The following information resources have been selected by the National Health Library and Knowledge Service Evidence Virtual Team in response to your question. The resources are listed in our estimated order of relevance to practicing healthcare professionals confronted with this scenario in an Irish context. In respect of the evolving global situation and rapidly changing evidence base, it is advised to use hyperlinked sources in this document to ensure that the information you are disseminating to the public or applying in clinical practice is the most current, valid and accurate. For further information on the methodology used in the compilation of this document—including a complete list of sources consulted—please see our National Health Library and Knowledge Service Summary of Evidence Protocol.

Question 196

What is the best evidence on the impact of remote working during the COVID–19 pandemic?

What is the best evidence on the impact of remote working during the COVID-19 pandemic?

Main Points

1. Impacts of working at home on individuals' mental and physical health vary considerably. At a minimum, opportunity for regular communication between managers and colleagues are important and help to reduce negative impacts associated with feeling isolated.
2. In a longitudinal survey of COVID-19 anxiety among Finnish workers, perceived loneliness, psychological distress, technostress and neuroticism were identified as robust psychological predictors of COVID-19 anxiety. Women and young people experienced higher anxiety.
3. In a rapid health assessment in Japan, several high-priority health effects were identified in teleworkers including eye/shoulder/back strain; stress caused by changes associated with the introduction of a new system; isolation caused by reduced communication; overlooking of personal changes; and reduced work productivity.
4. The Department of Enterprise, Trade and Employment, Health and Safety Authority and CIPD offer guidance and practical tips to employees and employers on remote working.

Summary of Evidence

Research has identified that remote work can have negative effects on mental health, with employees experiencing increased feelings of isolation, loneliness and stress. Employers also face challenges. Feedback provided by employers to the Department of Enterprise, Trade and Employment Ireland has highlighted how remote working does not easily support creativity, group dynamics, shared ownership and collegiality[2].

In a recent systematic review, De Macêdo et al[6] consider the main advantages and disadvantages of teleworking. The authors conclude that telecommuting can be a valuable tool for balancing professional and family life, and can help to improve the well-being of workers; however, several factors influence the overall remote working experience, and there is a need for companies to adopt unique strategies reflecting their own situation.

Oakman et al[7] conducted a rapid review with the aim of investigating the impact of working at home on individual workers' mental and physical health, and determining any gender differences, in order to develop recommendations for employers and employees to optimise workers' health. Overall, the findings suggest the impacts of working at home on individuals' mental and physical health vary considerably. However, despite limitations — with a relatively low number of studies reported — some consistent principles emerge which can be used to support employers in improving working conditions to mitigate the negative effects of working at home, and enhance the positive effects on employees' health. At a minimum, opportunities for regular communication between managers and colleagues are important and help to reduce the negative impacts associated with feeling isolated while working at home. In situations where working at home continues to be mandatory, consideration of the impact on the home environment and the financial impact of being at home on a full-time basis is required. Some financial compensation may be

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appropriate for employees to reduce the fiscal burden, although some costs may be offset by reduced costs associated with commuting.

Barone Gibbs et al[9] investigates the longitudinal impact of COVID-19 on work practices, lifestyle and well-being among desk workers during shelter-at-home restrictions. Results showed that compared to approximately 1 year before the pandemic, desk workers tended to increase sedentary time and had reduced sleep quality, worse mood, decreased quality of life and decreased work-related health during the COVID-19 shelter-at-home period; yet, diet and physical activity did not change and typical wake-time was delayed. The authors conclude that employers should consider supporting healthy lifestyle and well-being among desk workers during pandemic-related social restrictions, regardless of remote working status.

In a longitudinal survey of COVID-19 anxiety among Finnish workers, results showed that perceived loneliness, psychological distress, techno stress and neuroticism were identified as robust psychological predictors of COVID-19 anxiety. Increase in psychological distress and technostress during the COVID-19 crisis predicted higher COVID-19 anxiety. A recent change in their field of work and decreased social support from work communities predicted COVID-19 anxiety. Women and young people experienced higher anxiety[10].

