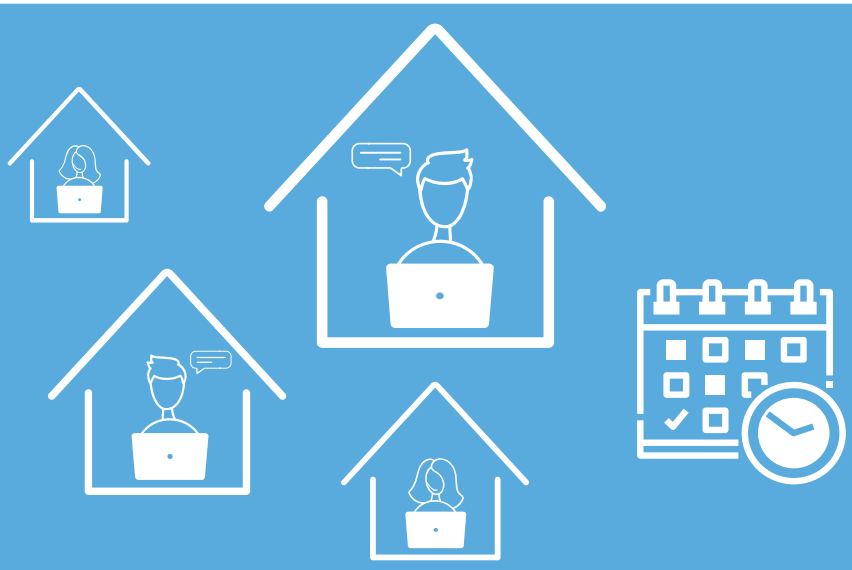
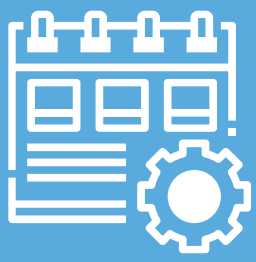
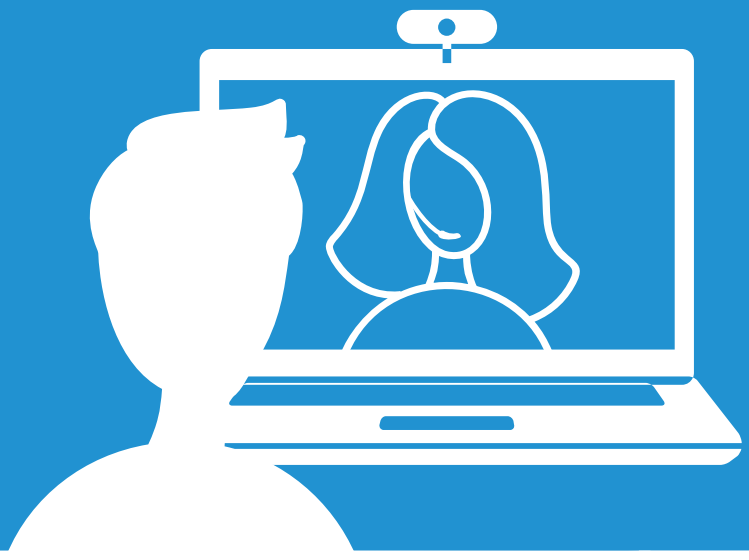


HEALTHY AND SAFE TELEWORK

TECHNICAL BRIEF — GENEVA, 2021





International Labour Organization

World Health Organization

HEALTHY AND SAFE TELEWORK

TECHNICAL BRIEF — GENEVA, 2021

International Labour Organization

World Health Organization

Healthy and safe telework: technical brief

ISBN (WHO) 978-92-4-004097-7 (electronic version)
ISBN (WHO) 978-92-4-004098-4 (print version)
ISBN (ILO) 978-92-2-036231-0 (print)
ISBN (ILO) 978-92-2-036232-7 (web PDF)

Suggested citation. Healthy and safe telework: technical brief. Geneva: World Health Organization and the International Labour Organization, 2021. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

Design by L'IV Com

Contents

Acknowledgements

The technical brief was developed by a joint World Health Organization/International Labour Organization (WHO/ILO) technical advisory group on healthy and safe telework, under the leadership of Ivan Dimov Ivanov from the WHO Department of Environment, Climate Change and Health and Manal Azzi from the ILO Labour Inspection, Labour Administration and Occupational Safety and Health Branch (LABADMIN/OSH).

Valuable contributions were provided at various stages by the following WHO staff and consultants: Faten Ben Abdelaziz and Kristine Sorensen (Department of Health Promotion), and Aiysha Malik (Department of Mental Health and Substance Abuse). The following ILO staff contributed to the document: Joaquim Pintado Nunes, Manal Azzi (LABADMIN/OSH) and Najati Ghosheh (Department of Conditions of Work and Equality) contributed to the technical content. The ILO Bureau for Employers' Activities and the Bureau for Workers' Activities reviewed and provided comments to the document.

Kathleen Mosier and Michelle Robertson from the International Ergonomics Association participated in the task force and contributed to the document.

The brief was reviewed by the following external reviewers: Yoshihisa Fujino (University of Occupational and Environmental Health, Japan), Ehi Iden (Occupational Health and Safety Managers, Nigeria) and Diana Levine (University of Haifa, Israel). Katie Fineran (Univeristy of Haifa, Israel) assisted with the literature review.

Useful comments were received from: Alliance for Health Promotion, Institution of Occupational Safety and Health, International Ergonomic Association, International Occupational Medicine Society Collaborative, and International Union for Health Promotion and Education.

Key messages

- Telework – the practice of working remotely using informational and communications technology has an important and growing role in the workplace, and has a potential impact on workers' health, safety and well-being.

- When organized and carried out properly, telework can be beneficial for physical and mental health and social well-being. It can improve work–life balance, reduce traffic and time spent commuting, and decrease air pollution, all of which can, indirectly, improve physical and mental health. Telework can also have public health and social benefits.

- Telework settings may fail to meet the occupational safety and health standards available at traditional worksites.

- Poor physical environment and workplace design and inadequate equipment and support can result in musculoskeletal disorders, eye strain and injuries.

- Working within a digital environment in physical isolation from co-workers, coupled with potential difficulties in managing work-private life balance in premises outside the direct control of the employer, can result in mental health problems and unhealthy behaviours.

- Protecting and promoting health and well-being in teleworking requires a comprehensive set of measures to provide a healthy and safe work environment, including adequate organization of the work.

- Governments, employers and workers all have a role in protecting and promoting health and safety while teleworking, including ergonomics, mental health and well-being, as defined by the ILO Convention on Occupational Safety and Health, 1981 and the Promotional Framework for Occupational Safety and Health Convention, 2006.

- Those employing teleworkers should develop programmes to promote healthy and safe telework. Such programmes should provide assistance for assessing and managing the risk factors for health and safety; workstation, computer and peripheral equipment, and remote ICT support.

- Occupational health services can offer ergonomic, mental health and psychosocial support.

- Workers should collaborate with employers on the implementation of these measures, cooperating with their employer and fulfilling their own health and safety duties to ensure decent and safe conditions for telework.

Overview

Definition of telework

Telework is defined as the use of information and communications technology (ICT) – such as desktop computers, laptops, tablets and smartphones – for work that is performed outside the employer's premises. This includes work performed from home, a satellite office or another location *(1)*. "Hybrid" work refers to a combination of telework and work on the employer's premises. Several different definitions and terms are used to describe telework (e.g. remote work and e-work); however, the unifying characteristics of telework, as outlined by the International Labour Organization (ILO) technical note COVID-19: Guidance for labour statistics data collection: Defining and measuring remote work, telework, work at home and home-based work *(2)*, include work that is fully or partly carried out at a location other than the default place of work, and the use of electronic devices such as a computer, tablet or telephone to perform work. Telework affects the degree of control that the employer has over the working environment, and the employer's ability to plan and provide for a healthy and safe work environment.

