



Emerging Evidence Alert

October 2022

This Emerging Evidence Alert includes the latest peer-reviewed articles, reports and evidence on a range of workplace health and safety, prevention, recovery at work and return to work topics published in September 2022 only.

Contents

- Description of Evidence Levels Definitions Used in this Review..... 2**
- Fostering Work Participation 3**
 - Return to Work..... 3
 - Presenteeism and Absenteeism 6
 - Working Hours..... 7
- Building Employer Capability 7**
 - Organisational Issues..... 7
 - Job Design..... 9
 - Shift Work..... 10
 - Management and Leadership..... 14
 - Work Ability 15
- Adapting to the Future of Work..... 16**
 - Aging Workforce..... 16
- Guiding and Supporting Mental Health and Wellbeing 17**
 - Mental Health..... 17
 - Bullying and Harassment..... 21
 - Psychosocial Issues..... 22
- Enabling Healthy and Safe Workplaces 24**
 - Health and Wellbeing 24
 - Work Health and Safety..... 29
 - Risk Assessment..... 36
 - Chronic Health Issues 38
 - Occupational Exposure..... 42
 - Physical Activity 48
 - Musculoskeletal Health 49

Description of Evidence Levels Definitions Used in this Review

1. **Level of Evidence** – Certain study designs are scientifically stronger at answering a question. The scoring hierarchy we provided is presented below.

Level of Evidence	Description
Level 1	Evidence from a systematic review or meta-analysis of relevant studies.
Level 2	Evidence from a randomised controlled trial
Level 3	Evidence from a controlled intervention trial without randomisation (i.e. quasi-experimental).
Level 4	Evidence from a case-control or cohort study.
Level 5	Evidence from a single case study, a case series, or qualitative study.
Level 6	Evidence from opinion pieces, reports of expert committees and/or from literature reviews (scoping or narrative).

2. **Relevance** – Research carried out in Australia or similar countries is most relevant to Australian readers.

Level	Description
A	Study conducted in Australia or the study has been conducted outside Australia but confounders unlikely to affect relevance
B	Study conducted outside Australia and confounders likely to affect generalisability



Know anyone that would like to subscribe?

Share this with colleagues and professional networks who are interested in receiving the latest WHS research from around the world delivered to their inbox monthly.

[Subscribe now >](#)

Fostering Work Participation

Return to Work

This month we explore the effectiveness of work-related interventions for return to work in people on sick leave, and the return-to-work issues related to long term sick listed employees, in patients undergoing bariatric surgery, following acquired brain injury and after various coronary events, including heart failure.

Diagnosis-specific cumulative incidence of return-to-work, resignation, and death among long-term sick-listed employees: Findings from the Japan epidemiology collaboration on occupational health study

Background: While it is essential to understand how long is sufficient for return-to-work when designing paid sick-leave systems, little attempt has been done to collect cause-specific information on when and how many of sickness absentees returned to work, became unemployed, or passed away. **Methods:** We studied the first sick-leave episode of ≥ 30 consecutive days in those ≤ 55 years of age during 2012-2013 among employees of 11 Japanese private companies ($n = 1,209$), which were followed until 2017. Overall and disease-specific cumulative incidences of return-to-work, resignations, and deaths were estimated using competing risk analysis. **Results:** During the 3.5-year period (follow-up rate: 99.9%), 1,014 returned to work, 167 became unemployed, and 27 died. Overall, return-to-work occurred within 1 year in 74.9% of all absentees and in 89.3% of those who successfully returned to work. Resignation occurred within 1 year in 8.7% of all absentees and in 62.9% of all subjects who resigned. According to ICD-10 chapters, the cumulative incidence of return-to-work ranged from 82.1% for mental disorders (F00-F99) to 95.3% for circulatory diseases (I00-I99). The cumulative incidence of return-to-work due to mental disorders ranged from 66.7% in schizophrenia (F20) to 95.8% in bipolar affective disorders (F31). Death was rarely observed except for cases of neoplasms (C00-D48), of which the cumulative incidence of death reached 14.2% by 1.5 years. **Conclusion:** Return-to-work and resignations occurred commonly within 1 year of sick leave among long-term sickness absentees in the Japanese private companies. Our findings may assist occupational physicians and employers in developing effective social protection schemes.

Nishiura et al. 2022.

Journal of Epidemiology, vol. 32, no. 9.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Mental disorders; neoplasms; retirement; return to work; sickness absence.

Evidence Level: 4B

Link: https://www.jstage.jst.go.jp/article/jea/32/9/32_JE20200541/article

Effectiveness of work-related interventions for return to work in people on sick leave: A systematic review and meta-analysis of randomized controlled trials

Background: Long-term sick leave is a serious concern in developed countries and the cost of sickness absence and disability benefits cause major challenges for both the individual and society as a whole. Despite an increasing body of research reported by existing systematic reviews, there is uncertainty regarding the effect on return to work of work-related interventions for workers with different diagnoses. The objective of this systematic review was to assess and summarize available research about the effects of work-related interventions for people on long-term sick leave and those at risk of long-term sick leave.

Methods: We conducted a systematic review in accordance with international guidelines. Campbell Collaboration (Area: Social Welfare), Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Embase, Epistemonikos, MEDLINE, PsycINFO, Scopus, and Sociological Abstracts were systematically searched in March 2021. Two authors independently screened the studies. We conducted risk of bias assessments and meta-analyses of the available evidence in randomized controlled trials (RCTs). The remaining comparisons were synthesized narratively. The certainty of evidence for each outcome was assessed. **Results:** We included 20 RCTs comprising 5753 participants at baseline from 4 different countries. The studies had generally low risk of bias. Our certainty in the effect estimates ranged from very low to moderate. Eight different interventions were identified. Meta-analysis revealed no statistically significant difference between multidisciplinary rehabilitation (MR) and usual care (US) (Risk Ratio [RR] 1.01;

Confidence Interval [CI] 95% 0.70-1.48 at 12 months follow-up) and between MR and other active intervention (Risk Ratio [RR] 1.04; Confidence Interval [CI] 95% 0.86-1.25 at 12 months follow-up). Remaining intervention groups revealed marginal, or no effect compared to the control group. The results for the secondary outcomes (self-efficacy, symptom reduction, function, cost-effectiveness) showed varied and small effects in the intervention groups. **Conclusion:** Overall, the present data showed no conclusive evidence of which work-related intervention is most effective for return to work. However, a handful of potential interventions exist, that may contribute to a foundation for future research. Our findings support the need for adequately powered and methodologically strong studies.

Tingulstad et al. 2022.

Systematic Reviews, vol. 11, no. 1.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Meta-analysis; return to work; sick leave; vocational rehabilitation.

Evidence Level: 1A

Link: <https://systematicreviewjournal.biomedcentral.com/articles/10.1186/s13643-022-02055-7>

Does the selection of the procedure impact the return to work in unemployed patients undergoing bariatric surgery?

Background: Obesity and its comorbidities are risk factors for absenteeism and unemployment. Bariatric surgery might help to intervene in the vicious circle of unemployment, social disadvantage and increasing obesity. The most common bariatric procedures are sleeve gastrectomy (SG) and Roux-en-Y gastric bypass (RYGB). This survey analyzes the influence of the bariatric procedure on return to work. **Methods:** The data of a German nationwide multicenter registry StuDoQ|MBE from 2015 to 2020 are evaluated. Patients are surveyed who underwent a primary SG or RYGB while being unemployed: 782 patients are included. Primary endpoint is any form of return to work within 1 year after treatment. The surgical procedure acts as the binary main treatment variable. A multivariate binary logistic regression model was performed with age, sex, vocational training and weight loss as third variables so that odds ratios (OR) and adjusted ORs were determined. **Results:** Of the patients, 41.56% received a RYGB, 58.44% a SG. One year after bariatric surgery, 39.39% of the patients with SG and 33.85% with RYGB reached a return to work. The OR for return to work is 1.27 ($p = 0.11$) non-significant in favor of SG. The adjusted OR is 1.26 ($p = 0.15$), indicating that there is no significant influence of the difference between the two surgical procedures on the outcome of return to work. **Conclusion:** There is a positive effect regarding return to work in bariatric patients: More than a third of the previously unemployed patients were employed 1 year after surgery. Procedure-specific influences could not be determined.

Claassen et al. 2022.

Obesity Surgery, vol. 32, no. 9.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Return to work; Roux-en-Y gastric bypass; sleeve gastrectomy; unemployment.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s11695-022-06164-z>

Intensive multi-disciplinary outpatient rehabilitation for facilitating return-to-work after acquired brain injury: A case-control study

Background: Return-to-work is often the most important objective of working-age patients with acquired brain injury, but is often difficult to achieve. There is a lack of evidence for effective treatment. This study aimed to assess the benefit of a multidisciplinary neurorehabilitation in a daytime hospital on return-to-work after an acquired brain injury. **Design:** Retrospective case-control study. **Patients:** Acquired brain injury patients between 18 and 65 years of age. **Methods:** Two periods, before ($n = 82$ patients) and after ($n = 89$ patients) the implementation of a daytime hospital in our neuro-rehabilitation unit were compared. Patients followed in the daytime hospital received intensive, interdisciplinary, coordinated, individual and group-level physical, cognitive, and vocational rehabilitation. During the control period, patients received outpatient neurorehabilitation with less intensive treatment without interdisciplinary coordination. The main outcome was the proportion of patients returning to $> 50\%$ of their premorbid work activity.

Results: Fifty-five percent of patients were able to resume more than 50% of their premorbid work level in

the daytime hospital period vs 41% in the control period ($p = 0.076$). **Conclusion:** Intensive and coordinated outpatient neurorehabilitation may facilitate return-to-work after an acquired brain injury.

Moreno Legast et al. 2022.

Journal of Rehabilitation Medicine, vol. 28.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*

(<https://creativecommons.org/licenses/by-nc/4.0/>)

Keywords: Rehabilitation; return to work; acquired brain injury.

Evidence Level: 5B

Link: <https://medicaljournalssweden.se/jrm/article/view/416>

Prevalence and determinants of return to work after various coronary events: Meta-analysis of prospective studies

Background: Return to work (RTW) after a coronary event remains a major concern. **Methods:**

This systematic review and meta-analysis of prospective studies published between January 1988 and August 2020, aim to evaluate the prevalence of RTW after a coronary event (myocardial infarction, acute coronary syndrome, angina pectoris) and to assess the determinants of RTW (such as follow-up duration, date of recruitment, country, gender, occupational factors, etc.). PRISMA and MOOSE guidelines were followed. Study quality was assessed using the Newcastle-Ottawa Scale. Random-effects models were carried out to determine pooled prevalence estimates and 95% confident interval. **Results:** A total of 43 prospective studies (34,964 patients) were investigated. RTW overall random effects pooled prevalence was estimated at 81.1% [95% CI 75.8-85.8]. Country, year of implementation or gender did not significantly modify the prevalence estimates. Lower level of education and degraded left ventricular ejection fraction decreased RTW prevalence estimates (respectively, 76.1% vs 85.6% and 65.3% vs 77.8%). RTW prevalence estimates were higher for white-collars (81.2% vs 65.0% for blue-collars) and people with low physical workload (78.3% vs 64.1% for elevated physical workload). **Conclusions:** Occupational physical constraints seem to have a negative role in RTW while psycho-logical factors at work are insufficiently investigated. A better understanding of the real-life working conditions influencing RTW would be useful to maintain coronary patients in the labor market.

Kai et al. 2022.

Scientific Reports, vol. 12, no. 1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Return to work; coronary event.

Evidence Level: 1A

Link: <https://www.nature.com/articles/s41598-022-19467-z>

Return to work and associated factors after the first hospitalization for heart failure

Background: Heart failure (HF) is a public health problem worldwide. Employment is vital in terms of personal, social, and economic aspects for patients with chronic diseases. The aim of this study is to investigate returning to work and the associated factors after first hospitalization for HF in working-age patients. **Methods:** In this retrospective cohort study, patients with the first hospitalization for HF in 2017-2020 who were employed before hospitalization were included. The demographic, occupational, and disease-related variables were compared in subjects with and without returning to work. Next, the relationship between the variables and the number of days off work was examined in participants who had returned to work. **Results:** The data of 204 participants were analyzed. About 90% of the participants returned to work after one year. There was a significant relationship between not returning to work and higher age, female sex, higher New York Heart Association (NYHA) class, Ejection fraction (EF) $\leq 40\%$, and history of chronic kidney disease (CKD). Among the participants who had returned to work, income level, cause of work exit, employer support, and the number of rehabilitation sessions had a significant relationship with the number of days off work. **Conclusion:** The results of this study showed that gender, age, EF level, history of CKD, and NYHA class were the most influential factors in returning to work after first HF hospitalization. Furthermore, income, cause of work exit, employer support, and the number of rehabilitation sessions were the most important factors contributing to the number of days off work.

Hosseinejad et al. 2022.

Archives of the Turkish Society of Cardiology, vol. 50, no. 6.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Return to work; hospitalization; heart failure; employment.

Evidence Level: 4B

Link: <https://archivestsc.com/en/return-to-work-and-associated-factors-after-the-first-hospitalization-for-heart-failure-138258>

Presenteeism and Absenteeism

This month we explore sickness absence and its relationship to poor psychosocial job conditions and the effect of early multidisciplinary intervention in patients with persistent low back pain

Poor psychosocial job conditions increase sickness absence: evidence from the PATH Through Life Mid-Aged Cohort

Background: Evidence is mounting that poor psychosocial job conditions increase sickness absence, but there is a need for further rigorous prospective research to isolate the influence of psychosocial job quality from other measured and unmeasured confounders. This study used four waves of prospective longitudinal data (spanning 12 years) to investigate the extent to which increases in poor psychosocial job quality are associated with greater relative risk of day of sickness absence. **Design:** Prospective cohort study. **Setting:** Data were from the Australian PATH Through Life cohort study. The analyses adopted hybrid-regression estimations that isolated the effect of within-person change in psychosocial job quality on sickness absence over time. **Participants:** Participants were from a midlife cohort aged 40-44 at baseline (7644 observations from 2221 participants). **Primary outcome measure:** Days sickness absence in the past 4 weeks. **Results:** The results show that after adjusting for a wide range of factors as well as unmeasured between-person differences in job quality, each additional psychosocial job adversity was associated with a 12% increase in the number of days of sickness absence (relative risk ratio: 1.12, 95% CI 1.03 to 1.21). Increases in psychosocial job adversity were also related to greater functional impairment (relative risk ratio: 1.17 (1.05 to 1.30)). **Conclusion:** The results of this study strengthen existing research highlighting the importance of addressing poor psychosocial job quality as a risk factor for sickness absence.

Leach et al. 2022.

BMJ Open, vol. 12, no. 9.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Epidemiology; occupational & industrial medicine; public health.

Evidence Level: 4A

Link: <https://bmjopen.bmj.com/content/12/9/e059572.long>

Effects of an early multidisciplinary intervention on sickness absence in patients with persistent low back pain: A randomized controlled trial

Background: Multidisciplinary rehabilitation is recommended to reduce sickness absence and disability in patients with subacute or chronic low back pain (LBP). This study aimed to investigate whether a 12-week coordinated work oriented multidisciplinary rehabilitation intervention was effective on return to work and number of days off work during one-year follow-up when compared to usual care. **Methods:** This study is a randomized controlled trial comparing the effectiveness of a 12-week multidisciplinary vocational rehabilitation program in addition to usual treatment. 770 patients with LBP, who were sick-listed, or at risk of being sick-listed were included in the study. The primary outcome was number of days off work due to LBP. The secondary outcomes were disability, health-related quality of life, pain, psychological distress and fear avoidance behavior. Data were collected at baseline, at the end of treatment, and at 6- and 12-months follow-up. Analyses were carried out according to the "intention-to-treat" principles. **Results:** A significant decrease in the number of patients who were on sick-leave was found in both groups at the end of treatment and at 6- and 12-months follow-up. Additionally, disability, pain, health related quality of life, psychological distress, and fear avoidance beliefs improved in both groups. No statistically significant

differences were found between the groups on any of the outcomes. **Conclusions:** The coordinated multidisciplinary intervention had no additional effect on sickness absence, disability, pain, or health related quality of life as compared with that of usual care.

Fisker et al. 2022.

BMC Musculoskeletal Disorders, vol. 23, no. 1.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Back pain; low back pain; multidisciplinary intervention; occupational health; randomized controlled trial; rehabilitation; return to work; sick leave.

Evidence Level: 2A

Link: <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-022-05807-7>

Working Hours

Health Conditions and Long Working Hours in Europe: A Retrospective Study

Background: Studies have shown that working conditions and employee health are related; therefore, this study aimed to determine the relationships between working long hours per week with health outcomes in different European countries. **Methods:** We analyzed data derived from the Survey of Health, Ageing, and Retirement in Europe. The sample included 12,099 participants aged ≥ 50 from 16 European countries. We analyzed self-reported working hours, health outcomes of blood cholesterol, heart attack, diabetes, and hypertension, as well as a longitudinal analysis of health outcomes among healthcare workers and workers in 13 other industries. **Results:** Statistical analyses identified that men are working longer hours per week compared with women in all included countries, and different levels of increase in health conditions in different industries. We also observed a slower increase in the prevalence of health conditions for healthcare workers compared with workers in other industries, especially diabetes and hypertension. The largest increase in prevalence of observed health conditions was reported for cholesterol, which increased for 17.14% among healthcare workers and for 21.70% in other industries over the observed nine-year period. **Conclusion:** Although the data point to a potentially high level of awareness in the field of preventive health among healthcare workers, more preventive health activities should be included in workplaces to strengthen employees' health. Full article

Korošec et al 2022

International Journal of Environmental Research and Public Health, vol. 19, no. 19.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: working environment; workplace; working time; occupational health; employees' health; health outcome; hypertension; cholesterol; diabetes; heart attack; employees; healthcare workers

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/19/19/12325>

Building Employer Capability

Organisational Issues

This month we explore the role of organisational core values as an element of a healthy workplace, the development of an ethical framework to guide organisational decision-making about COVID-19 testing in workplaces and the relationship between organizational justice and cardiometabolic disease

Core Values at Work—Essential Elements of a Healthy Workplace

Background: This paper explores core values at work—those values that give meaning to people's lives and their work, that allow each person to experience their work with passion, commitment, dignity, and respect. Though core values may appear to be simple and obvious, supporting them at work can be more complex and difficult than expected. These values are not only ethical and moral, but also social and cultural; they are intrinsically related to the same factors that promote health across the globe, including

family, community, and work. **Methods:** Three seminars outlined the nature and importance of core values within occupational health and well-being; these sessions were held during the International Commission on Occupational Health (ICOH) conferences between 2015 and 2020. A non-exhaustive, literature review explored these findings further. **Results:** Perspectives from international, national, and local occupational health programs have begun to demonstrate how core values underpin workers' well-being. These essential core values impact worker health positively when they are included and respected, and negatively when they are missing or corrupted. Within occupational safety and health (OSH), people's awareness of these values and their importance at work is now clearly emerging, offering opportunities to honor and protect each worker and help them to experience their core values through their work.