Nagata et al[12] developed a rapid health impact assessment in Japan to evaluate positive and negative health effects of teleworking and recommended easily implementable countermeasures. Although teleworkers experienced a reduced risk of COVID-19 infection, several high-priority health effects were identified. These included eye/shoulder/back strain; stress caused by changes associated with the introduction of a new system; isolation caused by reduced communication; overlooking of personal changes; and reduced work productivity. The authors outline proposed countermeasures for enhancing health and minimizing adverse health effects in the reporting of health impact assessments of teleworkers, non-teleworkers, and family members of teleworkers.

The Department of Enterprise, Trade and Employment (DETE), Health Safety Authority (HSA) and CIPD Ireland offer practical guidance for employers and employees working remotely[1, 3, 5]. The DETE recognises that COVID-19 has brought remote working to the forefront of working life and have produced a remote working strategy to ensure that ensure that remote working is a permanent feature in the Irish workplace in a way that maximises economic, social and environmental benefits[2].

The HSA offers guidance on work-related stress for employers and employees during COVID-19. The guidance outlines individual stress management approaches for employees; and also focuses on employers, and suggests strategies to ensure that communication, relationship management and leadership are more supportive to employees, more sustaining and more mindful of human frailties than has previously been the case[4].

Irish/International Guidance

[Department of Enterprise, Trade and Employment Guidance for Working Remotely](#)[1]

This website includes up-to-date information for employers and employees on working remotely. There are links to the latest guidance from the Department and a checklist for working remotely.

[Department of Enterprise, Trade and Employment (January 2021) Making Remote Work: National Remote Work Strategy](#)[2]

The objective is to ensure that remote working is a permanent feature in the Irish workplace in a way that maximises economic, social and environmental benefits. The Remote Work Strategy is built on three fundamental pillars which will be bolstered by underpinning conditions. PILLAR ONE is focussed on creating a conducive environment for the adoption of remote work. As remote working is a new way of working, it will need new and different measures in place to support it into the future. Changes to how and where people work will have impacts on a number of different areas such as the rights and responsibilities of employers and employees, health and safety legislation and tax arrangements. The actions in this pillar are centred on supporting employers and employees. PILLAR TWO highlights the importance of the development and leveraging of remote work infrastructure to facilitate increased remote work adoption. Adequate infrastructure must be in place to allow employers and employees to avail of remote working opportunities both at home and in hubs. The actions in this pillar are focussed on development and investment in the national hub infrastructure and the national delivery of broadband, both of which will be significant drivers in facilitating people to work

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1 Department of Enterprise, Trade and Employment. Guide for Working Remotely.
https://enterprise.gov.ie/en/What-We-Do/Workplace-and-Skills/Remote-Working/Guidance-for-working-remotely.html [Accessed 19 February 2021]
2 Department of Enterprise, Trade and Employment (January 2021) Making Remote Work: National Remote Work Strategy. https://enterprise.gov.ie/en/Publications/Publication-files/Making-Remote-Work.pdf [Accessed 19 February 2021]

remotely. PILLAR THREE is centred on maximising the benefits of remote work to achieve public policy goals. Policymakers need to be aligned by a shared vision and supported by access to the most relevant data to inform evidence-based policy. The actions in this pillar will ensure that data and collaborative practices are used to best effect to achieve the State's multiple policy goals.

Health and Safety Authority (Oct 2020) Guidance on working from home (for employers and employee)[3]

Guidance document highlighting the benefits and challenges of homeworking.

Health Safety Authority (HSA) Work Related Stress: a guide for employers and employees[4]

This guidance looks at managing mental health at work during COVID-19 and outlines individual stress management approaches for employees. It also focuses on employers and suggests strategies to ensure that the communications, relationship management and leadership to all employees, at all hierarchical levels are more supportive, more sustaining and more mindful of human frailties than has previously been the case. Within reason, employers should ensure that employee's mental health is provided with extra supports and that their systems of work are adapted to these unusual, unique and historic times.

