IWH Research Alert
August 6, 2021

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***Prince SA and Biswas A. The role of occupational physical activity on longevity. Lancet. Public Health. 2021; 6(8):e544. https://doi.org/10.1016/S2468-2667(21)00156-0 [open access]**

Abderhalden-Zellweger A, Probst I, Politis Mercier MP, Danuser B, and Krief P. Protecting pregnancy at work: normative safety measures and employees' safety strategies in reconciling work and pregnancy. Safety Science. 2021; 142:105387. https://doi.org/10.1016/j.ssci.2021.105387

Archangelidi O, Sathiyajit S, Consonni D, Jarvis D, and De Matteis S. Cleaning products and respiratory health outcomes in occupational cleaners: a systematic review and meta-analysis. Occupational & Environmental Medicine. 2021; 8:604-617. https://doi.org/10.1136/oemed-2020-106776

Abstract: There is consistent evidence of increased respiratory symptoms in occupational cleaners; however, uncertainty remains on type of respiratory health effects, underlying causal agents, mechanisms and respiratory phenotypes. We aimed to conduct a systematic review and if possible, a meta-analysis of the available literature to characterise and quantify the cleaning-related respiratory

health effects. We searched MEDLINE and EMBASE databases and included studies that evaluated the association of any respiratory health outcome with exposure to cleaning occupation or products in occupational cleaners. A modified GRADE was used to appraise the quality of included studies. We retrieved 1124 articles, and after applying our inclusion criteria, 39 were selected for the systematic review. We performed a meta-analysis of the 21 studies evaluating asthma which showed a 50% increased pooled relative risk in cleaners (meta-relative risk (RR)=1.50; 95% CI 1.44 to 1.56). Population-based cross-sectional studies showed more stable associations with asthma risk. No evidence of atopic asthma as dominant phenotype emerged. Also, we estimated a 43% increased risk (meta-RR=1.43; 95% CI 1.31 to 1.56) of chronic obstructive pulmonary disease. Evidence for associations with bronchial-hyper-responsiveness, lung function decline, rhinitis, upper and lower respiratory tract symptoms was weaker. In our systematic review and meta-analysis, we found that working as a cleaner is associated with an increased risk of reversible and even irreversible obstructive airway diseases. All studies lacked quantitative exposure assessment to cleaning products; this would help elucidate underlying causal agents and mechanisms. Exposure control and respiratory surveillance among cleaners is warranted to prevent the associated respiratory health burden. Trial registration number: CRD4201705915.

Borri N, Drago F, Santantonio C, and Sobbrio F. The "Great Lockdown": inactive workers and mortality by Covid-19. Health Economics. 2021; [epub ahead of print].
https://doi.org/10.1002/hec.4383
Abstract: In response to the Covid-19 outbreak, the Italian Government imposed an economic lockdown on March 22, 2020, and ordered the closing of all non-essential economic activities. This paper estimates the causal effects of this measure on mortality by Covid-19 and on mobility patterns. The identification of the causal effects exploits the variation in the active population across municipalities induced by the economic lockdown. The difference-in-differences empirical design compares outcomes in municipalities above and below the median variation in the share of active population before and after the lockdown within a province, also

controlling for municipality-specific dynamics, daily shocks at the provincial level, and municipal unobserved characteristics. Our results show that the intensity of the economic lockdown is associated with a statistically significant reduction in mortality by Covid-19 and, in particular, for age groups between 40 and 64 and older (with larger and more significant effects for individuals above 50). Back of the envelope calculations indicate that 4793 deaths were avoided, in the 26 days between April 5 and April 30, in the 3518 municipalities which experienced a more intense lockdown. Several robustness checks corroborate our empirical findings

Cmar JL and McDonnall MC. Long-term effects of a job search intervention for transition-age youth with visual impairments. Journal of Vocational Rehabilitation. 2021; 55(1):91-105. https://doi.org/10.3233/JVR-211149

Cockayne S, Fairhurst C, Frost G, Liddle M, Cunningham-Burley R, Zand M, et al. Slip-resistant footwear reduces slips among National Health Service workers in England: a randomised controlled trial. Occupational & Environmental Medicine. 2021; 78(7):472-478.
https://doi.org/10.1136/oemed-2020-106914 [open access]
Abstract: Objectives: Assess the effectiveness of 5* GRIP-rated slip-resistant footwear in preventing slips in the workplace compared to usual footwear (control group). Methods: A multicentre, randomised controlled trial; 4553 National Health Service (NHS) staff were randomised 1:1 to the intervention group (provided with 5* GRIP-rated slip-resistant footwear) or the control group. The primary outcome of incidence rate of self-reported slips in the workplace over 14 weeks was analysed using a mixed-effects negative binomial model. Secondary outcome measures included incidence rate of falls from a slip, falls not from a slip, proportion of participants reporting a slip, fall or fracture and time to first slip and fall. Results: 6743 slips were reported: 2633 in the intervention group (mean 1.16 per participant, range 0 to 36) and 4110 in the control group (mean 1.80 per participant, range 0 to 83). There was a statistically significant reduction in slip rate in the intervention group relative to the control group (incidence rate ratio (IRR) 0.63, 95% CI 0.57 to 0.70, p<0.001). Statistically significant differences, in favour of the intervention group,

