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Journal articles marked with an asterisk indicate an IWH scientist or adjunct scientist is included in the list of authors.

***Van Eerd D, Le Pouesard M, Yanar B, Irvin E, Gignac MAM, Jetha A, Morose T, and Tompa E. Return-to-work experiences in Ontario policing: injured but not broken. *Journal of Occupational Rehabilitation*. 2023; [epub ahead of print].**

<https://doi.org/10.1007/s10926-023-10135-1> [open access]

Abstract: PURPOSE: Police officers and others working in police services are exposed to challenging and traumatic situations that can result in physical and/or psychological injuries requiring time off work. Safely returning to work post-injury is critical, yet little is known about current return-to-work (RTW) practices in police services. This study examines RTW practices and experiences in police services from the perspective of RTW personnel and workers with physical and/or psychological health conditions. METHODS: We used a purposive sampling approach to recruit sworn and civilian members from several police services in Ontario, Canada. The recruited members had experienced RTW either as a person in a RTW support role or as a worker with a work-related injury/illness. We conducted and transcribed interviews for analysis and used qualitative research methods to identify themes in the data. RESULTS: Five overarching themes emerged. Two pointed to the context and culture of police services and included matters related to RTW processes, injury/illness complexity, the hierarchical nature of police organizations, and a culture of stoicism and stigma. The remaining three themes pointed to the RTW processes of accommodation, communication and trust-building. They included issues related to recovery from injury/illness, meaningful accommodation, timely and clear communication, malingering and trust. CONCLUSIONS: Our findings point to potential areas for improving RTW practices in

police services: greater flexibility, more clarity, stricter confidentiality and reduced stigma. More research is needed on RTW practices for managing psychological injuries to help inform policy and practice

Aasdahl L, Fimland MS, Bjorneliv GMW, Gismervik SO, Johnsen R, Vasseljen O, et al. Economic evaluation of inpatient multimodal occupational rehabilitation vs. outpatient acceptance and commitment therapy for sick-listed workers with musculoskeletal- or common mental disorders. *Journal of Occupational Rehabilitation*. 2023; 33(3):463-472. <https://doi.org/10.1007/s10926-022-10085-0> [open access]

Abstract: Purpose: To evaluate the cost-effectiveness and cost-benefit of inpatient multimodal occupational rehabilitation (I-MORE) compared to outpatient acceptance and commitment therapy (O-ACT) for individuals sick listed due to musculoskeletal- or common mental disorders during two-years of follow-up. Methods: We conducted an economic evaluation with a societal perspective alongside a randomized controlled trial with 24 months follow-up. Individuals sick listed 2 to 12 months were randomized to I-MORE (n = 85) or O-ACT (n = 79). The outcome was number of working days. Healthcare use and sick leave data were obtained by registry data. Results: Total healthcare costs during the 24 months was 12,057 euros (95% CI 9,181 to 14,933) higher for I-MORE compared to O-ACT, while the difference in production loss was 14,725 euros (95% CI -1,925 to 31,375) in favour of I-MORE. A difference of 43 (95% CI -6 to 92) workdays, in favour of I-MORE, gave an incremental cost-effectiveness ratio of 278 euros for one workday, less than the cost of one day production (339 euros). Net societal benefit was 2,667 euros during two years of follow-up. Conclusion: Despite considerable intervention costs, the lower production loss resulted in I-MORE being cost-effective when compared to O-ACT. Based on economic arguments, I-MORE should be implemented as a treatment alternative for individuals on long-term sick leave. However, more research on subgroup effects and further follow-up of participants' permanent disability pension awards are warranted.

Baek SU, Kim MS, Lim MH, Kim T, Won JU, and Yoon JH. Multidimensional employment precariousness mediates the association between low educational attainment and poor subjective well-being: results from a nationwide cross-sectional study in South Korea. *Scandinavian Journal of Work, Environment & Health*. 2023; 49(7):506-517. <https://doi.org/10.5271/sjweh.4109> [open access]