CIPD Ireland (2020) Employee remote working[5]

This guidance outlines the key points for consideration and communication as remote working is implemented to mitigate the spread of COVID-19 in line with government advice.

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[3] Health and Safety Authority (Oct 2020) Guidance on working from home (for employers and employee) https://www.hsa.ie/eng/supports_for_business/business_and_education_supports/guidance_for_employers_and_employees_working_from_home/guidance_for_employers_and_employees_working_from_home.pdf [Accessed 19 February 2021]

[4] Health Safety Authority (HSA) Work related stress during COVID-19: a guide for employers and employees https://www.hsa.ie/eng/topics/COVID-19/COVID-19_advice_for_employers_and_employees/COVID-19_stress_and_work_-_may_26_2020.pdf [Accessed 23 February 2021]

[5] CIPD Ireland. Employee remote working. https://www.cipd.ie/news-resources/practical-guidance/guides/employee-remote-working#gref [Accessed 19 February 2021]

International Literature

De Macêdo, TAM et al (2020) Ergonomics and telework: A systematic review[6]

BACKGROUND: Telework has been widely studied by public and private organizations; however, in ergonomics, studies that focused on this topic are still sporadic.

OBJECTIVE: To systematize the qualified scientific research related to ergonomics and teleworking to determine the main benefits and disadvantages, and to identify the main issues addressed by authors.

METHODS: A thorough search was conducted in the Scopus/Embase and Web of Science databases for this review. The following descriptors were used for the cataloguing of articles: "teleworking", "telecommuting", "telecommuters", "home office", "ergonomics" and "human factors". 36 studies were selected.

CONCLUSIONS: Results suggest that telecommuting can be a valuable tool for balancing professional and family life, and for helping to improve the well-being of workers; however, several factors can influence the overall remote working experience, and there is a need for companies to adopt unique strategies reflecting their own situation.

Oakman, J et al (2020) A rapid review of mental and physical health effects of working at home: how do we optimise health?[7]

BACKGROUND: The coronavirus (COVID-19) pandemic has resulted in changes to the working arrangements of millions of employees who are now based at home and may continue to work at home, in some capacity, for the foreseeable future. Decisions on how to promote

[6] De Macêdo TAM, Cabral ELDS, Silva Castro WR, de Souza Junior CC, da Costa Junior JF, Pedrosa FM, da Silva AB, de Medeiros VRF, de Souza RP, Cabral MAL, Másculo FS. Ergonomics and telework: A systematic review. Work. 2020;66(4):777-788. doi: 10.3233/WOR-203224. PMID: 32925139.

[7] Oakman J, Kinsman N, Stuckey R, Graham M, Weale V. A rapid review of mental and physical health effects of working at home: how do we optimise health? BMC Public Health. 2020 Nov 30;20(1):1825. doi: 10.1186/s12889-020-09875-z. PMID: 33256652; PMCID: PMC7703513.

employees' health while working at home need to be based on the best available evidence to optimise worker outcomes.

OBJECTIVE: To review the impact of WAH on individual workers' mental and physical health, to determine any gender differences, and to develop recommendations for employers and employees to optimise workers' health.

METHOD: A search was undertaken in PsychInfo, ProQuest and Web of Science, from 2007 to May 2020. Selection criteria included studies which involved employees who regularly worked at home, and specifically reported on physical or mental health-related outcomes. Two review authors independently screened studies for inclusion, one author extracted data and conducted risk of bias assessments with review by a second author.

RESULTS: 23 papers meet the selection criteria. 10 health outcomes were reported: pain, self-reported health, safety, well-being, stress, depression, fatigue, quality of life, strain, and happiness. The impact on health outcomes was strongly influenced by the degree of organisational support available to employees, colleague support, social connectedness outside of work, and levels of work to family conflict. Overall, women were less likely to experience improved health outcomes when working at home.