were observed in falls from a slip (IRR 0.51, 95% CI 0.28 to 0.92, p=0.03), the proportion of participants who reported a slip (OR 0.58, 95% CI 0.50 to 0.66, p<0.001) or fall (OR 0.73, 95% CI 0.54 to 0.99, p=0.04) and time to first slip (HR 0.73, 95% CI 0.67 to 0.80, p<0.001). Conclusions: The offer and provision of 5* GRIP-rated footwear reduced slips in NHS staff in the workplace. Trial registration number: ISRCTN33051393.

Delp L, Cole B, Lozano G, and Riley K. Worker injuries in southern California's warehousing industry: how to better protect workers in this burgeoning industry? New Solutions. 2021; 31(2):178-192.
https://doi.org/10.1177/10482911211017445
Abstract: Dangerous conditions and worker injuries in the rapidly growing warehousing industry have gained attention in recent years, with accounts typically drawing on worker reports and investigative journalism. We analyzed workers' compensation injury claims and California Division of Occupational Safety and Health (Cal/OSHA) citations in Southern California's large warehousing sector. Claims increased from 2014 to 2018, with a majority of injuries caused by repetitive motion, lifting and other ergonomic risk factors. Cal/OSHA cited employers for violating standards to protect workers from unsafe vehicle operations, dangerous machinery and equipment, and falls; and for failing to implement injury prevention programs. These citations address the causes of some worker injuries; however, no Cal/OSHA citations were issued for violating the state's Repetitive Motion Injuries prevention standard. Nor do enforcement activities address the underlying causes highlighted by workers-high production quotas and a relentless work pace-that characterize the industry. We discuss the value and limitations of our approach and the implications of our results

Galanti T, Guidetti G, Mazzei E, Zappala S, and Toscano F. Work from home during the COVID-19 outbreak: the impact on employees' remote work productivity, engagement, and stress. Journal of Occupational & Environmental Medicine. 2021; 63(7):e426-e432.
https://doi.org/10.1097/JOM.0000000000002236 [open access]
Abstract: OBJECTIVE: The COVID-19 pandemic made working from

home (WFH) the new way of working. This study investigates the impact that family-work conflict, social isolation, distracting environment, job autonomy, and self-leadership have on employees' productivity, work engagement, and stress experienced when WFH during the pandemic. METHODS: This cross-sectional study analyzed data collected through an online questionnaire completed by 209 employees WFH during the pandemic. The assumptions were tested using hierarchical linear regression. RESULTS: Employees' family-work conflict and social isolation were negatively related, while self-leadership and autonomy were positively related, to WFH productivity and WFH engagement. Family-work conflict and social isolation were negatively related to WFH stress, which was not affected by autonomy and self-leadership. CONCLUSION: Individual- and work-related aspects both hinder and facilitate WFH during the COVID-19 outbreak

Jin H, Chen Y, Fu Q, and Qu Q. Occupational risk factors of contracting COVID-19 among health workers: a systematic review. Work. 2021; 69(3):721-734.
https://doi.org/10.3233/WOR-210477
Abstract: BACKGROUND: With the spread of COVID-19 and the worsening global prevention and control situation, the risk of infection faced by health workers has been unprecedented. It is necessary to fully understand the occupational risks of health workers to protect them and reduce their risk of infection. OBJECTIVE: This study aimed to obtain comprehensive and detailed information on occupational risk factors of infectious diseases for HWs in different dimensions and to propose control strategies for three risk dimensions to protect HWs who are at high risk of infection during the pandemic. METHODS: A total number of 619 articles published from 2010 to 2021 were searched to conduct bibliometric analysis, which were retrieved in the Web of Science database with defined search terms. There were 26 articles met the criteria, and they were screened to identify occupational risk factors. RESULTS: We conducted an analysis of cited institutions, co-citation network analysis of journals, and references from bibliometric analysis. Nine risk factors were extracted, and they were classified and sorted into three dimensions. Infection control strategies for each dimension were proposed. CONCLUSIONS: The risk of infection faced by HWs

is unprecedented. Medical institutions should pay more attention to the nine risk factors that we identified and use the three risk dimensions to carry out risk identification and infection control to reduce the infection risk of HWs and protect them better