Prevalence of telework

The public health and social measures introduced because of the COVID-19 pandemic resulted in an unprecedented and rapid transition to telework in many sectors and regions around the world. In Europe, for example, the proportion of workers engaged in telework increased from 11% before the pandemic to 48% during it, with about 40% of paid workhours during the COVID-19 pandemic taking place by telework *(3, 4)*. In the region of Latin America and the Caribbean, more than 23 million people transitioned to telework in the second quarter of 2020 *(5)*. Globally, most of the transition to telework occurred among workers with higher income and education levels. A recent analysis suggests that the use of telework may continue to grow; for example, research conducted during 2020 indicates that 34% of jobs in the United States of America (USA) could plausibly be performed remotely *(6)*. As the use of telework is likely to increase, it is important to ensure that employers, governments and workers and their representatives understand how to address the potential health impacts of telework in a manner that balances the needs of workers and organizations.

About this document

The aim of this document is to provide technical information to employers, teleworkers and worker representatives about the impact of telework on health, safety and well-being. It provides practical advice on organizing and carrying out telework in a way that protects and promotes physical and mental health and social well-being, according to the existing World Health Organization (WHO) guidelines and ILO standards and guides.

This document addresses the following questions:

- What are the impacts of telework on the physical and mental health and social well-being of workers and their families?
- How can employers and workers organize and carry out teleworking in a healthy and safe manner?
- What are the roles and responsibilities of employers in protecting workers' health and safety, and providing a supportive environment for telework?
- What are the roles and responsibilities of workers and their representatives in protecting and promoting health and safety while teleworking?
- How can occupational health services and primary health care providers support the health and safety of teleworkers?

The methods used for the development of this documents are provided in the Annex.

This document was developed based on rapid review of evidence about health impacts of telework, scoping of existing relevant WHO guidelines and ILO norms and standards regarding occupational safety and health, health behaviours and working environment.

Health impact of telework

Physical health outcomes

There is extensive evidence on the impact of prolonged computer work on a number of physical ailments (e.g. musculoskeletal damage and eye strain) in office settings, but few studies have specifically assessed the impact of telework. The research that has been undertaken on telework has shown both positive and negative impacts on physical health.

A review of studies reported that home-based telework is generally seen by workers as having a positive effect on their self-reported health, but can lead to problems arising from workstation design and long working hours *(7)*. Two studies reported reductions in blood pressure with teleworking: a questionnaire-based study of academic personnel found that teleworkers had fewer complaints about arterial hypertension *(8)*, and a study of Swedish government workers showed blood pressure to be significantly higher during work at the office than during telework at home *(9)*. While the telework has most recently been used during the COVID-19 pandemic to prevent the spread of the virus, it has been also found that some teleworkers have also struggled to continue to work when they are sick, which has been termed sickness presenteeism *(10)*.

These studies are preliminary; more research will be needed to determine the true impacts of telework for different workers and over longer periods of time.

Mental health outcomes

Before the COVID-19 pandemic, telework was often based on individual agreements between a worker and employer (e.g. to better address work–life balance). However, in response to the COVID-19 pandemic, telework has in some cases been imposed on workers and employers as part of public health and social measures, resulting in a potential mismatch with workers' preferences.

Several research studies undertaken before the COVID-19 pandemic indicated that telework may reduce work-related stress *(11–14)*; however, other studies reported increased stress with telework *(15–17)*.

Five studies (including one review) undertaken either before or during the COVID-19 pandemic reported social isolation as a potential adverse health effect associated with telework *(7, 15, 18–20)*. Another study reported a higher incidence of loneliness, irritability, worry and guilt among teleworkers *(21)*. Conversely, a cohort study analysing employee demographic data, medical claims, health risk assessments and remote connectivity hours reported a reduced risk for depression among those who teleworked compared with those who did not telework *(22)*.

Research conducted in the USA during the COVID-19 pandemic reported that participants working from home spent more quality time with pets and family members, although working from the office provided more opportunities to socialize and led to less conflict between work and family *(19)*. A Spanish study conducted during COVID-19 home confinement demonstrated that *not* teleworking contributed to a better occupational balance, a balance of engagement in occupation that leads to well-being *(23)*.

A review of studies found that telework was associated with more conflict between work and family than traditional 9 to 5 schedules, and that such conflict was higher when work demands were high *(24)*.

A study conducted in Japan at a time when telework was expanding because of the COVID-19 epidemic reported that, as the frequency of telework increased, workers who preferred to telework experienced less psychological distress than those who preferred not to telework *(25)*. This suggests that worker preference affects the potential mental health impact of telework.

Health behaviours

A study of employee demographic data, medical claims, health risk assessments and remote connectivity hours showed a relationship between telework and lower health risks for alcohol abuse, tobacco use and obesity, with the relationship varying by telework intensity *(22)*. The study also showed greater levels of physical activity among teleworking employees compared with non-teleworkers *(22)*. Increased physical activity has also been observed among teleworkers. A survey-based study found that telework was associated with 71% higher odds of achieving 30 minutes or more of physical activity per day when compared with non-telework workdays *(26)*. A study of employees who began teleworking because of COVID-19 found a significant increase in the frequency of physical activity carried out during this period and a change in the type of activity, with a preference for strength training and stretching exercises *(27)*. A study of adults in the USA showed that those who worked from home spent more time on food preparation or consumption than those who worked away from home *(28)*. The findings suggest that working from home may provide more time to prepare and consume food, possibly yielding health benefits because home-prepared meals tend to be lower in calories and higher in nutrients than food bought in or around the workplace.

Protecting and promoting health, safety and well-being while teleworking

Physical environment and ergonomics

When workers engage in telework, they may face increased risks in relation to the physical environment and ergonomics (referred to as human factors/ergonomics[1]) because home settings often do not meet the same occupational safety and health standards as traditional worksites. The physical environment may present risks related to factors such as thermal discomfort from inadequate heating and cooling systems, lighting, electrical safety, home hygiene and air quality. Creating a good ergonomic environment for computer workers by providing an ergonomic chair, a large screen, a keyboard and mouse, adjustable or flexible workstations and training can minimize musculoskeletal and eye discomfort, promote healthy computing behaviours and improve performance *(29, 30)*.

Insufficient or inadequate set-up of the equipment available to the worker (e.g. ICT equipment, desk, chair and internet connection) can present health and safety risks *(31)*. A poorly positioned set-up of computer, chair and desk may result in musculoskeletal injuries such as neck or lower back pain and eye strain; it can also create mental health risks if it contributes to stress. Commensurate with their degree of control, employers should ensure that, as far as reasonably practicable, the telework office space meets ergonomics standards. Interventions such as ergonomic tele-site risk assessments, worker training, height-adjustable workstation furniture and proper set-up of office equipment are recommended to prevent injury during telework *(32)*, in particular where telework is performed on a regular basis.

The following action points may be considered while setting up a telework station. They are especially relevant for those undertaking long-term, regular telework:

- Teleworkers should have a dedicated workspace that is private, quiet and secure. A workstation "comfort zone" can be created by arranging the computer monitor and input devices so that they are close to the person's body, allowing a relaxed and comfortable posture, and reducing overstretching and awkward, non-neutral postures. Work surfaces should accommodate at minimum a stand-alone computer or laptop with a docking station and detachable keyboard.

- A well-designed ergonomic office chair is a critical component of the teleworker's home office. If used for full-time office and computer work, common household chairs can eventually create problems because of the lack of adjustments and support. It is important to select a chair with height adjustability, back-tilt mechanism, lumbar support, adjustable arm rests and a seat pan that has an appropriate width and length, so it fits the worker and supports their body.

