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**\*Andreas AT, Fuller AE, Smith PM, Blair A, Harris A, Carnide N, Pabayo R, Smith BT, Siddiqi A, Shahidi FV. Employment quality and suicide, drug poisoning, and alcohol-attributable mortality. *American Journal of Epidemiology*. 2025; [epub ahead of print].**

<https://doi.org/10.1093/aje/kwaf018> [open access]

Abstract: Suicide, drug poisoning, and alcohol-attributable mortality (SDAM) - often labelled 'deaths of despair' - are increasing among working-aged individuals in many high-income countries. We examined the association between employment quality and SDAM in Canada. Census records from the 2006 Canadian Census Health and Environment Cohort (n=2,805,550) were linked to mortality data from 2006-2019. Latent class analysis identified five employment quality types: standard (secure and rewarding), portfolio (rewarding but demanding), marginal (limited hours and earnings), intermittent (sporadic and unstable), and precarious (insecure and unrewarding). Poisson regression models estimated sex/gender-stratified associations between employment quality type and suicide, drug poisoning, and alcohol-attributable deaths separately. We observed a consistent mortality gradient across employment quality groups, with lower-quality employment - and precarious employment in particular - associated with increased rates of SDAM relative to higher-quality (i.e., standard) employment. For example, precarious employment was associated with a more than threefold rate of drug poisoning deaths among women (RR: 3.58, 95% CI: 3.21-4.00) and a more than twofold rate of alcohol-attributable death among men (RR: 2.22, 95% CI: 2.07-2.38). Employment quality is an important determinant of SDAM, with varying associations by sex/gender. Improvements in employment conditions may help to reduce the burden of premature mortality attributable to suicide and substance use

**\*Nadalin V, Carnide N, Mustard C, Severin CN, Furlan AD, and Smith PM. Opioid use among injured workers: pain and the return-to-work experience. Occupational and Environmental Medicine. 2025; [epub ahead of print].**

<https://doi.org/10.1136/oemed-2024-109745>

**Abstract:** OBJECTIVE: In this cross-sectional analysis, we explored how return-to-work (RTW) experiences and postinjury pain are associated with opioid use after a workplace injury/illness. METHODS: Workers with accepted lost-time claims, compensated by the workers' compensation board in Ontario, Canada were interviewed by telephone 18 months following a work-related physical injury/illness. Participants were asked about their past-year opioid use, current pain, RTW timing and workplace accommodations. Separate logistic regression analyses were conducted to estimate the association between two independent variables and opioid use: one combining the presence of pain with workplace accommodation and a second combining the presence of pain with RTW timing, adjusted for sociodemographic, work, injury and health covariates. RESULTS: Of 1793 participants included in the analysis, 35.6% used opioids more than once in the past 12 months. Compared with those who did not return to work too soon and had no/mild pain, odds of opioid use were higher among those with severe pain, both those who returned too soon (OR 2.90, 95% CI 2.11 to 3.99) and those who did not return too soon (OR 3.01, 95% CI 2.16 to 4.19). Compared with those who had an offer of accommodation and no/mild pain, workers with severe pain and an accommodation offer (OR 2.78, 95% CI 2.16 to 3.57) or without an offer (OR 2.69, 95% CI 1.90 to 3.81) had increased odds of reporting use of opioids. CONCLUSIONS: Findings suggest pain is the main factor associated with opioid use after a work-related injury, irrespective of RTW experiences. However, due to the limitations of this exploratory analysis, longitudinal research examining this issue is warranted

**Colacci M, Huang YQ, Postill G, Zhelnov P, Fennelly O, Verma A, et al. Sociodemographic bias in clinical machine learning models: a scoping review of algorithmic bias instances and mechanisms. Journal of Clinical Epidemiology. 2025; 178:111606.**

<https://doi.org/10.1016/j.jclinepi.2024.111606> [open access]

**Abstract:** Background and objectives: Clinical machine learning (ML) technologies can sometimes be biased and their use could exacerbate health disparities. The extent to which bias is present, the groups who most frequently experience bias, and the mechanism through which bias is introduced in clinical ML applications is not well described. The objective of this study was to examine instances of bias in clinical ML models. We identified the sociodemographic subgroups PROGRESS that experienced bias and the reported mechanisms of bias introduction. Methods: We searched MEDLINE, EMBASE, PsycINFO, and Web of Science for all studies that evaluated bias on sociodemographic factors within ML algorithms created for the purpose of facilitating clinical care. The scoping review was conducted according to the Joanna Briggs Institute guide and reported using the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) extension for scoping reviews. Results: We identified 6448 articles, of which 760 reported on a clinical ML model and 91 (12.0%) completed a bias evaluation and met all inclusion criteria. Most studies evaluated a single sociodemographic factor (n = 56, 61.5%). The most frequently evaluated sociodemographic factor was race (n = 59, 64.8%), followed by sex/gender (n = 41, 45.1%), and age (n = 24, 26.4%), with one study (1.1%) evaluating intersectional factors. Of all studies, 74.7% (n = 68) reported that bias was present, 18.7% (n = 17) reported bias was not present, and 6.6% (n = 6) did not state whether bias was present. When present, 87% of studies reported bias against groups with socioeconomic disadvantage. Conclusion: Most ML algorithms that were evaluated for bias