Abstract: OBJECTIVE: This paper explored how multidimensional employment precariousness (MEP) mediates the relationship between educational attainment and subjective well-being. METHODS: A nationwide sample of 46 919 Korean workers participated in surveys between 2017 and 2020. Educational attainment was divided into four categories: elementary school, middle school, high school, and college. Subjective well-being was assessed using the 5-item World Health Organization Well-Being Index, and MEP was evaluated using a modified version of the Employment Precariousness Scale (ERPES-E), with scores ranging from 0 to 100 and higher scores indicating worse employment precariousness. A counterfactual-based

logistic mediation analyses were used to estimation. RESULTS: The mean MEP score was 36.0 [standard deviation (SD) 12.1] for college education, 44.3 (SD 11.5) for high school, 49.5 (SD 10.1) for middle school, and 51.1 (SD 10.0) for elementary school. The prevalence of poor subjective well-being was 24.0% for college education, 31.3% for high school, 40.6% for middle school, and 44.8% for elementary school. Odds ratios (OR) for the total effect of education on the poor subjective well-being were 1.44 [95% confidence interval (CI) 1.37-1.53] for high school, 2.19 (95% CI 1.98-2.24) for middle school, and 2.40 (95% CI 2.04-2.82) for elementary school when compared to college education. The OR for the indirect effect mediated through MEP were 1.27 (95% CI 1.25-1.29) for high school, 1.46 (95% CI 1.42-1.51) for middle school, and 1.53 (95% CI 1.48-1.59) for elementary school, accounting for 63.9%, 48.5%, and 48.6% of the total effect, respectively. CONCLUSION: Our study suggests that MEP is an important contributor to the disparities in subjective well-being resulting from educational gradients

Chavez JA, Nam YS, Schwartz A, DeMoulin D, Swift JQ, and Turner C. Preventing work-related musculoskeletal injuries among oral and maxillofacial surgeons. *Work*. 2023; 76(1):243-249.

<https://doi.org/10.3233/WOR-220059>

Abstract: Background: Oral and maxillofacial surgeons (OMS) are continually required to adjust position and posture to access the limited surgical field in and around the head and neck, oral cavity, and oropharynx. Very limited data exists that quantifies the burden of musculoskeletal disorders (MSD) among OMS. Objective: This exploratory study seeks to address these literature gaps by assessing the prevalence of MSD among OMS. Method: A 12-question survey was designed to investigate the prevalence of MSD for OMS, including residents in training, actively practicing surgeons, and retired surgeons. Seventy-six surveys were distributed and completed in person by surgeons attending professional conferences from September 2018-September 2019. Survey questions included the Baker-Wong Faces pain scale, years in practice, number of hours worked per week, job tenure, pain attributable to work, and age. The Nordic scale identified and delineated anatomic site of musculoskeletal complaints, duration and treatment sought. Results: The most frequently cited sources and locations of pain attributable to occupation were shoulders, neck, and lower back. The risk of MSD symptoms was relatively two-fold [PR = 2.54, 95% CI = 0.90, 7.22] among OMS in practice for more than ten years compared to those in practice less than ten years. After adjusting for age and hours worked per week as potential confounders, the risk of MSD symptoms was higher among OMS in practice for more than ten years compared to those with less than ten years of experience, despite no statistically significant association. Conclusion: OMS are impacted by a high prevalence of MSD. The neck, shoulder, and lower back are the most frequently affected with discomfort and pain. This study found that practicing oral and maxillofacial surgery for more than 10 years is a potential risk factor for experiencing MSD.

Egger SM, Frey S, Sauerzopf L, and Meidert U. A literature review to identify effective web- and app-based mHealth interventions for stress management at work. *Workplace Health & Safety*. 2023; 71(10):452-463.

<https://doi.org/10.1177/21650799231170872> [open access]

Abstract: BACKGROUND: Persistent job-related stress can be harmful to physical and mental health and has a sizable financial burden on society. Face-to-face interventions are effective in reducing stress but have the disadvantage of high costs and time requirements. mHealth solutions may be an effective alternative to provide stress management interventions at work. Occupational health professionals need information on which mHealth apps are effective for employees to manage job-related stress. The aim of this review is to provide an overview of effective web- and app-based interventions for reduction of job-related stress and stress-related symptoms. METHOD: A literature review was conducted in the databases PubMed, PsycINFO, CINAHL Complete, and IEEEExplore. FINDINGS: A total of 24 articles describing 19 products were found. All products showed effectiveness in trials in improving mental and/or physical health and reducing stress. Most products have a course-like structure with a duration from 1 to 8 weeks. The products use various methods such as psychoeducation and education on stress, cognitive restructuring, emotional regulation, problem-solving, goal setting, gratitude, breathing, or mindfulness techniques. Most products use more than one method and most mixed material such as text on web pages, text messages, videos, reading and audio material, and games. CONCLUSION/APPLICATION TO PRACTICE: Overall, effective mHealth products were identified for the intervention of acute and chronic stress. Occupational health practitioners can use these 19 evidence-based mHealth products when advising organizations on health promotion of employees to reduce stress symptoms and promote health and well-being