CONCLUSIONS: This review identified several health outcomes affected by home working. The health/work relationship is complex and requires consideration of broader system factors to optimise the effects of working at home on workers' health. It is likely that mandated working at home will continue to some degree for the foreseeable future; organisations will need to implement formalised working at home policies that consider work-home boundary management support, role clarity, workload, performance indicators, technical support, facilitation of co-worker networking, and training for managers.

[Kniffin, KM et al (2021) COVID-19 and the workplace: Implications, issues, and insights for future research and action](#)[8]

The impacts of COVID-19 on workers and workplaces across the globe have been dramatic. This broad review of prior research rooted in work and organizational psychology is intended to make sense of the implications for employees, teams and work organizations. This review of relevant literature focuses on: (a) emergent changes in work practices such as working from home, or virtual teamwork; and (b) emergent changes for workers such as social distancing, stress, and unemployment. In addition, potential moderating factors — demographic characteristics, individual differences, and organizational norms — are examined, given the likelihood that COVID-19 will generate disparate effects. This broad scoping review provides an integrative approach for considering the implications of COVID-19 for work, workers and organizations, while also identifying issues for future research and insights to inform solutions.

[Barone Gibbs, B et al (2021) COVID-19 shelter-at-home and work, lifestyle and well-being in desk workers](#)[9]

BACKGROUND: Emerging cross-sectional reports find that the COVID-19 pandemic and related social restrictions negatively affect lifestyle behaviours and mental health in general populations.
AIMS: To study the longitudinal impact of COVID-19 on work practices, lifestyle and well-being among desk workers during shelter-at-home restrictions.
METHODS: We added follow-up after completion of a clinical trial among desk workers to longitudinally measure sedentary behaviour, physical activity, sleep, diet, mood, quality of life and work-related health using validated questionnaires and surveys. We compared outcomes assessed before and during COVID-19 shelter-at-home

[8] Kniffin KM, Narayanan J, Anseel F, Antonakis J, Ashford SP, Bakker AB, Bamberger P, Bapuji H, Bhave DP, Choi VK, Creary SJ, Demerouti E, Flynn FJ, Gelfand MJ, Greer LL, Johns G, Kesebir S, Klein PG, Lee SY, Ozcelik H, Petriglieri JL, Rothbard NP, Rudolph CW, Shaw JD, Sirola N, Wanberg CR, Whillans A, Wilmot MP, Vugt MV. COVID-19 and the workplace: Implications, issues, and insights for future research and action. Am Psychol. 2021 Jan;76(1):63-77. doi: 10.1037/amp0000716. Epub 2020 Aug 10. PMID: 32772537.
[9] Barone Gibbs B, Kline CE, Huber KA, Paley JL, Perera S. COVID-19 shelter-at-home and work, lifestyle and well-being in desk workers. Occup Med (Lond). 2021 Feb 18:kqab011. doi: 10.1093/occmed/kqab011. Epub ahead of print. PMID: 33598681.

restrictions. We assessed whether changes in outcomes differed by remote working status using analysis of covariance (ANCOVA). RESULTS: Participants (N = 112; 69% female; mean (SD) age = 45.4 (12.3) years; follow-up = 13.5 (6.8) months) had substantial changes to work practices, including 72% changing to remote work. Deleterious changes from before to during shelter-at-home included: 1.3 (3.5)-h increase in non-workday sedentary behaviour; 0.7 (2.8)-point worsening of sleep quality; 8.5 (21.2)-point increase in mood disturbance; reductions in five of eight quality of life subscales; 0.5 (1.1)-point decrease in work-related health (P < 0.05). Other outcomes, including diet, physical activity and workday sedentary behaviour, remained stable (P ≥ 0.05). Workers who were remote before and during the pandemic had greater increases in non-workday sedentary behaviour and stress, with greater declines in physical functioning. Wake-time was delayed overall by 41 (61) min, and more in workers who changed to remote.
CONCLUSIONS: Employers should consider supporting healthy lifestyle and well-being among desk workers during pandemic-related social restrictions, regardless of remote working status.

