

IWH Research Alert
March 24, 2017

Missed an issue? Catch up on previous 2017 *Research Alerts* available on the IWH website <http://www.iwh.on.ca/research-alerts>

Research Alerts is a service provided to you by the Institute for Work & Health (IWH) to help you keep abreast of recent literature in the areas of occupational health and safety, epidemiology, public health and others within the IWH mandate. Please note that these articles have not been reviewed by Institute scientists to assess the quality of the studies. *Research Alerts* should not be considered an endorsement of the findings. Readers are cautioned not to act on the results of single studies, but rather to seek bodies of evidence. It should also be noted that the Institute for Work & Health cannot provide full-text of articles listed in *Research Alerts* to individuals outside of the organization, as this violates copyright legislation.

Beales D, Kyaw-Myint S, Smith A, O'Sullivan P, Pransky G, Linton S, Job J, and Straker L. Work productivity loss in young workers is substantial and is associated with spinal pain and mental ill-health conditions. *Journal of Occupational & Environmental Medicine*. 2017; 59(3):237-245.

<http://dx.doi.org/10.1097/JOM.0000000000000990>

Abstract: OBJECTIVE: The aim of this study was to estimate the effect of spinal pain and mental ill-health conditions on work productivity in 22-year-old workers. METHODS: A cross-sectional design using data from the Raine Study cohort (n = 867) including self-reported work productivity and self-report of health practitioner diagnosed medical conditions. RESULT: Mean (median, 25th-percentile, 75th-percentile) annualized cost of health-related absenteeism was \$AUD1899 (\$0, \$0, \$1738) per worker. Annualized cost of presenteeism was \$AUD10,674 (\$6573, \$4003, \$13,087) per worker. Spinal pain and mental ill-health conditions were associated with increased health-related absenteeism, but not presenteeism. CONCLUSION: Work productivity loss in young workers is a substantial problem needing priority attention. Addressing spinal pain and mental ill-health may improve productivity of this important sector of the workforce

Biering K, Lander F, and Rasmussen K. Work injuries among migrant workers in Denmark. *Occupational and Environmental Medicine*. 2017; 74(4):235-242.

<http://dx.doi.org/10.1136/oemed-2016-103681>

Abstract: OBJECTIVES: Work migration into Denmark has increased during the recent decades, especially after the enlargement of the European Union (EU) in 2004. Whether or not migrant workers experience more work injuries than the native workforce has been debated and results are conflicting, most likely due to

methodological difficulties and cultural disparities. We set out to meet these challenges using population-based work injury registers, targeting a specific and representative region in Denmark. **METHODS:** This population-based study used data on work injuries from an emergency department (ED) and reported injuries from the ED's catchment area to the Danish Working Environment Authority during 11 years. We calculated incidences of work injury for groups of migrant workers compared with native Danes and adjusted incidence rate ratios based on information on the complete working population. **RESULTS:** The incidences of work injuries among migrant workers from the new EU countries and from the rest of the world were higher compared with Danish workers and workers from the old EU countries and other Western countries. Especially migrants older than 30 years and in low-risk industries were at higher risk. Workers who had migrated recently were at even higher risk. **CONCLUSIONS:** We found increased risk of work injuries among migrant workers. Studying migrants in registers is a methodological challenge as some migrants are not registered, for legal or illegal reasons; thus, only a selected group is studied, but this may most likely underestimate the risk

Buyts N, Wagner S, Randall C, Yu I, Geisen T, Harder H, Fraess-Phillips A, Hassler B, and Howe C. Australian employee perspectives on disability management in relation to job satisfaction, physical and mental health, workplace morale and reduced sickness absence. International Journal of Disability Management. 2017; 11(e2):1-8.

<http://dx.doi.org/10.1017/idm.2016.4>

Callander EJ, Lindsay DB, and Scuffham PA. Employer benefits from an early intervention program for depression: a cost-benefit analysis. Journal of Occupational & Environmental Medicine. 2017; 59(3):246-249.

<http://dx.doi.org/10.1097/JOM.0000000000000939>

Abstract: **OBJECTIVE:** The Work Outcomes Research Cost-benefit (WORC) project aimed to determine if early intervention for depression influenced workforce productivity in full-time employees. The current study aims to examine whether this intervention is cost-effective. **METHODS:** A cost-benefit analysis of the WORC project from the employer's perspective was undertaken, taking into account intervention costs and associated gains due to increased workforce productivity from baseline to 12-month follow-up. **RESULTS:** Both the single intervention and case management groups were found to have a decrease in time lost at work due to presenteeism. This contributed to net gains resulting from increased workforce productivity in both intervention groups.

CONCLUSIONS: The results suggest that the WORC intervention was cost-effective. A similar intervention to that described here may be beneficial to employers who are seeking to increase workforce productivity

Clarkson L, Naweed A, and Whale JJ. The minority report: hazard reporting in an Australian University. Work. 2017; 56(1):91-97.