Griffiths AJ, Hurley-Hanson AE, Giannantonio CM, Hyde K, Linstead E, Wiegand R, et al. Enhancing employment outcomes for autistic youth: using machine learning to identify strategies for success. *Journal of Vocational Rehabilitation*. 2023; 59(2):153-168.

<https://doi.org/10.3233/JVR-230034>

Jahanvand B, Bagher Mortazavi S, Asilian Mahabadi H, and Ahmadi O. Determining essential criteria for selection of risk assessment techniques in occupational health and safety: a hybrid framework of fuzzy Delphi method. *Safety Science*. 2023; 167:106253.

<https://doi.org/10.1016/j.ssci.2023.106253>

Kim JH, Muniz-Terrera G, and Leist AK. Does (re-)entering the labour market at advanced ages protect against cognitive decline? A matching difference-in-differences approach. *Journal of Epidemiology & Community Health*. 2023; 77(10):663-669.

<https://doi.org/10.1136/jech-2022-220197> [open access]

Abstract: Background: While prolonged labour market participation becomes increasingly important in ageing societies, evidence on the impacts of entering or exiting work beyond

age 65 on cognitive functioning is scarce. **Methods:** We use data from two large population-representative data sets from South Korea and the USA to investigate and compare the effects of the labour market (re-)entry and exit by matching employment and other confounder trajectories prior to the exposure. We chose the Korean Longitudinal Study of Aging (N=1872, 2006-2020) for its exceptionally active labour participation in later life and the Health and Retirement Study (N=4070, 2006-2020) for its growing inequality among US older adults in labour participation. We use the matching difference-in-differences (DID) method, which allows us to make causal claims by reducing biases through matching. **Results:** We find general positive effects of entering the labour market in South Korea (DID estimate: 0.653, 95% CI 0.167 to 1.133), while in the USA such benefit is not salient (DID estimate: 0.049, 95% CI -0.262 to 0.431). Exiting the late-life labour market leads to cognitive decline in both South Korea (DID estimate: -0.438, 95% CI -0.770 to -0.088) and the USA (DID estimate: -0.432, 95% CI -0.698 to -0.165). **Conclusions:** Findings suggest that Korean participants cognitively benefited from late-life labour market participation, while US participants did not. Differences in participant characteristics and reasons for labour market participation may have led to the differential findings. We found the negative effects of exiting the late-life labour force in both countries.

Laloo D, Lewsey J, Katikireddi SV, Macdonald EB, and Demou E. Cancer risk in information technology workers: a UK Biobank study. *Occupational Medicine*. 2023; 73(6):304-308.

<https://doi.org/10.1093/occmed/kqad070> [open access]

Abstract: **BACKGROUND:** The information technology (IT) workforce has been growing more rapidly than others, with occupational health (OH) risks of sedentary behaviour, physical inactivity and poor diet, yet studies of their non-communicable disease risk, notably cancer, are lacking. **AIMS:** To investigate cancer risk in IT workers compared to others in employment and the nine major Standard Occupational Classification (SOC) groups. **METHODS:** We evaluated incident diagnosed cancers in the UK Biobank cohort through national cancer registry linkage. Cox proportional hazard regression models, with 15-year follow-up, were used to compare incident cancer risk among IT workers with all other employed participants and with the nine major SOC groups. **RESULTS:** Overall, 10 517 (4%) employed participants were IT workers. Adjusting for confounders, IT workers had a slightly lower cancer incidence compared to all other employed participants (Model 2: hazard ratio = 0.91, 95% confidence interval [CI] 0.83-1.01). Compared to the nine major SOC groups, they had a similar (Major Groups 2, 5 and 8) or lower (Major Groups 1, 3, 4, 6, 7 and 9) cancer incidence. **CONCLUSIONS:** Despite their occupational risks of sedentary behaviour, poor diet and physical inactivity, IT workers do not have an increased cancer incidence compared to all other employed participants and the nine major SOC groups. This study paves the way for large, longitudinal health outcome studies of this under-researched and rapidly growing occupational group

Obenauer WG and Kalsher MJ. Does blame always shift? Examining the impact of workplace safety communication language on post-accident blame attributions for multiple entities. *Acta Psychologica*. 2023; 240:104024.

