IWH Research Alert
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***Shearer HM, Carroll LJ, Cote P, Randhawa K, Southerst D, Varatharajan S, Wong JJ, Yu H, Sutton D, van der Velde G, et al. The course and factors associated with recovery of whiplash-associated disorders: an updated systematic review by the Ontario protocol for traffic injury management (OPTIMa) collaboration. European Journal of Physiotherapy. 2020; [Epub ahead of print].**
https://doi.org/10.1080/21679169.2020.1736150

Abbasi M, Jalilolghadr S, Soltanabadi M, and Yazdi Z. Prevalence of musculoskeletal disorders in firefighters and its association with insomnia. Policy and Practice in Health and Safety. 2020; 18(1):34-40.
https://doi.org/10.1080/14773996.2019.1708613

Asilian-Mahabadi H, Khosravi Y, Hassanzadeh-Rangi N, Hajizadeh E, and Behzadan AH. Factors affecting unsafe behavior in construction projects: development and validation of a new questionnaire. International Journal of Occupational Safety & Ergonomics. 2020; 26(2):219-226.
https://doi.org/10.1080/10803548.2017.1408243

Abstract: Introduction. Occupational safety in general, and construction safety in particular, is a complex phenomenon. This study was designed to develop a new valid measure to evaluate factors affecting unsafe behavior in the construction industry. Methods. A new questionnaire was generated from qualitative research according to the principles of grounded theory. Key measurement properties (face validity, content validity, construct validity, reliability and discriminative validity) were examined using qualitative and quantitative approaches. The receiver operating characteristic curve was used to estimate the discriminating power and the optimal cutoff score. Results. Construct validity revealed an interpretable 12-factor structure which explained 61.87% of variance. Good internal consistency (Cronbach's alpha = 0.94) and stability (intra-class correlation coefficient = 0.93) were found for the new instrument. The area under the curve, sensitivity and specificity were 0.80, 0.80 and 0.75, respectively. The new instrument also discriminated safety performance among the construction sites with different workers' accident histories ($F = 6.40$, $p < 0.05$). Conclusion. The new instrument appears to be a valid, reliable and sensitive instrument that will contribute to investigating the root causes of workers' unsafe behaviors, thus promoting safety performance in the construction industry

Dhal M. Labor stand: face of precarious migrant construction workers in India. Journal of Construction Engineering and Management. 2020; 146(6):04020048.
https://doi.org/10.1061/(ASCE)CO.1943-7862.0001761

Hrymak V and de Vries JMA. The development and trial of systematic visual search: a visual inspection method designed to improve current workplace risk assessment practice. Policy and Practice in Health and Safety. 2020; 18(1):9-24.
https://doi.org/10.1080/14773996.2019.1708615

Hussain R, Pedro A, Lee DY, Pham HC, and Park CS. Impact of safety training and interventions on training-transfer: targeting migrant construction workers. International Journal of Occupational Safety & Ergonomics. 2020; 26(2):272-284.
https://doi.org/10.1080/10803548.2018.1465671

Abstract: Despite substantial efforts to improve construction safety training, the accident rate of migrant workers is still high. One of the primary factors contributing to the inefficacy of training includes information delivery gaps during training sessions (knowledge-transfer). In addition, there is insufficient evidence that these training programmes alone are effective enough to enable migrant workers to transfer their skills to the jobsite (training-transfer). This research attempts to identify and evaluate additional interventions to improve the transfer of acquired knowledge to the workplace. For this purpose, this study presents the first known experimental effort to assess the effect of interventions on migrant work groups in a multinational construction project in Qatar. Data analysis reveals that the adoption of training programmes with the inclusion of interventions significantly improves training-transfer. Construction safety experts can leverage the findings of this study to enhance training-transfer by increasing workers' safety performance and hazard identification ability

