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***Saunders R, Cardoso S, Le Pouésard M, Breslin C, Myers K, Swift M, et al. Addressing essential skills gaps among participants in an OHS training program: a pilot study. Policy and Practice in Health and Safety. 2020; [epub ahead of print]. https://doi.org/10.1080/14773996.2020.1786995**

***Sears JM, Hogg-Johnson S, Sterling RA, Fulton-Kehoe D, and Franklin GM. Prescription opioid overdose and adverse effect hospitalisations among injured workers in eight states (2010-2014). Occupational and Environmental Medicine. 2020; 77(7):439-445.**
https://doi.org/10.1136/oemed-2020-106472 [open access]
Abstract: OBJECTIVE: High-risk opioid prescribing practices in workers' compensation (WC) settings are associated with excess opioid-related morbidity, longer work disability and higher costs. This study characterises the burden of prescription opioid-related hospitalisations among injured workers. METHODS: Hospital discharge data for eight states (Arizona, Colorado, Michigan, New Jersey, New York, South Carolina, Utah and Washington) were obtained from the State Inpatient Databases, Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality. We

calculated 5-year (2010-2014) average annual rates of prescription opioid overdose/adverse effect (AE) hospitalisations. Injured workers were identified using payer (WC) and external cause codes. RESULTS: State-level average annual prescription opioid overdose/AE hospitalisation rates ranged from 0.3 to 1.2 per 100 000 employed workers. Rates for workers aged 65 years old were two to six times the overall rates. Among those hospitalised with prescription opioid overdose/AEs, injured workers were more likely than other inpatients to have a low back disorder diagnosis, and less likely to have an opioid dependence/abuse or cancer diagnosis, or a fatal outcome. Averaged across states, WC was the primary expected payer for <1% of prescription opioid overdose/AE hospitalisations vs 6% of injury hospitalisations. CONCLUSIONS: Population-based estimates of prescription opioid morbidity are almost nonexistent for injured workers; this study begins to fill that gap. Rates for injured workers increased markedly with age but were low relative to inpatients overall. Research is needed to assess whether WC as payer adequately identifies work-related opioid morbidity for surveillance purposes, and to further quantify the burden of prescription opioid-related morbidity

Bartoll X and Ramos R. Working hour mismatch, job quality, and mental well-being across the EU28: a multilevel approach. International Archives of Occupational and Environmental Health. 2020; 93(6):733-745.
https://doi.org/10.1007/s00420-020-01529-2 [open access]
Abstract: Objective: We aim to estimate the association between working hour mismatches and mental well-being. We also investigate the confounding and moderating role of job quality in this association. Methods: We use cross-sectional data from the European Working Conditions Survey of 2015 in the analysis. The sample includes 9345 male and 10,998 female employees in 28 countries. We run a multilevel linear regression accounting for the clustering of countries with mental well-being assessed by the World Health Organization Index. We compute mismatches in working hours as the difference between desired and actual hours of work, categorized as underemployed, unconstrained, and overemployed. The main dependent variable is the combination of these mismatches for each of the following working schedules: = 20; 21-34; 35-40; 41-47; and =

48 h/week (h/w).Results: The adverse association of short and long hours with well-being is mostly attributable to mismatches in working hours (except for men in the 41-47 h/w group). Once we adjust for job quality, overemployed men = 48 h/w experience a reduction in mental well-being of - 5.2 (95 CI % - 7.04 to - 3.76) with respect to the unconstrained base category 35-40 h/w. Overemployed women experience a reduction in mental well-being ranging from - 4.94 (95 CI % - 6.54 to - 3.34) in the = 48 h/w schedule to - 11.11 (95 CI % - 17.35 to - 4.87) in the = 20 h/w schedule. We observe a confounding role of job quality across most working hour schedules, but the interaction effects are modest. Conclusion: Employee control over working hours is associated with mental well-being with differences by gender. Labour policies aimed at promoting flexibility on the employee side could be favoured to improve workers' mental well-being.