Guillemin and Nicholas 2022

International Journal of Environmental Research and Public Health, vol. 19, no. 19.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: core values; occupational health; wellbeing; dignity

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/19/19/12505/htm>

Guiding organisational decision-making about COVID-19 asymptomatic testing in workplaces: Mixed-method study to inform an ethical framework

Background: Workplace programmes to test staff for asymptomatic COVID-19 infection have become common, but raise a number of ethical challenges. In this article, we report the findings of a consultation that informed the development of an ethical framework for organisational decision-making about such programmes. **Methods:** We conducted a mixed-method consultation - a survey and semi-structured interviews during November-December 2020 in a UK case study organisation that had introduced asymptomatic testing for all staff working on-site in its buildings. Analysis of closed-ended survey data was conducted descriptively. An analysis approach based on the Framework Method was used for the open-ended survey responses and interview data. The analyses were then integrated to facilitate systematic analysis across themes. Inferences were based on the integrated findings and combined with other inputs (literature review, ethical analysis, legal and public health guidance, expert discussions) to develop an ethical framework. **Results:** The consultation involved 61 staff members from the case study organisation (50 survey respondents and 11 interview participants). There was strong support for the asymptomatic testing programme: 90% of the survey respondents viewed it as helpful or very helpful. Open-ended survey responses and interviews gave insight into participants' concerns, including those relating to goal drift, risk of false negatives, and potential negative impacts for household members and people whose roles lacked contractual and financial stability. Integration of the consultation findings and the other inputs identified the importance of a whole-system approach with appropriate support for the key control measure of isolation following positive tests. The need to build trust in the testing programme, for example through effective communication from leaders, was also emphasised. **Conclusions:** The consultation, together with other inputs, informed an ethical framework intended to support employers. The framework may support organisational decision-making in areas ranging from design and operation of the programme through to choices about participation. The framework is likely to benefit from further consultation and refinement in new settings.

van der Scheer et al. 2022.

BMC Public Health, vol. 22, no. 1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Bioethics; COVID-19; mixed-method; qualitative; survey; testing; workplaces.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13993-1>

Organizational justice and cardiometabolic disease: A systematic review

Background: The effects of organizational justice on workers' health have been investigated in several areas of work. However, the systematization of available information on the effects related to cardiovascular diseases (CVD) and diabetes is scarce. **Methods:** This article aims to systematically review the association between organizational justice and CVD and metabolic disease in adult workers. The search

strategy included the terms organizational justice, coronary heart disease, cerebrovascular disease, systemic arterial hypertension, diabetes mellitus and CVD. This study investigated the following databases: MEDLINE, EMBASE, and LILACS. The quality of the studies was assessed using the instrument developed by the National Institute of Health. Results: This study identified 1,959 titles. **Results:** After evaluation, eight studies were selected. Individuals with a high perception of organizational justice showed a lower risk of CVD and metabolic disease, whereas low organizational justice presented repercussions for the cardiovascular and metabolic health of workers. **Conclusions:** The development of strategies to promote organizational justice must be prioritized and thus mitigate its impacts on workers and institutions.

Scalabrin et al. 2022.

Ciencia and Saude Coletiva, vol. 27, no. 9.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Justice; cardiometabolic disease; workers health; cardiovascular diseases.

Evidence Level: 1A

Link: <https://www.scielo.br/j/csc/a/vftpc6StVNzCfftSvLY3YVg/?lang=en>

Job Design

This month we examine the relationship between physical and psychological workloads and occupational fatigue and long working hours with the risk of glucose intolerance

Physical and psychological workloads and their association with occupational fatigue among hospital service personnel

Background: Physical and psychological workloads are a vital issue in the workplace. This study aimed to investigate the association between physical and psychological workloads and occupational fatigue among Iranian hospital service personnel. In Iran, hospital service personnel refers to a group of healthcare workers who undertake a range of duties, such as moving and carrying the hospital waste, transporting patients by wheelchair or gurney to the operating room, x-ray department, other wards, or other locations around the facility, performing cleaning tasks such as changing linens, mopping floors, and sterilizing equipment, and following infection control procedures to reduce the risk of spreading germs within the hospital setting. **Methods:** This cross-sectional study was conducted on 198 Iranian hospital service personnel. The response rate was 86%. The data were gathered using 1) The Persian version of the Job Content Questionnaire (P-JCQ) for assessing physical and psychosocial workloads and 2) The Persian version of the Swedish Occupational Fatigue Inventory (P-SOFI-20) for assessing fatigue dimensions.

Results: According to the P-JCQ, the physical and psychological workload intensities were high in 72.7% and 47% of the participants, respectively. Based on the P-SOFI, the participants' mean scores of "physical fatigue" (21.73 ± 6.2), "psychological fatigue" (13.61 ± 5.76), and "fatigue due to shift work" (18.17 ± 5.6) were moderate, while the mean score of "general fatigue" was high (27.3 ± 6.98). The findings revealed that various types of fatigue are associated with age, gender, marital status, daily working hours, and psychological workload. **Conclusions:** Psychological workload was a determinant of occupational fatigue among Iranian hospital service personnel. Hence, an interventional program, including job enrichment, job rotation, and work-rest cycle, is recommended.

Ahmadi et al. 2022.

BMC Health Services Research, vol. 22, no. 1.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Hospital service personnel; Iran; occupational fatigue; physical workload; psychological workload.

Evidence Level: 4B

Link: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-022-08530-0>

Long working hours and the risk of glucose intolerance: A cohort study

Background: Long working hours have negative effects on the health of workers. Several studies have reported the association between long working hours and both diabetes and prediabetes. Therefore, we

aimed to examine the temporal relationship between long working hours and glucose intolerance.

Methods: Our cohort study collected data from 25,803 healthy male participants at baseline. To evaluate the risk of incident glucose intolerance, we estimated the hazard ratios (HRs) and 95% confidence intervals (CIs) using the Cox proportional hazards regression analyses. **Results:** During 77,605.0 person-years of follow-up, 6741 participants developed glucose intolerance. Multivariable-adjusted HRs (95% CI) for weekly working 41-52 and >52 h compared with working 35-40 h, were 1.28 (1.17-1.40) and 2.80 (2.54-3.09), respectively. In the dose-response analyses, long working hours had a nearly linear relationship with the development of glucose intolerance across most working hours per week. The association between long working hours and incident glucose intolerance was stronger in the younger-age subgroups than in the older-age subgroups (p for interaction <0.001). **Conclusions:** Our large-scale cohort study demonstrated that long working hours were associated with incident glucose intolerance, with a dose-response relationship.

Lee et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Cohort studies; diabetes mellitus; glucose intolerance; long working hours; longitudinal studies; overwork.

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/19/18/11831>

Shift Work

This month we examine the effect of remodelling a shift schedule on work ability, quality of life and self-rated health, work-life balance and job satisfaction and the effect of shift work rosters on risk of cardiometabolic multimorbidity, clinically significant sleep disorders and mental health and trajectories of self-rated health. Studies also examine the effect of shift work rosters on stress during the SARS-CoV-2 pandemic, the perceptions and experiences of shift workers on their adherence to a nutrition intervention and the possible protective role of daytime eating on mood vulnerability in night work

Evolution of work ability, quality of life and self-rated health in a police department after remodelling shift schedule

Background: There exists a great diversity of schedules concerning the way shift work is organized and implemented with ample agreement regarding recommendable features of a shift system. In order to adapt the shift schedule of a metropolitan police department to current recommendations, a remodelled shift schedule was introduced in 2015. The aim of this study was to evaluate the potential associations between the remodelled shift schedule and work ability, quality of life and self-rated health after one and five years. **Methods:** A controlled before-and- after study was conducted during the piloting phase (2015-2016) as well as a 5-year follow-up using paper questionnaires. Outcome parameters included work ability, quality of life and self-rated health. **Results:** Work ability, quality of life and self-rated health improved after the first year of the newly implemented shift schedule among police officers working in the piloting police stations compared to those working according to the former schedule. In 5-year follow-up differences between indicators diminished. **Conclusions:** The implementation of a remodelled shift schedule including more 12-h shifts accompanied by more days off and a coherent weekend off duty was not associated with detrimental effects to work ability, quality of life or self-reported health among police officers.

Velasco-Garrido et al. 2022.

BMC Public Health, vol. 22, no. 1.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Health; police; quality of life; shift-work; work ability.

Evidence Level: 3B

Link: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-022-14098-5>

Shift work and the risk of cardiometabolic multimorbidity among patients with hypertension: A prospective cohort study of UK biobank

Background: Although the association between shift work and individual cardiometabolic diseases has been well studied, its role in the progression to cardiometabolic multimorbidity (CMM) remains unclear. In this study, we investigate the association between shift work and the incidence of CMM in patients with hypertension. **Methods and Results:** This study is a population-based and prospective cohort study on 36 939 UK Biobank participants. We used competing risk models to examine the association between shift work and the risk of CMM, which was defined as coexistence of hypertension and diabetes, coronary heart disease, or stroke in our study. We also investigated the association between the frequency and duration of shift work and CMM risks. In addition, we conducted a cross-classification analysis with the combination of frequency and duration of shift work, chronotype and sleep duration as the exposure metrics. During a median follow-up of 11.6 years, a total of 5935 participants developed CMM. We found that usually/always night shift workers were associated with a 16% higher risk of CMM compared with day workers (hazard ratio [HR], 1.16 [95% CI, 1.02-1.31]). We also found that a higher frequency of night shifts (>10/month) was associated with increased risk of CMM (HR, 1.19 [95% CI, 1.06-1.34]) that was more pronounced for >10/month in combination with a morning chronotype or <7 hours or >8 hours of sleep duration (HR, 1.26 [95% CI, 1.02-1.56]; HR, 1.43 [95% CI, 1.19-1.72], respectively). **Conclusions:** We find that night shift work is associated with higher CMM risk in patients with hypertension.

Yang et al. 2022.

Journal of the American Heart Association, vol. 11, no. 17.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Biological specimen banks; follow-up studies; incidence; multimorbidity; prospective studies; shift work schedule.

Evidence Level: 4B

Link: <https://www.ahajournals.org/doi/10.1161/JAHA.122.025936>

Police officers' work-life balance, job satisfaction and quality of life: longitudinal effects after changing the shift schedule

Background: To evaluate mental health-related outcomes of police officers 5.5 years after implementing a new alternating shift schedule which was supposed to improve their health and work-life balance. **Design:** Pre-post study design with a baseline survey at the beginning of the piloting of the new shift schedule in 2015 and another survey 5.5 years later in 2020. **Setting:** Police departments of a German metropolitan police force piloting the new shift schedule. **Participants:** 116 shift-working police officers out of a population of 1673 police officers at the follow-up date. **Interventions:** New shift schedule based on occupational health recommendations. **Outcomes measures:** Work-life balance, job satisfaction and quality of life. **Methods:** Mixed analyses of variances were used to test the hypotheses of within-subject and between-subject differences regarding time and gender. **Results:** We found partly significant differences between the baseline and follow-up survey for work-life balance ($F(1, 114) = 6.168, p=0.014, \eta^2 = 0.051$), job satisfaction ($F(1, 114) = 9.921, p=0.002, \eta^2 = 0.080$) and quality of life ($F(1, 114) = 0.593, p=0.443, \eta^2 = 0.005$). Neither significant differences between male and female police officers nor interaction effects of time and gender were found. **Conclusion:** An increase was found for each of the three outcomes 5.5 years after implementing the new shift schedule. The results contribute to the current state of research on mental health-related outcomes of working conditions in shift work. On this basis, recommendations for designing shift schedules can be deduced to promote mental health and job satisfaction for employees in shift work.

Rohwer et al. 2022.

BMJ Open, vol. 12, no. 9.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Epidemiology; mental health; occupational & industrial medicine.

Evidence Level: 5B

Link: <https://bmjopen.bmj.com/content/12/9/e063302.long>

Investigating the influence of shift work rosters on stress measured as cortisol in hair during the SARS-CoV-2 pandemic

Background: The mental and physical health of workers has been affected by the changes in workload related to the COVID-19 pandemic. **Methods:** This study measured hair cortisol concentration (HCC) in non-healthcare night-shift workers with standard shifts (8-h shifts) and extended shifts (12-h shifts) before and during the first wave of the COVID-19 pandemic. **Results:** There was a twofold increase in HCC among shift workers during the first wave of the COVID-19 pandemic compared with previous measurements with no significant differences between rosters. The authors concluded that working 12-h shifts did not appear to be an additional stressor in the already demanding COVID-19 pandemic.

Casjens et al. 2022.

Psychoneuroendocrinology, vol. 143.

Keywords: Biomarkers; extended shift length; rotational shift work; SARS-CoV-2 pandemic; shift work schedules.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0306453022001998?via%3Dihub>

Shift work, clinically significant sleep disorders and mental health in a representative, cross-sectional sample of young working adults

Background: Mental health conditions confer considerable global disease burden in young adults, who are also the highest demographic to work shifts, and of whom 20% meet criteria for a sleep disorder. We aimed to establish the relationship between the combined effect of shift work and sleep disorders, and mental health. **Methods:** The Raine Study is the only longitudinal, population-based birth cohort in the world with gold-standard, Level 1 measurement of sleep (polysomnography, PSG) collected in early adulthood. Participants (aged 22y) underwent in-laboratory PSG and completed detailed sleep questionnaires. Multivariable adjusted robust linear regression models were conducted to explore associations with anxiety (GAD7) and depression (PHQ9), adjusted for sex, health comorbidities, and work hours/week. Data were from 660 employed young adults (27.3% shift workers). **Results:** At least one clinically significant sleep disorder was present in 18% of shift workers (day, evening and night shifts) and 21% of non-shift workers ($p = 0.51$); 80% were undiagnosed. Scores for anxiety and depression were not different between shift and non-shift workers ($p = 0.29$ and $p = 0.82$); but were higher in those with a sleep disorder than those without (Md(IQR) anxiety: 7.0(4.0-10.0) vs 4.0(1.0-6.0)), and depression: (9.0(5.0-13.0) vs 4.0(2.0-6.0)). Considering evening and night shift workers only (i.e. excluding day shift workers) revealed an interaction between shift work and sleep disorder status for anxiety ($p = 0.021$), but not depression ($p = 0.96$), with anxiety scores being highest in those shift workers with a sleep disorder (Md(IQR) 8.5(4.0-12.2)). We have shown that clinical sleep disorders are common in young workers and are largely undiagnosed. Measures of mental health do not appear to be different between shift and non-shift workers. **Conclusions:** These findings indicate that the identification and treatment of clinical sleep disorders should be prioritised for young workers as these sleep disorders, rather than shift work per se, are associated with poorer mental health. These negative mental health effects appear to be greatest in those who work evening and/or night shift and have a sleep disorder.

Reynolds et al. 2022.

Scientific Reports, vol. 12, no. 1.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Sleep disorders; shift work; mental health; working adult; disease burden.

Evidence Level: 4A

Link: <https://www.nature.com/articles/s41598-022-20308-2>

Daytime eating prevents mood vulnerability in night work

Background: Shift workers have a 25 to 40% higher risk of depression and anxiety partly due to a misalignment between the central circadian clock and daily environmental/behavioral cycles that may negatively affect mood and emotional well-being. Hence, evidence-based circadian interventions are required to prevent mood vulnerability in shift work settings. **Methods:** We used a stringently controlled 14-d circadian paradigm to assess mood vulnerability during simulated night work with either daytime and

nighttime or daytime-only eating as compared with simulated day work (baseline). **Results:** Simulated night work with daytime and nighttime eating increased depression-like mood levels by 26.2% (p-value adjusted using False Discovery Rates, pFDR = 0.001; effect-size $r = 0.78$) and anxiety-like mood levels by 16.1% (pFDR = 0.001; effect-size $r = 0.47$) compared to baseline, whereas this did not occur with simulated night work in the daytime-only eating group. Importantly, a larger degree of internal circadian misalignment was robustly associated with more depression-like ($r = 0.77$; $P = 0.001$) and anxiety-like ($r = 0.67$; $P = 0.002$) mood levels during simulated night work. **Conclusions:** These findings offer a proof-of-concept demonstration of an evidence-based meal timing intervention that may prevent mood vulnerability in shift work settings. Future studies are required to establish if changes in meal timing can prevent mood vulnerability in night workers. **Qian et al. 2022.**

Proceedings of the National Academy of Sciences of the United States of America, vol. 119, no. 38.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Circadian disruption; mental health; mood vulnerability; shift work; sleep.

Evidence Level: 5B

Link: <https://www.pnas.org/doi/10.1073/pnas.2206348119>

Shift workers' perceptions and experiences of adhering to a nutrition intervention at night whilst working: A qualitative study

Background: This study explored the feasibility of implementing a meal timing intervention during night shift work. **Methods:** Data were collected via semi-structured interviews. Interviews were coded inductively by two researchers independently, then three major themes were collaboratively developed. Subthemes from each major theme were mapped to the theoretical domains framework and the Capability Opportunity Motivation model of behaviour change. **Results:** Seventeen night shift workers (rotating or permanent) aged between 25 and 65 years were interviewed. Participants predominately worked as health professionals. The feasibility of a simple meal timing intervention to avoid eating between 1 and 6 am on night shift is largely affected by three major influences (1) physical and emotional burden of shift work which drives food temptations; (2) the workplace context including the meal break environment, social and cultural context at work, and break scheduling; and (3) motivation of the individual. Facilitators to avoiding eating at night were, keeping busy, having co-worker support, management support, education of health benefits and/or belief that the intervention was health promoting. The barriers to avoiding eating at night were the emotional and physical toll of working at night leading to comfort eating and not having rest areas away from food environments. **Conclusions:** To support night shift workers with changing timing of meals, interventions at work should target both individual and organisational level behaviour change.

Huggins et al. 2022.

Scientific Reports, vol. 12, no.1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Shift workers; nutrition; night shift; meal timing.

Evidence Level: 5A

Link: <https://www.nature.com/articles/s41598-022-19582-x>

Concurrent trajectories of self-rated health and working hour patterns in health care shift workers: A longitudinal analysis with 8-year follow-up

Background: The association between health and working hours is hypothesized to be reciprocal, but few longitudinal studies have examined changes in both health and working hour patterns over time. We examined combined trajectories of self-rated health and two working hour patterns (working <35 h/week and working night shifts) and the extent to which these trajectories were predicted by employees' lifestyle and mental health. **Methods:** Participants of this cohort study with a 8-year follow-up were 5,947 health care shift workers. We linked self-reports of health from three repeated surveys with objective pay-roll based data on working hours. Using group-based multi-trajectory analysis we identified concurrent trajectories for self-rated health and working hour patterns. We examined their associations with baseline lifestyle-related factors (smoking, at-risk alcohol use, obesity, and physical inactivity) and mental health (sleep problems and psychological distress) using multinomial regression analysis. **Results:** Three combined trajectories of self-rated health and working <35 h/week and four combined trajectories of self-rated

health and night work were identified. Unhealthy lifestyle and poor mental health were associated with trajectories of moderate and declining health. Sleep problems were linked with working <35 h/week. Younger age and good mental health were associated with a combined trajectory of good health and continued night shift work. **Conclusion:** Trajectories of suboptimal and declining health are associated with trajectories of reducing working hours and leaving night work, and are more common in employees with unhealthy lifestyle, sleep problems, and psychological distress.

Ervasti et al. 2022.

Frontiers of Public Health, vol.6.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Health; multi-trajectory analysis; night work; shift work (MeSH); working hours.