<https://doi.org/10.1016/j.actpsy.2023.104024>

Abstract: The under-researching of Latinx employees in the organizational diversity literature is of critical importance as extant research indicates that findings relevant to frequently studied minority employees may not be applicable to Latinx employees. One factor that differentiates Latinx employees in the U.S. from other racial and ethnic minorities is their use of, or perceived use of, language. In this research, we investigated how inclusion efforts that incorporated multiple languages into the workplace impacted employment outcomes for Latinx employees following a workplace accident. In three separate studies, we found that factors such as the language used to communicate a safety warning (Studies 1 & 2) and employee ethnicity (Studies 2 & 3) influenced blame attributed to a low-level leader (the job foreman), but they had no relationship with blame attributed toward the injured employee who was the target of communication. Consequently, these findings differ from attribution theory research which has posited that blame shifts from one entity to another. Additionally, extant research on employment discrimination has typically focused on differential outcomes for occupational minorities. Our findings, however, suggest that researchers should examine the conditions in which equal treatment (despite perceived differences in needs) could place traditionally marginalized populations at a systematic disadvantage and, consequently, may actually be indicative of workplace discrimination

Pao C, Arbona C, Fan W, and Tran J. Duty-related trauma and PTSD symptoms in US urban firefighters. *Occupational Medicine*. 2023; 73(6):324-331.

<https://doi.org/10.1093/occmed/kqad076>

Abstract: Background: Little is known about the multi-dimensional nature of traumatic duty-related events encountered by firefighters in relation to their post-traumatic stress disorder (PTSD) risk. Aims: To describe the types of duty-related events encountered by career firefighters and explore if years in the fire service or total event load moderated the association of trauma exposure to PTSD symptoms. Methods: Participants included 755 career, male firefighters (19% of the department's firefighters and 76% of those who accessed the electronic anonymous survey). The Duty-Related Incident Stressors scale was used to assess exposure to 25 potentially traumatic events (event load) and self-appraisal of the stress associated with these events, grouped by type of event (indirect, direct and colleague-related). The Post-Traumatic Stress Disorder Checklist was used to assess PTSD symptoms. Results: Firefighters rated colleague-related events as the most stressful, followed by indirect and direct events. Event load ($r = 0.25$) and indirect, direct and colleague-related events stress ($r = 0.32-0.35$) were positively associated with PTSD symptoms. Results of moderation analyses indicated that event load served as a risk factor in the relation of indirect events stress to PTSD symptoms, and as a buffer in the relation of direct events stress to PTSD symptoms. Years in the fire service were not associated with PTSD symptoms

nor moderated the relation of event stress to PTSD symptoms. Conclusions: Findings underscored the importance of considering the differential effects that types of duty-related traumatic events and cumulative exposure to trauma may have on firefighters' PTSD symptoms.

Remy VFM and Guseva Canu I. The impact of the SARS-CoV-2 pandemic on health and working conditions of Swiss bus drivers. *Journal of Transport & Health*. 2023; 32:101683.

<https://doi.org/10.1016/j.jth.2023.101683> [open access]