demonstrated bias on sociodemographic factors. Furthermore, most bias evaluations concentrated on race, sex/gender, and age, while other sociodemographic factors and their intersection were infrequently assessed. Given potential health equity implications, bias assessments should be completed for all clinical ML models.

**Goncalves A, Dutra A, and Mussi CC. Occupational risks and health and safety management strategies in the port sector: a systematic literature review. *Safety Science*. 2025; 184:106767.**

<https://doi.org/10.1016/j.ssci.2024.106767>

**Jakobsen LS, Samani A, Desbrosses K, de Zee M, Steinhilber B, and Madeleine P. Effects of 24-weeks in-field use of a back-supporting exoskeleton on biomechanics, work intensity and musculoskeletal discomfort: a randomized controlled trial among logistic workers. *Applied Ergonomics*. 2025; 125:104469.**

<https://doi.org/10.1016/j.apergo.2025.104469> [open access]

Abstract: The trial investigated the impact of a back-supporting exoskeleton (BSE) on biomechanics, work intensity, and musculoskeletal discomfort among logistic-workers over 24-weeks in a field-setting. Twenty workers were randomized into intervention and control groups, performing daily order-picking with and without the BSE, respectively. Effects on muscles activity and kinematics were measured during standardized tasks before and after the intervention period, while work intensity and musculoskeletal discomfort were rated throughout the intervention period. The results indicated significant reductions in back muscle activity during lifting tasks with BSE assistance before and after 24-weeks. Although three BSE users stopped using the exoskeleton during the intervention period, the remaining workers progressively increased their daily BSE use associated with an overall decrease in perceived work intensity throughout the 24-weeks. The trial suggests that the effect of the BSE on back muscle activity remains constant over 24-weeks, opposite what was hypothesized based on previous research on training

**Kadir A, Sunindijo RY, Widanarko B, Erwandi D, Nasri SM, Satrya BA, et al. Impact of physical and psychological strain on work-related musculoskeletal disorders: a cross-sectional study in the construction industry. *Inquiry*. 2025; 62:1-12.**

<https://doi.org/10.1177/00469580251315348> [open access]

Abstract: This study examined the interplay between physical workload, psychological stress, and the prevalence of work-related musculoskeletal disorders (WMSDs) among construction workers in Indonesia. This cross-sectional study used a purposive sampling technique to gather quantitative data from 409 respondents working in four construction companies through structured questionnaires. Data collection tools included the Copenhagen Psychosocial Questionnaire III (COPSOQ III), the K10 scale for psychosocial distress, and the Nordic Body Map for musculoskeletal symptoms. Independent variables encompassed demographic factors, physical work environment, and psychosocial aspects, while the dependent variable was the presence of work-related musculoskeletal disorders (WMSDs) symptoms over the past 7 days and 12 months. Descriptive statistics and logistic regression analyses were performed using IBM SPSS Statistics Grad Pack 29.0 PREMIUM. The study revealed a high prevalence of WMSDs among workers, with 36.2% reporting symptoms in the past 7 days and 31.5% in the past 12 months. These symptoms primarily affected the neck, shoulders, back, and waist. Both physical and psychosocial factors were found to be the risk, with high levels of somatic stress and sleep disorders significantly increasing the likelihood of WMSDs. Psychological distress emerged as a particularly strong

predictor to these disorders. The findings underscore the importance of implementing targeted interventions and safety policies to mitigate WMSDs risks and improve occupational health within the construction industry.