Karkkainen S, Silventoinen K, Svedberg P, and Ropponen A. Life events as predictors for disability pension due to musculoskeletal diagnoses: a cohort study of Finnish twins. International Archives of Occupational and Environmental Health. 2020; 93(4):469-478.
https://doi.org/10.1007/s00420-019-01505-5 [open access]
Abstract: PURPOSE: Musculoskeletal diagnoses (MSD) are one of the largest diagnostic groups for disability pensions (DP). This study investigated the associations between life events and DP due to MSD, considering sociodemographic, health, and familial factors. METHODS: The study sample included 18,530 Finnish twins, 24-64 years old at baseline, who responded to a questionnaire in 1981 including a 21-item life event inventory. Information on DP with diagnosis codes (ICD codes: M00-M99) were obtained from the official national pension registers. Life events were divided into family- and work-related events. "Positive change in life" was analyzed separately. Cox proportional hazards models were used to calculate hazard ratios (HR) with 95% confidence intervals (CI). RESULTS: During the follow-up of 23 years, 1273 (7%) individuals were granted DP due to MSD. In discordant pair analysis, family-related events (>/= 4 events) increased (HR 1.63, 95% CI 1.31, 2.03)

and the absence of such events decreased (HR 0.68, 95% CI 0.48, 0.95) the risk of DP due to MSD. For work-related events (>/= 3 events), the risk estimates were non-significant when controlling for familial factors. Having had a positive change in life decreased the risk of DP due to MSD (HR 0.79, 95% CI 0.65, 0.96) while controlling for familial confounding, but were non-significant in the full model controlling for various covariates (HR 0.91, 95% CI 0.75, 1.12). CONCLUSIONS: The associations between life events and the risk of DP due to MSD are complex and potentially affected by familial and other confounding factors including sociodemographics and health

Lallukka T, Hiilamo A, Oakman J, Manty M, Pietilainen O, Rahkonen O, et al. Recurrent pain and work disability: a record linkage study. International Archives of Occupational and Environmental Health. 2020; 93(4):421-432. https://doi.org/10.1007/s00420-019-01494-5 [open access]
Abstract: PURPOSE: We examined the associations between recurrent single- and multisite pain and incident sickness absence (SA) of different lengths and the risk of disability pension (DP). METHODS: The data were derived from the Finnish Helsinki Health Study. Pain measures were recorded for panel 1 in 2000/2 and 2007, and for panel 2 in 2007 and 2012 (altogether 3191 employees). SA data were obtained from the employer's personnel register and DP events from the Finnish Centre for Pensions. Negative binomial regression models with generalized estimation equations were used to model the incidence of self-certified short- (1-3 days), and medically certified medium- (4-14 days) and long-term (more than 14 days) SA episodes. Cox regression models were fitted for the associations between pain and all-cause DP and competing risk models for DP by diagnostic groups. Social and health-related covariates were adjusted for. RESULTS: Recurrent pain was associated with short-, medium- and long-term SA. Additionally, recurrent single- and multisite pain increased the risk of long-term SA. Recurrent single or multisite pain was further associated with an increased risk of DP, while a single instance of pain did not increase the risk. CONCLUSIONS: These results suggest that recurrent pain is a robust determinant of subsequent SA and DP risk. Improved understanding of determinants of recurrent pain is needed to inform

the development of targeted measures to reduce SA and premature exit from employment

Nazerian R, Korhan O, and Shakeri E. Work-related musculoskeletal discomfort among heavy truck drivers. International Journal of Occupational Safety & Ergonomics. 2020; 26(2):233-244.
https://doi.org/10.1080/10803548.2018.1433107
Abstract: Background. Heavy truck drivers are exposed to various psychological, psychosocial and physiological factors, some of which can cause musculoskeletal discomfort in different body regions. Purpose. This study aims to investigate the correlation between different factors of musculoskeletal discomfort in heavy truck drivers. Methods. A cross-sectional study design was applied. A total of 384 participants were interviewed using an updated version of the Nordic musculoskeletal questionnaire. While hypothesis testing was used to assess the association of different factors in musculoskeletal discomfort, logistic regression was applied to explore different correlations among questions of the survey. Results. The results demonstrate that hours of exposure to vibration were associated with discomfort in the neck and shoulders ($p < 0.001$). This relationship was not statistically significant in the lower back area ($p = 0.300$). Additionally, 19 equations, their correlations and their odds ratios were formulated with Nagelkerke $R(2) > 0.05$. Conclusion. Fifty-seven percent of the drivers were suffering from discomfort in their lower back region. Moreover, seat comfort was found to be highly correlated with discomfort in the neck, shoulder and upper back areas. Additionally, with aging the likelihood of experiencing discomfort in the neck, upper back and knees is increased

Nioi A, Wendelboe-Nelson C, Cowan S, Cherrie M, Rashid S, Cowie H, et al. Nudging construction workers towards better sun-safety behaviour: summary of the evidence for practitioners. Policy and Practice in Health and Safety. 2020; 18(1):25-33.
https://doi.org/10.1080/14773996.2019.1708614