Abstract: Introduction For decades, bus drivers (BDs) have been recognized as one of the most exposed occupational groups worldwide. Yet, BDs' health issues have not attracted sufficient attention. During the SARS-CoV-2 pandemic, BDs were part of essential workers and experienced additional occupational exposures related to the pandemic crisis. Method We conducted a nationwide cross-sectional study among Swiss BDs to assess the impact of these exposures on their working and health conditions. The latter were treated as dichotomous variables, assessed using a self-administered online questionnaire. The questionnaire was distributed via all three unions active in the public transport sector in Switzerland since 40% of BDs are unionized. Data were analyzed using linear and logistic regression models adjusted for socio-professional and demographic characteristics of BDs. Results The study sample included 916 participants. The overall response rate was 21%. The average age was 48.2 years (SD = 9.7) and the driving seniority was 11.5 years (SD = 9.7). Most BDs felt sufficiently protected. However, 58% and 42% of BDs, respectively, had to replace their colleagues on short notice and worked extra hours. For 41% of BDs, these constraints negatively impacted their physical or mental health. BDs graded their companies' management of SARS-CoV-2 crisis at 4.1 (SD = 1.2) on a 6-point scale. This grade was associated with shortening of rest phase and impact on health. Exposure and its impact on health varied across geographic regions and unions. In Eastern Switzerland, BDs' satisfaction rates were lower than in Espace Mittelland and with a stronger pandemic impact on working conditions and health. Part-time work was associated with lower pandemic impact and higher BD's satisfaction rate regarding working conditions. Conclusion Assessment of BDs' work conditions and their changes associated with the pandemic is necessary to insure a better crisis management in the future, especially in regions and unions with low satisfaction rates.

Roswag M, Abdel Hadi S, Hausser JA, and Mojzisch A. Running toward my challenges: day-level effects of physical activity before work on appraisal of the upcoming workday and employee well-being. *Journal of Occupational Health Psychology*. 2023; 28(5):310-324.

<https://doi.org/10.1037/ocp0000360>

Abstract: Previous research has typically conceptualized physical activity as a recovery activity after work that promotes well-being by allowing employees to detach from work and replenish their resources. Here, we aimed to go beyond this framework by proposing a new theoretical model of how physical activity in the morning before work affects employee well-

being. Drawing upon the transactional theory of stress, we theorized that physical activity before work shapes employees' appraisal of their upcoming workday which, in turn, affects their well-being. In a preregistered study (N = 269), we utilized a within-person daily experience sampling approach to test our model. Results showed that two types of appraisals are particularly important for explaining the effects of physical activity before work on employee well-being: First, challenge appraisal mediated the effects of physical activity before work on work engagement. Second, we found an indirect effect via threat appraisal of physical activity before work on job-related anxiety. Exploratorily, we found that threat appraisal also mediated the effect of physical activity before work on emotional exhaustion. In conclusion, our results show that physical activity before work is beneficially related to several types of well-being outcomes by increasing challenge appraisal and decreasing threat appraisal. Furthermore, our study advances theoretical understanding on physical activity and work stress by shedding light on the mechanisms underlying the effect of physical activity on employee well-being and showing that physical activity before work benefits well-being by shaping how employees appraise their work situation on a day-to-day basis. (PsycInfo Database Record (c) 2023 APA, all rights reserved)

Schott KD, Kriebel D, Sama SR, Buchholz BO, Jarvholm B, and Wahlstrom J. A cohort study of retinal detachment among Swedish construction workers. *Scandinavian Journal of Work, Environment & Health*. 2023; 49(7):518-525.

<https://doi.org/10.5271/sjweh.4100> [open access]

Abstract: Objective: Retinal detachment (RD) has been associated with exposure to heavy lifting. Many occupations within the construction industry are likely to involve lifting tasks. We investigated the association between occupational heavy lifting and rhegmatogenous RD in a retrospective cohort study of Swedish construction workers. Methods: We studied Swedish construction workers who participated in an industry-wide health and safety program from 1971 to 1993. Individual occupation codes were linked to a job exposure matrix, assigning intensity of exposure to heavy lifting to each worker. The Swedish National Patient Register was used to identify cases of RD that occurred during follow-up through the end of 2012. We used Poisson regression modeling to calculate incidence rates of RD associated with heavy lifting, age and other covariates. A subcohort of those age ≥ 25 years at enrollment was studied to reduce bias from missing exposure information from work prior to enrollment. Results: Of 256 241 construction workers, 17% were classified with high exposure to heavy lifting in their occupation. Within the cohort, 1588 cases of RD were identified. Average exposure intensity of heavy lifting was not associated with risk of RD. However, RD risk increased with increasing cumulative exposure to heavy lifting, both in the full cohort and subcohort of those who were ≥ 25 years old at entry into the construction-worker cohort. Conclusion: Construction workers' risk of RD appeared to increase with time spent exposed to heavy lifting.