[1] This is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system. It applies theory, principles, data and methods to the design of work to optimize human well-being and overall systems performance.

Ergonomic checkpoints, published by the ILO and International Ergonomics Association, provides practical solutions for improving safety, health and working conditions from an ergonomic point of view *(33)*.

The ILO has also developed an Ergonomics checkpoints application (for both iOS and Android) that helps users to create interactive checklists of ergonomic checkpoints for their own workplaces. The app includes best practice recommendations for taking action and implementing effective improvements in ergonomics in the workplace *(34)*.

Ergonomic checkpoints, published by the ILO and International Ergonomics Association, provides practical solutions for improving safety, health and working conditions from an ergonomic point of view *(33)*.

The ILO has also developed an *Ergonomics checkpoints* application (for both iOS and Android) that helps users to create interactive checklists of ergonomic checkpoints for their own workplaces. The app includes best practice recommendations for taking action and implementing effective improvements in ergonomics in the workplace *(34)*.

- When setting up a computer workstation layout, the work surface should be large enough to ensure the proper placement of the monitor, keyboard and mouse, along with a document holder. When using a laptop, it is worth considering an external keyboard and monitor to allow for the monitor to be at the proper height for viewing, to reduce neck strain. Employers, through occupational health services, should provide workers with assistance in setting up the teleworking station.

- While typing or mousing, the worker should keep their wrists in a straight, nonrigid position, and avoid positioning the wrists at an exaggerated angle or in a position that causes tension in the wrists. A palm rest (sometimes called a wrist rest) can provide support during pauses but is not designed to be used during typing or moving the mouse. The hands and the wrists should be free to move when typing and should not be anchored or resting on a palm rest, table or thighs while typing. The fingers should be relaxed and nonrigid when operating a laptop or an input device, to reduce strain to the finger joints. Resting the palms while typing may be harmful because it can cause the person to bend and hold their wrists and fingers back, or it can apply pressure to the underside of the wrists.

- If a smartphone or tablet is used, its height should be raised to eye level or slightly below (e.g. by placing the device on a stack of books or magazines). An external ergonomic keyboard should be used if a worker needs to type text into a smartphone or tablet for a long time *(35)*.

- Visual strain and eye fatigue can be reduced by positioning the monitor to eliminate glare (window blinds and overhead baffles can be used to redirect the source of any glare). To reduce eye strain from fixation on the screen, teleworkers should be encouraged to regularly focus on far objects and then rest the eyes *(36)*.

- Risks of slips, trips and falls should be reduced by managing cables and placing them away from any walking areas, and by keeping the workspace organized and tidy. Electrical equipment should be maintained to avoid risks of fire and electrocution.

- Air circulation, ventilation and temperature should be adequate to maintain the worker's normal level of job performance and safety in the home environment.

- Ambient noise level should be kept as low as possible and the use of safe listing devices through earphones and headphones should be encouraged *(37)*.

- Varying computing postures and taking regular stretch breaks will reduce the impact of sedentary workstyles, prolonged sitting, and the static loads (i.e. stress caused by sitting or standing in one place for a prolonged period) and fatigue associated with computer work. If possible, teleworkers should be able to move through a variety of sitting and standing postures to promote healthy work habits and to reduce musculoskeletal and visual discomforts. Workers should be encouraged to change postures and take short breaks throughout the day to move. There are benefits to incorporating standing positions throughout the workday while computing; however, it is essential to be trained on how to properly adjust and use sit–stand workstations to avoid musculoskeletal and eye symptoms *(30)*.

- Integrating routine breaks into the teleworker's daily work regimen and providing ergonomic reminders via wearable technology or software programmes that encourage and promote physical activity may be helpful in keeping workers healthy.

It is useful that teleworkers receive training on the recommended strategies (i.e. how to optimally set up and adjust a workstation to obtain various comfortable computing postures, and how to adopt healthy computer work habits and vary postures throughout working hours). This training can be supported by a tele-ergonomics evaluation and surveillance system that monitors ergonomic assessments, training and implementation of corrective actions. Online resources and training on how to manage boundaries around work–life balance and simultaneous demands from work and family will help workers to gain a better sense of control and reduce stress, and will improve work performance.

Psychosocial risk factors

When organized and carried out properly, telework can be beneficial for mental health and social well-being. It can improve work–life balance, reduce time spent on commuting to the workplace, and offer opportunities for flexible work arrangements, all of which may promote mental health and social wellbeing.

Telework may present risks for psychosocial well-being, including impact on work pace, longer working hours, interference with work–life balance, isolation and detachment. There might also be a risk of violence and harassment, including cyberbullying. The psychosocial impact on the worker and their family may be compounded in situations when the worker does not have access to a private, quiet and dedicated workstation.

Communication can be challenging during telework, because it is limited to ICT channels with little or no face-to-face communication and can be limited by the bandwidth of the internet connection. Difficulties related to communication may make it difficult for workers to understand the task at hand, resulting in stress. Some workers may feel the effects of social or professional isolation, owing to decreased communication with their colleagues and management. Studies have shown the importance of using open communication that emphasizes the sharing of information *(38)* and communicating with motivating language *(39)* in promoting worker well-being during telework.

While teleworking, workers may experience sometimes working long hours or late into the night. If the set work times are not well established between workers and their managers, resulting in difficulty disconnecting from work and managing the work schedule.). This is exacerbated when a company works across multiple time zones. Employees working from home tend to work longer hours than when they are working at the premises of the employer, in part because the time to commute to the workplace

is replaced by work activities, and also because of changes in work routines and the blurring of the boundaries between paid work and personal life *(1)*.

Because telework relies heavily on ICT and internet usage, cyberbullying can pose risks to workers. Cyberbullying may occur among colleagues, among supervisors and subordinates, and among workers and clients or the public. Experiencing cyberbullying may affect workers' mental health. To protect workers from these potential threats, employers should consider establishing a workplace policy covering cyberbullying, in consultation with workers or their representatives.

While teleworking from home, tension among family members or housemates may increase the risk that a worker experiences domestic violence and harassment. Employers can help raise awareness among workers about the signs and effects of domestic violence, and provide information about relevant resources and support for victims.

The following action points may be considered to encourage social interactions and promote mental health during telework:

- Employers should encourage workers to set boundaries on workhours and keep to a regular schedule, to ensure they do not to work an excessive number of hours. Timers and hour logs can help workers track their hours and stay within a healthy work schedule, but such tools must be confidential, and workers should not feel they are being monitored or are under constant surveillance.

- Employers should avoid contacting workers outside of scheduled workhours, and should encourage co-workers and managers to communicate only during scheduled workhours.

- Regular social interactions during telework (e.g. virtual meetups and dedicated social time before and after meetings) may decrease the sense of isolation and detachment during telework. Workers should be encouraged to connect with co-workers for virtual gatherings and informal chats.

- Employers should provide teleworkers with ICT tools and software that will help them to connect efficiently with co-workers and managers. Regular communication with managers and peers about current happenings, sharing of information and problem-solving ideas, and discussing performance-related issues can reduce psychosocial strain. However, it is important for employers and managers to be aware of the number of online meetings employees are involved in, especially the number of back-to-back meetings.

- Workers should be encouraged to engage in enjoyable social and recreational activities during work breaks. This could include short physical activity breaks.

- Workers should be informed about the potential psychosocial risks related to telework, the early symptoms of mental ill health, and how and where they can access psychosocial and mental health supports.

- Teleworkers should be trained on appropriate work behaviour and digital etiquette while interacting with colleagues, and on how to identify and respond to abuse or bullying.