Evidence Level: 4A

Link: <https://www.frontiersin.org/articles/10.3389/fpubh.2022.926057/full>

Management and Leadership

Occupational health development and safety management of enterprise employees based on the perspective of sustainable environment

Background: In recent years, the economy of enterprises has developed rapidly. Most enterprises focus on economic interests and ignore the occupational health of employees, resulting in an increase in the occupational morbidity rate of employees. Occupational insecurity of corporate employees will reduce the work efficiency of employees. In turn, it will affect the economic development of the enterprise. Paying attention to the occupational health and safety development of corporate employees is a necessary measure for corporate economic development. The main reasons that endanger the occupational health of employees are the unreasonable discharge of pollutants and the substandard treatment of pollutants. The sustainable environmental strategy of enterprise development can well control the risk factors that endanger the occupation of enterprise employees, and it is conducive to the health and safety development of enterprise employees and enterprises. **Methods:** This paper studied the impact of sustainable environmental factors on the occupational health and safety development of enterprise employees through the fuzzy analytic hierarchy process and analyzed the impact on the occupation of enterprise employees according to the larger influencing factors. **Results:** The experimental results showed that heavy metal wastewater, dust, hydrogen sulfide gas, and high-temperature radiation are the four most weighted impact indicators. Different concentrations of these four indicators are tested; when the concentration value of these impact indicators is low, it has little impact on the occupational safety and development of enterprise employees. However, when the concentration increases, the occupational safety and development of enterprise employees are seriously reduced. When the safety is the lowest, it is only 20%, and the development is only 23%. **Conclusions:** Carrying out sustainable environmental development can reduce the discharge of industrial waste; hence, while protecting the environment, the occupational health and safety and development potential of employees can be improved.

Chen et al. 2022.

Journal of Environmental and Public Health, vol. 8.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Occupational health; employees; morbidity rate.

Evidence Level: 6A

Link: <https://www.hindawi.com/journals/jep/2022/3792356/>

Work Ability

This month we explore the relationship of work ability with depressive symptoms in workers with recurrent low back pain and the effect of work on employees' self-assessed job performance

Depressive symptoms are associated with decreased quality of life and work ability in currently working health care workers with recurrent low back pain

Background: This study investigates the association between depressive symptoms and multisite pain and health-related quality of life and work ability in currently employed health care workers with recurrent low back pain (LBP). **Methods:** Multisite pain, depressive symptoms, quality of life, and work ability were assessed by validated questionnaires. A generalized linear model was used for statistical analysis.

Results: Notably, 28% of female health care workers with LBP had at least moderate levels of depressive symptoms. Depressive symptoms were significantly associated with decreased health-related quality of life and work ability. Multisite pain was not significantly associated with work ability. **Conclusions:** Depressive symptoms are relatively common in female health care workers with LBP, and treatment of these symptoms may be crucial to improve their work ability.

Virkkunen et al. 2022.

Journal of Occupational and Environmental Medicine, vol. 64, no. 9.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Depression; quality of life; work ability; healthcare workers; low back pain.

Evidence Level: 5B

Link:

https://journals.lww.com/joem/Fulltext/2022/09000/Depressive_Symptoms_Are_Associated_With_Decreased.11.aspx

Work from home during the COVID-19 pandemic-the impact on employees' self-assessed job performance

Background: This study investigates the impact of remote workplace factors on employees' social and technical self-assessed performance during the COVID-19 pandemic. **Methods:** The impact of the variables belonging to the employee's profile, organizational environment, and work-life balance categories on social and technical performance were analyzed, based on a survey of 801 Romanian employees, using ordinary least squares and quantile regression techniques. While the first method provided summary point estimates that calculated the average effect of the explanatory variables for the "average employee", the second approach allowed us to focus on the effects explanatory variables have on the entire conditional distribution of the response variables, taking into account that this effect can be different for employees with different levels of performance. **Results:** Job autonomy, engagement, communication skills, trust in co-workers, occupational self-efficacy, and family-work conflict, significantly influence both social and technical performance. PhD education and trust in management significantly influence social performance, while motivation, stress, the share of time spent in remote work, organizational commitment, children in the household, and household size, influence only technical performance.

Kifor et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19 pandemic; quantile regression analysis; social performance; technical performance; work from home.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/17/10935>

Adapting to the Future of Work

Aging Workforce

This month we examine the barriers and facilitators of re-employment among senior workers and the risk factors for disability, long term sick leave and early-age retirement among aged workers due to low back pain

Barriers and facilitators of re-employment among senior workers: Prospective cohort study

Background: Re-entering the labour market after a period of unemployment can be challenging for seniors. This study investigates personal as well as circumstantial barriers and facilitators of re-employment.

Methods: Unemployed seniors in Denmark (≥ 50 years, $n = 1636$) from the first wave (mid-2018) of the SeniorWorkingLife study were prospectively followed until March 2020 in national registers on labour market participation. Using weighted logistic-regression-modelled odds ratios (ORs), we estimated the association between personal and circumstantial factors at baseline and re-employment during follow-up.

Results: During follow-up, 28% re-entered paid employment. The desire to have a job (reference: not having the desire to have a job) increased the likelihood of re-employment (OR 2.35, 95% CI 1.14-4.85).

Contrastingly, a higher age (60-63 vs. 50-54 years; OR 0.36, 95% CI 0.16-0.79) and poor health (OR 0.32, 95% CI 0.16-0.61) decreased the likelihood of re-employment. Sex, education and belief that age constitutes a barrier to re-employment were not associated with the likelihood of re-employment

Conclusions: Unemployed seniors desiring to have a job are more likely to get a job. However, a higher age and poor health are important barriers that should be taken into account, e.g., by ensuring employment opportunities for these groups in society.

Thomassen et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Occupational; re-employment; return to work; seniors; unemployment; unemployment characteristics; worker.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/18/11536>

Long-term sick leave for back pain, exposure to physical workload and psychosocial factors at work, and risk of disability and early-age retirement among aged Swedish workers

Background: To assess the risk of disability and early-age retirement associated with previous long-term sickness absence for back pain (back-pain SA), exposure to high physical workload, low job control, high demands and high strain, and to evaluate effect modification by work factors on the relationship between back-pain SA and premature retirement. **Methods:** All employed Swedish residents born 1946-1955 ($n = 835,956$) were followed up from 2010 to 2016 for disability (DP) and early-age pension (EAP). Associations of premature retirement with exposure to work factors and back-pain SA in the 3 years before follow-up were estimated through proportional hazards models. Retirement, back-pain SA and covariates were assessed through administrative sources, and exposure to work factors through a job-exposure matrix.

Results: In both genders, back-pain SA was associated with DP (> 1 episode: HR 3.23 among men; HR 3.12 among women) and EAP (> 1 episode: HR 1.24 among men; HR 1.18 among women). Higher physical workload and lower job control were also associated with an increased DP risk in both genders, whereas higher job demands showed a decreased risk. For EAP, associations with work factors were weak and inconsistent across genders. No effect modification by work factors was found, except for a negative effect modification by job strain on DP risk among women, i.e. a reduced effect of back-pain SA with increasing exposure. **Conclusion:** Back-pain SA was a significant predictor of both DP and EAP, while work factors were consistently associated only with DP. Our results indicate that the joint effect of back-pain SA and work factors on DP is additive and does not support effect modification by work factors.

d'Errico et al. 2022.

International Archives of Occupational and Environmental Health, vol. 95, no. 7.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Back pain; physical workload; premature retirement; psychosocial hazards; sickness absence; work.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00420-022-01862-8>

Guiding and Supporting Mental Health and Wellbeing

Mental Health

This month we explore the risk factors for developing PTSD after a work-related musculoskeletal injury, the relationship between workplace burnout and male depression and managing burnout through transformational leadership. Other studies explore the occupational structure of depressive symptoms, the relationship between psychosocial job stressors and risk of suicidal behavior, and the effects of mobile mindfulness training on the mental health of employees. In COVID-19 related research studies explore the effect of COVID-19 on employees' mental health and the impact of working from home on mental health.

Effects of mobile mindfulness training on mental health of employees: A CONSORT-compliant pilot randomized controlled trial

Background: Employee stress and well-being affect organizational efficiency and productivity, as well as physical and psychological health of employees. Mindfulness is believed to reduce stress, prevent diseases, and promote well-being. Mindfulness has been used as the main component of various smartphone-based healthcare applications. Previous studies have suggested that mindfulness applications have a positive effect on employee stress and mental health. However, relatively few randomized controlled trials have examined the effectiveness of mindfulness applications on employees. This study aims to evaluate whether mobile mindfulness training (MMT) as a stress self-management tool improves employees' perceived stress, subjective well-being, and Mibyeong, a condition that is not a disease but shows obvious health abnormalities. **Methods:** Participants were recruited through advertisements displayed at 3 workplaces, including a patent attorney's office, a construction company, and a public relations firm. A total of 45 employees were randomly assigned to 1 of 2 groups: the MMT group (Group A) receiving smartphone application-based mindfulness training, and a wait-list control (WLC) group (Group B), who received no intervention. Group A employees conducted MMT following daily and event guidelines for 4 weeks. In contrast, Group B employees did not receive any intervention in that time. The outcome variables were perceived stress, subjective well-being, and Mibyeong. Surveys were conducted at baseline, post-intervention, and follow-up (fourth week post-intervention). **Results:** Demographic characteristics and baseline assessments were not significantly different between the 2 groups. The results of this study revealed that subjective well-being and Mibyeong were significantly improved in the MMT group compared with the WLC group. Moreover, this improvement was maintained up to at least 4 weeks later. However, perceived stress was not significantly reduced in the MMT group compared to the WLC group.

Conclusion: Four weeks of MMT improved the subjective well-being and Mibyeong of employees. However, further studies are required to investigate the effect of MMT on other areas of mental health.

Yoon et al. 2022.

Medicine, vol. 101, no. 35.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Mental health; mindfulness training; employees; psychological health.

Evidence Level: 4A

Link: https://journals.lww.com/md-journal/Fulltext/2022/09020/Effects_of_mobile_mindfulness_training_on_mental.27.aspx

The effect of COVID-19 on employees' mental health

Background: Long lockdowns, food shortages, and the inability to receive basic primary healthcare have aggravated the effects of pandemics. However, most studies have focused on the health problems of the infected people or the measures employed to keep the disease under control. **Methods:** This cross-sectional study focused primarily on the mental health issues of employees. By employing a convenient sampling method, we reached 237 respondents (135 with coronavirus history) to assess the impact of the pandemic on employees. Multivariate causal relationships were assessed with Structural Equation Modeling (SEM). **Results:** The predictors included internal entrapment (INT) and difficulty identifying feelings (DIF), which are significant predictors of depression (DEPR). DIF was found to be a significant predictor of INT and EXT feelings, while FEAR was found to be a significant predictor of INT, DIF, and DEPR. Quality of life (QoL) was found to be a significant predictor of DIF and DDF, DEPR, EXT and INT, and FEAR. The results also showed that DIF mainly manifested its effect on depression through INT. The DEPR level of employees working only from home was higher than that of other employees. **Conclusions:** The depression levels of women, young employees, and those whose QoL was adversely affected by the coronavirus were higher than the rest.

Rodoplu Şahin et al. 2022.

Scientific Reports, vol. 12, no. 1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19; mental health; healthcare; pandemic; employee.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-022-18692-w>

The relationship between workplace burnout and male depression symptom assessed by the Korean version of the Gotland male depression scale

Background: Screening for depression in males is important because their symptoms differ from those of females, ranging from indications of aggression to attempts at suicide. Men and women differ in their responses to job stress. There are no tools that have been verified, developed, or translated for screening male depression in Korea. Our team translated the Gotland Male Depression Scale (GMDS) into Korean. **Methods:** The Korean version of GMDS (K-GMDS) and Maslach Burnout Inventory-General Survey (MBI-GS) were administered to 277 office workers in one public institution. Gender differences in each scale score were measured along with the correlation between the K-GMDS and the MBI-GS. **Results:** There was no significant difference in the K-GMDS score between males and females, whereas females scored significantly higher on the MBI-GS ($p < .001$). The correlation between the K-GMDS total score and the MBI total score (male: $r = .702$, $p < .001$, female: $r = .375$, $p < .001$) and MBI subscale scores were higher in males than females. Gender moderated the relationship between total K-GMDS and total MBI scores ($p < .001$). The Korean version of the GMDS is suitable for screening male depression symptoms in the workplace. The results of the K-GMDS demonstrated a strong correlation between depressive symptoms and work-related burnout among men. **Conclusions:** This study can be used as a basis for studying male depression symptoms in Korea, which has not been studied extensively. This will prove beneficial for work environments.

Moon et al. 2022.

American Journal of Men's Health, vol. 16, no. 5.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)* (<https://creativecommons.org/licenses/by-nc/4.0/>)

Keywords: Gotland Male Depression Scale; Maslach Burnout Inventory-General Survey; male depression symptom.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9483954/>

Risk factors for developing concurrent posttraumatic stress injury after work-related musculoskeletal injury: A case-control study

Background: This study aimed to study risk factors for developing concurrent posttraumatic stress injury (PTSI) among workers experiencing work-related musculoskeletal injury (MSI). **Methods:** A case-control

study was conducted using workers' compensation data on injured workers undergoing rehabilitation programs for concurrent MSI and PTSI (cases) and MSI only (controls). A variety of measures known at the time of the compensable injury were entered into logistic regression models. **Results:** Of the 1948 workers included, 215 had concurrent MSI and PTSI. Concurrent MSI and PTSI were predicted by type of accident (adjusted odds ratio [OR], 25.8), experiencing fracture or dislocation fracture or dislocation (adjusted OR, 3.7), being public safety personnel (adjusted OR, 3.1), and lower level of education (adjusted OR, 1.9). **Conclusions:** Experiencing a concurrent PTSI diagnosis with MSI after work-related accident and injury appears related to occupation, type of accident, and educational background.

Gross et al. 2022.

Journal of Occupational and Environmental Medicine, vol. 64, no. 9.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)*
(<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Posttraumatic stress injury; risk; musculoskeletal injury.

Evidence Level: 5A

Link:

https://journals.lww.com/joem/Fulltext/2022/09000/Risk_Factors_for_Developing_Concurrent.22.aspx

Explaining the occupational structure of depressive symptoms: Precarious work and social marginality across European countries

Background: The idea that socioeconomic differences are a "fundamental cause" of health and well-being is the basis for large volumes of research. However, one of the challenges in this area is that of linking socioeconomic positions to etiological mechanisms in theoretically informative ways. The situation is doubly challenging because the expression and meaning of socioeconomic positions and the mechanisms they activate change over time. **Methods and Results:** Focusing on depression and applying mediation analysis to data from a large multinational sample from European countries, we find strong support for a three-stage model where occupational differences are largely mediated by exposure to precarious work, which itself is mediated by social marginality. The model is largely robust across welfare state regimes.

Conclusions: Ultimately, the research extends fundamental cause perspectives by highlighting connections between "old" and "new" dimensions of socioeconomic status and the social and social psychological sequelae that connect them to psychological well-being.

Macmillan et al. 2022.

Journal of Health and Social Behavior, vol. 63, no. 3.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*
(<https://creativecommons.org/licenses/by-nc/4.0/>)

Keywords: Fundamental causes; mental health; precarious work; social marginality; welfare state regimes.

Evidence Level:

Link: <https://journals.sagepub.com/doi/full/10.1177/00221465211072309>

Psychosocial job stressors and risk of suicidal behavior: An observational study among Swedish men

Background: This study aimed to explore the relationship between psychosocial job stressors and suicidal behavior (fatal and non-fatal) among Swedish men while controlling for potential confounders.

Methods: Population-based Swedish longitudinal cohort study of male conscripts without previous self-harm (N=1 483 310) enlisting 1968-2002. Conscript examination included measures of IQ, stress resilience and psychiatric diagnoses. Job demand-control (JDC) exposure was assessed using the Swedish Job Exposure Matrix linked to specific occupations. Suicidal behavior among men aged 30-64 was identified in the National Hospital Register (non-fatal self-harm) and Swedish Cause of Death Register (suicide) during follow-up 2002-2014. Cox regression models were used to estimate associations between JDC category and suicidal behavior. **Results:** In fully adjusted models, passive jobs (low demand-low control) showed the highest risk of suicidal behavior [hazard ratio (HR) 1.33, 95% confidence interval (CI) 1.25-1.43] compared to those with low strain (low demand-high control), followed by high strain (high demand-low control) (HR 1.12, 95% CI 1.03-1.22). A lower risk of suicidal behavior was found in the active category, where levels of both demand and control are high (HR 0.64, 95% CI 0.60-0.70). Separate analyses for suicide as outcome revealed a lower risk of suicide in persons with active jobs (high demands-high control). The passive

category showed a higher risk for suicide, but the association did not remain after adjustment for stress resilience and IQ. **Conclusions:** These results show that psychosocial job stressors among men are associated with risk for suicidal behavior. Improving job control has the potential to decrease suicidal behavior for this group.

Åberg et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 48, no. 6.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Psychosocial stressors; job; suicidal behavior; men; Sweden.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4039>

The impact of working from home on mental health: A cross-sectional study of Canadian worker's mental health during the third wave of the COVID-19 pandemic

Background: The COVID-19 pandemic has seen a considerable expansion in the way work settings are structured, with a continuum emerging between working fully in-person and from home. The pandemic has also exacerbated many risk factors for poor mental health in the workplace, especially in public-facing jobs.

Methods: Therefore, we sought to test the potential relationship between work setting and self-rated mental health. To do so, we modeled the association of work setting (only working from home, only in-person, hybrid) on self-rated mental health (Excellent/Very Good/Good vs. Fair/Poor) in an online survey of Canadian workers during the third wave of COVID-19. The mediating effects of vaccination, masking, and distancing were explored due to the potential effect of COVID-19-related stress on mental health among those working in-person. **Results:** Among 1576 workers, most reported hybrid work (77.2%). Most also reported good self-rated mental health (80.7%). Exclusive work from home (aOR: 2.79, 95%CI: 1.90, 4.07) and exclusive in-person work (aOR: 2.79, 95%CI: 1.83, 4.26) were associated with poorer self-rated mental health than hybrid work. Vaccine status mediated only a small proportion of this relationship (7%), while masking and physical distancing were not mediators. **Conclusions:** We conclude that hybrid work arrangements were associated with positive self-rated mental health. Compliance with vaccination, masking, and distancing recommendations did not meaningfully mediate this relationship.

Bodner et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19; masking; mental health; occupational health; physical distancing; telecommuting.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/18/11588>

Managing hospital employees' burnout through transformational leadership: The role of resilience, role clarity, and intrinsic motivation

Background: Medical errors have been identified as one of the greatest evils in the field of healthcare, causing millions of patient deaths around the globe each year, especially in developing and poor countries. Globally, the social, economic, and personal impact of medical errors leads to a multi-trillion USD loss. Undoubtedly, medical errors are serious public health concerns in modern times, which could be mitigated by taking corrective measures. Different factors contribute to an increase in medical errors, including employees' risk of burnout. Indeed, it was observed that hospital employees are more exposed to burnout situations compared to other fields. In this respect, managing hospital employees through transformational leadership (TL) may reduce the risk of burnout. However, surprisingly, studies on the relationship between TL and burnout are scarce in a healthcare system, indicating the existence of a critical knowledge gap.