Peng L and Chan AHS. Adjusting work conditions to meet the declined health and functional capacity of older construction

workers in Hong Kong. Safety Science. 2020; 127:104711. https://doi.org/10.1016/j.ssci.2020.104711

Phatak D and Jia B. Improving sitting postures: a pilot intervention using a wearable posture support system. IISE Transactions on Occupational Ergonomics and Human Factors. 2020; 8(1):20-26. https://doi.org/10.1080/24725838.2020.1726841

van der Put AC, Mandemakers JJ, de Wit JBF, and van der Lippe T. Worksite health promotion and social inequalities in health. SSM - Population Health. 2020; 10:100543. https://doi.org/10.1016/j.ssmph.2020.100543 [open access]
Abstract: It is well-documented that higher educated employees have better health than the lower educated. The workplace has been put forward as a contributor to this inequality. We extend previous work on workplace characteristics that could influence employee health by asking to what extent workplace health promotion (WHP) can account for the relation between education and health. Two ways in which WHP may relate to health inequalities are addressed: higher educated employees may be more likely to use WHP than lower educated employees and the effect of WHP on health may be stronger for higher educated than for lower educated employees. Using data from the European Sustainable Workforce Survey which contains information on over 11000 employees in 259 organisations, we test whether three types of WHP mediate or moderate the relation between education and health: healthy menus, sports facilities and health checks. We find that higher educated employees are in better health and that use of WHP positively relates to health. Use of healthy menus and sports facilities in the workplace can contribute to increasing health inequalities, as lower educated employees are less likely to make use of these. Health checks could contribute to diminishing health inequalities, as lower educated employees are more likely to use them compared to higher educated employees. The effect of WHP is not contingent on education. We advise stimulating lower educated employees to make more use of WHP, which can contribute to decreasing health inequalities

Qureshi SM, Purdy N, and Neumann WP. Development of a methodology for healthcare system simulations to quantify nurse workload and quality of care. IISE Transactions on Occupational Ergonomics and Human Factors. 2020; 8(1):27-41. https://doi.org/10.1080/24725838.2020.1736692

Rose LM, Eklund J, Nord Nilsson L, Barman L, and Lind CM. The RAMP package for MSD risk management in manual handling: freely accessible tool, with website and training courses. Applied Ergonomics. 2020; 86:103101. https://doi.org/10.1016/j.apergo.2020.103101 [open access]

Abstract: In this paper the RAMP Package is presented with the objective to facilitate the application of the RAMP tool to systematically manage MSD risks. The package consists of the RAMP tool (Risk Assessment and Management tool for manual handling Proactively), the RAMP website, and free, globally available online, training courses (MOOCs). An Action module used for managing identified MSD risks is introduced. The tool, encompassing a wide range of risks, is applicable to the whole risk management process. Furthermore, RAMP is openly available for download, and free to use. The RAMP tool and training materials were developed using a participative iterative methodology including researchers and practitioners. RAMP was downloaded in 86 countries in the first 26 months since its' launch and over 2400 learners from high-, middle- and low-income countries have joined the MOOCs. The RAMP Package meets organisations' needs for an accessible, comprehensive risk assessment and management tool.

Taylor LK, Tong X, and Maxwell SE. Evaluating supplemental samples in longitudinal research: replacement and refreshment approaches. Multivariate Behavioral Research. 2020; 55(2):277-299. https://doi.org/10.1080/00273171.2019.1628694

Abstract: Despite the wide application of longitudinal studies, they are often plagued by missing data and attrition. The majority of methodological approaches focus on participant retention or modern missing data analysis procedures. This paper, however, takes a new approach by examining how researchers may supplement the sample with additional participants. First, refreshment samples use the same

selection criteria as the initial study. Second, replacement samples identify auxiliary variables that may help explain patterns of missingness and select new participants based on those characteristics. A simulation study compares these two strategies for a linear growth model with five measurement occasions. Overall, the results suggest that refreshment samples lead to less relative bias, greater relative efficiency, and more acceptable coverage rates than replacement samples or not supplementing the missing participants in any way. Refreshment samples also have high statistical power. The comparative strengths of the refreshment approach are further illustrated through a real data example. These findings have implications for assessing change over time when researching at-risk samples with high levels of permanent attrition

*IWH authored publications.