Health behaviours and well-being

Work can have an important role in promoting health and well-being among workers through diet, physical activity and a healthy work–life balance *(40)*. Telework presents unique challenges and opportunities for promoting health and well-being. When telework is carried out in private homes and other premises outside the direct control of the employer, it may be difficult to enforce the established workplace policies on tobacco smoking, use of alcohol and drugs. Work–life balance may be affected as workers are faced with family duties, especially if young children or other family members are at home during working hours. Respecting boundaries between work and personal time can reduce psychosocial stressors and enhance worker performance.

For many adults, the workplace is a key setting for being physically active and reducing sedentary behaviour. The trip to and from work, activity breaks, workplace programmes and incidental activity all offer opportunities for increased physical activity throughout the workday *(41)*.

Employers can support teleworker well-being through encouraging healthy routines and providing training and resources for maintaining healthy behaviours while teleworking *(42)*. The following action points may be considered to promote healthy behaviours and well-being during telework:

- Employers can encourage and enable teleworkers to define boundaries for work and personal time, to ensure that they maintain a routine of work- and nonwork-related activities and a time-management schedule. Employers can promote the opportunity for workers to have flexibility and control of their schedules, to manage the competing demands of work and family tasks.

- Excess screen time and irregular workhours during telework can have a detrimental effect on sleep patterns. Workers should maintain a regular sleep schedule and refrain from screen time and work duties before sleep. Electronic devices can be set to have reminders for the worker to turn off the device before sleep.

- Workers and employers should work together to develop and implement telework arrangements that allow workers time to rest, recuperate, and address personal activities.

- WHO recommends that all adults should undertake 150–300 minutes of moderate-intensity or 75–150 minutes of vigorous-intensity physical activity, or some equivalent combination of moderate-intensity and vigorous-intensity aerobic physical activity per week *(43)*. Although this may be challenging during periods of telework because of the long hours of sedentary work, the worker's routine can be set up to include times for physical activity; for example, by scheduling a recreational physical activity, fitness class or walk.

- WHO recommends that workplaces be designed to enable people with diverse abilities to be physically active *(44)*. Thus, for telework, employers should encourage physical activity in accordance with the worker's ability.

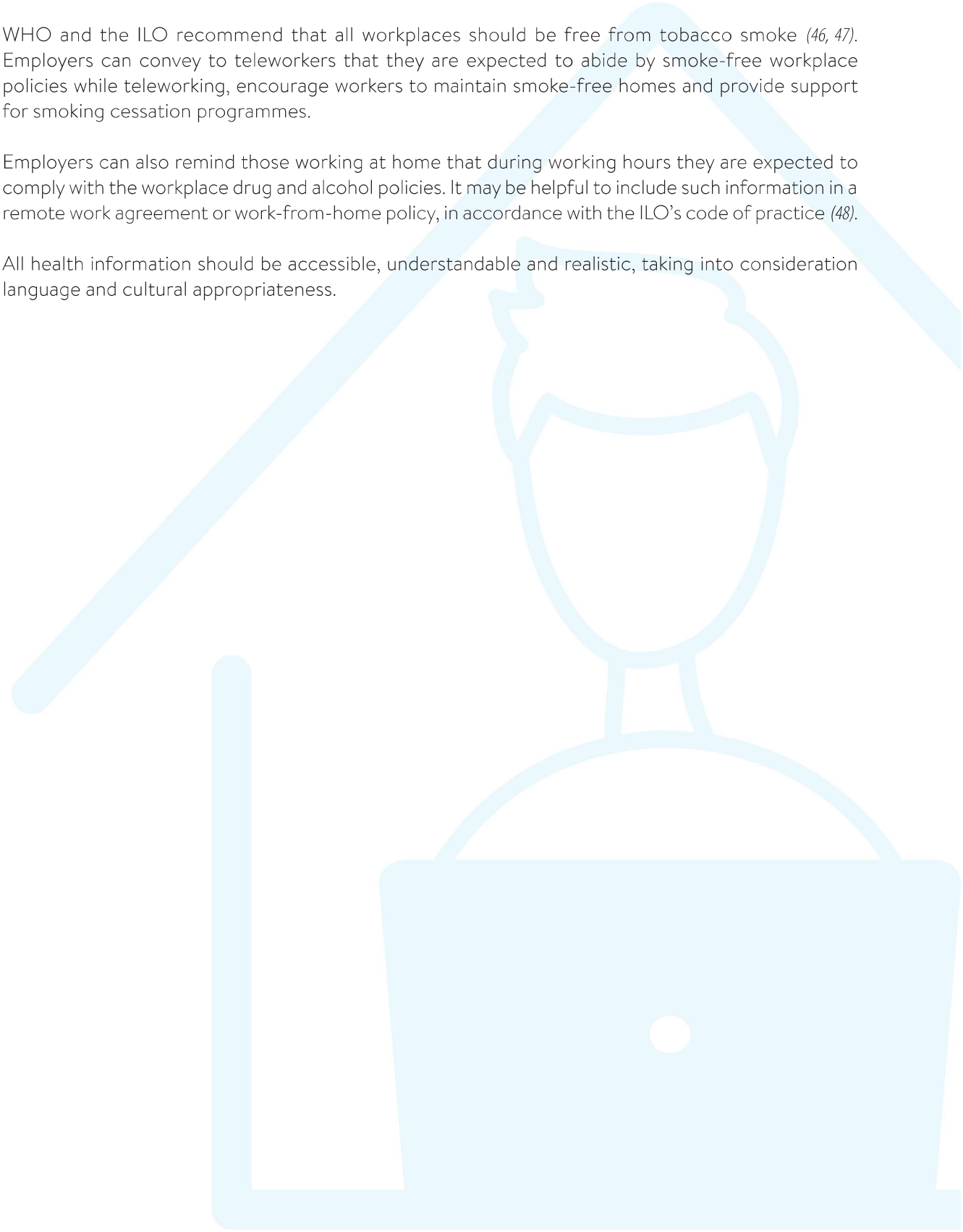
- Maintaining a healthy diet that balances energy intake and expenditure, and limits intake of free sugars to 10% of energy intake and total fat to less than 30% of total energy intake is important for maintaining health. Workers can be educated about healthy food options from reliable sources such as WHO's 5 keys to a healthy diet *(45)*. To maintain a healthy diet while teleworking, it can be helpful

to plan regular meals and snacks, avoid snacking while working or distracted, drink sufficient water and avoid processed food and drinks with added sugar.

- WHO and the ILO recommend that all workplaces should be free from tobacco smoke *(46, 47)*. Employers can convey to teleworkers that they are expected to abide by smoke-free workplace policies while teleworking, encourage workers to maintain smoke-free homes and provide support for smoking cessation programmes.

- Employers can also remind those working at home that during working hours they are expected to comply with the workplace drug and alcohol policies. It may be helpful to include such information in a remote work agreement or work-from-home policy, in accordance with the ILO's code of practice *(48)*.

- All health information should be accessible, understandable and realistic, taking into consideration language and cultural appropriateness.



Roles and responsibilities of employers, workers and governments

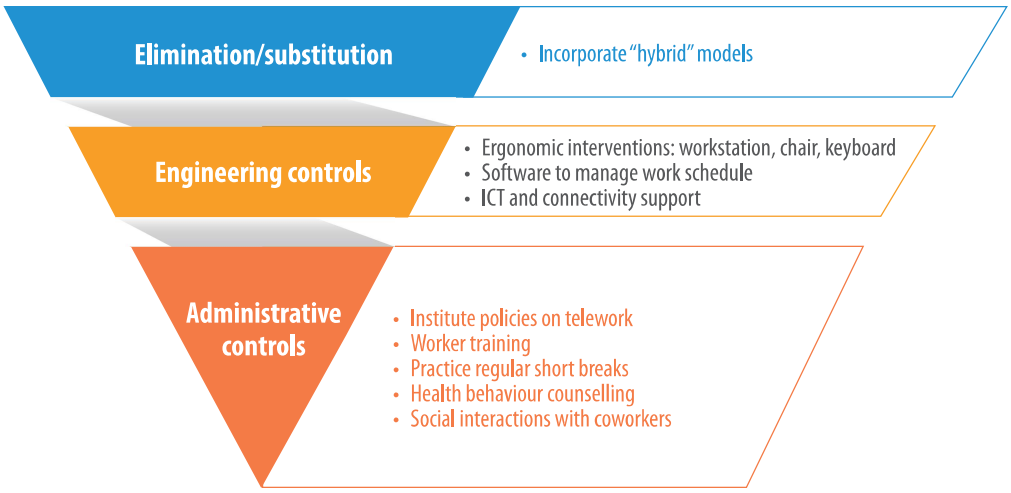
The Occupational Safety and Health Convention, 181 (No 155) *(49)* and its accompanying Recommendation (No. 164) *(50)* describe the responsibilities and rights of employers and workers, and the role of governments to ensure the right to safe and healthy working environments.

