all — Modernisation of the EU Occupational Safety and Health Legislation and Policy', COM(2017) 12 final, 10.1.2017, p. 9. Available at: <https://ec.europa.eu/social/BlobServlet?docId=16874&langId=en>

⁽⁶⁾ EU (European Union), Council Recommendation (EC) No 2013/C 354/01 on promoting health-enhancing physical activity across sectors. Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:354:0001:0005:EN:PDF>

⁽⁷⁾ EU (European Union), *EU physical activity guidelines*, 2008. Available at: https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/2008_eu_physical_activity_guidelines_en.pdf

⁽⁸⁾ Loyen, A., van der Ploeg, H.P., Bauman, A., Brug, J. and Lakerveld, J., 'European sitting championship: prevalence and correlates of self-reported sitting time in the 28 European Union Member States', *PLoS ONE*, Vol. 11, No 3, 2016, e0149320. Available at: <https://doi.org/10.1371/journal.pone.0149320>. Based on Eurobarometer data collected in 2013.

around 7.5 hours a day, of which 4 hours 10 minutes involved sitting at work ⁽⁹⁾ ⁽¹⁰⁾. According to Eurostat data from 2017, 39 % of EU workers carry out their work while sitting down ⁽¹¹⁾. This includes office workers using computers, staff in call centres and vehicle drivers. According to the 2015 European Working Conditions Survey ⁽¹²⁾, 28 % of workers report sitting almost all the time and 30 % report sitting a quarter to three-quarters of the time. In total, 31 % of women reported sitting almost all the time, compared with 25 % of men. The percentage of people working with computers, laptops or keyboards for all or almost all of the time increased from 17.6 % in 2000 to 30.3 % in 2015. In the 2019 European Survey of Enterprises on New and Emerging Risks, the second most frequently reported risk factor in the EU-27 (61 % of establishments) was prolonged sitting ⁽¹³⁾.

Workers at risk

▪ Types of work

Office workers are most at risk of prolonged sitting. However, other jobs and work areas involving prolonged sitting include drivers, pilots, crane operators, sewing machine operators, assembly line workers, and those working at service desks and in laboratories, call centres and control rooms. Those working from home may be tempted to work for longer without a break, in what may be poorer ergonomic conditions than those that they have in the office.

▪ Women

Women report sitting at work almost all the time more than men ⁽¹⁴⁾. They are over-represented in a number of predominantly seated jobs, such as office work and micro-assembly, which are also of a low grade. This may mean that they have a lack of control over how they work, including when they can take breaks to get up and move around. Pregnant women need to avoid prolonged sitting by taking frequent breaks to stand and move around, especially as pregnancy advances.

▪ Older workers and workers with chronic musculoskeletal conditions

Prolonged sitting is a particular issue for workers who have developed chronic conditions such as back pain and rheumatic diseases, as long periods of sitting may provoke the pain associated with such conditions. As the workforce ages, there will be more workers with such conditions. In addition, because of the increased sedentary nature of work and a rise in the official retirement age, workers today may have an increased exposure to sedentary work across their life course compared with previous generations of workers. Avoiding prolonged sitting is an issue for sustainable working.

The health effects of prolonged sitting

Based on a short review of literature, the report presents the cause and health effects of prolonged static sitting in a graphic model. Health effects that have been linked to prolonged sitting include:

- low back pain;
- neck and shoulder complaints;
- type 2 diabetes and cardiovascular disease;
- obesity;

⁽⁹⁾ Saidj, M. et al., 'Descriptive study of sedentary behaviours in 35,444 French working adults: cross-sectional findings from the ACTI-Cités study', *BMC Public Health*, Vol. 15, No 379, 2015. Available at: <https://doi.org/10.1186/s12889-015-1711-8>

⁽¹⁰⁾ Debrosses, K., 'Le Comportement sédentaire au travail: de quoi parle-t-on?', *Hygiène et sécurité du travail*, No 252, 2018. Available at: <http://www.inrs.fr/dms/inrs/CataloguePapier/HST/TI-DC-22/dc22.pdf>