[Savolainen, I et al (2021) COVID-19 Anxiety-A Longitudinal Survey Study of Psychological and Situational Risks among Finnish Workers](#)[10]
BACKGROUND: The COVID-19 crisis has changed the conditions of many all over the globe. One negative consequence of the ongoing pandemic is anxiety brought about by uncertainty and the COVID-19 disease. Increased anxiety is a potential risk factor for wellbeing at work. This study investigated psychological, situational, and socio-demographic predictors of COVID-19 anxiety using longitudinal data. METHODS: A nationally representative sample of Finnish workers (N = 1308) was collected before and during the COVID-19 crisis. Eighty percent of the participants responded to the follow-up study (N = 1044). COVID-19 anxiety was measured with a modified Spielberger

[10] Savolainen I, Oksa R, Savela N, Celuch M, Oksanen A. COVID-19 Anxiety-A Longitudinal Survey Study of Psychological and Situational Risks among Finnish Workers. Int J Environ Res Public Health. 2021 Jan 19;18(2):794. doi: 10.3390/ijerph18020794. PMID: 33477756; PMCID: PMC7832302.

State-Trait Anxiety Inventory. Psychological and situational predictors included perceived loneliness, psychological distress, technostress, personality, social support received from the work community, and remote working. A number of socio-demographic factors were also investigated.

RESULTS: Perceived loneliness, psychological distress, technostress, and neuroticism were identified as robust psychological predictors of COVID-19 anxiety. Increase in psychological distress and technostress during the COVID-19 crisis predicted higher COVID-19 anxiety. A recent change in their field of work and decreased social support from work communities predicted COVID-19 anxiety. Women and young people experienced higher anxiety.

CONCLUSIONS: Different factors explain workers' COVID-19 anxiety. Increased anxiety can disrupt wellbeing at work, emphasizing the organizations' role in maintaining an inclusive and caring work culture and providing technical and psychological support to workers during crisis.

[Schall, MC and Chen, P (2021) Evidence-Based Strategies for Improving Occupational Safety and Health Among Teleworkers During and After the Coronavirus Pandemic](#)[11]

OBJECTIVE: To review practical, evidence-based strategies that may be implemented to promote teleworker safety, health, and well-being during and after the coronavirus pandemic of 2019 (COVID-19). Background: The prevalence of telework has increased due to COVID-19. The upsurge brings with it challenges, including limited face-to-face interaction with colleagues and supervisors, reduced access to ergonomics information and resources, increased social isolation, and blurred role definitions, which may adversely affect teleworker safety, health and well-being.

METHOD: Evidence-based strategies for improving occupational safety, health and well-being among teleworkers were synthesized in a narrative-based review to address common challenges associated

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[11] Schall MC Jr, Chen P. Evidence-Based Strategies for Improving Occupational Safety and Health Among Teleworkers During and After the Coronavirus Pandemic. Hum Factors. 2021 Jan 8:18720820984583. doi: 10.1177/0018720820984583. Epub ahead of print. PMID: 33415997.

with telework considering circumstances unique to the COVID-19 pandemic.

RESULTS: Interventions aimed at increasing worker motivation to engage in safe and healthy behaviours via enhanced safety leadership, managing role boundaries to reduce occupational safety and health risks, and redesigning work to strengthen interpersonal interactions, interdependence, as well as workers' initiation have been supported in the literature.

APPLICATION: This review provides practical guidance for group-level supervisors, occupational safety and health managers, and organizational leaders responsible for promoting health and safety among employees despite challenges associated with an increase in telework.