Castellucci H, Viviani C, Arezes P, Molenbroek JFM, Martinez M, Aparici V, et al. Applied anthropometry for common industrial settings design: working and ideal manual handling heights. International Journal of Industrial Ergonomics. 2020; 78:102963. https://doi.org/10.1016/j.ergon.2020.102963

Donovan M, Khan A, and Johnston V. The contribution of onsite physiotherapy to an integrated model for managing work injuries: a follow up study. Journal of Occupational Rehabilitation. 2020; [epub ahead of print]. https://doi.org/10.1007/s10926-020-09911-0 [open access]
Abstract: Purpose As part of an integrated system to manage work injuries, some organisations utilise the skills of an onsite physiotherapist. Onsite physiotherapy can provide benefits for the workers and organisation when delivered as part of an early intervention injury prevention program (IPP) at a poultry meat processing plant. However, once established, the sustainability of this service on work injury and compensation outcomes without ongoing physiotherapy contribution is unknown. Methods Through analysis of two large secondary datasets of workplace injuries and compensation claims, outcome measures of injury rates, cost per workers' compensation claim and duration of work absence were compared over a 36-month period where onsite physiotherapy contributed to the

IPP and was later removed. Results 3951 injuries and their 781 resultant compensation claims were analysed within a 36-month analysis period. A small but non-significant rise in injury rates and duration of work absence was associated with the removal of onsite physiotherapy. There was also a shift towards more compensations claims with work absence after physiotherapy was removed. However, there was a significant reduction in adjusted mean costs per claim of $847 for all injury types (p<0.001) and $930 for musculoskeletal disorders (p<0.001) after the removal of onsite physiotherapy. Conclusions Once an IPP was embedded within an organisation, onsite physiotherapy services were able to be discharged without significantly and negatively impacting demonstrated benefits and injury outcomes. There was also cost savings to the insurer through reduced mean claim costs and to the employer by not funding the onsite physiotherapy service

Gismervik SÃ, Aasdahl L, Vasseljen O, Fors EA, Rise MB, Johnsen R, et al. Inpatient multimodal occupational rehabilitation reduces sickness absence among individuals with musculoskeletal and common mental health disorders: a randomized clinical trial. Scandinavian Journal of Work, Environment & Health. 2020; 46(4):364-372. https://doi.org/10.5271/sjweh.3882 [open access]

Abstract: Objectives This study aimed to investigate whether inpatient multimodal occupational rehabilitation (I-MORE) reduces sickness absence (SA) more than outpatient acceptance and commitment therapy (O-ACT) among individuals with musculoskeletal and mental health disorders. Methods Individuals on sick leave (2-12 months) due to musculoskeletal or common mental health disorders were randomized to I-MORE (N=86) or O-ACT (N=80). I-MORE lasted 3.5 weeks in which participants stayed at the rehabilitation center. I-MORE included ACT, physical exercise, work-related problem solving and creating a return to work plan. O-ACT consisted mainly of 6 weekly 2.5 hour group-ACT sessions. We assessed the primary outcome cumulative SA within 6 and 12 months with national registry-data. Secondary outcomes were time to sustainable return to work and self-reported health outcomes assessed by questionnaires. Results SA did not differ between the interventions at 6 months, but after one year individuals in I-MORE had 32 fewer SA days compared

to O-ACT (median 85 [interquartile range 33-149] versus 117 [interquartile range 59-189)], P=0.034). The hazard ratio for sustainable return to work was 1.9 (95% confidence interval 1.2-3.0) in favor of I-MORE. There were no clinically meaningful between-group differences in self-reported health outcomes. Conclusions Among individuals on long-term SA due to musculoskeletal and common mental health disorders, a 3.5-week I-MORE program reduced SA compared with 6 weekly sessions of O-ACT in the year after inclusion. Studies with longer follow-up and economic evaluations should be performed