Methods: This study aims to fill this knowledge gap by investigating the role of TL in reducing the risk of burnout among hospital employees. At the same time, this study also tests the mediating effects of resilience and role clarity with the conditional indirect effect of intrinsic motivation in the above-proposed relationship. To test different hypotheses, a hypothetical model was developed for which we collected the data from different hospital employees (n = 398). **Results:** Structural equation modeling (SEM) was considered for statistical validation of hypotheses confirming that TL significantly reduces burnout. The results further indicated that resilience and role clarity mediate this relationship significantly. Lastly, the

conditional indirect effect of intrinsic motivation was also confirmed. **Conclusions:** Our results provide meaningful insights to the hospital administrators to combat burnout, a critical reason for medical errors in hospitals. Further, by incorporating the TL framework, a hospital may reduce the risk of burnout (and, hence, medical errors); on the one hand, such a leadership style also provides cost benefits (reduced medical errors improve cost efficiency). Other different theoretical and practical contributions are discussed in detail.

Chen et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Burnout; healthcare; medical errors; transformational leadership.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/17/10941>

Bullying and Harassment

This month we examine the relationships between workplace bullying and risk of suicide and employee well-being

Workplace bullying and risk of suicide and suicide attempts: A register-based prospective cohort study of 98 330 participants in Denmark

Background: The aim of this study was to analyze whether individuals reporting exposure to workplace bullying had a higher risk of suicidal behavior, including both suicide attempt and death by suicide, than those not reporting such exposure. **Methods:** Using a prospective cohort study design, we linked data from nine Danish questionnaire-based surveys (2004-2014) to national registers up to 31 December 2016. Exposure to workplace bullying was measured by a single item. Suicide attempts were identified in hospital registers and death by suicide in the Cause of Death Register. Among participants with no previous suicide attempts, we estimated hazard ratios (HR) and 95% confidence intervals (CI), adjusting for sex, age, marital status, socioeconomic status, and history of psychiatric morbidity. **Results:** The sample consisted of 98 330 participants (713 798 person-years), 63.6% were women, and the mean age was 44.5 years. Of these participants, 10 259 (10.4%) reported workplace bullying. During a mean follow-up of 7.3 years, we observed 184 cases of suicidal behavior, including 145 suicide attempts, 35 deaths by suicide and 4 cases that died by suicide after surviving a suicide attempt. The fully-adjusted HR for the association between workplace bullying and suicidal behavior was 1.65 (95% CI 1.06-2.58). The HR for suicide attempts and death by suicide were 1.65 (1.09-2.50) and 2.08 (0.82-5.27), respectively. Analyses stratified by sex showed a statistically significant association between workplace bullying and suicidal behavior among men but not women. **Conclusions:** The results suggest that exposure to workplace bullying is associated with an elevated risk of suicidal behavior among men.

Conway et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 48, no. 6.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Bullying; workplace bullying; suicide; Denmark.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4034>

Bullying behavior and employee well-being: how do different forms of social support buffer against depression, anxiety and exhaustion?

Background: Workplace bullying has severe negative consequences for the well-being of targeted employees. Previous research suggests that social support may buffer against such adverse effects. However, it remains unclear if different forms of support have equally strong effects and if support buffers equally effectively against different outcomes. Further, little is known about social support as a mitigating factor in remote occupational groups such as seafarers. This study examines the buffering effects of four forms of support (instrumental and emotional peer support, company support, non-work support) on three

aspects of employee well-being (depression, anxiety, and exhaustion) among seafarers.

Methods: Responses to a cross-sectional online survey from a convenience sample of 414 seafarers on international commercial vessels were analyzed using moderated regression analyses with PROCESS.

Results: Exposure to workplace bullying behavior increased seafarers' depression, anxiety and exhaustion. Instrumental peer support and non-work support buffered the negative impact of bullying on depression. The impact of bullying on exhaustion was buffered by company support. The impact of bullying on anxiety was not buffered by any of the four forms of support. **Conclusion:** Extending previous research, the findings suggest that the interaction between workplace bullying and support depends not only on the source of support, but also on the type of support and the outcome considered. While support from colleagues on board was important for seafarers, company and non-work support must not be overlooked. Interventions should, therefore, encourage the development of peer support and ensure access to shore-based support for workers in remote locations.

Paukstat et al. 2022.

International Archives of Occupational and Environmental Health, vol. 95, no. 7.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Exhaustion; maritime industry; mental health; social support; workplace bullying.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00420-022-01844-w>

Psychosocial Issues

This month we explore the relationship between different dimensions of workplace spirituality and psychological well-being and how conflict at work impairs physiological recovery during sleep. In COVID-19 related research studies explore how work-family conflict influenced the safety performance of employees during the initial COVID-19 pandemic, and the effects of workplace measures against COVID-19 on psychological distress of full-time employees

How work-family conflict influenced the safety performance of subway employees during the initial COVID-19 pandemic: Testing a chained mediation model

Background: This study examined the impact of work-family conflict on subway employees' safety performance during the initial wave of the COVID-19 pandemic. We proposed a chain mediation model in which job burnout and affective commitment play mediating roles in this process. **Methods:** Using questionnaire data from 632 Chinese subway employees during February 2020, structural equation modeling analyses were performed. **Results:** The analyses showed that work-family conflict had a significant negative impact on subway employee safety performance. Moreover, job burnout completely mediated the influence of work-family conflict on safety performance, while affective commitment only partially mediated the influence of job burnout on safety performance. **Conclusions:** These findings suggest the important role played by Work-Family balance during the pandemic and contribute to a deeper understanding of the inner mechanisms. We also discussed several practical implications for organizations to reduce the negative impact of work-family conflict on safety performance.

Zhang et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 17.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Affective commitment; job burnout; safety performance; work-family conflict.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/17/11056>

Conflict at work impairs physiological recovery during sleep: A daily diary study

Background: Sleep plays an essential role in maintaining employees' health and well-being. However, stressors, such as conflict at work, may interfere with employees' sleep. **Methods:** Drawing on previous literature on the relationship between conflict at work and sleep outcomes, we proposed a negative relationship between daily conflict at work and physiological changes during early sleep, particularly

nocturnal heart rate variability (HRV). Furthermore, building on the perseverative cognition hypothesis, we proposed that daily work-related rumination mediates the relationship between conflict at work and nocturnal HRV. Ninety-three healthcare employees participated in a daily diary study for five workdays, resulting in 419 observations. **Results:** Multilevel analysis revealed a significant relationship between daily conflict at work and nocturnal HRV, specifically high-frequency (HF) power. Daily conflict at work was found to predict rumination; however, rumination did not significantly predict nocturnal HRV. **Conclusions:** Our results suggest that daily conflict at work increases rumination during the off-job time and may directly alter nocturnal HRV, specifically parasympathetic function in early sleep.

Kerman et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: HF; RMSSD; heart rate variability; perseverative cognition; sleep; work stress.

Evidence Level: 5A

Link: <https://www.mdpi.com/1660-4601/19/18/11457>

Relationship between different dimensions of workplace spirituality and psychological well-being: Measuring mediation analysis through conditional process modeling

Background: The present study aims to identify the relationship between workplace spirituality, compassion, relationship with others at work, spiritual orientation, organizational value and alignment of personal values, and psychological well-being among university teachers. Further, the mediating effect of job stress was also identified between workplace spirituality and psychological well-being. Similarly, the mediation of environmental mastery between organizational values and alignment of personal values and psychological well-being was examined. Finally, we examined the mediation of personal growth between spiritual orientation and psychological well-being. **Methods:** The data were collected through a structured and adapted five-point Likert scale using a purposive sampling technique, with a total sample of 873 male and female university teachers working in the private and government universities. We employed structural equation modeling to check the relationship among the considered variables for analysis purposes. **Results:** The results show a strong positive relationship between the independent and dependent variables. The findings further demonstrated that the mediation analysis confirms that job stress mediates the relationship between workplace spirituality and psychological well-being, and environmental mastery mediates between organizational values and alignment of personal values and psychological well-being. Finally, personal growth mediates between spiritual orientation and psychological well-being. **Conclusion:** To maintain the excellent quality of education, educational institutes need to identify and imply the practice of workplace spirituality that will help to reduce job stress and improve the psychological well-being of universities' teachers, thus resulting in better educational output.

Ahmed et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Job stress; psychological well-being; spirituality orientation; structural equation modeling; university teachers; workplace spirituality.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/18/11244>

Effects of workplace measures against COVID-19 on psychological distress of full-time employees: A 12-month prospective study in the COVID-19 pandemic

Background: This study aimed to investigate the prospective effects of corporate and organizational workplace measures against COVID-19 on reducing employees' psychological distress during a 12-month follow-up in the COVID-19 pandemic. **Methods:** Data were retrieved from an online longitudinal panel survey of full-time employees in Japan, with the 1st survey in March 2020, and the 2nd to 6th surveys in May, August, November 2020, February and March 2021, respectively. Seven area-specific workplace measures were assessed using a self-report 23-item scale at the 2nd follow-up. Psychological distress was measured using an 18-item scale of the Brief Job Stress Questionnaire at each survey. Linear regressions and mixed model analysis were conducted of psychological distress at follow-ups on scores of the area-specific

workplace measures, adjusting for psychological distress and other covariates at the 1st survey. **Results:** A total of 941 employees responded at baseline; most of them (86.9-90.9%) participated in the follow-up surveys. Linear regression analysis indicated that workplace measures of facilitating employees' preventive measures (ie, hygiene behaviors) statistically significantly and negatively correlated with psychological distress at the 5th survey [b=-0.518, standard error (SE) 0.259, P=0.046]. A statistically significant and negative interaction between the scores and time of follow-up was observed in the mixed model analysis (b=-0.096, SE 0.047, P=0.041). No such correlation or interaction was found for any of other subcategorical workplace measures. **Conclusions:** The study provides prospective evidence for a protective effect of workplace measures to facilitate employee's hygiene behaviors on reducing psychological distress of full-time employees in the COVID-19 pandemic. The association seems stronger at a later follow-up.

Asaoka et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 48, no. 6.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19; psychological distress; employees; workplace measures.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4030>

Enabling Healthy and Safe Workplaces

Health and Wellbeing

This month we explore the role of remote working on employees' performance and well-being, and the overall health of men who do fly-in fly-out work, the relationship between passion for work and psychological well-being, and the pre-injury health status of truck drivers with a workers' compensation claim. In the area of sleep health, studies explore the relationship between sleep quality and dietary patterns and the association between daily rest periods and sleep duration with worker health and productivity. Other studies explore the health of greenspace workers and the effectiveness of a worksite lifestyle intervention to reduce BMI among farmworkers. In COVID-19 related research studies explore the changes in occupational well-being during COVID-19: and the COVID-19 vaccine for people who live and work in prisons.

Investigating the Role of Remote Working on Employees' Performance and Well-Being: An Evidence-Based Systematic Review

Background: Remote working refers to a working model in which employees can pursue work tasks outside the organization due to the use of technology. Several research papers showed that different assumptions are linked to remote work because of the flexibility and autonomy granted to employees when working remotely or from home. **Methods:** This review consistently aims to describe remote work's role in employees' well-being and performance. Using the Preferred Reporting Items for Systematic reviews and Meta-analyses (PRISMA) guidelines, 20 peer-reviewed papers published from 2010 until 2021 were selected for this review. **Results:** Findings showed various and mixed consequences on employees' performance and well-being. Specifically, remote working affects employees' perceptions about themselves and their workplaces and contributes to their physical and mental health, particularly regarding work-life balance. Managerial implications for remote working implementation will be discussed in the paper.

Ferrara et al

International Journal of Environmental Research and Public Health, vol. 19, no. 19.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: employees wellbeing; work-health balance; occupational health promotion; innovative; intrapreneurial skills; positive attitudes at work; smart learning; working environments

Evidence Level: 1A

Link: <https://www.mdpi.com/1660-4601/19/19/12373/htm>

Sleep quality and dietary patterns in an occupational cohort of police officers

Background and Methods: This study explored the association between self-reported sleep quality, sleep duration, and dietary patterns among 422 police officers aged 21-74 years, using a cross-sectional study design. The study found that among women, good sleep quality and long sleep duration were associated with a dietary pattern high in consumption of both fruits and vegetables and dairy products.

Velazquez-Kronen et al. 2022.

Behavioral Sleep Medicine, vol. 20, no. 5.

Keywords: Sleep quality; dietary patterns; sleep duration; police officers.

Evidence Level: 4B

Link: <https://www.tandfonline.com/doi/abs/10.1080/15402002.2021.1954925?journalCode=hbsm20>

The overall health of men who do fly-in fly-out work in the mining sector

Background: Fly-in fly-out (FIFO) continues to be a fact of life for many men working in the mining industry. The goal of this article is to gain a better understanding of the impacts of FIFO on the overall health of men working in the mining sector and the relationship these men have to seeking help. **Methods:** A qualitative study of 22 men was conducted using a semi-structured interview guide modeled after Torkington et al.

Results: Results indicate that men present poor health as a result of workplace-specific performance requirements (long workdays, difficult environmental conditions), being physically far away from their family, and the fact that they do not often seek mental health help. **Conclusions:** Additional studies with a much larger sample of men are necessary.

Labra et al. 2022.

American Journal of Men's Health, vol. 16, no. 5.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*

(<https://creativecommons.org/licenses/by-nc/4.0/>)

Keywords: West Quebec; fly-in fly-out; men; mental health; mines; physical health.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9515529/>

Latent profile analysis of passion for work and its relationship with psychological well-being

Background: So far, studies based on the dualistic model of passion have ignored how the 2 different types of passion interact in a person's identity. The aim of this article is to identify profiles of passion for work and their consequences for psychological well-being. **Material and methods:** The survey was conducted on a sample of 522 employees of various employment sectors. The *Passion Scale* was used to assess passion for work, while to explore well-being, the anxiety and depression subscale of the *General Health Questionnaire* (GHQ-28) and the *Subjective Vitality Scale* were employed. Latent profile analysis (LPA) was used to distinguish the passion profiles, following which the results regarding well-being in the following groups were compared using non-parametric tests. **Results:** Four passion profiles have been identified. They are termed as high-moderate (profile 1: high harmonious passion for work and moderate obsessive passion for work), high (profile 2: high harmonious passion for work and obsessive passion for work), optimal (profile 3: high harmonious passion for work and low obsessive passion for work), and low (profile 4: low harmonious passion for work and low obsessive passion for work). Employees with a low score for both harmonious passion for work and obsessive passion for work had the lowest score regarding well-being. **Conclusions:** This study was one of the first to use the LPA approach to explore the configuration of passion for work. It provided an indication of how the different dimensions and levels of passion set up with each other and what their consequences would be. The conducted research emphasized the protective role of the harmonious passion for work against the negative effect of obsessive passion for work. *Med Pr.* 2022;73(4):315-23.

Mudło-Głagolska 2022.

Medycyna Pracy, vol. 73, no. 4.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*

(<https://creativecommons.org/licenses/by-nc/4.0/>)

Keywords: Employee; latent profile analysis; organization; passion for work; psychological well-being; subjective vitality.

Evidence Level: 5B

Link: <http://medpr.imp.lodz.pl/Latent-profile-analysis-of-passion-for-work-and-its-relationship-with-psychological,149314,0,2.html>

Changes in occupational well-being during COVID-19: the impact of age, gender, education, living alone, and telework in a Finnish four-wave population sample

Background: This study investigated how occupational well-being evolved across different phases, before and during the COVID-19 outbreak in the Finnish population. Whereas studies have suggested that certain demographic groups (eg, young, female) are more at risk during COVID-19, less is known whether the effects of such demographic factors may vary (i) across different phases of the unfolding viral outbreak and (ii) on different dimensions of occupational well-being. As they are predictors of changes in burnout, job boredom, and work engagement, we examined age, gender, education, living alone, and teleworking. This is the first study to provide such detailed knowledge regarding the changes in various occupational well-being dimensions before and during the COVID-19 outbreak. **Methods:** We collected randomized population panel data at the end of 2019 and conducted three follow-up surveys with 6-month intervals (N=532). The data were analyzed with latent change score models. **Results:** Whereas during spring 2020, occupational well-being slightly improved, in autumn 2020 well-being decreased back to pre-COVID-19 levels. There was an indication of slight increases in job boredom between before COVID-19 and summer 2021. Well-being deteriorated more for the young and those who lived alone. There was also some indication of females, those with lower education, and non-teleworkers experiencing less favorable changes in occupational well-being. Teleworking appeared to have more beneficial effects on well-being for those with lower education. **Conclusions:** The study suggests that only relatively minor changes in well-being took place among the employed population. A particular focus in workplaces should be targeted at younger employees.

Kaltainen et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 48, no. 6.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19; occupational well-being; age; gender; education; telework; Finnish.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4033>

COVID-19 vaccine for people who live and work in prisons worldwide: A scoping review

Background: Overcrowding, poor conditions, and high population turnover make prisons highly susceptible to COVID-19. Vaccination is key to controlling COVID-19, yet there is disagreement regarding whether people who live and work in prisons should be prioritised in national vaccination programmes.

Methods: To help resolve this, we critically examine the extent, nature, and quality of extant literature regarding prioritisation of COVID-19 vaccinations for people who live and work in prisons. Using a scoping review as our methodological framework, we conducted a systematic literature search of 17 databases.

Results: From 2,307 potentially eligible articles, we removed duplicates and screened titles and abstracts to retain 45 articles for review and quality appraisal. Findings indicated that while most countries recognise that prisons are at risk of high levels of COVID-19 transmission, only a minority have explicitly prioritised people who live and work in prisons for COVID-19 vaccination. Even among those that have, prioritisation criteria vary considerably. This is set against a backdrop of political barriers, such as politicians questioning the moral deservingness of people in prison; policy barriers, such as the absence of a unified international framework of how vaccine prioritisation should proceed in prisons; logistical barriers regarding vaccine administration in prisons; and behavioural barriers including vaccine hesitancy. **Conclusions:** We outline five strategies to prioritise people who live and work in prisons in COVID-19 vaccination plans: (1) improving data collection on COVID-19 vaccination, (2) reducing the number of people imprisoned, (3) tackling vaccine populism through advocacy, (4) challenging arbitrary prioritisation processes via legal processes, and (5) conducting more empirical research on COVID-19 vaccination planning, delivery, and acceptability. Implementing these strategies would help to reduce the impact of COVID-19 on the prison population, prevent community transmission, improve vaccine uptake in prisons beyond the current pandemic, foster political accountability, and inform future decision-making.

Ismail et al. 2022.

PLoS One, vol. 17, no. 9.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19 vaccine; prisons; vaccination.