Johansson MK and Rissanen R. Interventions for return to work following work-related injuries among young adults: a systematic literature review. Work. 2021; 69(3):795-806. https://doi.org/10.3233/WOR-205028

Abstract: OBJECTIVE: To provide a review of current knowledge about interventions aimed to facilitate young adults to return to work following work-related injuries. METHODS: A systematic review of published literature from the year 2010 and onwards was conducted to identify studies examining return to work interventions for young adults (aged 19-29) following work-related injuries using PubMed and Web of Science. Two reviewers conducted the screening process and assessed the study quality using the National Heart, Lung, and Blood Institute assessment tool for Observational Cohort and Cross-Sectional studies. Due to wide heterogeneity and small number of studies retained post-screening, a descriptive summary analysis of the included studies was conducted. RESULTS: No studies were identified that focused exclusively on interventions for young adults. However, two studies, in which an age category of young adults was available, were included and assessed for quality. The study populations were primarily suffering from work-related injuries in the lower back or lower limbs. Both studies revealed that return to work interventions using a case manager coordinating and providing consultation, advice, and risk management to multidisciplinary teams was associated with lower sick leave days. CONCLUSIONS: Despite the emerging evidence that young adults have higher rates of work-related injuries compared to older colleagues, information concerning work-related injuries and return to work interventions specifically targeting young workers is still lacking. Further research is therefore needed to develop and evaluate return to work interventions for the population of young adults

Kowalsky RJ, Hergenroeder AL, and Barone Gibbs B. Acceptability and impact of office-based resistance exercise breaks. Workplace Health & Safety. 2021; 69(8):359-365.

https://doi.org/10.1177/2165079920983820
Abstract: background: Breaking up sedentary behavior with standing or walking can decrease discomfort, fatigue, and sleepiness. However, less is known about acceptability and impact of resistance exercise breaks on these outcomes. Therefore, we evaluated the acceptability of resistance exercise breaks and their influence on discomfort, physical and mental fatigue, and sleepiness during occupational sitting. Methods: Workers completed two 4-hour conditions in random order: prolonged sitting (SIT) and sitting with hourly resistance exercise breaks (REX). All outcomes were measured at baseline and every hour thereafter with five total breaks. Linear mixed models evaluated overall condition effects and differences at each hour. Cohen's d estimated magnitudes of effect. Acceptability was assessed via questionnaire after the REX condition and reported as percentages. Findings: Fourteen adults (age: 53.4 ± 9.5 years, body mass index [BMI]: 30.9 ± 4.8 kg/m2) were enrolled. Although ratings of discomfort, fatigue, and sleepiness were typically lower during REX as compared with SIT, overall outcomes were not significantly different between conditions ($p > .05$). However, a significant reduction in mental fatigue at hour 4 in favor of the REX condition (ß = -0.48 log-points, $p < .05$, $d = 0.37$) was observed. Program acceptability questions revealed the majority (>50%) of participants reported a "4" or "5" on a 5-point Likert-type scale for all questions, indicating high acceptability for implementation. Conclusions/application to practice: Resistance exercise breaks had high acceptability and provided preliminary evidence of improving ratings of mental fatigue. More research is needed to better understand the role of resistance training to reduce sedentary behavior.

Liu R, Mou X, and Liu HC. Occupational health and safety risk assessment based on combination weighting and uncertain linguistic information: method development and application to a construction project. IISE Transactions on Occupational Ergonomics and Human Factors. 2020; 8(4):175-186. https://doi.org/10.1080/24725838.2021.1875519
Abstract: OCCUPATIONAL APPLICATIONS Occupational hazards and work-related accidents are a substantial problem in countries around the world. Therefore, it is of great importance to develop

appropriate techniques to assess and reduce the risk of occupational hazards. In many situations, however, exact data are inadequate to model real-life scenarios, because of the complexity of occupational health and safety (OHS) risk assessment problems. We present a new OHS risk assessment model to assess and rank the risk of occupational hazards based on combination weighting and uncertain linguistic information. Moreover, a practical example of a shopping mall construction project is given to illustrate the effectiveness of the proposed model. The new model was found to provide a useful, practical, and flexible way for risk evaluation in OHS. In particular, it offered a new method for capturing domain expert opinions and prioritizing potential occupational hazards to improve the health and safety of workers