Holm LW, Bohman T, Lekander M, Magnusson C, and Skillgate E. Risk of transition from occasional neck/back pain to long-duration activity limiting neck/back pain: a cohort study on the influence of poor work ability and sleep disturbances in the working population in Stockholm County. BMJ Open. 2020; 10(6):e033946.
https://doi.org/10.1136/bmjopen-2019-033946 [open access]
Abstract: Objectives: The prevalence of neck/back pain (NBP) is high worldwide. Limited number of studies have investigated workers with occasional NBP regarding the risk of developing long-duration activity limiting NBP (LNBP). The objectives were to assess (1) the effect of poor work ability and sleep disturbances in persons with occasional NBP on the risk of LNBP, and (2) the interaction effect of these exposures. Design: Cohort study based on three subsamples from the Stockholm Public Health Cohort. Settings: The working population in Stockholm County. Participants: Persons aged 18-60 years, reporting occasional NBP the past 6 months at baseline year 2010 (n=16 460).Measures: Work ability was assessed with items from the Work Ability Index, perceived mental and/or physical work ability. Sleep disturbances were self-reported current mild/severe disturbances. The outcome in year 2014 was reporting NBP the previous 6 months, occurring =couple of days per week and resulting in decreased work ability/restricted other daily activities. The additive effect of having both poor work ability and sleep disturbances was modelled with a dummy variable, including both exposures. Poisson log-linear regression was used to calculate risk ratios (RRs) and 95% CIs. Results: At follow-up, 9% had developed LNBP. Poor work ability and sleep disturbances were independent risk factors for LNBP;

adjusted RR 1.7 (95% CI: 1.4 to 2.0) and 1.4 (95% CI: 1.2 to 1.5), respectively. No additive interaction was observed. Conclusion: Workers with occasional NBP who have poor work ability and/or sleep disturbances are at risk of developing LNBP. Having both conditions does not exceed additive risk.

Iavicoli S, Valenti A, Barillari C, Fortuna G, Boccuni V, Carnevale F, et al. Making the difference in occupational health: three original and significant cases presented at ICOH congresses in the 20th century. Safety and Health at Work. 2020; 11(2):215-221. https://doi.org/10.1016/j.shaw.2020.03.004 [open access]
Abstract: BACKGROUND: The aim of this study is to illustrate the historical role of the International Commission on Occupational Health (ICOH) congresses as an arena where national and international occupational medicine can dialogue and as the first example of scientific transferability of the research and prevention results that have had such an impact on global public health. METHODS: We used the ICOH Heritage Repository, in which ICOH congress proceedings (from the first congress in Milan in 1906 to the last congress, held in Dublin in 2018), are organised in an orderly way, updated and easily accessible according to open access logic. RESULTS: We describe studies by three physicians who submitted significant scientific work to ICOH congresses, one on the battle against ancylostomiasis (Volante, 1906), the second (Quarelli, 1928) on carbon disulphide poisoning, and the third (Viola, 1969) on the carcinogenicity of vinyl chloride monomer. Priority is given to Italian cases, on account of the authors' obvious familiarity with the issues. CONCLUSION: The visibility offered in ICOH conferences and their published proceedings has boosted the international spread of their findings, contributing to the scientific transferability of the research results and influencing the development of policies and prevention interventions that have had a great impact on global public health

Kar G and Hedge A. Effects of a sit-stand-walk intervention on musculoskeletal discomfort, productivity, and perceived physical and mental fatigue, for computer-based work. International Journal of Industrial Ergonomics. 2020; 78:102983. https://doi.org/10.1016/j.ergon.2020.102983

Kyron MJ, Rikkers W, O'Brien P, Bartlett J, and Lawrence D. Experiences of police and emergency services employees with workers' compensation claims for mental health issues. Journal of Occupational Rehabilitation. 2020; [epub ahead of print].
https://doi.org/10.1007/s10926-020-09909-8
Abstract: Purpose To assess employees' experiences of the workers' compensation claim process for psychological trauma, stress or a mental health condition sustained during the course of work in the police and emergency services sector. Methods 14,868 employees (69.4% male, response rate=22%) from around Australia participated in Answering the Call: the Beyond Blue National Mental Health and Wellbeing Study of Police and Emergency Services, and were asked questions regarding their workers' compensation experiences for mental health reasons. Results 14% of all employees in police and emergency services organisations had made a workers' compensation claim for mental health reasons. Only 8.2% of employees making a claim had a positive experience (95% CI 6.6-9.8) while 70.3% had a poor experience (95% CI 67.6-73.0). Two-thirds of employees who had made a claim reported that the process was unsupportive and stressful, and over half reported that it had an overall negative impact on their recovery. Employees with poor overall support from their managers and those who perceived negative stigma about mental health in their workplace were more likely to report poor experiences. Conclusions The workers' compensation process is perceived negatively by most police and emergency services employees who have experience with it, and a majority found that it negatively impacted on their recovery. Ways to reform the system to better support employees experiencing significant functional impairments related to mental health issues should be urgently considered