Evidence Level: 6A

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0267070>

Health of greenspace workers: Morbidity and mortality data from the AGRICAN cohort

Background: Knowledge on the health of greenspace workers is scarce, even though they are exposed to many occupational hazards. The aim of this study was to analyze mortality by cause, prevalence of some non-cancer diseases, and incidence of the main cancers among greenspace workers. **Methods:** A sub-cohort of greenspace workers was formed within the AGRICAN cohort. Demographic information, health characteristics and self-reported diseases at enrolment were described separately in terms of frequencies (%), median and Interquartile Range (IQR) for greenspace workers, farmers, and other non-agricultural workers. Causes of death and cancer incidence were identified through linkage with cancer registries from enrolment (2005-2007) to 2015. Hazard ratio (HR) and 95% Confidence Intervals [95% CI] were estimated using Cox proportional hazard regression with age as the underlying timescale. **Results:** The sub-cohort included 6247 greenspace workers who were higher proportion men, younger and more frequently smokers than farmers and non-agricultural workers. Male and female greenspace workers reported more history of allergic diseases; and males, more history of depression. Compared to other workers male greenspace workers showed a non-significant higher mortality from ischemic cardiological diseases (HR = 1.14 [0.81-1.60]). Incidence was higher in male greenspace workers than farmers for overall cancer (HR = 1.15 [1.04-1.27]), cancer of the prostate (HR = 1.21 [1.02-1.44]), thyroid (HR = 2.84 [1.26-6.41]), testis (HR = 3.98 [1.50-10.58]) and skin melanoma (HR = 2.15 [1.33-3.47]). Non-significant increased risks were also found for sarcomas, larynx and breast. In women, risk of breast cancer was higher in greenspace workers than in farmers (HR = 1.71 [1.17-2.50]). **Conclusions:** Whereas greenspace workers have often been included with other pesticide applicators in epidemiological studies, our analyses highlighted the differences between these two populations. They demonstrate the need to study them separately and to investigate more thoroughly the role of specific occupational exposures such as pesticides as well as the effect on women.

de Graaf et al. 2022.

Environmental Research, vol. 212.

User License: Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Cancer; greenspace workers; mortality; non-agricultural workers; occupational epidemiology; pesticides.

Evidence Level: 4B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0013-9351\(22\)00702-2](https://linkinghub.elsevier.com/retrieve/pii/S0013-9351(22)00702-2)

The joint association of daily rest periods and sleep duration with worker health and productivity: A cross-sectional web survey of Japanese daytime workers

Background: A daily rest period (DRP) is a daily inter-work interval that contains sleep opportunity. This study investigates the joint association of DRP and sleep duration with worker health and productivity.

Methods: A total of 13,306 Japanese daytime workers participated in this web-based cross-sectional survey. Participants reported on their DRPs and sleep duration; moreover, sleep difficulties, mental health, and presenteeism were assessed by the standardized questionnaires. The participants were divided into 10 groups based on their DRPs and sleep duration. **Results:** Logistic regression analyses showed that the combination of quick return (QR: DRP of <11 h) and short sleep duration (<6 h) was found to be significantly associated with sleep difficulties (odds ratio [OR] = 4.45, 95% confidence interval [CI] = 2.83-7.01), poor mental health (OR = 3.04, 95% CI = 1.79-5.15), and presenteeism (OR = 2.35, 95% CI = 1.47-3.77) compared with the reference group (the combination of adequate DRP [15 h] and a normal sleep duration [≥ 6 h]). **Conclusions:** The combination of QR and normal sleep duration or adequate DRP and short sleep

duration was significantly associated with high ORs for the outcomes. QR, short sleep duration, or both negatively affect worker health and productivity.

Ikeda et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Daily rest period; mental health; presenteeism; quick return; sleep duration; sleep quality.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/17/11143>

Pre-injury health status of truck drivers with a workers' compensation claim

Background: Truck drivers are a vulnerable population due to the high number of workplace injuries and fatalities predominant in their occupation. In Australia, the road freight transportation industry has been identified as a national priority area in terms of creating preventative measures to improve the health and safety of its workers. With an environment conducive to poor nutritional food choices and unhealthy lifestyle behaviours, many barriers exist to creating a safe and healthy workforce. Thus, the current study aimed to describe the pre-injury hospital-recorded health conditions and health service use of truck drivers with a worker's injury compensation claim/s when compared to workers in other industries. **Methods:** Data was obtained from a compensation claims database and linked with hospital admissions data recorded five years prior to the injury claim. Health and lifestyle behaviour data for the occupational code of truck drivers was compared to other occupational drivers, as well as to all other occupations. Analysis was conducted via logistic regression. **Results:** The results found that when compared to other occupational drivers, truck drivers were significantly more likely to have a hospital-recorded diagnosis of diabetes and/or hypertension, as well as being significantly more likely to have a hospital record of tobacco use and/or alcohol misuse/abuse. **Conclusion:** The findings show that there is a need to review and revise existing health strategies to promote the health and wellbeing of truck drivers, especially given their challenging work environment.

Batson et al. 2022.

BMC Public Health, vol. 22, no. 1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Health service use; occupational drivers; occupational health; road environment; truck driver health; work injury.

Evidence Level: 5A

Link: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-022-13885-4>

Effectiveness of a worksite lifestyle intervention to reduce BMI among farmworkers in California: A cluster randomised controlled trial

Background: To evaluate the effectiveness of *PASOS SALUDABLES*, a culturally tailored lifestyle intervention to prevent obesity and diabetes among Latino farmworkers, when implemented at large scale in the worksite. **Design:** This study was a two-arm parallel group, cluster randomised controlled trial, where participants received either a twelve-session lifestyle intervention (intervention) or six-session leadership training (control) at their worksite. The intervention was delivered by *Promotoras* in Spanish. All sessions were conducted at the worksites (ranches) during meal breaks. Blinded, trained research assistants collected socio-demographic and outcome data (i.e. BMI as primary outcome and waist circumference, glycated Hb (HbA1c), cholesterol and blood pressure as secondary outcomes) at baseline and follow-up assessments (i.e. 3 months, 6 months, 1 year and 1-5 years). **Setting:** Recruitment and intervention delivery occurred at twelve study ranches in Oxnard, California. **Participants:** We enrolled farmworkers hired by a large berry grower company, who were ≥ 18 years old, spoke Spanish and were free of diabetes at screening. **Results:** A total of 344 workers were enrolled in the intervention and 271 in the control group. The intervention resulted in attenuated increase of BMI over time; however, the difference in trend between groups was not significant ($\beta = -0.01$ for slope difference, $P = 0.29$). No significantly different trend by group was observed in secondary outcomes ($P > 0.27$). **Conclusions:** The worksite intervention, implemented during meal breaks, did not reduce BMI or other clinical indicators. Nevertheless, this study

supports the feasibility of recruiting and engaging the Latino farmworker population in workplace health promotion interventions.

Matias et al. 2022.

Public Health Nutrition, vol. 25, no. 9.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: California; farmworkers; latinos; lifestyle intervention; obesity; workplace intervention.

Evidence Level: 2B

Link: <https://www.cambridge.org/core/journals/public-health-nutrition/article/effectiveness-of-a-worksite-lifestyle-intervention-to-reduce-bmi-among-farmworkers-in-california-a-cluster-randomised-controlled-trial/45506135E4DA529B1468908876C2B5BF>

Work Health and Safety

This month we examine the influence of different personality traits on team safety and the types of work-related injuries among insured construction workers, the injuries and deaths by trauma scores due to occupational accidents, and the mortality rates by occupation in Japanese workers from 1980 to 2015. Other studies explore the incidence of traumatic brain injury by severity among work-related injured workers and individual and work-related predictors of exhaustion. In COVID-19 related research, studies examined the effects of wearing personal protective equipment on workers skin, the dangers of reused personal protective equipment, the health behaviour and workplace health promotion of employees in the telecommunications sector, the role of psychological factors on safety training for safety behaviour, and how to enhance the role of occupational health services in the battle against COVID-19 disease. Other COVID related studies explore the risk of COVID -19 infection by occupation, the COVID -19 seroprevalence in the public transportation industry, the consequences of COVID -19 on employees in remote working, the determinants of workplace safety towards COVID -19 and when and how do business shutdowns work.

Effects of wearing personal protective equipment during COVID-19 pandemic on composition and diversity of skin bacteria and fungi of medical workers

Background: This study explored the effect on skin microbiome of wearing PPE. **Methods:** The microbiome on the face, hand, and back of subjects were analysed before and after wearing PPE. **Results:** The study identified that wearing PPE affected the skin microbiota, especially bacteria, which may affect the skin health of workers during the COVID-19 pandemic.

Lin et al. 2022.

Journal of the European Academy of Dermatology and Venereology, vol. 36, no. 9.

Keywords: Personal protective equipment; COVID-19; skin bacteria; fungi; medical workers.

Evidence Level: 5B

Link: <https://onlinelibrary.wiley.com/doi/10.1111/jdv.18216>

Home office, health behavior and workplace health promotion of employees in the telecommunications sector during the pandemic

Background: Our study aims to present the perception and experiences of employees at a large multinational telecommunications company in Hungary working in home offices, as well as their health behavior and the workplace health promotion during the SARS-CoV-2 COVID-19 outbreak. **Methods:** The sample consisted of the full sample of highly skilled employees at a large telecommunication multinational company (N = 46). Throughout the analysis, tests for homogeneity of variance were followed by a MANOVA test to compare the groups' means by gender, age, and job classification. **Results:** The results clearly show that in the short term, workers' mental health did not deteriorate, they do not argue or fight more with their partners and are no more depressed or irritable than before. Workers are less likely to think of ways to be more effective at work than in a home office. Similarly, they do not think that employers have more expectations than before the pandemic. **Conclusions:** Our research shows the assumption about home

workers being less efficient or less diligent in their daily work to be false. A supportive and flexible employer approach to health-conscious employees will be an essential aspect in the future.

Tánczos et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Fitness; mental health and wellness in home office; multinational companies; work health promotion.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/18/11424>

Occupation and SARS-CoV-2 infection risk among 108 960 workers during the first pandemic wave in Germany

Background: The aim of this study was to identify the occupational risk for a SARS-CoV-2 infection in a nationwide sample of German workers during the first wave of the COVID-19 pandemic (1 February-31 August 2020). **Methods:** We used the data of 108 960 workers who participated in a COVID follow-up survey of the German National Cohort (NAKO). Occupational characteristics were derived from the German Classification of Occupations 2010 (Klassifikation der Berufe 2010). PCR-confirmed SARS-CoV-2 infections were assessed from self-reports. Incidence rates (IR) and incidence rate ratios (IRR) were estimated using robust Poisson regression, adjusted for person-time at risk, age, sex, migration background, study center, working hours, and employment relationship. **Results:** The IR was 3.7 infections per 1000 workers [95% confidence interval (CI) 3.3-4.1]. IR differed by occupational sector, with the highest rates observed in personal (IR 4.8, 95% CI 4.0-5.6) and business administration (IR 3.4, 95% CI 2.8-3.9) services and the lowest rates in occupations related to the production of goods (IR 2.0, 95% CI 1.5-2.6). Infections were more frequent among essential workers compared with workers in non-essential occupations (IRR 1.95, 95% CI 1.59-2.40) and among highly skilled compared with skilled professions (IRR 1.36, 95% CI 1.07-1.72).

Conclusions: The results emphasize higher infection risks in essential occupations and personal-related services, especially in the healthcare sector. Additionally, we found evidence that infections were more common in higher occupational status positions at the beginning of the pandemic.

Reuter et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 48, no. 6.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: SARS-CoV-2; infection risk; pandemic; COVID; German.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4037>

The double-edged sword of safety training for safety behaviour: The critical role of psychological factors during COVID-19

Background: Safety training (ST) is the primary means of avoiding unsafe behaviors, but it has not achieved the expected impact on improving workplace safety because of the high psychological stress it brings to workers. The coronavirus disease 2019 (COVID-19) further threatens workers' psychological conditions, thereby diminishing the effectiveness of ST. However, the existing literature has mainly laid emphasis on the bright side of ST and neglected examining its impact on safety behavior (SB) from detrimental psychological factors. **Methods:** Drawing from the conservation of resources theory, a novel two-staged model was established to understand how these psychological factors mediate and moderate the association between ST and SB. We incorporated resource consumption (e.g., role overload (RO) and COVID-19-related task setbacks) and resource generation (e.g., psychological resilience) into the model to consider both detrimental and protective psychological factors against ST. We then implemented a time-separated, three-wave data collection on a sample of frontline workers to validate this hypothetical model. **Results:** Consistent with our hypothesis, RO played a significant mediating role between ST and SB, that is, ST leads to RO, and in turn, holds up SB. Surprisingly, contrary to our hypothesis, COVID-19-related task setbacks weakened the negative and indirect impact of ST on SB via RO. This is one of the first empirical studies to highlight how detrimental psychological factors caused by ST constrict or amplify SB.

Conclusions: In practice, the efficacy of ST can be enhanced by cultivating psychological resilience and clarifying employees' job responsibilities to reduce the ambiguity of roles.

Ning et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Conservation of resources theory; role overload; safety behavior; safety training; task setbacks.

Evidence Level: 6B

Link: <https://www.mdpi.com/1660-4601/19/17/10951>

The influence of mutual assistance of construction workers with different personality traits on team safety

Background: Construction workers' unsafe behaviors are closely related to construction safety performance. Most existing studies on construction workers' personality traits and safety behaviors have ignored the flexibility of worker mix at construction sites, the dynamics of workers' behaviors, and the complexity of environmental risks at construction sites. **Methods:** Based on the cognitive process of construction workers' safety behaviors and from the perspective of personality traits, this research establishes an agent-based model of steelworkers' mutual assistance behavior. The AnyLogic platform is adopted to show emerging phenomena in complex problems. **Results:** Through simulation experiments, the optimized configuration of construction team members under different risk environments can be obtained. **Conclusions:** This research is conducive to project managers to understand the influence of construction workers' mutual assistance on team safety, assess workers' potential for safe work before recruitment, and carry out active safety management from the source instead of looking for the cause of the accident afterward, making safety management theory more realistic and dynamic.

Li et al. 2022.

Computational Intelligence and Neuroscience, vol. 16.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Personality traits; behavior; construction workers; safety performance.

Evidence Level: 6B

Link: <https://www.hindawi.com/journals/cin/2022/1396368/>

Analysis of injuries and deaths by trauma scores due to occupational accidents

Background: This study was aimed to evaluate the injury characteristics, causes, results, and hospital charges in cases of occupational accidents that were reported to judicial authorities using trauma scores. **Methods:** The study was performed after obtaining permission from the judicial authorities and approval from the local ethics committee. All occupational accident cases that were reported to the judicial authorities in Bolu Province between 2015 and 2019 were included in the study. The groups were compared with the Chi-Square test, Mann-Whitney U Test, and the Kruskal-Wallis Test. $P < 0.05$ was considered statistically significant. **Results:** This study included 3599 cases. The majority of the cases (74.70%) were male, with a mean age of 34.90 ± 10.50 years. Occupational accidents occurred most frequently between 8 and 16 h ($n=1982$; 55.10%), on Friday ($n=595$, 16.53%), in April ($n=356$; 9.89%), and in spring ($n=971$; 26.98%). Occupational accident-related death occurred in 29 cases (0.8%). The most common injury due to occupational accidents occurred in the food industry ($n=1256$, 34.90%). Blunt object injury ($n=1112$, 30.90%) was the most common type of occupational accident; and the upper extremity ($n=2049$, 54.93%) was the most common injury localization. The mean Abbreviated Injury Scale of the cases was 0.94 ± 0.74 , the mean Injury Severity Score (ISS) was 1.79 ± 4.47 , and the mean New-Injury Severity Score (NISS) was 2.11 ± 5.28 . The means of ISS and NISS were statistically significantly higher for males, life-threatening injuries, work accidents in the Construction and Agriculture-Forestry sectors, fall from height, traffic accidents, and caught-in-machinery. The total hospital charge was 1,351,339.10 TL and its average was 380.30 ± 2418.90 TL. The mean of treatment costs was significantly higher in the agriculture-forestry and construction sectors. **Conclusion:** The evaluation of all occupational accidents that are submitted to the jurisdiction on a provincial basis may provide more useful information in the prevention of work accidents. The use of trauma scores in the evaluation of occupational accidents is a useful argument for

understanding the sectors and injury types that cause severe trauma. Furthermore, trauma scores may be an important predictor of hospital costs.

Hösükler et al. 2022.

Ulus Travma Acil Cerrahi Derg, vol. 28, no. 9.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*

(<https://creativecommons.org/licenses/by-nc/4.0/>)

Keywords: Injury; death; trauma; occupational accidents.

Evidence Level: 4B

Link: <https://tjtes.org/jvi.aspx?un=UTD-22796&volume=>

SARS-CoV-2 Seroprevalence in those utilizing public transportation or working in the transportation industry: A rapid review

Background: Proximity and duration of social contact while working or using public transportation may increase users' risk of SARS-CoV-2 exposure. This review aims to assess evidence of an association between use of public transportation or work in the transportation industry and prevalence of SARS-CoV-2 antibodies as well as to identify factors associated with seropositivity in transit users. **Methods:** A literature search of major databases was conducted from December 2019 to January 2022 using key words including "seroprevalence", "SARS-CoV-2", and "public transit". A narrative review of included studies was completed for the following categories: those working in the transportation industry, healthcare workers relying on public transit, and population-based studies. **Results:** The association between work in the transit industry and seroprevalence varied based on location, demographic characteristics, and test sensitivities. No association was found in healthcare workers. Several population-based studies indicated higher seroprevalence in those using public transit. **Conclusions:** Overall seroprevalence estimates varied based on geographic location, population demographics, study methodologies, and calendar date of assessment. However, seropositivity was consistently higher in racial minorities and low-income communities.

Heiskanen et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19; SARS-CoV-2; public transit; seroprevalence; transportation.

Evidence Level: 6A

Link: <https://www.mdpi.com/1660-4601/19/18/11629>

A nucleic acid amplification test-based strategy does not help inform return to work for healthcare workers with COVID-19

Background: The objective of this study is to assess the utility of a nucleic acid amplification test-based approach to shorten isolation of healthcare workers (HCWs) with COVID-19 in the setting of the highly transmissible omicron variant. **Methods:** Between December 24, 2021, and January 5, 2022, HCWs who tested positive for SARS-CoV-2 were retested with PCR at least 5 days since onset of symptoms.

Results: Forty-six sequential fully COVID-19 vaccinated HCWs who had tested positive for SARS-CoV-2 underwent follow-up testing. All the samples were confirmed as omicron variants and only four (8.7%) were negative in the follow-up test performed at a median of 6 (range 5-12) since onset of symptoms.

Conclusions: Implementation of a test-based strategy is logistically challenging, increases costs, and did not lead to shorter isolation in our institution.

Hijano et al. 2022.

Influenza and Other Respiratory Viruses, vol. 16, no. 5.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19; NAAT; SARS-CoV-2; antigen test; healthcare workers; isolation.

Evidence Level: 4A

Link: <https://onlinelibrary.wiley.com/doi/10.1111/irv.13000>

The dangers of reused personal protective equipment: Healthcare workers and workstation contamination

Background: Personal protective equipment (PPE) is vital to protect healthcare workers (HCWs) and the reuse of PPE poses risk for accidental contamination. **Methods:** This study studied 28 HCW donning and doffing PPE while performing simulated evaluations of patients with Covid-19. **Results:** The study found that PPE reuse posed a high level of risk of cross-infection contamination. The current design of PPE requires complete redesign with improved engineering and usability to protect healthcare workers.

Doos et al. 2022.

The Journal of Hospital Infection, vol. 127, no. 59-68.

Keywords: Contamination; healthcare workers; human factors; occupational hazards; personal protective equipment; worker safety.