Taylor J, Murray R, Binzer M, Robert Borse C, Davis A, Gallogly V, et al. EMERG-ing data: multi-city surveillance of workplace violence against EMS responders. *Journal of Safety Research*. 2023; 86:62-79.

<https://doi.org/10.1016/j.jsr.2023.06.008> [open access]

Abstract: PROBLEM: Between 1980 and 2021, emergency medical services (EMS) calls experienced a 421% increase, while calls for fires declined by 55%. The more exposure, the more the opportunity for workplace violence (WPV). Due to the non-existence of a reporting system that captures physical and verbal violence, it has been difficult to quantify the degree of WPV experienced by the U.S. fire and rescue service. METHODS: To describe WPV in three large metropolitan fire departments, an existing data system was modified. The EMERG platform was selected because it is one of the most confidential data systems available to collect exposures. RESULTS: In a one-year pilot of EMERG, 126 events were reported. Verbal violence was present in 81% of all reports, with physical violence only at 19%. Patients were the most frequently reported assailant (73%). The most frequently reported injury was emotional stress (70%). Six percent of all injuries reported moderate-to-major physical injury severity, and 30% reported moderate-to-major mental injury severity. DISCUSSION: Verbal violence as a contributor to first responder stress is often underestimated. This pilot shows that it can and should be captured. That mental injury severity was consistently rated higher than physical injury severity across all injuries is not surprising given the prevalence of verbal violence reported and because physical violence has emotional sequela. SUMMARY: Data from the EMERG reporting system give us evidence, on a larger scale than has ever existed for the fire and rescue service, that verbal and physical violence, and the resultant emotional stress and mental injury severity, is an issue that needs further attention and resources. PRACTICAL APPLICATIONS: In order to ensure robust surveillance, it remains likely that triangulation of multiple data sources will still be required to approximate the true burden

Wang X, Dewidar O, Rizvi A, Huang J, Desai P, Doyle R, et al. A scoping review establishes need for consensus guidance on reporting health equity in observational studies. *Journal of Clinical Epidemiology*. 2023; 160:126-140.

<https://doi.org/10.1016/j.jclinepi.2023.06.009> [open access]

Abstract: OBJECTIVES: To evaluate the support from the available guidance on reporting of health equity in research for our candidate items and to identify additional items for the Strengthening Reporting of Observational studies in Epidemiology-Equity extension. STUDY DESIGN AND SETTING: We conducted a scoping review by searching Embase, MEDLINE, CINAHL, Cochrane Methodology Register, LILACS, and Caribbean Center on Health Sciences Information up to January 2022. We also searched reference lists and gray literature for additional resources. We included guidance and assessments (hereafter termed "resources") related to conduct and/or reporting for any type of health research with or about people experiencing health inequity. RESULTS: We included 34 resources, which supported one or more candidate items or contributed to new items about health equity reporting in observational research. Each candidate item was supported by a median of six (range: 1-15)

resources. In addition, 12 resources suggested 13 new items, such as "report the background of investigators". CONCLUSION: Existing resources for reporting health equity in observational studies aligned with our interim checklist of candidate items. We also identified additional items that will be considered in the development of a consensus-based and evidence-based guideline for reporting health equity in observational studies

Yates E. Developing or degrading young workers? How business strategy and the labour process shape job quality across different industrial sectors in England. *Work, Employment and Society*. 2023; 37(5):1186-1205.

<https://doi.org/10.1177/0950017021107044> [open access]

Abstract: This article explores variations in job quality for young workers by analysing six employers across three industrial sectors of Greater Manchester, an English city-region. Four aspects of job quality are examined because of their centrality in shaping how youth labour-power is deployed in the labour process: technological utilisation, work-rate, autonomy and discretion, and opportunities for training and career progression. Primary data were collected from 30 semi-structured interviews with business owners, managers, young workers and from workplace observations. Findings reveal job quality is high in advanced manufacturing and creative and digital sectors, but low in business services. Job quality is shaped by the nature of commodity production and accompanying labour process. Development or degradation of young workers in the labour process depends largely on the requirements of the employer, as few countervailing pressures exist. Training provision improves job quality, but demand-side interventions are required to generate sustainable good jobs for young workers.

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