Newaz MT, Ershadi M, Jefferies M, and Davis P. Assessing safety management factors to develop a research agenda for the construction industry. Safety Science. 2021; 142:105396. https://doi.org/10.1016/j.ssci.2021.105396

Oraison HM and Kennedy GA. The effect of social support in chronic back pain: number of treatment sessions and reported level of disability. Disability and Rehabilitation. 2021; 43(11):1526-1531. https://doi.org/10.1080/09638288.2019.1668969

Abstract: Background: Chronic back pain is characterized by its duration and poor response to medical interventions and is a major health problem. Treatment up-take, adherence, and social support are key issues and are vital for recovery and functionality. However, there is limited research on the role of social support and treatment uptake and adherence for chronic back pain. Aim: The aim of this study was to explore the impact of social support in terms of treatment uptake and adherence in chronic back pain patients in Australia. Methods: Two hundred and one adult men and women completed a battery of questionnaires that assessed levels of social support and disability and treatment uptake and adherence. Results: Stepwise multiple regression predicting treatment participation, produced a significant model that included participant's age and level of social support and accounted for 14% of the variance, $F(2,179) = 14.10$, $p < 0.001$, adj $R2 = 0.14$. Life control, affective distress and

level of social support scores accounted for 26% of the variance in disability levels F(3,179) = 21.42, p < 0.001, adj R2 = 0.26. Conclusion: The findings indicated that age, social support had a significant positive effect on the number of treatment sessions attended by participants and that life control, affective distress, and level of social support were negatively related to disability levels. The findings support interdisciplinary approaches, including social interventions as important part of any chronic back pain treatment. Implications for rehabilitation Chronic back pain does not respond well to traditional rehabilitation methods based on the Medical Model. Social support has a significant impact on treatment adherence and disability. This study measures perceived social support from an emotional and instrumental perspective. Social support interventions as part of a multidisciplinary approach would be beneficial in the experience of chronic back pain.

Reeb-Whitaker C, LaSee CR, and Bonauto DK. Surveillance of work-related asthma including the emergence of a cannabis-associated case series in Washington State. Journal of Asthma. 2021; [epub ahead of print].
https://doi.org/10.1080/02770903.2021.1955379
Abstract: Objective: We conducted surveillance for work-related asthma (WRA) in Washington State to identify the industry sectors and asthma exposures most commonly affecting injured workers and in need of prevention activities. Methods: Using workers' compensation data as the primary data source, valid cases were classified as work-aggravated asthma (WAA) or new onset asthma that includes occupational asthma (OA) and reactive airways dysfunction syndrome (RADS). The source of exposure that caused the worker's asthma, their industry and occupation were determined. Results: There were 784 valid work-related asthma cases identified for the period 2

Shakerian S, Habibnezhad M, Ojha A, Lee G, Liu Y, Jebelli H, et al. Assessing occupational risk of heat stress at construction: a worker-centric wearable sensor-based approach. Safety Science. 2021; 142:105395.
https://doi.org/10.1016/j.ssci.2021.105395

Sippli K, Schmalzried P, Rieger MA, and Voelter-Mahlknecht S. Challenges arising for older workers from participating in a workplace intervention addressing work ability: a qualitative study from Germany. International Archives of Occupational & Environmental Health. 2021; 94(5):919-933.
https://doi.org/10.1007/s00420-020-01639-x [open access]
Abstract: Objective: Studies examining what renders workplace interventions to sustain and promote work ability of older workers successful have largely neglected older workers´ perspective. This paper outlines the results of a study with regard to older workers´ experiences and expectations of a workplace intervention. Based on these findings, some reflections on how to improve the design and the implementation of workplace interventions for older workers are provided. Methods: Semi-structured interviews were conducted with older workers (N = 8) participating in a workplace intervention undertaken at one production site of a large manufacturing company in Baden-Wurttemberg/Germany. The interview guide included questions on participants´ experiences with and expectations of the intervention. The interviews were recorded, transcribed verbatim and analyzed using qualitative content analysis according to Mayring (2014). Results: Older workers´ reported some challenges they face due to their participation in the workplace intervention. These resulted from the work environment (physical challenges), the work process design (new long work cycle), the work organization (tight time allowances, little job rotation, change of teams, age stereotypes) and the management of the workplace intervention (bad information, feeling of occupational insecurity and lack of being valued). Conclusions: The study shows that challenges arising for older workers from their participation in the workplace intervention may have counteracted the promotion of work ability. As findings suggest, some of these challenges might have been avoided either by considering workers´ perspective during design and implementation of an intervention or by referring to evidence on aging and work ability.