Evidence Level: 5A

Link: [https://www.journalofhospitalinfection.com/article/S0195-6701\(22\)00170-0/fulltext](https://www.journalofhospitalinfection.com/article/S0195-6701(22)00170-0/fulltext)

Work-related injuries among insured construction workers presenting to a Swiss adult emergency department: A retrospective study (2016-2020)

Background: Occupational injuries are one of the main causes of Emergency Department visits and represent a substantial source of disability or even death. However, the published studies and reports on construction-occupational accidents in Switzerland are limited. **Methods:** We aimed to investigate the epidemiology of fatal and non-fatal injuries among construction workers older than 16 years of age over a 5-year period. Data were gathered from the emergency department (ED) of Bern University Hospital. A retrospective design was chosen to allow analysis of changes in construction accidents between 2016-2020.

Results: A total of 397 patients were enrolled. Compared to studies in other countries, we also showed that the upper extremity and falling from height is the most common injured body part and mechanism of injury. Furthermore, we were able to show that the most common age group representing was 26-35 years and the second common body part injured was the head, which is a difference from studies in other countries. Wound lacerations were the most common type of injury, followed by joint distortions. By stratifying according to the season, occupational injuries among construction workers were found to be significant higher during summer and autumn. **Conclusions:** As work-related injuries among construction workers are becoming more common, prevention strategies and safety instructions must be optimized.

Dethlefsen et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Suva; adult emergency department; construction site accidents; work-related injuries.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/18/11294>

Difference in mortality rates by occupation in Japanese male workers aged 25 to 64 years from 1980 to 2015

Background and Methods: This study examines the trends in mortality among Japanese working men, across various occupational categories, from 1980 to 2015. A Poisson model of trend, occupational category, and step variable was analysed for eight occupational categories separately, by cause, to explore the trends in mortality. **Results:** This study found a sharp increase in mortality in the late 1990s, especially among professionals and managers. The overall trends in cancer, ischemic heart disease (IHD), cerebrovascular disease (CVD), and suicide mortality decreased across almost all occupational categories from 1980 to 2015, although there was an increasing trend in cancer of 0.5% among managers. Clerical workers had the greatest relative decrease in mortality rates from cancer (-82.9%), IHD (-81.7%), and CVD (-89.1%). Japan continues to make gains in lowering mortality and extending life expectancy, but its workplace culture must improve to ensure that those working at the heart of the Japanese corporate world can also benefit from Japan's progress in health. Mortality rates in working-aged Japanese men have been declining. However, similar declines are not evident among managers, for whom the mortality rate is remaining stable or slightly increasing. **Conclusions:** There is a need to address the needs of managers and improve workplace environments for these workers.

Dhungel et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Japan; cancer; managers; mortality; occupational mortality; suicide.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/18/11328>

Consequences of COVID-19 on employees in remote working: challenges, risks and opportunities an evidence-based literature review

Background: The COVID-19 pandemic forced organizations across all sectors and sizes to undertake crucial changes in order to remain productive during the emergency. Among these, the shift towards remote working arrangements is still present in our workplaces, impacting employees' well-being and productivity.

Methods: This systematic review aims to describe the pandemic's consequences on work organization by analyzing whether and how the shift towards remote or home-working impacted employees' productivity, performance, and well-being. Furthermore, it describes the role of individual and organizational factors in determining employees' adjustment to remote work. Sixty-seven peer-reviewed papers published from 2020 to 2022, written in English, were selected through the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines. **Results:** Findings describe how remote working arrangements, the workplace and organizational factors, and the employees' individual traits and skills impacted employees' productivity and well-being. Furthermore, they provide a description of the organizational enforcement actions reported in the literature. **Conclusions:** Managerial and practical implications, such as enforcement actions, team management strategies, and initiatives to promote employees' physical and mental health, will be discussed in the paper.

De Vincenzi et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Economy; long COVID-19; well-being; workplace healthy.

Evidence Level: 1A

Link: <https://www.mdpi.com/1660-4601/19/18/11672>

Enhancing the role of occupational health services in the battle against Corona Virus Disease 2019

Background: In OHS, risk assessment is a core practice. However in Italy implementing preventive measures required by law can exempt the employers from legal disputes in case of COVID-19 infection eliminating the need for the risk assessment process. In this commentary, the authors reinforce the role of risk assessment against COVID-19, in terms of prevention, contact-tracing activity and COVID-19 rates of vaccinal coverage.

Chirico et al. 2022.

Annali di igiene Medicina preventiva e di comunità, vol. 34, no. 5.

Keywords: Coronavirus; occupational health; safety; workplace; preventative.

Evidence Level: 6B

Link: <https://www.annali-igiene.it/articoli/2022/5/11-Chirico.pdf>

Incidence of traumatic brain injury by severity among work-related injured workers from 2010 to 2019:

An analysis of workers' compensation insurance data in Korea

Background: This study aimed to investigate the status of work-related traumatic brain injury (wrTBI) in Korea between 2010 and 2019. **Methods:** This study used Korea Workers' Compensation Insurance data, and the sample comprised workers who claimed compensation for wrTBI from 2010 to 2019. The annual incidence of wrTBI was calculated as the rate per 100,000 workers. Time trends over the 10-year period were assessed using Poisson regression. **Results:** The mean incidence of wrTBI was 28.4/100,000. Regarding the incidence rate of wrTBI by severity, mild TBI and moderate-to-severe TBI were 12.9/100,000 and 15.5/100,000, respectively. The incidence of mild TBI among workers was higher in 2010, but moderate-to-severe TBI was higher after 2011. **Conclusions:** Our findings highlight the need for providing information on mild TBI to workers as part of occupational safety and health education.

Bae et al. 2022.

Journal of Occupational and Environmental Medicine, vol. 64, no. 9.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Traumatic brain injury; work injury; worker's compensation insurance; Korea.

Evidence Level: 4B

Link:

https://journals.lww.com/joem/Fulltext/2022/09000/Incidence_of_Traumatic_Brain_Injury_by_Severity.3.aspx

Individual and work-related predictors of exhaustion in East and West Germany

Background: Chronic exhaustion is a consequence of detrimental working conditions and demands, as well as inadequate coping techniques, potentially resulting in burnout. Previous research has studied occupational environment and individual factors as predictors of exhaustion. Although these differ between former East and West German states, the regional distinction regarding exhaustion has been neglected. **Methods:** To fill this gap, we used the Copenhagen Burnout Inventory in a representative German sample from 2014 to assess the burnout symptom exhaustion. Estimating ordinary least squares regressions, important burnout predictors were compared between the former East and West German states. **Results:** Regional differences concerning occupational environments were related to the associations between individual factors, situational aspects of technostress and exhaustion. Associations between individual factors (e.g., female sex, lower working hours, age, partnership status, and household income) and exhaustion were stronger in East Germany, whereas technostress (strain of internet use, number of e-mails during leisure time, and social pressure to be constantly available) was more strongly associated with exhaustion in West Germany. **Conclusions:** Despite lower financial gratification and a higher social pressure to be constantly available in the East, West Germans were more afflicted by exhaustion. Individual factors and technostress should thus be considered when focusing on job-related mental health issues.

Braunheim et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: East/West Germany; burnout; exhaustion; information and communication technologies; technostress.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/18/11533>

When and how do business shutdowns work? Evidence from Italy's first COVID-19 wave

Background and Methods: This paper explores the effect of business shutdowns in reducing mortality related to covid-19. **Results:** The study uses death registry data from 5000 Italian municipalities and identified that business shutdowns effectively curbed mortality, possibly reducing the death toll from the first wave of COVID-19 in Italy by about 40%. **Findings:** The study concluded that closing business activities with a high degree of interpersonal contact saves lives, whilst shutting down production activities only had mild effects on mortality.

Ciminelli et al. 2022.

Health Economics, vol. 31, no. 9.

Keywords: COVID-19; Italy; business shutdowns; mortality.

Evidence Level: 5B

Link: <https://onlinelibrary.wiley.com/doi/10.1002/hec.4502>

Determinants of workplace safety towards SARS-Cov-2 and combating COVID-19 among non-healthcare workers in Hong Kong, Nanjing and Wuhan, China

Background and Methods: There has been no validated tool to assess workplace infection control towards SARS-Cov-2 in non-healthcare industries. In this first year survey during 07/2020-04/2021, 6684 workers were recruited from varied non-healthcare settings of Hong Kong, Nanjing and Wuhan of China and

responded standard questionnaires containing information of prevention measures and policies implemented by companies and personal preventive behaviour towards infection control. All participants were randomly stratified into two sub-samples as training and validation sample. Workplace safety index towards SARS-Cov-2 (WSI-SC2) was developed and validated using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). **Results:** We identified 14 manifest variables in WSI-SC2, with three sub-indices named "Workplace infection control measures and prevention", "Company occupational safety and health management and commitment" and "Worker's personal preventive behavior and awareness towards infectious control". WSI-SC2 obtained a good internal consistency reliability (Cronbach's alpha coefficients ranged: 0.76-0.91), good composite reliability (composite reliability ranged: 0.70-0.95) and satisfactory fit of the model (GFI = 0.95; SRMR = 0.05; RMSEA = 0.07). We further performed stratified analysis according to cities, and the index remained stable. Workers with higher scores of WSI-SC2 were more likely to uptake COVID-19 test. **Conclusions:** This multi-city large study developed a novel and validated tool that could horizontally measure the workplace safety towards SARS-Cov-2 in non-healthcare workers.

Tse et al. 2022.

Scientific Reports, vol. 12, no. 1.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Workplace safety; COVID-19; SARS-CoV-2; non-healthcare workers.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-022-19195-4>

Risk Assessment

This month we explore the measurements and observations of movements of warehouse forklift truck operators, the risk factors for shoulder disorders among workers, and the associations between occupational mechanical exposures and surgery for subacromial impingement syndrome. In COVID-19 related research studies explored the use of stochastic microexposure modelling to assess COVID-19 risk at a workplace and the perceived COVID-19 health and job risks faced by digital platform drivers.

Measurements and observations of movements at work for warehouse forklift truck operators

Background: Inclinometry and video analyses can provide objective measures of physical workloads.

Methods: The study aim was to measure and observe arm, back and head postures and movements among forklift truck operators (FLTOS) during a working day, analyzing differences between types of forklift trucks and to assess reported workload and health. Twenty-five male FLTOS in a high-level warehouse were randomly included. The data collected comprised technical measurements, video analyses of postures and movements, and a questionnaire measuring health, pain and workload. **Results:** On average, the FLTOS rotated their head more than 45°, in total, 232 times/h. Video analysis revealed that FLTOS periodically drive the forklift truck sideways with the head rotated in the direction of travel, and in periods look upwards, in which the head is highly rotated and extended. **Conclusions:** Inclinometry and observations during the working day has the potential to be a valuable part of risk assessment promoting occupational safety and health.

Rolander et al. 2022.

International Journal of Occupational Safety and Ergonomics, vol. 28, no. 3.

User License: Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Head posture; head rotation; inclinometry; inertia measurement unit; neck/shoulder pain.

Evidence Level: 5A

Link: <https://www.tandfonline.com/doi/full/10.1080/10803548.2021.1943866>

Assessment of the COVID-19 infection risk at a workplace through stochastic microexposure modeling

Background: This study describes a new model for COVID-19 infection risks and policy evaluations, taking into account specifics of a workplace, mask efficiency, and daily routines of employees. The model allows for effective risk assessment and policy evaluation when there are large uncertainties about the disease, making it particularly suitable for COVID-19 risk assessments.

Vecherin et al. 2022.

Journal of Exposure Science and Environmental Epidemiology, vol. 32, no. 5.

Keywords: COVID-19 risk assessment; Disease Spreading Modeling; Microenvironment approach; Probability of infection; Spatial probability of transmission; Temporal probability of transmission.

Evidence Level: 6B

Link: <https://www.nature.com/articles/s41370-022-00411-2>

Perceived COVID-19 health and job risks faced by digital platform drivers and measures in place to protect them: A qualitative study

Background: As they deliver food, packages, and people across cities, digital platform drivers (gig workers) are in a key position to become infected with COVID-19 and transmit it to many others. The aim of this study is to identify perceived COVID-19 exposure and job risks faced by workers and document the measures in place to protect their health, and how workers responded to these measures. **Methods:** In 2020-2021, in-depth interviews were conducted in Ontario, Canada, with 33 digital platform drivers and managers across nine platforms that delivered food, packages, or people. Interviews focused on perceived COVID-19 risks and mitigation strategies. Audio recordings were transcribed verbatim and uploaded to NVivo software for coding by varied dual pairs of researchers. A Stakeholder Advisory Committee played an instrumental role in the study. **Results:** As self-employed workers were without the protection of employment and occupational health standards, platform workers absorbed most of the occupational risks related to COVID-19. Despite safety measures (e.g., contactless delivery) and financial support for COVID-19 illnesses introduced by platform companies, perceived COVID-19 risks remained high because of platform-related work pressures, including rating systems. We identify five key COVID-19 related risks faced by the digital platform drivers. **Conclusion:** We situate platform drivers within the broad context of precarious employment and recommend organizational- and government-level interventions to prevent digital platform worker COVID-19 risks and to assist workers ill with COVID-19. Measures to protect the health of platform workers would benefit public health aims by reducing transmission by drivers to families, customers, and consequently, the greater population.

MacEachen et al. 2022.

American Journal of Industrial Medicine, vol. 65, no. 9.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Covid-19 pandemic; digital platforms; gig economy health interventions; occupational health and safety; precarious employment.

Evidence Level: 5B

Link: <https://onlinelibrary.wiley.com/doi/10.1002/ajim.23409>

Risk factors for shoulder disorders among French workers: Prospective cohort study

Objectives: Shoulder disorders are common in the working population. This longitudinal study aimed to explore the relationships between personal factors and occupational organisational, psychosocial, and biomechanical factors and the incidence of shoulder disorders. **Methods:** A total of 3710 workers in the Pays de la Loire region (Loire Valley area, France) were randomly included by their occupational physician in the Cosali cohort between 2002 and 2005. All workers completed a self-administered questionnaire about personal factors and work exposure, and using a standardised physical examination, occupational physicians diagnosed shoulder disorders. Between 2007 and 2010, 1611 workers were re-examined by their occupational physician. The 1,320 workers free of shoulder disorders at baseline were studied. A conceptual model was developed in which relationships between organisational, psychosocial, biomechanical, and personal factors at baseline and the incidence of shoulder disorders were assumed. Structural equation modelling was used to test the model. **Results:** Shoulder disorders were directly

associated with biomechanical factors and age but not with psychosocial factors. However, skill discretion and psychological demand influenced shoulder disorders indirectly through biomechanical factors. Exposure to a work pace dependent on an automatic rate and to a work pace dependent on customers' demands were associated with biomechanical and psychosocial factors, but not directly to shoulder disorders. **Conclusions:** This study identified the complex direct and indirect relationships between occupational factors and shoulder disorders. Our data confirmed our conceptual causation model: organisational and psychosocial factors were associated with biomechanical factors, while biomechanical factors were associated with the incidence of shoulder disorders.

Bodin et al. 2022.

International Archives of Occupational and Environmental Health, vol. 95, no. 7.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Musculoskeletal; occupational exposure; shoulder disorder; structural equation modelling; work.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00420-022-01853-9>

Associations between single and combined occupational mechanical exposures and surgery for subacromial impingement syndrome: A nationwide Danish cohort study

Background: This study aimed to evaluate whether the risk of surgery for subacromial impingement syndrome (SIS) increases with the number of combined occupational mechanical exposures compared with single exposure. **Methods:** We reanalyzed data from a register-based cohort study of the entire Danish working population (N=2 374 403) with 14 118 events of surgery for SIS (2003-2008). Exposure information in 10-year windows was obtained by combining occupational codes with a job exposure matrix. For single and combined mechanical exposures, we created three exposure variables of the number of years with specific exposure intensities with or without co-existing mechanical exposures. We used logistic regression as survival analysis. **Results:** We found exposure-response relations for duration and intensity of each single mechanical exposure except for repetition. The single effect of arm elevation >90° reached a maximum adjusted odds ratio (OR_{adj}) of 1.7 [95% confidence interval (CI) 1.5-2.0], which increased to 1.8 (95% CI 1.5-2.0), 2.0 (95% CI 1.9-2.2), and 2.2 (95% CI 2.0-2.5) when combined with repetition, force, and both. When combining repetition with arm elevation >90°, force, and both, OR_{adj} increased from 1.5 (95% CI 1.3-1.8) to 2.1 (95% CI 1.8-2.4), 2.5 (95% CI 2.4-2.9), and 2.7 (95% CI 2.4-3.0). For force, OR_{adj} increased from 2.5 (95% CI 2.1-2.9) to 2.6 (95% CI 2.3-2.8), 2.8 (95% CI 2.4-3.2), and 3.0 (95% CI 2.6-3.4).

Conclusion: We found an increased risk of surgery for SIS with the number of combined exposures; the risk was especially pronounced when the combined exposures included force.

Dalbøge et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 48, no. 6.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Subacromial impingement syndrome; occupational mechanical exposures; Danish.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4032>

Chronic Health Issues

This month we explore chronic health issues associated with colorectal cancer prevalence among long-haul truck drivers, employees with autism spectrum disorder, persons with traumatic brain injury, adults living with chronic pain and workers with multiple sclerosis.

Factors associated with colorectal cancer prevalence among long-haul truck drivers in the United States

Background: This study explored the association between colorectal cancer (CRC) risk factors and CRC prevalence among long-haul truck drivers using the results from the Commercial Driver Medical Exam (CDME) data of 47,786 commercial motor vehicle drivers. **Results:** The study found that presence of 4 or

more concomitant medical conditions, obesity and increasing age) were significantly associated with CRC prevalence.

Rogers et al. 2022.

American Journal of Health Promotion, vol. 36, no. 7.

Keywords: Body mass index; colonic neoplasms; diabetes mellitus; gastrointestinal diseases; gender role; occupational health.

Evidence Level: 4A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9420779/>

Remote work support needs of employees with autism spectrum disorder in Poland: Perspectives of individuals with autism and their coworkers

Background and aims: With remote work becoming more common across industries, employees with autism may experience different work support needs from neurotypical peers. However, the specific remote work needs of this group of employees are underexplored in the literature. We aim to propose ways to assess workplace digital adaptation needs for individuals with autism and a framework for communicating these needs to employers. **Methods:** This qualitative study included interviews with 13 Polish business professionals, including coworkers and/or supervisors of employees with autism ($n = 9$) and female employees with autism ($n = 4$), about their remote work support needs. Participants responded to semi-structured interview questions identifying advantages and risk factors associated with remote work for this specific group of employees. **Results:** Participants reported advantages of remote work, such as limiting sensory overload and intensive interpersonal contacts, indirect interpersonal communications, flexible work hours, and eliminating the need to travel to work. Participants also reported challenges of remote work, such as reducing wanted or helpful social contacts, engaging in direct electronic communications, limiting opportunities to learn from other employees, and managing work-life balance. **Conclusion:** These findings suggest a need for an autism-inclusive digitalized remote work design customized to the unique needs of employees on the autism spectrum. Business managers would be key partners in the design of autism-inclusive digitalized remote work systems. Additional research is needed with larger and more diverse samples of employees with autism.