⁽¹¹⁾ Eurostat, 'Persons performing physical activity when working by type of activity, most frequent activity status, quantile and degree of urbanization [ilc_hch06]', last update: 24 February 2020. Available at: <https://data.europa.eu/euodp/en/data/dataset/rE6263Ct1IFXmwmOHizAA>

⁽¹²⁾ Eurofound, *Sixth European Working Conditions Survey — Overview report (2017 update)*, Publications Office of the European Union, Luxembourg, 2017. Available at: <https://www.eurofound.europa.eu/surveys/european-working-conditions-surveys/sixth-european-working-conditions-survey-2015>

⁽¹³⁾ EU-OSHA (European Agency for Safety and Health at Work), 'Third European Survey of Enterprises on New and Emerging Risks (ESENER 3)', 2019. Available at: <https://osha.europa.eu/en/publications/third-european-survey-enterprises-new-and-emerging-risks-esener-3/view>

⁽¹⁴⁾ Eurofound, *Sixth European Working Conditions Survey — Overview report (2017 update)*, Publications Office of the European Union, Luxembourg, 2017. Available at: <https://www.eurofound.europa.eu/surveys/european-working-conditions-surveys/sixth-european-working-conditions-survey-2015>

- certain types of cancers, in particular breast cancer and colon cancer;
- mental health issues;
- premature death.

Regarding diabetes and cardiovascular disease, when you sit you hardly use your leg muscles. However, muscle activity in the large leg muscles is important for getting your blood pumping.

▪ **Sitting and MSDs**

Exposure to whole-body vibration when sitting, for example in vehicles, increases the risks of low back problems and other MSDs, especially if postures are constrained, awkward or poor.

In addition to low back pain, sitting work can result in upper limb disorders when combined with repetitive work, static muscle load, awkward postures and having to apply force or reaching.

Regulations and guidelines

▪ **Regulations**

Although prolonged sitting is not specifically covered by any European safety and health regulations, in accordance with EU directives, all employers in the EU have general duties to carry out risk assessments and put in place preventive measures based on the assessments⁽¹⁵⁾. In selecting the measures, they should avoid risks if possible and adapt work to the worker. Any workers who habitually use display screen equipment as a significant part of their normal work are covered by regulations on display screen equipment⁽¹⁶⁾, which include providing them with a suitable workstation and chair, and periodic breaks or changes of activity to reduce time spent on display screen work. Directives on work equipment⁽¹⁷⁾, machinery⁽¹⁸⁾, vibration⁽¹⁹⁾ and manual handling⁽²⁰⁾ may all be relevant to improving the health and ergonomics of seated work.

▪ **Guidelines for sitting at work**

Based on the guidelines reviewed in the report, the following is recommended:

At work:

- Spend 50 % or less of your working day sitting.
- Avoid sitting for any length of time — aim to get up at least every 20-30 minutes.
- Always get up for at least 10 minutes after 2 hours of sitting — sit less whenever possible.
- Do not exceed 5 hours of sitting at work each day.
- Work in an active manner and change position between sitting, standing and walking.

Always maintaining a posture that is ‘as upright as possible’ is no longer considered ideal and is being replaced by the concept of ‘dynamic sitting’, whereby sitting positions are continuously altered. In addition, the opposite of sitting is not standing — it is moving. So, although a sit-stand table to alternate between sitting and standing can be useful, it is not enough, as you are still alternating between two static postures.

Prevention practice

It is important to change posture as much as possible. The general goal is to promote a dynamic, active workstyle: moving more and sitting less. Workers should be able to adopt a variety of positions when working and preferably be able to vary between sitting, standing and moving around.