[Nagata, T et al (2021) Anticipated health effects and proposed countermeasures following the immediate introduction of telework in response to the spread of COVID-19: The findings of a rapid health impact assessment in Japan](#)[12]

OBJECTIVES: The health effects of telework, which was introduced extensively in the immediate context of the COVID-19 pandemic crisis in Japan, on teleworkers, their families and non-teleworkers, are unknown. Accordingly, we developed a rapid health impact assessment (HIA) to evaluate positive and negative health effects of telework on these groups and recommended easily implementable countermeasures.

METHODS: Immediately after an emergency was declared in Japan, we implemented a rapid, 5-step HIA. We screened and categorized health effects of telework for the three above-mentioned groups, extracting their content, directionality, and likelihood. Following a scoping exercise to determine the HIA's overall implementation, five experienced occupational health physicians appraised and prioritized the screened items and added new items. We outlined specific

[12] Nagata T, Ito D, Nagata M, Fujimoto A, Ito R, Odagami K, Kajiki S, Uehara M, Oyama I, Dohi S, Fujino Y, Mori K. Anticipated health effects and proposed countermeasures following the immediate introduction of telework in response to the spread of COVID-19: The findings of a rapid health impact assessment in Japan. J Occup Health. 2021 Jan;63(1):e12198. doi: 10.1002/1348-9585.12198. PMID: 33527667; PMCID: PMC7851629.

countermeasures and disseminated the results on our website. A short-term evaluation was conducted by three external occupational health physicians and three nurses.

RESULTS: Following screening and appraisal, 59, 29, and 27 items were listed for teleworkers, non-teleworkers, and family members of teleworkers, respectively, covering work, lifestyle, disease and medical care, and home and community. Targeted countermeasures focused on the work environment, business management, communications, and lifestyles for teleworkers; safety and medical guidelines, work prioritization, and regular communication for non-teleworkers; and shared responsibilities within families and communication outside families for family members of teleworkers.

CONCLUSION: The HIA's validity and the countermeasures' practical applicability were confirmed by the external evaluators. They can be easily applied and adapted across diverse industries to mitigate the wider negative effects of telework and enhance its positive effects.

[Contreras, F et al (2020) E-Leadership and Teleworking in Times of COVID-19 and Beyond: What We Know and Where Do We Go](#)[13]
This study investigates the existing knowledge on teleworking and e-leadership; and analyzes the supposed challenges. The literature review shows that companies with effective e-leadership can view teleworking as an opportunity. It is advantageous for not only companies' productivity but also the environment and people who work remotely. However, traditional or no leadership can result in some risks. Thriving in remote work environments implies that managers must adjust the companies' structure, making them less hierarchical, and developing new abilities to establish a strong and trustworthy relationship with their employees to maintain their competitiveness, while retaining a genuine concern for their employees' well-being. Similarly, successful e-leadership must be able to consolidate and lead effective virtual teams to accomplish

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[13] Contreras F, Baykal E, Abid G. E-Leadership and Teleworking in Times of COVID-19 and Beyond: What We Know and Where Do We Go. Front Psychol. 2020 Dec 11;11:590271. doi: 10.3389/fpsyg.2020.590271. PMID: 33362656; PMCID: PMC7759482.

organizational goals. This study contributes to the literature and leaders during the pandemic.

Other

[Department of Health (last updated 10 January 2021) Healthy Ireland: Keep Well Campaign](#)[14]
Useful resource providing a plan to support your mental health and wellbeing during the COVID-19 pandemic.