Tomczak et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Autism spectrum disorder; hybrid work; neurodiversity; remote work; well-being.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/17/10982>

A pilot study of PEERS® for Careers: A comprehensive employment-focused social skills intervention for autistic young adults in the United States

Background: Autistic young adults are at elevated risk for poor employment/internship outcomes, despite having many strengths relevant to the workplace. Currently, very few employment interventions for this population comprehensively promote skills development and success across the various stages of employment. **Aims:** To address this gap, the current study aimed to test the feasibility, acceptability, and efficacy of a novel college to career intervention program, PEERS® for Careers. **Methods and procedures:** Twelve autistic young adults (19-30 years old) were enrolled and matched to a career coach. The pilot program consisted of 90-minute sessions delivered twice per week, for 10 weeks, covering content relevant to obtaining, maintaining, and thriving in employment/internship settings. **Outcomes and results:** Results indicated that young adults showed a significant improvement in employment-related social skills knowledge, $p < .001$. Participants also reported significant improvements in their feelings of preparedness for employment over the course of the study, $p = .009$, with all young adults self-identifying as "somewhat prepared" or "very prepared" post-intervention. Additionally, in only a brief 10-week intervention, a slight increase in participants who secured or maintained internship/employment-related activities was observed. Overall, lesson content and coaching were perceived as helpful. No significant changes were observed in self-reported autism symptomatology. **Conclusions and implications:** In sum, the PEERS® for Careers program shows promise as a college to career intervention program for autistic young

adults. **What this paper adds:** There is a dearth of evidence-based interventions for autistic young adults, despite significant need for supports to bolster vocational and relational success. This paper is the first to evaluate the PEERS® for Careers intervention in a pilot study by exploring feasibility, acceptability, and efficacy of this novel college to career intervention program, which teaches ecologically valid employment-related skills using a strengths-based approach. Results suggest PEERS® for Careers shows significant potential as a comprehensive intervention to address the multi-faceted needs of autistic individuals in the workplace through didactic lessons, behavioral rehearsals to practice skills, and out of group assignments. Autistic young adult participants reported a high level of satisfaction with the program and lessons surrounding employment-related social skills. They also endorsed increased feelings of internship/employment readiness and increased knowledge of workplace etiquette, with most participants maintaining or securing employment. This study supports PEERS® for Careers as a feasible intervention that likely benefits autistic individuals' vocational outcomes, which emerge as a strong correlate of well-being in adulthood. This work is essential to furthering the development and provision of effective services to meet needs of the autism community.

Moody et al. 2022.

Research in Developmental Disabilities, vol. 128.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Autism Spectrum Disorder; employment; PEERS®; Social Skills Intervention; young adults.

Evidence Level: 5A

Link: <https://www.sciencedirect.com/science/article/pii/S089142222001172?via%3Dihub>

Navigating the impact of workplace distractions for persons with TBI: A qualitative descriptive study

Background: Persons with traumatic brain injuries (TBIs) who return to work often struggle with managing environmental distractions due to residual cognitive impairments. Previous literature has established that environmental distractions impact persons with TBI, yet, the extent to which distractions impact workplace performance is unknown. **Methods:** This qualitative descriptive study using phenomenology methods, explored the experiences of seven individuals with TBIs and how they perceived workplace distractions to impact their productivity. Data was collected using semi-structured interviews with seven participants who were diagnosed with mild, moderate, and severe TBIs. Interviews were transcribed and analyzed using thematic analysis. **Results:** Main findings centered around what environmental distractions impacted work performance, the farther-reaching consequences of distractibility, strong emotional feelings and worry about perceived work performance associated with distractibility, mitigating distractibility through "gaming the attentional system", and utilizing music as a distraction masker to enhance task performance.

Conclusions: In light of this study's findings, researchers, and clinicians are encouraged to consider the wider impact of distractions on persons with TBI. The real-life accounts documented in this study will assist researchers and clinicians to account for the impact of environmental distractions in rehabilitation and support employment for persons with TBI.

Pinnow et al. 2022.

Scientific Reports, vol. 12, no. 1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Traumatic brain injury; return to work; workplace; environmental distractions; cognitive impairments.

Evidence Level: 5A

Link: <https://www.nature.com/articles/s41598-022-20083-0>

Occupational therapy lifestyle intervention added to multidisciplinary treatment for adults living with chronic pain: A feasibility study

Background: To evaluate the feasibility and outcomes of an occupational therapy lifestyle intervention for adults living with chronic pain. **Design:** This one-group pre-post interventional study investigated the feasibility and outcomes of the Redesign Your Everyday Activities and Lifestyle with Occupational Therapy (REVEAL(OT)) intervention targeting meaningful activities and lifestyle. **Settings:** The occupational therapist-led intervention was added to standard multidisciplinary chronic pain treatment at a Danish pain

centre. **Participants:** Of the 40 adult participants aged 18-64 (mean 46.6±10.9 years old, 85% females, chronic pain duration ≥3 months), there were 31 completers. **Intervention:** Three feasibility rounds were carried out in 2019-2021. The intervention focused on meaningful activities, healthy eating habits and daily physical activity. Methods of didactical presentations, group discussions, personal reflection and experiential learning were used in the intervention composed both of individual and group sessions. **Outcomes:** Primary outcomes were predefined research progression criteria evaluated by the red-amber-green method. Secondary outcomes measured pre-post changes in health-related quality of life and occupational performance and satisfaction. **Results:** The study demonstrated satisfactory programme adherence (77.5%), patients' self-perceived relevance (97%), timing and mode of delivery (97%) and assessment procedure acceptance (95%). No adverse events causing discontinuation occurred. Recruitment rate (n=5.7 monthly), retention (77.5%) and the fidelity of delivery (83.3%) needed improvement. We observed no improvement in health-related quality of life (mean=0.04, 95% CI -0.03 to 0.12) but positive change in occupational performance (mean=1.80, 95% CI 1.25 to 2.35) and satisfaction (mean=1.95, 95% CI 1.06 to 2.84). The participants reached the minimal clinically important difference for occupational performance (≥3.0 points in 13.8%) and satisfaction (≥3.2 points in 24.0%). **Conclusions:** The REVEAL(OT) intervention was feasible to deliver and beneficial for the participants' occupational performance and satisfaction. The interventions' recruitment, retention and delivery strategies need optimisation in a future definitive trial.

Nielsen et al. 2022.

BMJ Open, vol. 12, no. 9.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Complementary medicine; pain management; public health; rehabilitation medicine.

Evidence Level: 3B

Link: <https://bmjopen.bmj.com/content/12/9/e060920.long>

Evaluating occupational performance coaching to support fatigue management for people with multiple sclerosis: A feasibility study

Background: To determine the feasibility of adding coaching sessions to a website (MS INFoRM) that supports self-directed fatigue management for people with multiple sclerosis (PwMS). **Design:** Double-blind, parallel-group feasibility study. **Participants and setting:** Twenty-six PwMS, who experienced severe fatigue (fatigue severity scale > 5.4), were recruited from participants who were ineligible for the main trial testing on the MS INFoRM website. **Intervention:** Six 45-to-60-min sessions of one-on-one coaching plus access to the MS INFoRM website compared to two check-in phone calls plus access to the MS INFoRM website. Both study arms took place over 3 months. **Main measures:** Feasibility parameters included proportion eligible of those screened; proportion consented; missing data; retention and adherence rates. Acceptability was explored through qualitative interviews. Secondary outcomes (self-efficacy and fatigue impact) were measured at baseline and post-intervention. **Results:** 76 people were invited to participate in this add-on study. 40 were interested and screened: 32 were eligible, 26 consented, and were randomized (mean age: 48.5 yrs (SD: 8.7), mean disease duration: 11.5 yrs). Retention was 85% (22 out of 26). Coaching adherence was high (86% attended ≥ 5 sessions). At 3 months, people in the intervention group showed more improvements in self-efficacy and fatigue impact compared to the comparison group, however, the difference was not statistically significant ($p = 0.471$ and $p = 0.147$, respectively). The intervention was well-received by the participants and there were no adverse events. **Conclusion:** Combining one-on-one coaching sessions along with web-based interventions is feasible and appreciated by the participants, and worth exploring further in a larger trial.

Askari et al. 2022.

Clinical Rehabilitation, vol. 36, no. 9.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)* (<https://creativecommons.org/licenses/by-nc/4.0/>)

Keywords: Feasibility study; coaching; fatigue management; multiple sclerosis.

Evidence Level: 4B

Link: <https://journals.sagepub.com/doi/full/10.1177/02692155221107074>

Occupational Exposure

This month we explore occupational exposure studies related to occupational coal and silica dust-associated lung disease, parental occupational exposure to combustion products and risk of childhood leukaemia, occupational asthma, noise-exposure in firefighters, occupational radon exposure, long-term exposures to copper and occupational exposure to particles and biomarkers of cardiovascular disease. Other studies explore the heat strain in workplaces, and monitoring exposure to occupational stress using biomarkers and smartwatches.

Glycogen metabolism reprogramming promotes inflammation in coal dust-exposed lung

Background: Long-term coal dust exposure triggers complex inflammatory processes in the coal workers' pneumoconiosis (CWP) lungs. The progress of the inflammation is reported to be affected by disordered cell metabolism. However, the changes in the metabolic reprogramming associated with the pulmonary inflammation induced by the coal dust particles are unknown. **Methods and Results:** Herein, we show that coal dust exposure causes glycogen accumulation and the reprogramming of glucose metabolism in the CWP lung. The glycogen accumulation caused by coal dust is mainly due to macrophages, which reprogram glycogen metabolism and trigger an inflammatory response. In addition, 2-deoxy-D-glucose (2-DG) reduced glycogen content in macrophages, which was accompanied by mitigated inflammation and restrained NF- κ B activation. **Conclusions:** Accordingly, we have pinpointed a novel and crucial metabolic pathway that is an essential regulator of the inflammatory phenotype of coal dust-exposed macrophages. These results shed light on new ways to regulate CWP inflammation.

Wang et al. 2022.

Ecotoxicology and Environmental Safety, vol. 242.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)*
(<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: 2-DG; Coal workers' pneumoconiosis; Glycogen metabolism; pulmonary inflammation; scMetabolism; scRNA-seq.

Evidence Level: 6B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0147-6513\(22\)00753-9](https://linkinghub.elsevier.com/retrieve/pii/S0147-6513(22)00753-9)

Understanding the pathogenesis of occupational coal and silica dust-associated lung disease

Background: Workers in the mining and construction industries are at increased risk of respiratory and other diseases as a result of being exposed to harmful levels of airborne particulate matter (PM) for extended periods of time. While clear links have been established between PM exposure and the development of occupational lung disease, the mechanisms are still poorly understood. A greater understanding of how exposures to different levels and types of PM encountered in mining and construction workplaces affect pathophysiological processes in the airways and lungs and result in different forms of occupational lung disease is urgently required. Such information is needed to inform safe exposure limits and monitoring guidelines for different types of PM and development of biomarkers for earlier disease diagnosis. Suspended particles with a 50% cut-off aerodynamic diameter of 10 μ m and 2.5 μ m are considered biologically active owing to their ability to bypass the upper respiratory tract's defences and penetrate deep into the lung parenchyma, where they induce potentially irreversible damage, impair lung function and reduce the quality of life. **Methods:** Here we review the current understanding of occupational respiratory diseases, including coal worker pneumoconiosis and silicosis, and how PM exposure may affect pathophysiological responses in the airways and lungs. **Results:** We also highlight the use of experimental models for better understanding these mechanisms of pathogenesis. We outline the urgency for revised dust control strategies, and the need for evidence-based identification of safe level exposures using clinical and experimental studies to better protect workers' health.

Vanka et al. 2022.

European Respiratory Review, vol. 31, no. 165.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*
(<https://creativecommons.org/licenses/by-nc/4.0/>)

Keywords: Lung disease; occupation; coal; silica dust; pathogenesis; construction industry.

Evidence Level: 6A

Link: <https://err.ersjournals.com/content/31/165/210250.long>

Parental occupational exposure to combustion products, metals, silica and asbestos and risk of childhood leukaemia: Findings from the Childhood Cancer and Leukaemia International Consortium (CLIC)

Background: Parental occupational exposures around conception (father) or during pregnancy (mother) have been hypothesized as potential predisposing factors for childhood leukaemia. We investigated parental exposure to several known occupational carcinogens and childhood leukaemia risk. **Methods:** We conducted a pooled analysis using case-control data from four European countries (3362 childhood leukemia cases and 6268 controls). Parental occupational exposures to polycyclic aromatic hydrocarbons (PAH), diesel engine exhaust (DEE), chromium, nickel, crystalline silica, and asbestos were assessed by a general population job-exposure matrix. We estimated odd ratios (ORs) and 95% confidence intervals (CIs) using unconditional logistic regression models for all childhood leukaemia combined, by leukaemia type (ALL and AML) and by ALL subtype (B-lineage and T-lineage). **Results:** We found an association between high paternal occupational exposure to crystalline silica and childhood ALL (OR 2.20, CI 1.60-3.01) with increasing trend from no exposure to high exposure ($P = <0.001$), and also for AML (OR 2.03, CI 1.04-3.97; P for trend = 0.008). ORs were similar for B- and T-lineage ALL. For ALL, ORs were also slightly elevated with wide confidence intervals for high paternal occupational exposure to chromium (OR 1.23, CI 0.77-1.96), and DEE (OR 1.21, CI 0.82-1.77). No associations were observed for paternal exposures to nickel, PAH and asbestos. For maternal occupational exposure we found several slightly elevated odds ratios but mostly with very wide confidence intervals due to low numbers of exposed mothers. **Conclusions:** This is a first study suggesting an association between fathers' occupational exposure to crystalline silica and an increased risk of childhood leukaemia in their offspring. As this association was driven by certain occupations (field crop farmers and miners) where other potentially relevant exposures like pesticides and radon may also occur, more research is needed to confirm our findings of an association with crystalline silica, and if so, mechanistic studies to understand the pathways.

Onyije et al. 2022.

Environment International, vol. 167.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Childhood leukaemia; crystalline silica; job-exposure matrix; parental occupational exposure; pooled analysis.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0160412022003361?via%3Dihub>

Occupational asthma caused by low-molecular-weight chemicals associated with contact dermatitis: A retrospective study

Background: Occupational asthma (OA) may have different etiologies, but it is not clear whether the etiologic agents influence the clinical presentation, especially the co-occurrence of skin lesions.

Objective: To determine the impact of different asthmagens on the characteristics of OA, with a focus on the occurrence of prior or concomitant skin disorders. **Methods:** In a retrospective analysis of patients who visited the Occupational and Environmental Disease Clinic of a tertiary referral hospital from 2009 to 2019, we classified patients into definite, probable, or possible OA according to prespecified diagnostic guidelines. In multivariate logistic regression with sensitivity analysis, we examined the relation of high- and low-molecular-weight (HMW and LMW) agents with the clinical presentation. **Results:** Of 209 cases of OA, 66 were caused by HMW agents and 143 by LMW agents. Patients with OA exposed to LMW agents had higher odds of having (had) allergic contact dermatitis (odds ratio, 5.45 [1.80-23.70]; $P < .01$), compared with patients exposed to HMW agents. Conversely, HMW agents were associated with higher odds of rhinitis symptoms (odds ratio of LMW/HMW, 0.33 [0.17-0.63]; $P < .001$) and high total IgE (odds ratio of LMW/HMW, 0.35 [0.17-0.70]; $P < .01$). Risk factors for having coexisting contact dermatitis included construction work, hairdressing, and exposure to metals or epoxy resins. **Conclusions:** Among patients with OA, exposure to specific LMW agents was associated with a high frequency of contact dermatitis. Different types of asthmagens within HMW or LMW agents appear to determine the phenotype and comorbidity of OA.

Tsui et al. 2022.

The Journal of Allergy and Clinical Immunology in Practice, vol. 10, no. 9.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Asthma; contact dermatitis; occupational diseases; phenotype; rhinitis.

Evidence Level: 4B

Link: [https://www.jaci-inpractice.org/article/S2213-2198\(22\)00502-5/fulltext](https://www.jaci-inpractice.org/article/S2213-2198(22)00502-5/fulltext)

Subclinical hearing deficits in noise-exposed firefighters

Background: Noise-induced hearing loss (NIHL) is the most prevalent occupational disease in the world and firefighters are at increased risk of NIHL due to their frequent exposure to hazardous levels of noise during service. Adverse effects of NIHL include acceleration of age-related hearing loss and an increased risk of cognitive decline. A critical challenge in addressing NIHL is the delayed clinical presentation of symptoms and lack of sensitive tools for early detection. **Methods:** To study the early clinical symptoms of NIHL in this high-risk group, we collected hearing function data including behavioral audiometric thresholds and distortion product otoacoustic emissions (DPOAEs) in 176 firefighters during annual physical assessments. **Results:** Results revealed significant deficits in cochlear outer hair cell function in the presence of normal audiograms. Additionally, 55% of firefighters self-reported changes in hearing, while 20% self-reported concerns about their balance. This study is the first to characterize DPOAEs in firefighters who display decreased DPOAE amplitudes with increasing years in the fire service. **Conclusions:** These effects were observed even when controlling for hearing loss and age and are suggestive of a link between hearing loss and occupational exposure to hazardous noise.

Snapp et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Age-related hearing loss; early detection; firefighters; noise-induced hearing loss; occupational hearing loss; subclinical; surveillance.

Evidence Level: 5A

Link: <https://www.mdpi.com/1660-4601/19/17/11028>

Occupational stress monitoring using biomarkers and smartwatches: A systematic review

Background: This article presents a systematic review of the literature concerning scientific publications on wrist wearables that can help to identify stress levels. **Methods:** The study is part of a research project aimed at modeling a stress surveillance system and providing coping recommendations. The investigation followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. **Results:** In total, 38 articles were selected for full reading, and 10 articles were selected owing to their alignment with the study proposal. The types of technologies used in the research stand out amongst our main results after analyzing the articles. It is noteworthy that stress assessments are still based on standardized questionnaires, completed by the participants. The main biomarkers collected by the devices used in the selected works included: heart rate variation, cortisol analysis, skin conductance, body temperature, and blood volume at the wrist. **Conclusions:** This study concludes that developing a wrist wearable for stress identification using physiological and chemical sensors is challenging but possible and applicable.

Morales et al. 2022.

Sensors (Basel), vol. 22, no. 17.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Internet of Things; physicochemical parameters; pulse wearable; stress measurement.

Evidence Level: 1A

Link: <https://www.mdpi.com/1424-8220/22/17/6633>

An innovative tool to control occupational radon exposure

Background: After smoking, indoor radon is the main contributor to lung cancer in many countries. The European Union (EU) Directive 2013/59/Euratom establishes a maximum reference level of 300 Bq/m³ of radon concentration in the workplace, and an effective dose limit of 20 mSv per year for workers. If the radon concentration in a workplace exceeds the reference level, constructive mitigation applies.

Methods: When constructive mitigation is not feasible, we propose to keep workers' effective dose below 6 mSv per year (category B of exposed workers) by controlling occupancy time. Setting the maximum annual dose at 6 mSv protects workers' health and eases the regulatory requirements for employers. If multisite workers are present, each worker has to be monitored individually by tracking the time spent and the radon concentration at each worksite. **Results:** This paper shows a software tool for employers to perform this complex tracking in an accurate, conservative, and transparent manner, and in compliance with the EU by-laws.

Martin-Gisbert et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Directive 2013/59/Euratom; effective dose; ionizing radiation; lung cancer; workplace.