At the national level, these standards define the obligation of ratifying Member States to formulate, implement and periodically review – in consultation with the most representative organizations of employers and workers – a national policy on occupational safety and health that defines the functions and responsibilities of public authorities, employers, workers and others. This policy should apply to all work circumstances, including telework, taking account of its special characteristics. According to the Promotional Framework for Occupational Safety and Health Convention, 2006 (No 187) *(51)*, countries should also establish a national system (Article 4) providing the main framework for implementing the national policy, and a programme defining a time frame, priorities and means of action for the improvement (Article 5). At the workplace level, according to the Occupational Safety and Health Convention *(49)*, employers should ensure that, as far as reasonably practicable, workplaces, machinery, equipment and processes under their control are safe and without risk to health (Article 16). In performing their work, workers should cooperate in fulfilling the obligation placed upon the employer (Article 19, a). There should also be arrangements for cooperation between employers and representatives of workers; namely, providing information and consulting workers' representatives on all matters related to occupational safety and health. Cooperation between management and workers or their representatives is essential for the success of any approach to secure the health of teleworkers. The definition of a workplace in the Occupational Safety and Health Convention *(49)* includes "all places where workers need to be or to go by reason of their work and which are under the direct or indirect control of the employer" (Article 3, c) and defines health in relation to work as "not merely the absence of disease or infirmity; it also includes the physical and mental elements affecting health which are directly related to safety and hygiene at work" (Article 3, e).

Sound management systems for occupational safety and health at the enterprise level contribute to safe and healthy working environments, with occupational risks addressed using the hierarchy of controls as they apply to telework: elimination, substitution, engineering controls, and administrative controls *(52)*. Figure 1 outlines potential interventions of occupational hazards of telework according to the hierarchy of controls. Occupational risk management, including in relation to telework, should happen in consultation with workers and workers' representatives; namely, through safety and health committees or safety delegates where they exist. Workers should also be able to communicate with each other and with their representatives over safety and health issues while teleworking.

Organizations and managers can have a positive role in designing telework that promotes worker well-being *(53)*. To reduce the risks associated with the physical environment and ergonomics, employers should ensure that workers receive adequate equipment to complete the tasks of the job. For workers with physical disability, provision of equipment, tools and training to modify the telework environment should be planned in consultation with the workers and their representatives, in line with the ILO Code of Practice on Managing Disability in the Workplace *(54)* ().

Fig. 1: Hierarchy of controls of occupational hazards in telework



Employers should provide information and recommendations, along with training on how to adjust the physical environment and how best to place (arrange) the computer and office equipment to reduce such risks *(33)*. Employers should also emphasize the importance of varying work tasks periodically, changing computing positions (including standing) and taking regular breaks to move and stretch.

Telework presents some unique challenges in managing remote workers; thus, managers should be trained in effective risk management, distance leadership and workplace health promotion. This training should cover how to mitigate risk and respond to workers' health and safety issues *(29)*. Employers should provide clear direction on maintaining confidential company information, enable security measures for workers working from home, and establish telework policies and procedures to support working from home (e.g., purchasing of equipment, technology including software, office furniture and supplies). ICT support and services (e.g., for telephone, internet and equipment) should be provided, and teleworkers should be informed of this. Legal issues regarding equipment and maintenance contracts and insurance (e.g., workers' compensation, homeowners' insurance and disability insurance) may need to be discussed and formalized as organizational policies.

Employers should communicate clearly about tasks, responsibilities, decision-making authority, autonomy and results to be achieved, adjusting workload and work assignments where necessary *(55)*. There should also be an understanding between workers and employers regarding hours of being in contact, while adhering to applicable working-time regulations. When possible, allowing flexibility regarding working-time arrangements can help workers to balance their responsibilities. Employers should encourage workers to incorporate relaxation exercises, stretching or physical activity into breaks during meetings and during the workday. They should also provide workers with advice about creating a dedicated, disruption-free workspace, and establishing boundaries with others in their household *(56)*.

Teleworkers must be provided with regular working hours and rest periods. International and national norms concerning regular working hours and rest periods should also be considered when setting up telework policies and arrangements. Working time should be as flexible as possible. The Hours of Work (Commerce and Offices) Convention, 1930 (No 30) *(57)* established daily and weekly working hour limits

for commercial and office workers (i.e. 8 hours per day and 48 hours per week), which could be applicable to teleworkers. The Weekly Rest (Commerce and Offices) Convention, 1957 (No 106) *(58)* provides for an uninterrupted weekly rest period comprising not less than 24 hours in the course of each period of 7 days, which may also apply to teleworkers.

The European Union Framework Agreement on Telework (2002) *(59)* established a general framework on the rules regarding telework; the aim was to promote such work while ensuring that it met the needs of workers and employers. The agreement highlights that teleworkers retain the same legal protections as employees who work at an employer's workplace. It also identifies features that are specific to remote working and require adaptation (e.g., employment conditions, data protection, privacy, equipment, health and safety, organization of work, training and collective rights).

The European Union Framework Agreement on Telework (2002) *(59)* established a general framework on the rules regarding telework; the aim was to promote such work while ensuring that it met the needs of workers and employers. The agreement highlights that teleworkers retain the same legal protections as employees who work at an employer's workplace. It also identifies features that are specific to remote working and require adaptation (e.g., employment conditions, data protection, privacy, equipment, health and safety, organization of work, training and collective rights).

The pressure that teleworkers often feel pressured to be constantly "connected" to their employer and co-workers can lead to many of the negative consequences of telework (e.g. longer working hours and tension in balancing paid work and personal life commitments). Hence, in some countries "the right to disconnect" has been established, meaning that the worker has the right to disengage from work and refrain from engaging in work-related electronic communications (e.g. emails and text messages) during non-workhours. In other countries, existing working time regulations deal with all relevant working time issues in general terms, and no additional laws have been introduced. In many countries where the right to disconnect has been established, the right to disconnect is meant for all workers, including office workers (who may be reached outside of office hours) and teleworkers. The right to disconnect can be also viewed as a way to limit working hours and ensure workers can get proper rest between work days.

Therefore, it is important to organize telework to meet the needs of both workers and the organization; this requires a focus on outputs or outcomes rather than process., the emphasis is placed on setting up and agreeing the time frames and output required. Employers should refrain from excessive monitoring or surveillance of workers, including the inappropriate use of software that monitors computer usage or activates constant online video capabilities. Such measures reduce trust and may increase stress for teleworkers.

The process of organizing telework should include *(31)*:

- the worker and manager or employer discussing and developing an individual teleworking workplan for telework, and clarifying priorities;
- agreeing on a common system to signal availability for work and ensuring that managers and colleagues respect the system;
- encouraging workers to share when they are feeling overloaded, to serve as an early warning system to detect the risk of burnout, and know when tasks or team members should be reassigned;

- conducting a skills-mapping exercise among the workers, to potentially redeploy underused workers to overstretched teams;
- being clear about the expected results;
- ensuring that both workers and managers understand when a task is completed satisfactorily, with the provision of positive feedback, when possible; and
- ensuring timely, regular and constructive feedback to workers, by describing what the workers did, and focusing on changes that will result in the most significant improvement to the task and will have the expected impact.