[Chartered Institute of Ergonomics and Human Factors (2020) Home Working and Staying Healthy](#)[15]
Infographic that offers simple guidance and advice on setting up your workstation, creating the right environment for working from home and staying mentally fit.
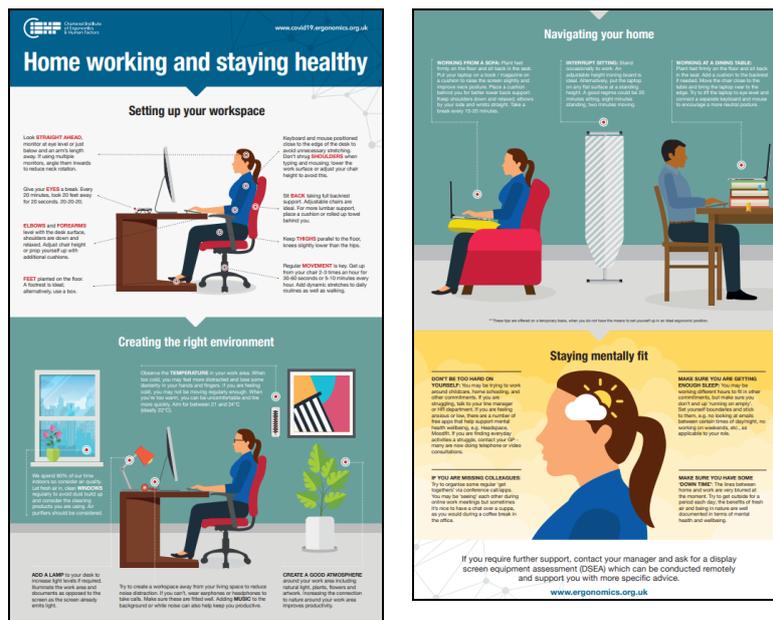
Click on image to enlarge.

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[14] Healthy Ireland; Department of Health (last updated 10 January 2021) Keep Well Campaign. https://www.gov.ie/en/campaigns/healthy-ireland/
[15] Chartered Institute of Ergonomics and Human Factors. Home working and Staying Healthy https://www.ergonomics.org.uk/common/Uploaded%20files/Publications/CIEHF-Working-from-Home-Infographic.pdf [Accessed 19 February 2021]

The Cochrane Work Review Group (2020) Special Overview: working at home[16]

Collates the Cochrane Reviews that are identified as most directly relevant for employers and those working at home due the 2019 Coronavirus outbreak. Reviews evaluate the effects of interventions on the following topics:

- ☐ Staying active
- ☐ Optimization of the work environment
- ☐ Prevention of eye problems due to computer use
- ☐ Actions for pain of the lower back, neck, shoulders and arms

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[16] The Cochrane Work Review Group. Special Overview Working at home
https://work.cochrane.org/news/special-overview-working-home [Accessed 19 February 2021]

The following search strategy was used:

"remote work*"[Title/Abstract] OR "telework*"[Title/Abstract] OR "home working"[Title/Abstract] OR "working from home"[Title/Abstract] OR "remote office"[Title/Abstract] OR "e-work"[Title/Abstract] OR "virtual teams"[Title/Abstract] OR "virtual office"[Title/Abstract] OR "virtual work*"[Title/Abstract] OR "mobile work*"[Title/Abstract] OR "Teleworking"[MeSH Terms]

AND

"wellbeing"[Title/Abstract] OR "well-being"[Title/Abstract] OR "well-being"[Title/Abstract] OR "stress*"[Title/Abstract] OR "distress*"[Title/Abstract] OR "psychological stress"[Title/Abstract] OR "depress*"[Title/Abstract] OR "anxiet*"[Title/Abstract] OR "emotion*"[Title/Abstract] OR "loneliness"[Title/Abstract] OR "lonely"[Title/Abstract] OR "relationships"[Title/Abstract] OR "social support*"[Title/Abstract] OR "sickness"[Title/Abstract] OR "belonging"[Title/Abstract] OR "identity"[Title/Abstract] OR "health*"[Title/Abstract] OR "Work Engagement"[MeSH Terms]

[†] Marie Carrigan, Librarian, St. Luke's Radiation Oncology Network [Author; Editor]; Brendan Leen, Area Library Manager, HSE South [Editor]