**Lass I, Vera-Toscano E, and Wooden M. Working from home, COVID-19, and job satisfaction. ILR Review. 2025; 78(2):330-354.**

<https://doi.org/10.1177/00197939241301704> [open access]

Abstract: This article examines the impact of the growth in the incidence of working from home during the COVID-19 pandemic on workers' job satisfaction. Using longitudinal data collected in 2019 and 2021 as part of the Household, Income and Labour Dynamics in Australia (HILDA) Survey, fixed-effects models of job satisfaction are estimated. Changes in the share of total weekly work hours usually worked from home are not found to have any significant association with changes in job satisfaction for men. By contrast, a strong significant positive (but nonlinear) association is found for women, and this relationship is concentrated on women with children. These findings suggest the main benefit of working from home for workers arises from the improved ability to combine work and family responsibilities, something that matters more to women given they continue to shoulder most of the responsibility for house and care work.

**Lucas REC, Merino EAD, da Silva LB, Leite WKDS, Norte Silva JM, and Rique Junior JF. Influence of extended working hours and physical recovery on absenteeism in the footwear industry from a system dynamics model. International Journal of Occupational Safety & Ergonomics. 2024; 30(4):1167-1178.**

<https://doi.org/10.1080/10803548.2024.2382619>

Abstract: Objectives. Work-related musculoskeletal disorders (WMSDs) are recurrent in the footwear industry, resulting in absenteeism. This study aimed to quantitatively analyze the influence of overtime work and physical recovery time on the occurrence of WMSD-related absenteeism using a system dynamics model. As ergonomic methods have limitations in quantitatively simulating the behavior of these relationships, the integration of computational modeling techniques has emerged as a methodological alternative to bridge this gap. Methods. An ergonomic work analysis (EWA) was developed in a production cell of a large company. A model of causal relationships (causal loop diagram) and a simulation model (flow and stock diagram) were then developed, where three scenarios for overtime and physical recovery time were analyzed. Results. Working an additional hour resulted in a 42% increase in physical overload, leading to 7.62 leave requests per year and 78.7 days of employee absenteeism. Increasing the physical recovery time by 15 min reduced the overload to 36.5%, resulting in 6.8 leave requests per year and 71.1 days of employee absenteeism. Conclusions. Properly managing excess workload and providing adequate physical recovery for professionals is necessary to mitigate the productivity impacts of absenteeism in the footwear industry.

**Murphy M, Merrick N, Cowen G, Sutton V, Allen G, Hart NH, et al. Physical and psychological factors related to injury, illness and tactical performance in law enforcement recruits: a systematic review. Injury Prevention. 2025; 31(1):9-17.**

<https://doi.org/10.1136/ip-2023-045150>

Abstract: Objective: There are inconsistent reports of factors relating to injury, illness and tactical performance in law enforcement recruits. Our objectives were to: (1) report physical and psychological risk factors and protective factors for injury and illness and (2) report physical and psychological risk

factors and protective factors for tactical performance success. Design: Systematic epidemiological review. Methods: Searches of six databases were conducted on 13 December 2022. We included cohorts that assessed physical and psychological factors for injury, illness and tactical performance success. Study quality was assessed using the Joanna Briggs Institute Quality Assessment Checklist for Prevalence Studies and certainty assessed using the Grading of Recommendations Assessment, Development and Evaluation. Results: 30 studies were included, and quality assessment was performed. Very low certainty of evidence exists for physical variables related to injury risk, and we found no studies that investigated psychological variables as a risk factor for injury. Low-certainty evidence found older age, poorer performance with push-up reps to failure, poorer arm ergometer revolutions, poorer beep test, poorer 75-yard pursuit and the 1.5 miles run tests to be associated with reduced tactical performance. Very low certainty of evidence exists that the psychological variables of intelligence and anger are associated with tactical performance. Conclusions: We identified a lack of high-level evidence for factors associated with injury, illness and performance. Interventions based on this research will be suboptimal. We suggest context-specific factors related to injury, illness and performance in law enforcement populations are used to inform current practice while further, high-quality research into risk factors is performed. Prospero registration number: CRD42022381973.

**Rosch A, Chernak E, and Blundell J. Air rage from the sharp end: cabin crew perspectives on disruptive passenger behaviour in Europe and its impact on occupational safety and well-being. *International Journal of Occupational Safety & Ergonomics*. 2024; 30(4):1196-1207.**

<https://doi.org/10.1080/10803548.2024.2383055> [open access]

Abstract: Disruptive passenger behaviour (DPB) incidents spiked during the COVID-19 pandemic period, compromising the safety of commercial flights on a daily basis. This qualitative semi-structured interview study examined the perceived triggering factors and motivations for DPB and the subsequent impact of DPB upon cabin crew well-being and safety. Twenty-four European cabin crew disclosed experiences, subjective observations of perpetrator traits, assessment of DPB development and information regarding their well-being and perceived safety. Thematic analysis revealed that the perceived frequency of DPB had increased, driven by an accumulation of pandemic-related factors - such as enforcing mask wearing amongst intoxicated passengers. DPB was found to decrease resilience and spur maladaptive coping strategies in crew. Suggested enhancements to current DPB mitigation consisted of stricter punishment for DPB as a deterrent, alcohol bans and higher quality training. These findings can inform decision-makers' efforts to support cabin crew well-being and create safer cabin workplaces in the future