Roles of occupational health services

Occupational health practitioners (e.g. occupational medicine physicians, nurses, psychologists, ergonomists and ancillary staff) have an important role in the identification and mitigation of health risks among teleworkers. To meet the changing needs of a workforce moving to telework, occupational health services – as defined by the Occupational Health Services Convention, 1985 (No 161) *(60)* –need to expand their delivery channels. New channels could include online consultations, mobile applications and online checklists to conduct risk assessments, online evaluation of worker health, digital tools for mental health and psychosocial support, and tele-ergonomic assessments and interventions. Workers' representatives are important in selecting and arranging for effective services with such professionals, including giving workers information on how to access their advice and services.

Teleworkers should be educated by occupational health staff, national health and safety authorities, or other appropriate persons on the potential risks to physical and mental health and well-being before teleworking is introduced. Referral to ergonomic assessment should be carried out and measures taken to optimize the workplace according to the tasks and the worker. Occupational health services should include either onsite or remote ergonomic risk assessment, and access to occupational and physical therapy services to treat occupational musculoskeletal injuries and eye strain.

Occupational health practitioners should assess teleworkers by identifying characteristics that can be used to identify early signs and symptoms of health outcomes. Occupational health practitioners should inquire about workplace mental health stressors (e.g., low autonomy, high or low demands, harassment by managers or colleagues, and bullying) and non-workplace mental health stressors (e.g., work–life imbalance, demands from child or elder care, and domestic violence). Regular screening of teleworkers for mental health outcomes (e.g., depressive symptoms, isolation, burnout and anxiety) through mobile apps and online surveys should also be considered.

The reporting of occupational illness and injury by occupational health practitioners to the relevant health authorities is an important way to track the incidence of occupational health outcomes and monitor the efficacy of workplace interventions. Illnesses and injuries, arising out of or during the course of telework, may be less likely to be reported as occupational diseases and accidents *(7)*. Occupational health practitioners should assess the work-relatedness of injuries and illnesses among teleworkers and should report cases to occupational health registries while ensuring confidentiality for workers.

Conclusion

When properly organized and supported, telework may have positive impacts on workers' physical and mental health and social well-being. However, when the health and safety risks of teleworking are not prevented and workers cannot make healthy choices while teleworking, such work can have significant negative impacts on health. The general principles embedded in the Occupational Safety and Health Convention *(49)* – that is, the need to assess and manage risks, and the hierarchy of controls – should apply to telework.

Current trends suggest that telework will continue to grow as an integral part of the world of work. By mitigating physical and mental health risk factors, and promoting safe, healthy behaviours and well-being, we can protect all workers, regardless of where they conduct their work.

References

1. Eurofound and the International Labour Office. Working anytime, anywhere: the effects on the world of work. In: Luxembourg & Geneva. Publications Office of the European Union, the International Labour Office; 2017 (https://www.eurofound.europa.eu/publications/report/2017/working-anytime-anywhere-the-effects-on-the-world-of-work.
2. COVID-19: guidance for labour statistics data collection. Defining and measuring remote work, telework, work at home and home-based work. Geneva: International Labour Organization; 2020 (https://ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_747075.pdf)
3. Living, working and COVID-19, COVID-19 series. Luxembourg: Publications Office of the European Union; 2020 (https://www.eurofound.europa.eu/publications/report/2020/living-working-and-covid-19.
4. Telework in the EU before and after the COVID-19: where we were, where we head to. Luxembourg: European Commission; 2020 (https://ec.europa.eu/jrc/sites/default/files/jrc120945_policy_brief_-_covid_and_telework_final.pdf).
5. At least 23 million people have transitioned to teleworking in Latin America and the Caribbean. Geneva: International Labour Organization; 2021 (https://www.ilo.org/caribbean/newsroom/WCMS_811296/lang--en/index.htm).
6. Dingel J, Neiman B. How many jobs can be done at home? : National Bureau of Economic Research; 2020 (https://dx.doi.org/10.3386/w26948).
7. Montreuil S, Lippel K. Telework and occupational health: a Quebec empirical study and regulatory implications. Saf Sci. 2003;41:339–58. (https://dx.doi.org/10.1016/s0925-7535(02)00042-5).
8. Arvola R, Kristjuhan Ü. Workload and health of older academic personnel using telework. Agron Res. 2015;13:741–9 (https://www.researchgate.net/publication/282269727_Workload_and_health_of_older_academic_personnel_using_telework).
9. Lundberg U, Lindfors P. Psychophysiological reactions to telework in female and male white-collar workers. J Occup Health Psychol. 2002;7:354–64 (https://dx.doi.org/10.1037/1076-8998.7.4.354).
10. Steidelmüller C, Meyer S-C, Müller G. Home-based telework and presenteeism across Europe. J Occup Environ Med. 2020;62:998–1005 (https://journals.lww.com/joem/Fulltext/2020/12000/Home_Based_Telework_and_Presenteeism_Across_Europe.4.aspx.
11. Allen TD, Golden TD, Shockley KM. How effective is telecommuting? Assessing the status of our scientific findings. Psychol Sci Public Interest. 2015;16:40–68 (https://pubmed.ncbi.nlm.nih.gov/26403188/).
12. Arvola R, Tint P, Kristjuhan Ü, Siirak V. Impact of telework on the perceived work environment of older workers. Sci Ann Econ Bus. 2017;64:199–214 (http://archive.sciendo.com/SAEB/saeb.2017.64.issue-2/saeb-2017-0013/saeb-2017-0013.pdf).
13. Bosua R, Gloet M, Kurnia S, Mendoza A, Yong J. Telework, productivity and wellbeing: an Australian perspective. Telecommun J Aust. 2013;63 (https://dx.doi.org/10.7790/tja.v63i1.390).

14. Gajendran RS, Harrison DA. The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. J Appl Psychol. 2007;92:1524–41(https://dx.doi.org/10.1037/0021-9010.92.6.1524).

15. de Macêdo TAM, Cabral ELdS, Silva Castro WR, de Souza Junior CC, da Costa Junior JF, Pedrosa FM et al. Ergonomics and telework: a systematic review. Work. 2020;66:777–88 (https://dx.doi.org/10.3233/wor-203224).

16. Heiden M, Widar L, Wiitavaara B, Boman E. Telework in academia: associations with health and well-being among staff. High Educ. 2020;81:707–22 (https://dx.doi.org/10.1007/s10734-020-00569-4).

17. Song Y, Gao J. Does telework stress employees out? A study on working at home and subjective well-being for wage/salary workers. J Happiness Stud. 2019;21:2649–68 (https://dx.doi.org/10.1007/s10902-019-00196-6).

18. Bentley TA, Teo STT, McLeod L, Tan F, Bosua R, Gloet M. The role of organisational support in teleworker wellbeing: A socio-technical systems approach. Appl Ergon. 2016;52:207–15 https://dx.doi.org/10.1016/j.apergo.2015.07.019.

19. Hoffman CL. The experience of teleworking with dogs and cats in the United States during COVID-19. Animals. 2021;11:268 (https://pubmed.ncbi.nlm.nih.gov/33494484.

20. McNaughton D, Rackensperger T, Dorn D, Wilson N. "Home is at work and work is at home": telework and individuals who use augmentative and alternative communication. Work. 2014;48:117–26 (https://dx.doi.org/10.3233/wor-141860).

21. Mann S, Holdsworth L. The psychological impact of teleworking: stress, emotions and health. New Technol Work Employ. 2003;18:196–211 (https://dx.doi.org/10.1111/1468-005x.00121).