▪ **Prevention strategy to avoid prolonged sitting**

As with all areas of risk management, actions to avoid prolonged sitting should be implemented within a strategy that takes a systematic approach, uses risk assessment and follows a hierarchy of prevention

⁽¹⁵⁾ <https://osha.europa.eu/en/legislation/directives/the-osh-framework-directive/1>

⁽¹⁶⁾ <https://osha.europa.eu/en/legislation/directives/5>

⁽¹⁷⁾ <https://osha.europa.eu/en/legislation/directives/3>

⁽¹⁸⁾ <https://osha.europa.eu/en/legislation/directives/directive-2006-42-ec-of-the-european-parliament-and-of-the-council>

⁽¹⁹⁾ <https://osha.europa.eu/en/legislation/directives/19>

⁽²⁰⁾ <https://osha.europa.eu/en/legislation/directives/6>

measures. The prevention strategy should ensure good workplace ergonomics and worker participation and include specific measures to limit prolonged sitting and promote movement at work. At the organisational level, supportive workplace policies and practices are needed. At the environmental level, changes to the workspace can encourage less sitting and more movement. At the individual level, workers need to be encouraged to work more dynamically and move more, for example taking microbreaks to stretch and using the stairs. The report includes a graphic to assist in deciding whether work should be carried out sitting or standing.

The prevention strategy should include the following:

- Provide a **suitable ergonomic workstation** and suitable environmental conditions as a starting point, including an appropriate chair, stool, table and driver's seat. **Adjustability** is important to allow postural change and comfortable working, for example adjustable chairs that also facilitate postural change and 'dynamic sitting', adjustable workstation height, sit-stand workstations and cabins that can swivel.
- **Organise work to limit sitting and promote movement:** balance the tasks to be performed and provide possibilities for active work, task rotation, job enrichment, minibreaks and individual control options. Choose an approach directed at active/dynamic work. Give workers sufficient control over their work so that they can alter how they work and take a break when needed.
- **Organise the work environment and culture to promote movement**, for example putting bins and printers in a common area and scheduling time for stretching during meetings.
- Encourage consultation and **active worker involvement** — this is important for all aspects of the strategy. By working together, employers and workers can find practical ways to promote more active ways of working.
- **Promote healthy behaviour**, for example through raising awareness of and providing training on prolonged sitting. This measure will be ineffective unless implemented together with the other abovementioned elements.
- **Implement organisational policies and practices** to make sure it happens in practice.

It is important to assess the full range of risks factors, including prolonged sitting, poor ergonomic postures, repetitive movements, manual handling and exposure to whole-body vibration, and address them together in a comprehensive way.

▪ **Tips and examples of workplace practice**

The report contains a number of tips for making workplaces more active, such as having walking meetings, using cordless phones so that workers can walk around while talking, motivating workers to take breaks, move and stretch, using computer apps that give break and stretching reminders. The report also includes tips for drivers (e.g. to vary posture as much as possible while driving) and for teleworkers (e.g. plan short exercise breaks, do a small household chore to interrupt sitting).

Often workplace interventions are simple and low cost. Some measures used in the practical examples and sectoral guidance presented in the report include the following:

- Supermarket checkouts: allow operators to swap between sitting and standing when they need to.
- Casino croupiers: allow a maximum of 15 minutes sitting and 30 minutes standing and a rest of 15 minutes after 45 minutes at the gaming table.
- Petrol station till: allow workers to alternate between sitting and standing and provide an adjustable seat and screen.
- Factory production line: introduce microbreaks and task rotation.

▪ **School ergonomics and promoting movement in schools**

Primary school pupils spend 30 hours per week sitting at their desks ⁽²¹⁾. This is in addition to time spent sitting outside school, for example in front of screens at home. Low back pain has been associated with school furniture features, but schools are in a position to encourage pupils to move more. This includes using activity-based methods during classes, and facilities and school grounds that encourage physical activity and active school commutes.