**Schmitz AN, Giuliani-Dewig HK, Laffan MR, Trivisonno AJ, Gerstner GR, Mota JA, et al. Work-related fatigue: relationship between perceived and performance fatigability in career firefighters. *Journal of Occupational & Environmental Medicine*. 2025; 67(2):110-114.**

<https://doi.org/10.1097/JOM.0000000000003282>

Abstract: Objective The purpose of this study was to (1) examine the relationship between perceived work-related fatigue and performance fatigability, and (2) assess the impact of percent body fat (%BF) on perceived fatigue constructs in career firefighters. Methods Thirty-nine career firefighters completed body composition testing, the Occupational Fatigue Exhaustion Recovery (OFER15) scale assessing three subscales of work-related fatigue (acute fatigue, chronic fatigue, and inter-shift recovery), and maximal leg extensor isometric strength testing prior to and following an isotonic fatiguing protocol. Results

Performance fatigability was not associated with any of the OFER15 perceived work-related fatigue variables ( $P \geq 0.513$ ). Greater %BF was associated with greater  $\% \Delta$  peak torque ( $r = -0.41$ ,  $P = 0.010$ ) but none of the OFER15 perceived work-related fatigue variables ( $P \geq 0.638$ ). Conclusions Performance fatigability was not associated with OFER15 perceived work-related fatigue, and greater adiposity negatively impacted performance fatigability but not perceived fatigability.

**Spiwak R, Gawaziuk J, Burton L, Wightman A, Comaskey B, Sareen J, et al. Mental health in public safety personnel with workplace injuries requiring surgery: a longitudinal population-wide administrative data study in Manitoba, Canada. *BMJ Open*. 2025; 15(2):e084367.**

<https://doi.org/10.1136/bmjopen-2024-084367> [open access]

**Abstract:** Objectives: Public safety personnel (PSP) are responsible for ensuring the safety and security of communities, often putting their own lives and well-being at risk by performing dangerous and demanding work. As a result, these workers are particularly vulnerable to workplace-related physical and mental traumatic injuries. Research is needed to understand the mental health of PSP following traumatic physical injury to inform effective prevention programmes and interventions. The objective of this study was to investigate whether PSP with traumatic physical workplace injuries requiring surgery with anaesthetic have higher post-injury rates of mental disorders compared with the general population with similar non-workplace injuries. Design: Retrospective longitudinal cohort study. Setting: Population-based study using linked anonymised administrative data for PSP and the general population in Manitoba, Canada. Participants: This study compared two groups hospitalised for a traumatic physical injury requiring surgery with anaesthetic between 1 January 2002 and 31 December 2018: (1) PSP ( $n=293$ ) injured in the workplace and matched 1:5 on sex, age, geographical region and surgical procedure code with (2) individuals in the general population (GenPop) injured outside the workplace (no Workers Compensation Board claim) ( $n=1198$ ). Primary and secondary outcomes and measures: As planned in the study protocol, the prevalence of mental disorders including anxiety, depression and substance use was measured in the cohorts 2 years pre- and post-injury. Results: This study found an elevated unadjusted risk of depression in PSP compared with the general population in the 2 years post-injury, adjusting for pre-injury mental health (rate ratio, 1.49; 95% CI, 1.02 to 2.17;  $p < 0.0001$ ). After adjusting, there were no significant differences in rates between the two cohorts; however, the significant group  $\times$  care interaction term for depression suggests a greater risk for PSP compared with GenPop over time. Conclusions: Our findings indicate that, compared with a matched cohort, PSP have an increased risk of depression from the pre-injury to post-injury period following a traumatic physical workplace injury. PSP have a unique mental health trajectory following workplace injury that should be considered when developing rehabilitation strategies for this important population.