Evidence Level: 6B

Link: <https://www.mdpi.com/1660-4601/19/18/11280>

A potential wearable solution for preventing heat strain in workplaces: The cooling effect and the total evaporative resistance of a ventilation jacket

Background: The increase in average seasonal temperatures has an impact in the occupational field, especially for those sectors whose work activities are performed outdoors (agricultural, road and construction sectors). Among the adaptation measures and solutions developed to counteract occupational heat strain, personal cooling garments represent a wearable technology designed to remove heat from the human body, enhancing human performance. **Methods:** This study aims to investigate the effectiveness and the cooling power of a specific cooling garment, i.e. a ventilation jacket, by quantifying the evaporative heat losses and the total evaporative resistance both when worn alone and in combination with a work ensemble, at three adjustments of air ventilation speed. Standardised "wet" tests in a climatic chamber were performed on a sweating manikin in isothermal conditions considering three clothing ensembles (single jacket, work ensemble and a combination of both) and three adjustments of fan velocity.

Results: Results showed a significant increase ($p < 0.001$) in evaporative heat loss values when the fan velocity increased, particularly within the trunk zones for all the considered clothing ensembles, showing that fans enhanced the dissipation by evaporation. The cooling power, quantified in terms of percent changes of evaporative heat loss, showed values exceeding 100% when fans were on, in respect to the condition of fans-off, for the trunk zones except for the Chest. A significant ($p < 0.01$) decrease (up to 42.3%) in the total evaporative resistance values of the jacket, coupled with the work ensemble, was found compared to the fans-off condition. **Conclusions:** Results confirmed and quantified the cooling effect of the ventilation jacket which enhanced the evaporative heat losses of the trunk zones, helping the body to dissipate heat and showing the potential for a heat adaptation measure to be developed.

Del Ferraro et al. 2022.

Environmental Research, vol. 212.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Adaptation measure; cooling garments; hot environment; occupational heat stress; sweating manikin; ventilation fans.

Evidence Level: 3B

Link: <https://www.sciencedirect.com/science/article/pii/S0013935122008027?via%3Dihub>

Cross-sectional study of workers employed at a copper smelter-effects of long-term exposures to copper on lung function and chronic inflammation

Background: The aim of the study was to assess the effect of exposure to copper-containing dust on lung function and inflammatory endpoints among workers of a German copper plant, effects rarely studied

before. **Methods:** One hundred four copper-exposed smelter workers and 70 referent workers from the precious metal and lead facilities were included, with different metal exposures in both groups due to the different process materials. Body plethysmography, exhaled nitric oxide (FeNO) measurements, and blood sampling were conducted in all workers. Smoking status and the use of respiratory protective equipment were considered. In a subgroup of 40 nonsmoking volunteers (28 copper-exposed and 12 referents), sputum biomarkers were assessed. **Results:** Median lung function values of both copper-exposed and the referent groups were within reference ranges of "healthy" individuals, and statistical differences between the groups were mostly not evident. Similarly, differences in blood and sputum biomarkers were too small to be biologically relevant. **Conclusion:** The results suggest the absence of the detectable effects of copper-containing dust exposure on lung function or chronic inflammation within the investigated cohort.

Haase et al. 2022.

Journal of Occupational and Environmental Medicine, vol. 64, no. 9.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Copper; lung function; chronic inflammation; exposure; German.

Evidence Level: 4B

Link:

https://journals.lww.com/joem/Fulltext/2022/09000/Cross_sectional_Study_of_Workers_Employed_at_a_18.aspx

Workers' occupational dust exposure and pulmonary function assessment: Cross-sectional study in China

Background: This study aims to determine the occupational health status of workers exposed to dust and the risk factors of lung function decline, to provide a basis for formulating corresponding occupational disease-prevention strategies. **Methods:** Data on 2045 workers exposed to dust, including their age, gender, exposure time, chest X-ray test results, and pulmonary function test results, were obtained from a key occupational disease monitoring project in Chongqing, China, in 2021. Chi-square tests and multifactorial logistic regression, and other methods, were used for statistical analysis. **Results:** The prevalence of pneumoconiosis-like changes was 0.83% (17/2045), and the prevalence of abnormal forced expiratory volume in one second (FEV₁), forced vital capacity (FVC), and FEV₁/FVC was 4.25% (87/2045), 12.81% (262/2045), and 1.47% (30/2045), respectively. With increasing worker's age, the prevalence of abnormal pneumoconiosis-like changes ($p = 0.0065$), FEV₁ ($p = 0.0002$), FVC ($p < 0.0001$), and FEV₁/FVC ($p = 0.0055$) all increased. Factors such as age, exposure duration, enterprise size, and dust exposure concentration were associated with abnormal lung function. **Conclusions:** Workers exposed to occupational dust have a high rate of abnormal lung function. The government, enterprises, and individuals should pay attention to occupational dust exposure, and various effective measures should be actively taken to protect the life and health of workers.

He et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Dust exposure; occupational health; pneumoconiosis; pulmonary function.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/17/11065>

Associations of self-reported occupational exposures and settings to ALS: A case-control study

Background: Environmental exposures contribute to the pathogenesis of amyotrophic lateral sclerosis (ALS), a fatal and progressive neurological disease. Identification of these exposures is important for targeted screening and risk factor modification. **Objective:** To identify occupational exposures that are associated with a higher risk of ALS using both survey and standard occupational classification (SOC) coding procedures, and to highlight how exposure surveys can complement SOC coding. **Methods:** ALS participants and neurologically healthy controls recruited in Michigan completed a detailed exposure assessment on their four most recent and longest held occupations. Exposure scores were generated from the exposure survey, and occupations were assigned to SOC codes by experienced exposure scientists. **Results:** This study included 381 ALS and 272 control participants. ALS participants reported higher

duration-adjusted occupational exposure to particulate matter (OR = 1.45, 95% CI 1.19-1.78, $p < 0.001$), volatile organic compounds (OR = 1.22, 95% CI 1.02-1.45, $p = 0.029$), metals (OR = 1.48, 95% CI 1.21-1.82, $p < 0.001$), and combustion and diesel exhaust pollutants (OR = 1.20, 95% CI 1.01-1.43, $p = 0.041$) prior to ALS diagnosis, when adjusted for sex, age, and military service compared to controls. In multivariable models, only occupational exposure to metals remained significant risk (OR = 1.56, 95% CI 1.11-2.20, $p = 0.011$), although in an adaptive elastic net model, particulate matter (OR = 1.203), pesticides (OR = 1.015), and metals (1.334) were all selected as risk factors. Work in SOC code "Production Occupations" was associated with a higher ALS risk. SOC codes "Building and Grounds Cleaning and Maintenance Occupations", "Construction and Extraction Occupations", "Installation, Maintenance, and Repair Occupations", and "Production Occupations" were all associated with a higher exposure to metals as determined using survey data. **Discussion:** Occupational exposure to particulate matter, volatile organic compounds, metals, pesticides, and combustion and diesel exhaust and employment in "Production Occupations" was associated with an increased ALS risk in this cohort.

Goutman et al. 2022.

International Archives of Occupational and Environment Health, vol. 95, no. 7.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Amyotrophic lateral sclerosis; exposome; metals; occupation; risk factors.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007/s00420-022-01874-4>

Occupational exposure to particles and biomarkers of cardiovascular disease-during work and after vacation

Background: Ambient particle matter is a risk factor for cardiovascular disease (CVD). However, little is known about associations between particles in occupational settings and risk of CVD. We investigated associations between occupational dust exposure and biomarkers of CVD, and potential recovery effects after vacation. **Methods:** Personal dust exposure measurements (respirable silica, respirable dust $< 4 \mu\text{m}$, and particles of $0.1\text{-}10 \mu\text{m}$ (PM $0.1\text{-}10$)) were conducted once, and biological sampling were performed twice on non-smoking, male construction workers in Stockholm county, Sweden; during work and immediately after summer vacation. Linear regressions with adjustments for confounders and covariates were performed evaluating associations between occupational dust exposure and biomarkers. Paired t tests were performed evaluating changes before and after vacation. **Results:** Sixty-five workers participated. Homocysteine concentrations were significantly higher with increasing concentrations (mg/m^3) of respirable silica, respirable dust, and PM $0.1\text{-}10$, and pulse rate with higher levels of respirable dust and dust of PM $0.1\text{-}10$. Homocysteine levels were also positively correlated to number of years of dust exposure, as were low-density lipoprotein (LDL) levels. A clear recovery effect was present for LDL after vacation, but not for homocysteine. **Conclusions:** Occupational dust exposure was associated with some CVD risk markers, even at mean exposure concentrations below the Swedish occupational exposure limits for respirable silica and respirable dust, respectively. Vacation resulted in recovery for some risk markers. However, the change of the homocysteine and LDL levels suggest a long-term effect. Reduction of occupational exposure to dust may decrease the risk of CVD among exposed workers.

Grahn et al. 2022.

International Archives of Occupational and Environment Health, vol. 95, no. 7.

User License: Creative Commons Attribution (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Cardiovascular risk markers; construction industry; longitudinal measures; occupational exposure; particles; respirable silica.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007/s00420-022-01900-5>

Potential impacts of different occupational outdoor heat exposure thresholds among Washington State crop and construction workers and implications for other jurisdictions

Background: Occupational heat exposure is associated with substantial morbidity and mortality among outdoor workers. **Methods:** We sought to descriptively evaluate spatiotemporal variability in heat threshold exceedances and describe potential impacts of these exposures for crop and construction

workers. We also present general considerations for approaching heat policy-relevant analyses. We analyzed county-level 2011-2020 monthly employment (Bureau of Labor Statistics Quarterly Census of Employment and Wages) and environmental exposure (Parameter-elevation Relationships on Independent Slopes Model (PRISM)) data for Washington State (WA), USA, crop (North American Industry Classification System (NAICS) 111 and 1151) and construction (NAICS 23) sectors. Days exceeding maximum daily temperature thresholds, averaged per county, were linked with employment estimates to generate employment days of exceedances. **Results:** We found spatiotemporal variability in WA temperature threshold exceedances and crop and construction employment. Maximum temperature exceedances peaked in July and August and were most numerous in Central WA counties. Counties with high employment and/or high numbers of threshold exceedance days, led by Yakima and King Counties, experienced the greatest total employment days of exceedances. Crop employment contributed to the largest proportion of total state-wide employment days of exceedances with Central WA counties experiencing the greatest potential workforce burden of exposure. **Conclusions:** Considerations from this analysis can help inform decision-making regarding thresholds, timing of provisions for heat rules, and tailoring of best practices in different industries and areas.

Flunker et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Washington State; crop and construction employment; heat rule; maximum temperature exceedances; occupational heat exposure; outdoor workers; policy.

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/19/18/11583>

Physical Activity

This month we examine the effect of vigor at work and weekly physical activity on job stress and mental health, and how work from home affected levels of leisure-time physical inactivity

Effects of vigor at work and weekly physical activity on job stress and mental health

Background: This study explores the role of personal resources, specifically vigor at work (a positive affect generated by the ongoing interactions in the workplace) and weekly physical activity (PA), in the stress-mental health relationship, given the positive relationships found between PA and levels of vigor experienced on health. Thus, we hypothesized that vigor at work would mediate the relationship between job stress and workers' mental health, whereas weekly PA would moderate the relationship between stress and vigor at work. **Methods:** Five hundred and twenty-seven workers completed self-report scales for stress, weekly PA, vigor at work, and mental health. The results showed that vigor at work was related to better mental health, whereas stress was related to high psychological problems and low vigor at work.

Results: The interaction between stress and weekly PA on vigor was significant, indicating a counterproductive effect of weekly PA. Specifically, the negative relationship between stress and vigor at work was greater when doing weekly PA. **Conclusions:** In this vein, high levels of weekly PA would not have a favorable impact when workers experience high levels of stress, consuming part of vigor at work and reducing the positive effect of vigor at work on mental health by coping with stress.

Cortés-Denia et al. 2022.

Scientific Reports, vol. 12, no. 1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Stress; mental health; physical activity; vigor.

Evidence Level: 5B

Link: <https://www.nature.com/articles/s41598-022-19966-z>

COVID-In confidentes: How did COVID-19 and work from home influence the prevalence of leisure-time physical inactivity? An analysis of before and during the pandemic

Background: The COVID-19 pandemic has brought drastic changes to the lives of the global population. The restrictions imposed by government agencies impacted the daily lives of citizens, influencing several health behaviours, such as physical activity (PA). Thus, the present study aimed to assess the prevalence of physical inactivity (PI) and its associated factors before and during the COVID-19 pandemic. **Methods:** A population-based household seroepidemiological survey was conducted in two Brazilian municipalities located in the state of Minas Gerais, in which 1750 volunteers were interviewed between October and December 2020. Face-to-face interviews were conducted using a structured questionnaire in an electronic format. The moments considered for the PI analysis were M0 (before the pandemic), M1 (from March to July 2020), and M2 (from October to December 2020). Descriptive statistics and univariate and multivariate logistic regression were used to examine the factors associated with PI before (M0) and during the pandemic (M1 and M2). **Results:** The prevalence of PI was higher in the first months of the pandemic (M1) (67.3%; 95% confidence interval (CI): 62.4-71.9) than in the months from October to December 2020 (M2) (58.7%; 95% CI: 52.8-64.3); however, at both times (M1 and M2), PI was more prevalent than in the period before the pandemic started (M0) (39.7%; 95% CI: 35.6-43.8). Individuals who were overweight, obese, and had low educational levels were more likely to be physically inactive. At both M1 and M2, individuals who worked at a work from home were less likely to have PI. **Conclusions:** The results suggest that the COVID-19 pandemic negatively influenced PA, substantially increasing the prevalence of PI. The determinants associated with PI were education, body mass index, and work from home.

Moura et al. 2022.

BMJ Public Health, vol. 22, no. 1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: COVID-19; health research; physical inactivity; social isolation.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-14145-1>

Musculoskeletal Health

This month we explore the factors associated with musculoskeletal disorders and the effect of a shoulder exoskeleton on muscle and joint loading

The Exo4Work shoulder exoskeleton effectively reduces muscle and joint loading during simulated occupational tasks above shoulder height

Background: Excessive physical shoulder musculoskeletal loading (muscle and joint contact forces), known to contribute to work-related shoulder disorders, can be reduced by a passive shoulder exoskeleton during quasi-static tasks. However, its effect on neighboring joints i.e. elbow, lower back, hip, and knee and its effect on joint contact forces have not been investigated. Furthermore, the effect of the exoskeleton's assistance versus movement adaptation when wearing the exoskeleton on musculoskeletal loading remains unexplored. **Methods:** 3D motion capture and ground reaction forces were measured while 16 participants performed 5 simulated occupational tasks with and without the exoskeleton. A musculoskeletal modeling workflow was used to calculate musculoskeletal loading. Shoulder muscle fatigue was quantified using surface EMG. In addition, exoskeletons usability was quantified using the system usability scale.

Results: When wearing the passive shoulder exoskeleton, shoulder and elbow musculoskeletal loading decreased during the high lift and overhead wiring task, without increasing the musculoskeletal load at the back, hip and knee. In contrast, musculoskeletal loading in the shoulder, as well as in the knee increased while lifting a box from the ground to knee height and from elbow height to shoulder height. When wearing the exoskeleton, muscle activity of the Trapezius descendens, Deltoideus medius and Biceps brachii were reduced during the high lift. **Conclusion:** The passive shoulder exoskeleton reduces musculoskeletal loading in the lower back, shoulder and elbow during simulated occupational tasks above shoulder height. In contrast, for tasks below shoulder height, the use of the exoskeleton needs to be

critically reviewed to avoid increased musculoskeletal loading also in neighboring joints due to altered movement execution when wearing the exoskeleton.

van der Have et al. 2022.

Applied Ergonomics, vol. 103.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Full-body musculoskeletal modeling; muscle fatigue; passive shoulder exoskeleton; simulated occupational tasks.

Evidence Level: 3A

Link: <https://www.sciencedirect.com/science/article/pii/S0003687022001235?via%3Dihub>

Factors associated with musculoskeletal disorders among regular and special education teachers: A narrative review

Background: Musculoskeletal disorder (MSD) is a major health problem, which can lead to an enormous burden to the institution as well as chronic disability to the individual. Teachers are at risk of developing MSD due to the exposure to various ergonomic risk factors. Teachers of special education, for example, are expected to perform extra duty such as lifting and moving students, feeding food, changing diapers, and helping them in ambulation. Although there is an adequate amount of scientific research on MSD's prevalence and its risk factors among regular teachers, only few studies have focused on special education teachers. **Methods:** This review aimed to address these gaps by describing the evidence from various papers on the prevalence of MSD among regular and special education teachers and the related risk factors. The papers have been gathered using electronic databases, including PubMed, Science Direct, Google Scholar, and Springer. **Results:** The prevalence of MSD among regular teachers ranges from 48.7% to 73.7%, while the prevalence ranges from 38.7% to 94% in special education teachers. Risk factors, such as individual (age, duration of teaching, working hours, and work burden), physical (teaching activities, affected body areas), and psychological factors (stress, anxiety, fear), were identified. **Conclusions:** From the review, it is recommended to implement ergonomically designed workplaces, comprehensive ergonomic training, psychological approaches, and functional training among teachers at risk.

Abdul Rahim et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 18.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Designed workplaces; ergonomics; musculoskeletal disorders; special education teachers.

Evidence Level: 6A

Link: <https://www.mdpi.com/1660-4601/19/18/11704>

Can a workplace dialogue impact the perceived influence of neck and/or backpain on everyday activities and performance at work? A secondary analysis from the randomized controlled trial WorkUp

Background: Neck- and back- pain are highly prevalent conditions in Sweden and world-wide. Such pain often has consequences on everyday activities, work- and personal life. One consequence is work absence and decreased productivity at work. Adding a workplace dialogue to structured physiotherapy was recently found to lead to increased workability, i.e., not being on sick leave during the 12th month of follow up.

Aim: The aim of the study was to explore the effect of a workplace dialogue intervention on secondary outcomes: perceived impact of neck and/or back pain on everyday activities and on performance at work, and total days of sick leave during 12 month follow up. A further aim was to examine associations between perceived influence of pain, and sick leave. **Method:** Patients with neck and/or back pain in primary care in the south of Sweden were randomized into structured physiotherapy alone (n = 206) or with the addition of a workplace dialogue (n = 146). Data regarding the pain's influence on everyday activities and on performance at work were collected using weekly text messages for 52 weeks. The pattern of change in perceived influence of neck and/or back pain on everyday activities and performance at work was compared between the groups with linear mixed models. Cross sectional correlations between perceived influence of neck and/or back pain on everyday activities and performance at work, and days of sick leave, during the preceding four weeks at months 3, 6, 9 and 12 were examined. **Result:** We found no differences in change of perceived influence of neck and/or back pain on daily activities or perceived performance at

work, or total days of sick leave during the 12 months of follow up between the groups with structured physiotherapy with or without a workplace dialogue. There was a weak to moderate positive correlation between days of sick leave and perceived influence of neck and/or back pain on everyday activities and performance at work (rho 0.28-0.47). **Conclusion:** A workplace dialogue was not found to affect the perceived impact of neck and/or back pain on everyday activities and performance at work.

Axén et al. 2022.

BMC Musculoskeletal Disorders, vol. 23, no. 1.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Neck and back pain; primary care; sick leave; work ability; workplace dialogue.

Evidence Level: 4B

Link: <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-022-05812-w>