22. Henke RM, Benevent R, Schulte P, Rinehart C, Crighton KA, Corcoran M. The effects of telecommuting intensity on employee health. Am J Health Promot. 2015;30:604–12 (https://dx.doi.org/10.4278/ajhp.141027-quan-544).

23. González-Bernal JJ, Santamaría-Peláez M, González-Santos J, Rodríguez-Fernández P, León Del Barco B, Soto-Cámara R. Relationship of forced social distancing and home confinement derived from the COVID-19 pandemic with the occupational balance of the Spanish population. J Clin Med. 2020;9:3606 (https://pubmed.ncbi.nlm.nih.gov/33182379).

24. Higgins C, Duxbury L, Julien M. The relationship between work arrangements and work-family conflict. Work. 2014;48:69–81 (https://dx.doi.org/10.3233/wor-141859).

25. Otsuka S, Ishimaru T, Nagata M, Tateishi S, Eguchi H, Tsuji M et al. A cross-sectional study of the mismatch between telecommuting preference and frequency associated with psychological distress among Japanese workers in the COVID-19 pandemic. J Occup Environ Med. 2021; (https://journals.lww.com/joem/Fulltext/9000/A_Cross_Sectional_Study_of_the_Mismatch_Between.97817.aspx).

26. Chakrabarti S. Does telecommuting promote sustainable travel and physical activity? J Transp Health. 2018;9:19–33 (https://dx.doi.org/10.1016/j.jth.2018.03.008).

27. Rodríguez-Nogueira Ó, Leirós-Rodríguez R, Benítez-Andrades JA, Álvarez-Álvarez MJ, Marqués-Sánchez P, Pinto-Carral A. Musculoskeletal pain and teleworking in times of the COVID-19: analysis of the impact on the workers at two Spanish universities. Int J Environ Res Public Health. 2020;18:31 (https://pubmed.ncbi.nlm.nih.gov/33374537/).

28. Restrepo BJ, Zeballos E. The effect of working from home on major time allocations with a focus on food-related activities. Rev Econ Househ. 2020:1–23 (https://pubmed.ncbi.nlm.nih.gov/32863807).

29. Broughton A, Battaglini M. Teleworking during the COVID-19 pandemic: risks and prevention strategies. Luxembourg: European Union; 2021 (https://osha.europa.eu/en/publications/teleworking-during-covid-19-pandemic-risks-and-prevention-strategies/view.

30. Robertson MM, Ciriello VM, Garabet AM. Office ergonomics training and a sit-stand workstation: effects on musculoskeletal and visual symptoms and performance of office workers. Appl Ergon. 2013;44:73–85 (https://dx.doi.org/10.1016/j.apergo.2012.05.001).

31. Teleworking during the COVID-19 pandemic and beyond: a practical guide. Geneva: International Labour Organization; 2020 (https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/instructionalmaterial/wcms_751232.pdf).

32. Home working and display screen equipment (DSE) during COVID-19: factsheet. London: Society of Occupational Medicine; 2020 (https://www.som.org.uk/Home_Working_and_DSE_during_COVID-19_factsheet.pdf.

33. International Labour Office, International Ergonomics Association. Ergonomic checkpoints. Geneva: International Labour Office; 2010 (https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/instructionalmaterial/wcms_178593.pdf.

34. Ergonomic checkpoints app. Geneva: International Labour Organization; 2021 (https://www.ilo.org/global/topics/safety-and-health-at-work/resources-library/publications/WCMS_438082/lang--en/index.htm.

35. Ebara T. The 7 HFE tips for teleworking/home-learning using tablet/smartphone devices. Jpn J Ergon. 2021;57:S01 (https://dx.doi.org/10.5100/jje.57.s01-1).

36. Anshel J. Visual ergonomics handbook. Boca Raton: CRC Press; 2005 (https://dx.doi.org/10.1201/9781420032055.

37. Safe listening devices and systems: a WHO-ITU standard. Geneva: World Health Organization; 2019 (https://apps.who.int/iris/bitstream/handle/10665/280085/9789241515276-eng.pdf).

38. Lautsch BA, Kossek EE, Eaton SC. Supervisory approaches and paradoxes in managing telecommuting implementation. Hum Relat. 2009;62:795–827 (https://www.researchgate.net/publication/258139922_Supervisory_Approaches_and_Paradoxes_in_Managing_Telecommuting_Implementation).

39. Madlock PE. The influence of motivational language in the technologically mediated realm of telecommuters. Hum Resour Manag J. 2013;23:196–210 (https://www.researchgate.net/publication/260416037_The_influence_of_motivational_language_in_the_technologically_mediated_realm_of_telecommuters).

40. Burton J. WHO healthy workplace framework and model: background and supporting literature and practices. Geneva: World Health Organization; 2010 (https://www.who.int/occupational_health/healthy_workplace_framework.pdf).

41. van Dongen JM, Proper KI, van Wier MF, van der Beek AJ, Bongers PM, van Mechelen W et al. Systematic review on the financial return of worksite health promotion programmes aimed at improving nutrition and/or increasing physical activity. Obes Rev. 2011;12:1031–49 (https://dx.doi.org/10.1111/j.1467-789x.2011.00925.x).

42. Forastieri V. SOLVE: integrating health promotion into workplace OSH policies: trainer's guide. Geneva: International Labour Organization; 2012 (https://www.ilo.org/global/topics/safety-and-health-at-work/resources-library/training/WCMS_178397/lang--en/index.htm).

43. WHO guidelines on physical activity and sedentary behaviour: at a glance. Geneva: World Health Organization; 2020 https://www.who.int/publications/i/item/9789240014886).

44. Global action plan on physical activity 2018-2030: more active people for a healthier world: at-a-glance. Geneva: World Health Organization; 2018 (https://apps.who.int/iris/bitstream/handle/10665/272722/9789241514187-eng.pdf).

45. 5 keys to a healthy diet. Geneva: World Health Organization; 2014 (https://www.who.int/docs/default-source/healthy-diet/5keyshealthydiet-brochure.pdf?sfvrsn=1f460e75_4).

46. FCTC: WHO Framework Convention on Tobacco Control: Guidelines for implementation of Article 8 – Protection from exposure to tobacco smoke Geneva: World Health Organization; 2005 (9240014888; https://www.who.int/fctc/treaty_instruments/adopted/Guidelines_Article_8_English.pdf.

47. ILO conventions and recommendations related to smoking at the workplace. Geneva: International Labour Organization; 2009 (https://www.ilo.org/global/topics/safety-and-health-at-work/areasofwork/workplace-health-promotion-and-well-being/WCMS_118399/lang--en/index.htm.

48. Management of alcohol- and drug-related issues in the workplace. Code of practice. Geneva: International Labour Organization; 1999 (https://www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_PUBL_9221094553_EN/lang--en/index.htm.

49. C155 – Occupational Safety and Health Convention. Geneva: International Labour Organization; 1981 (https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C155.

50. R164 – Occupational Safety and Health Recommendation. Geneva: International Labour Organization; 1981 (https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:55:0::NO::P55_TYPE,P55_LANG,P55_DOCUMENT,P55_NODE:REC,en,R164,/Document.

51. C187 – Promotional Framework for Occupational Safety and Health Convention. Geneva: International Labour Organization; 2006 (https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C187.

52. Guidelines on occupational safety and health management systems. Geneva: International Labour Organization; 2001 (https://www.ilo.org/safework/info/standards-and-instruments/WCMS_107727/lang--en/index.htm.

53. Wang B, Liu Y, Qian J, Parker SK. Achieving effective remote working during the COVID-19 pandemic: a work design perspective. Appl Psychol. 2020:10.1111/apps.12290 (https://pubmed.ncbi.nlm.nih.gov/33230359).