**Stjernbrandt A, Pettersson H, Wahlstrom J, Rodin I, Nilsson T, and Burstrom L. Hand cold stress testing among Arctic open-pit miners: a clinical study. *International Journal of Occupational Safety & Ergonomics*. 2024; 30(4):1188-1195.**

<https://doi.org/10.1080/10803548.2024.2383051> [open access]

**Abstract:** Objectives. This study aimed to evaluate the influence of individual characteristics (sex, age, body mass index [BMI] and smoking habits) on the tolerance time, pain ratings and rewarming time of hand cold stress testing (CST). Methods. We included 153 subjects (63% men) working in a Swedish open-pit mine (participation rate 41%). The right hand was immersed in 3 °C circulating water for up to 45 s. Pain ratings were registered every fifth second using a visual analog scale. Results. The tolerance

time (mean  $\pm$  standard deviation) was  $35 \pm 12$  s for men and  $29 \pm 14$  s for women ( $p = 0.007$ ). The youngest age group (18-29 years) had the longest tolerance time, while the oldest group (54-65 years) had the shortest ( $p = 0.005$ ). Women had significantly higher pain ratings than men after 5, 10 and 25 s. The group with the highest BMI had the shortest rewarming time ( $p < 0.001$ ). Conclusions. Age and sex influenced the tolerance time of hand CST, while only sex affected the pain ratings and BMI the rewarming time. When performing CST in future studies, these parameters should be considered.

**Urban L, Haller N, Pieper D, and Mathes T. A methodological review identified several options for utilizing registries for randomized controlled trials. *Journal of Clinical Epidemiology*. 2025; 178:1116-14. <https://doi.org/10.1016/j.jclinepi.2024.111614> [open access]**

**Abstract:** Objectives: Registry-based randomized controlled trials (RRCTs) can provide internally valid results in a real-world context at relatively low effort and cost. However, the main characteristics, the extent to which the registry is utilized (eg, proportion of data from registry) and registry-related limitations are not well characterized. This methodological review of RRCTs aims to analyze the trial design features, investigate potential usage options, and identify possible limitations of using registry data for randomized controlled trials (RCTs). Study design and setting: A systematic search in PubMed for ongoing and published RRCTs was conducted up to February 2, 2023. Studies that reported at least one outcome derived from a registry were included. Study selection was independently performed by two reviewers. All data were extracted into a standardized table, and descriptive statistics were generated. Results: We included 162 RRCTs (41 protocols and 121 studies). Most RRCTs were multicenter trials ( $n = 127$ ; 78.4%) comprising a large number of participants (median = 1787; range = 41 to 683,927) and a long follow-up period (median = 60 months; range = 1 to 367 months) with a minimal loss to follow-up. The inclusion criteria of participants were mostly broadly defined. Types of interventions ranged from surgical procedures to behavioral interventions, and almost half of the interventions (46.9%) had a preventive purpose. The main registry outcome was mostly a clinical endpoint (40.1%) or a composite endpoint of major clinical events (30.9%) that was objectively measurable. We found different degrees of registry utilization, ranging from the exclusive use of long-term monitoring of previously published data to the more comprehensive registry utilization for patient recruitment, endpoint collection, and long-term follow-up. Limitations related to the use of registry data comprised potential coding errors or incomplete data (eg, due to under-recording of mild cases). In addition, technical challenges must be considered (eg, failed linkages or time-delayed data entry). Conclusion: A broad spectrum of potential usage options and usage extent of registry data exist. Our analysis suggests that in many cases, the potential of using registry data and thus their benefits were not fully utilized. In addition, the study illustrates that there is not a single, unified methodology for designing RRCTs but that registries can support RCTs in various ways. Therefore, future RRCTs should specify for what purposes and to what extent registries were utilized. Moreover, a clear definition and taxonomy of RRCTs appears necessary for facilitating future dialogue and research on RRCTs.

**Wurzelbacher SJ, Krieg EF, Meyers AR, Bushnell PT, Van Nguyen N, and Tseng CY. Evaluating injury and illness trends in federal and postal service employees using workers' compensation claims data 2007-2022. *Journal of Occupational & Environmental Medicine*. 2025; 67(2):132-152. <https://doi.org/10.1097/JOM.0000000000003270>**

**Abstract:** OBJECTIVE: The purpose of this study was to understand federal workplace injury/illness trends. METHODS: Over 1.5 million federal and Postal Service employee workers' compensation (WC)

claims from 2007 to 2022 were linked to employment data and analyzed. RESULTS: From 2007 to 2019, falls, slips, trips represented the highest proportion of claims (30.7%), followed by overexertion and bodily reaction (24.4%), unclassified (16.4%), contact with objects and equipment (13.1%), violence and other injuries by persons or animals (8.8%), transportation incidents (4.0%), exposure to harmful substances or environments (2.5%), and fires and explosions (0.24%). From 2020 to 2022, COVID-19 drove a major shift to exposure to harmful substances or environments representing the highest proportion of claims (44.3%). CONCLUSIONS: Claims data represent a potentially rich data source that employing agencies can use to focus prevention and treatment of injury/illness

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