Conclusions for the workplace

Prolonged static sitting is related to various serious health problems, including cardiovascular problems, type 2 diabetes and low back pain. Our bodies need movement, and avoiding static postures is part of making work sustainable. Although many jobs in Europe involve prolonged static sitting, much can be done to organise work to limit prolonged sitting and facilitate more movement and physical activity at work, to ensure good ergonomics and to make sitting work more dynamic. Important factors identified in this report include the following:

- Overall, 2 hours is considered the maximum time for continuous sitting as health risks may occur, in particular, when this 2-hour limit is exceeded on a regular basis. Within this timeframe, getting up every 20-30 minutes is important.
- Our next posture is the best posture. This means changing position between sitting, standing and walking. It also means varying posture as much as you can when you are sitting — ‘dynamic sitting’ and doing occasional stretching exercises, either sitting or getting up.
- Prolonged sitting should not just be replaced with prolonged standing, as prolonged standing is also associated with serious health effects. The approach can be summed up as ‘sit when you need to, stand when you want to and move when you can’ ⁽²²⁾.
- The general approach to avoiding prolonged sitting at work should be through a prevention strategy that ensures good workplace ergonomics and worker participation and that includes specific measures to limit prolonged sitting and promote movement at work within the strategy.
- As with all MSDs, early reporting of problems related to prolonged sitting is important.

Pointers for policy-makers

▪ **General**

- Many workplace interventions are simple and low cost; however, employers must be provided with information to understand the basics.
- Guidelines on workstations and active working are needed, preferably sector-specific guidelines. This includes simple, sector-specific resources for MSEs.
- More attention needs to be given to preventing prolonged sitting in non-office work.
- Improved research tools are needed, especially questionnaires, to assess and investigate prolonged sitting.

▪ **OSH and workplace health promotion policy**

- Prolonged sitting should be included in any OSH risk assessment that is carried out.
- Avoiding prolonged sitting should become part of all workplace health promotion campaigns.

▪ **Gender and age**

More women than men report that their work involves sitting almost all the time. Women are over-represented in a number of predominantly seated jobs (office work, micro-assembly), which are also of a low grade.

⁽²¹⁾ BAuA (Bundesanstalt für Arbeitsschutz und Arbeitsmedizin), *The ups and downs of sitting – Sitting at work and elsewhere*, BAuA, Dortmund, 2008. Available at:

https://www.baua.de/DE/Angebote/Publikationen/Praxis/A66.pdf?__blob=publicationFile&v=2

⁽²²⁾ IWH (Institute for Work and Health), ‘Sitting or standing? Which is best?’, 2018. Available at: <https://www.iwh.on.ca/videos-and-presentations/sitting-or-standing-which-is-best>

- More research and guidance are needed on the health effects and risk prevention of prolonged sitting in jobs carried out by women. This includes when prolonged sitting is combined with other musculoskeletal risks.
- More attention needs to be given to the types of sedentary work that women do.

With regard to age, studies show that the level of prevalence of MSDs increases with age; this is partly due to the length of cumulative exposure to MSD hazards over the work-life course.

- For workers aged over 65 years, there is a need to develop an understanding of the impact of the extended duration of exposure owing to their extended working lives.
- More research is needed on moving older workers to less demanding predominantly seated occupations without exposing them to prolonged sitting.
- **Public health policy**
 - A combined approach aimed at reducing seated time both at work and at home and being more active is needed. More collaboration between OSH and public health in this area is needed to achieve this.
 - Public health programmes should include advice for the workplace on making work more dynamic and limiting prolonged sitting, and healthcare professionals should be educated and informed so that they can provide appropriate advice.
 - The cause-effect relationship between sitting and health effects is not fully understood. More research is needed in this area.
- **Schools**
 - Education about prolonged sitting and actions to limit it should take place in schools.
 - More attention needs to be given to the ergonomics of classrooms.

Overall conclusions

Tackling prolonged sitting at work is part of making work more sustainable as well as part of tackling sedentary lifestyles. Work should provide good ergonomic working conditions, facilitate postural change between sitting, standing and walking and 'dynamic sitting', whereby sitting positions are continuously altered, and promote more physical movement at work. This should be part of a combined prevention and health promotion strategy. There are many simple and low-cost steps that MSEs can easily take to reduce prolonged sitting at work and increase movement.

Remember:

Our next posture is the best posture! Stand when you want to, sit when you need to and move when you can.

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.

European Agency for Safety and Health at Work

Santiago de Compostela 12, 5th floor
48003 Bilbao, Spain
Tel. +34 944794360
Fax +34 944794383
E-mail: information@osha.europa.eu