Robbins RB, Thiese MS, Ott U, Wood EM, Effiong A, Murtaugh M, et al. Metabolic syndrome in commercial truck drivers: prevalence, associated factors, and comparison with the general population. Journal of Occupational and Environmental Medicine. 2020; 62(7):453-459.
https://doi.org/10.1097/JOM.0000000000001863

Scholten B, Kenny L, Duca RC, Pronk A, Santonen T, Galea KS, et al. Biomonitoring for occupational exposure to diisocyanates: a systematic review. Annals of Work Exposures and Health. 2020; 64(6):569-585.
https://doi.org/10.1093/annweh/wxaa038 [open access]
Abstract: Diisocyanates are a group of chemicals that are widely used in occupational settings. They are known to induce various health effects, including skin- and respiratory tract sensitization resulting in allergic dermatitis and asthma. Exposure to diisocyanates has been studied in the past decades by using different types of biomonitoring markers and matrices. The aim of this review as part of the HBM4EU project was to assess: (i) which biomarkers and matrices have been used for biomonitoring diisocyanates and what are their strengths and limitations; (ii) what are (current) biomonitoring levels of the major diisocyanates (and metabolites) in workers; and (iii) to characterize potential research gaps. For this purpose we conducted a systematic literature search for the time period 2000-end 2018, thereby focussing on three types of diisocyanates which account for the vast majority of the total isocyanate market volume: hexamethylene diisocyanate (HDI), toluene diisocyanate (TDI), and 4,4'-methylenediphenyl diisocyanate (MDI). A total of 28 publications were identified which fulfilled the review inclusion criteria. The majority of these studies (93%) investigated the corresponding diamines in either urine or plasma, but adducts have also been investigated by several research groups. Studies on HDI were mostly in the motor vehicle repair industry [with urinary hexamethylene diamine result ranging from 0.03 to 146.5 µmol mol-1 creatinine]. For TDI, there is mostly data on foam production [results for urinary toluene diamine ranging from ~0.01 to 97 µmol mol-1 creatinine] whereas the available MDI data are mainly from the polyurethane industry (results for methylenediphenyl diamine range from 0.01 to 32.7 µmol mol-1 creatinine). About half of the studies published were prior to 2010 hence might not reflect current workplace exposure. There is large variability within and between studies and across sectors which could be potentially explained by several factors including worker or workplace variability, short half-lives of biomarkers, and differences in sampling strategies and analytical techniques. We identified several research gaps which could further be taken into account when studying diisocyanates biomonitoring levels: (i) the development of

specific biomarkers is promising (e.g. to study oligomers of HDI which have been largely neglected to date) but needs more research before they can be widely applied, (ii) since analytical methods differ between studies a more uniform approach would make comparisons between studies easier, and (iii) dermal absorption seems a possible exposure route and needs to be further investigated. The use of MDI, TDI, and HDI has been recently proposed to be restricted in the European Union unless specific conditions for workers' training and risk management measures apply. This review has highlighted the need for a harmonized approach to establishing a baseline against which the success of the restriction can be evaluated.

Shaw WS, Main CJ, Findley PA, Collie A, Kristman VL, and Gross DP. Opening the workplace after COVID-19: what lessons can be learned from return-to-work research? Journal of Occupational Rehabilitation. 2020; [epub ahead of print].
https://doi.org/10.1007/s10926-020-09908-9 [open access]

Sjoberg A, Pettersson-Stromback A, Sahlen KG, Lindholm L, and Norstrom F. The burden of high workload on the health-related quality of life among home care workers in Northern Sweden. International Archives of Occupational and Environmental Health. 2020; 93(6):747-764.
https://doi.org/10.1007/s00420-020-01530-9 [open access]
Abstract: OBJECTIVE: Previous studies have shown that high workload affects health negatively. However, studies are lacking among home care workers. The aim of this study is to examine the burden of perceived workload on health-related quality of life (HRQoL) among home care workers and to determine whether psychosocial factors modify such a relationship. METHODS: A cross-sectional study was conducted in which 1162 (58% response rate) home care workers participated. The psychosocial factors were measured by QPSnordic. HRQoL was measured by EuroQol 5 dimensions, from which responses were translated into quality-adjusted life year scores (QALY). Propensity scores were used with absolute risk differences (RD). Stratified analysis was used to test the buffer hypothesis of the demand-control-support model. RESULTS: Personnel with a high workload had a statistically significant 0.035 lower QALY than personnel with a normal workload. This difference