54. Managing disability in the workplace: ILO code of practice. Geneva: International Labour Organization; 2002 (https://www.ilo.org/skills/pubs/WCMS_103324/lang--en/index.htm.

55. Teleworking hints and FAQs: a guide for managers. Perth, Australia: Government of Western Australia; 2021 (https://www.commerce.wa.gov.au/sites/default/files/atoms/files/teleworking_hints_and_faqs.pdf.

56. Robertson MM, Mosier K. Work from home: human factors/ergonomics considerations for teleworking. Geneva: International Labour Organization; 2020 (https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_742061.pdf.

57. Hours of Work (Commerce and Offices) Convention. Geneva: International Labour Organization; 1930:C30 (https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C030.

58. C106 – Weekly Rest (Commerce and Offices) Convention. Geneva: International Labour Organization; 1957 (https://www.ilo.org/dyn/normlex/en/f?p=1000:12100:::NO:12100:P12100_INSTRUMENT_ID:312251.

59. Framework agreement on telework. Brussels: European Union; 2002 (https://www.worker-participation.eu/EU-Social-Dialogue/Interprofessional-ESD/Outcomes/Framework-agreements/Framework-agreement-on-telework-2002.

60. C161 – Occupational Health Services Convention. Geneva: International Labour Organization; 1985 (https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C161.

Annex: Methods

Review of the scientific literature

A rapid review of the literature pertaining to the health impact of telework was conducted, including peer-reviewed publications from the year 2000 to 1 June 2021. Databases queried included PubMed, Scopus and Google Scholar for the following search terms: "telecommute*" or "telework*" and "health", "wellness", "wellbeing", "burnout", "ergonomic", "psychosocial effect", "stress", "muscular skeletal strain", "musculoskeletal disorder", "physical activity", "ergonom*", "diet", "social interaction", "anxiety", "depression", "mood", "insomnia", "exhaustion", "fatigue" or "isolation". A total of 127 articles were screened for relevance. Articles without exposure to telework (as defined in Section 1.1) or a measured health outcome or health risk were excluded from the review. After screening, 47 articles were included in the review.

The overall quality of the literature is limited by the retrospective and qualitative nature of the data and the small sample size, which limits statistical significance and introduces bias and misclassification. Most studies are from high-income countries and primarily assess office-based work environments; this limits the external validity and relevance to most of the world's workers. The geographically narrow distribution of the literature was also noted in previous reviews of the scientific literature, with 34 of 38 articles published on telework and ergonomics conducted in high-income countries.
The review of the literature was not intended to make evidence-based recommendations, but to explore the available evidence on the impact of telework on worker health and well-being.

Development of technical content

The content was developed through:

1. Reviewing of existing evidence of health impacts of telework.

2. Reviewing existing WHO guidelines and ILO standards relevant to healthy and safe telework.

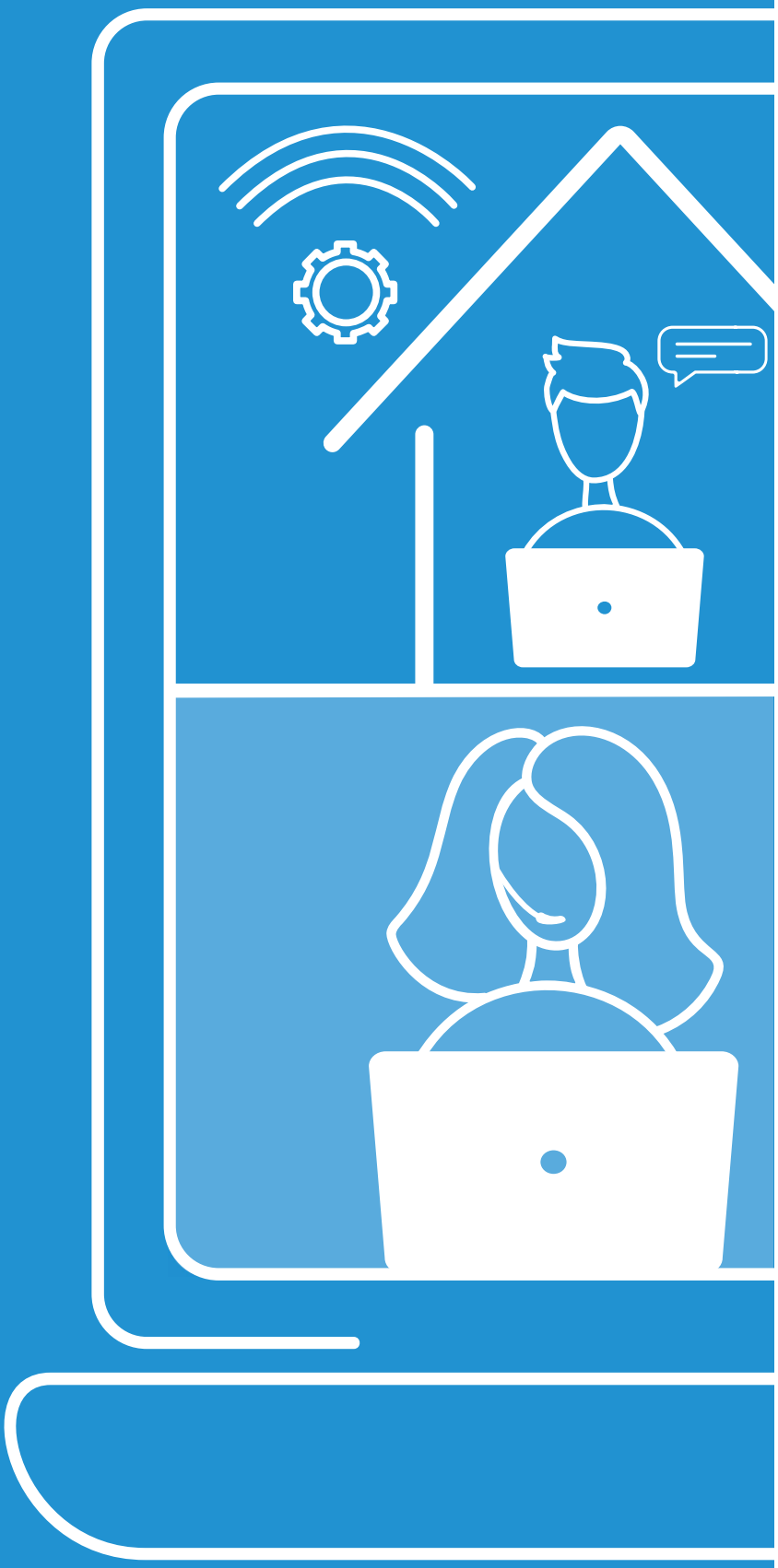
3. Reviewing guidance and tools published by inter-governmental agencies and relevant professional associations, such as European Agency for Safety and Health at Work, International Ergonomic Association, International Society of Occupational Medicine.

4. Writing first draft and peer review by external subject matter experts.

5. Inviting relevant stakeholders to submit comments on the final draft.

All external experts and reviewers provided declaration of interests and no competing interests were identified. No commercial entities were involved in the content development.

This brief provides information about the health impact of telework and guidance on how to organize telework to protect and promote physical and mental health and social wellbeing of workers.



Global Occupational and Workplace Health Programme
Department for Environment, Climate Change and Health
Healthier Populations Division
World Health Organization
20, avenue Appia
CH-1211 Geneva 27, Switzerland
workershealth@who.int
https://www.who.int/health-topics/occupational-health

Labour Administration, Labour Inspection and Occupational Safety and Health Branch
Governance and Tripartism Department
International Labour Organization
4 route des Morillons
CH-1211, Geneva 22, Switzerland
labadmin-osh@ilo.org
www.ilo.org/labadmin-osh

9789240040977