Stahl C, Karlsson EA, Sandqvist J, Hensing G, Brouwer S, Friberg E, et al. Social insurance literacy: a scoping review on how to define and measure it. Disability and Rehabilitation. 2021; 43(12):1776-1785.

https://doi.org/10.1080/09638288.2019.1672111
Abstract: PURPOSE: Sickness insurance and workers' compensation systems decide on peoples' eligibility for benefits, and are commonly based on medical certificates and assessments of work ability. Systems differ in the extent to which they preserve clients' dignity and right to fair assessments. In this article, we define a new concept for studying interactions between individuals and systems: social insurance literacy, which concerns how well people understand the different procedures and regulations in social insurance systems, and how well systems communicate with clients in order to help them understand the system. METHODS: The concept was defined through a scoping literature review of related concepts, a conceptual re-analysis in relation to the social insurance field, and a following workshop. RESULTS: Five related concepts were reviewed for definitions and operationalizations: health literacy, financial/economic literacy, legal capability/ability, social security literacy, and insurance literacy. CONCLUSIONS: Social insurance literacy is defined as the extent to which individuals can obtain, understand and act on information in a social insurance system, related to the comprehensibility of the information provided by the system. This definition is rooted in theories from sociology, social medicine and public health. In the next step, a measure for the concept will be developed based on this review. Implications for rehabilitation Social insurance literacy is a new concept that is based on theories in sociology, social medicine and public health. It provides conceptual orientation for analyzing factors that may influence different outcomes of peoples' contacts with social insurance systems. The concept is of relevance for rehabilitation professionals since it focuses on how interactions between individuals and systems can influence the rehabilitation process. The study will in the next step develop a measure of social insurance literacy which will have practical applications for rehabilitation professionals

Wang DD, O'Neill WW, Zervos MJ, McKinnon JE, Allard D, Alangaden GJ, et al. Association between implementation of a universal face mask policy for healthcare workers in a health care system and SARS-COV-2 positivity testing rate in healthcare workers. Journal of Occupational & Environmental Medicine. 2021; 63(6):476-481.

https://doi.org/10.1097/JOM.0000000000002174 **[open access]**
Abstract: Objective: Examine the effect of a universal facemask policy for healthcare workers (HCW) and incidence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) positivity. Methods: Daily number of symptomatic HCW tested, SARS-CoV-2 positivity rates, and HCW job-descriptions were collected pre and post Universal HCW facemask policy (March 26, 2020). Multiple change point regression was used to model positive-test-rate data. SARS-CoV-2 testing and positivity rates were compared for pre-intervention, transition, post-intervention, and follow-up periods. Results: Between March 12 and August 10, 2020, 19.2% of HCW were symptomatic for COVID-19 and underwent SARS-CoV-2 testing. A single change point was identified ~March 28-30 (95% probability). Before the change point, the odds of a tested HCW having a positive result doubled every 4.5 to 7.5 days. Post-change-point, the odds of a tested HCW having a positive result halved every 10.5 to 13.5 days. Conclusions: Universal facemasks were associated with reducing HCW's risk of acquiring COVID-19

Zhang Y, ElGhaziri M, Siddique S, Gore R, Kurowski A, Nobrega S, et al. Emotional labor and depressive symptoms among healthcare workers: the role of sleep. Workplace Health & Safety. 2021; 69(8):383-393.
https://doi.org/10.1177/21650799211014768
Abstract: Background: Depression is the second leading cause of disability worldwide. Health care workers report a higher prevalence of depressive symptoms than the general population. Emotional labor has contributed to poor health and work outcomes. However, the mechanism for the potential association between emotional labor and depressive symptoms has not been well studied. This study examines the relationship between emotional labor and depressive symptoms and whether sleep plays a role in explaining this relationship. Methods: In 2018, health care workers (n = 1,060) from five public sector facilities in the northeast United States participated in this cross-sectional survey. The survey included questions on participants' surface-acting emotional labor (masking one's feelings at work), depressive symptoms, sleep duration and disturbances, and socio-demographic characteristics. Multivariable linear and Poisson regression modeling were used to examine associations among

variables. Findings: There was a significant association between emotional labor and depressive symptoms (ß = 0.82, p < .001). Sleep disturbances, but not short sleep duration, partially mediated this association. Neither sleep variable moderated this association. Conclusions/application to practice: Depressive symptoms were prevalent among health care workers and were associated with emotional masking. Sleep disturbances play an important intermediate role in translating emotional labor to depressive symptoms in these workers. Effective workplace programs are needed to reduce health care workers' emotional labor to improve their mental health. Sleep promotion should also be emphasized to mitigate the negative effect of emotional labor and promote mental wellbeing.

***IWH authored publication.**