was also statistically significant for the Visual Analogue Scale (RD 5.0) and the mobility (RD 0.033) and anxiety/depression scales (RD 0.20) dimensions of EQ-5D. For QALY, the effect of a high workload compared to a normal workload was higher, with low (RD 0.045, significant) compared with high (RD 0.015, non-significant) social support; while it was similar, and non-significant results, for low and high control. CONCLUSIONS: Our study shows that lowered work burden would be beneficial for home care personnel. Furthermore, our results suggest that interventions aimed at increasing social support could reduce work-related illness

Stokholm ZA, Erlandsen M, Schlunssen V, Basinas I, Bonde JP, Peters S, et al. A quantitative general population job exposure matrix for occupational noise exposure. Annals of Work Exposures and Health. 2020; 64(6):604-613. https://doi.org/10.1093/annweh/wxaa034

Abstract: Occupational noise exposure is a known risk factor for hearing loss and also adverse cardiovascular effects have been suggested. A job exposure matrix (JEM) would enable studies of noise and health on a large scale. The objective of this study was to create a quantitative JEM for occupational noise exposure assessment of the general working population. Between 2001-2003 and 2009-2010, we recruited workers from companies within the 10 industries with the highest reporting of noise-induced hearing loss according to the Danish Working Environment Authority and in addition workers of financial services and children day care to optimize the range in exposure levels. We obtained 1343 personal occupational noise dosimeter measurements among 1140 workers representing 100 different jobs according to the Danish version of the International Standard Classification of Occupations 1988 (DISCO 88). Four experts used 35 of these jobs as benchmarks and rated noise levels for the remaining 337 jobs within DISCO 88. To estimate noise levels for all 372 jobs, we included expert ratings together with sex, age, occupational class, and calendar year as fixed effects, while job and worker were included as random effects in a linear mixed regression model. The fixed effects explained 40% of the total variance: 72% of the between-jobs variance, -6% of the between-workers variance and 4% of the within-worker variance. Modelled noise levels showed a monotonic increase with increasing expert

score and a 20 dB difference between the highest and lowest exposed jobs. Based on the JEM estimates, metal wheel-grinders were among the highest and finance and sales professionals among the lowest exposed. This JEM of occupational noise exposure can be used to prioritize preventive efforts of occupational noise exposure and to provide quantitative estimates of contemporary exposure levels in epidemiological studies of health effects potentially associated with noise exposure

Thomee S, Osterberg K, Radman L, and Jakobsson K. Cognition and mental wellbeing after electrical accidents: a survey and a clinical study among Swedish male electricians. International Archives of Occupational and Environmental Health. 2020; 93(6):683-696.
https://doi.org/10.1007/s00420-020-01520-x
Abstract: Purpose: The purpose was to examine long-term consequences of exposure to electrical current passing through the body. We investigated (1) whether electricians after having experienced an electrical accident report more cognitive problems and lower mental wellbeing and (2) have objectively verifiable reduced cognitive function; and (3) which circumstances at the time of the accident affect long-term subjective cognitive function and mental wellbeing? Methods: A survey of male electricians who had experienced electrical accidents (n = 510) and a clinical study in a subsample (n = 23) who reported residual health problems was carried out. Both groups were examined regarding subjective cognitive function (Euroquest-9) and mental wellbeing (Symptom Checklist-90 subscales). The clinical study included neuropsychological tests of memory, attention, spatial function, and premorbid intellectual capacity. A matched control group was retrieved from reference data. Results: The survey participants reported more cognitive problems and lower mental wellbeing than referents. Of the examined circumstances, having experienced mortal fear at the time of the accident and health complaints, especially mental symptoms, for > 1 week after the accident were the most significant risk factors for later subjective cognitive problems and lower mental wellbeing. The only statistically significant difference in neuropsychological tests was better performance in part of the memory tests by the clinical study group compared to the control

group. Conclusions: The participants reported more cognitive problems and lower mental wellbeing than referents, but no long-term objective cognitive dysfunction was detected. Emotional response at the time of the accident and health complaints in the aftermath of the accident may constitute important indications for medical and psychological follow-ups.

*IWH authored publications.