<http://dx.doi.org/10.3233/WOR-162470>

Abstract: **BACKGROUND:** Understanding what influences reporting is critical to underpinning the knowledge base around reporting behaviour and assisting in developing effective strategies to increase reporting levels within an organisation. Universities should investigate reporting behaviour in their own organisation and investigate why differences exist between different job profiles. **OBJECTIVE:** The aim of this study was to investigate hazard reporting in an Australian University and to assess what factors (employment type, level of safety responsibility and prior injury) influence reporting behaviour. **METHODS:** A total of 256 university employees and postgraduate students completed a survey on their hazard reporting. **RESULTS:** The study indicated that demographic variables such as department type, role in the organisation, level of safety activity in role, and prior injury effected the reporting of hazards. Issues for non-reporting were also found to support findings in other studies. A unique finding was that while teaching-focused academics were not more likely to have been injured at work they were more likely to have reported a hazard, while researchers were less likely to report despite not being more or less likely to have received an injury. **CONCLUSIONS:** Although this study indicates there are differences in an organisations hazard reporting based on demographics and prior injury occurrence further research is required to evaluate the impact across other organisations and sectors

Dauth C and Toomet O. On government-subsidized training programs for older workers. Labour. 2016; 30(4):371-392.

<http://dx.doi.org/10.1111/labr.12082>

Esquirol Y, Niezborala M, Visentin M, Leguevel A, Gonzalez I, and Marquie JC. Contribution of occupational factors to the incidence and persistence of chronic low back pain among workers: results from the longitudinal VISAT study. Occupational and Environmental Medicine. 2017; 74(4):243-251.

<http://dx.doi.org/10.1136/oemed-2015-103443>

Abstract: **OBJECTIVE:** Among the aetiological factors of chronic low back pain (CLBP), occupational factors are often suspected, but their contribution remains to be ascertained. This study aimed to determine the impact of a wide range of occupational factors on the incidence and persistence of CLBP. **METHOD:** From the VISAT (Vieillessement SAnte Travail) study, 1560 workers were examined at baseline and 5 years later. CLBP was defined as having low back pain or specific treatment for at least 6 months. Participants newly affected with CLBP and those with persistent CLBP at follow-up were distinguished. In addition to individual factors, a broad panel of occupational factors were analysed, covering employment, physical, organisational and psychosocial factors. Multivariate analyses were used to determine predictive factors of incidence and persistence of CLBP. Receiver operating characteristic (ROC) curves were performed to analyse the contribution of occupational factors. **RESULTS:** 22.6% of participants without any CLBP initially presented with CLBP 5 years later, while 53.7% of participants with CLBP at baseline had CLBP at the second collection. Carrying

heavy loads, the lack of recognition of completed work and productivity-related income predicted a higher risk of incidence of CLBP. However, no significant association between occupational factors and the risk for persistence of CLBP was observed, while the risk was multiplied by two for history of depression and rheumatological events. ROC curves confirmed the significant contribution of occupational factors to incidence of CLBP. CONCLUSIONS: Occupational factors played a pivotal role in the incidence of CLBP, while individual factors were the main determinants of persistence of CLBP

Gallagher S and Schall MC, Jr. Musculoskeletal disorders as a fatigue failure process: evidence, implications and research needs. *Ergonomics*. 2017; 60(2):255-269.

<http://dx.doi.org/10.1080/00140139.2016.1208848>

Abstract: Mounting evidence suggests that musculoskeletal disorders (MSDs) may be the result of a fatigue failure process in musculoskeletal tissues. Evaluations of MSD risk in epidemiological studies and current MSD risk assessment tools, however, have not yet incorporated important principles of fatigue failure analysis in their appraisals of MSD risk. This article examines the evidence suggesting that fatigue failure may play an important role in the aetiology of MSDs, assesses important implications with respect to MSD risk assessment and discusses research needs that may be required to advance the scientific community's ability to more effectively prevent the development of MSDs. Practitioner Summary: Evidence suggests that musculoskeletal disorders (MSDs) may result from a fatigue failure process. This article proposes a unifying framework that aims to explain why exposure to physical risk factors contributes to the development of work-related MSDs. Implications of that framework are discussed

Howard KJ, Castaneda RA, Gray AL, Haskard-Zolnierok KB, and Jordan K. Psychosocial factors related to functional restoration treatment completion and return-to-function for patients with chronic disabling occupational musculoskeletal disorders. *Journal of Occupational & Environmental Medicine*. 2017; 59(3):320-326.

<http://dx.doi.org/10.1097/JOM.0000000000000953>

Abstract: OBJECTIVE: The aim of this study was to identify demographic and psychosocial variables associated with successful completion of a functional restoration program and return-to-function within 3 months of treatment completion. METHODS: Three hundred seven patients admitted to the functional restoration program were evaluated for completion status and 200 patients with valid data were assessed for 3-month return-to-function status following completion. Psychosocial and functional status was assessed at baseline. RESULTS: Key factors associated with program completion included lower perceived disability, lower pain, lower functional impairment, and lower fear avoidance. Factors associated with 3-month return-to-function included lower perceived disability, lower depression, greater belief that pain is not associated

with impairment, and higher quality of life. CONCLUSIONS: Psychosocial and functional factors contribute to both functional restoration completion and 3-month return-to-function outcomes.

Jones W, Haslam R, and Haslam C. What is a 'good' job? Modelling job quality for blue collar workers. *Ergonomics*. 2017; 60(1):138-149.

<http://dx.doi.org/10.1080/00140139.2016.1165870>

Abstract: This paper proposes a model of job quality, developed from interviews with blue collar workers: bus drivers, manufacturing operatives and cleaners (n = 80). The model distinguishes between core features, important for almost all workers, and 'job fit' features, important to some but not others, or where individuals might have different preferences. Core job features found important for almost all interviewees included job security, personal safety and having enough pay to meet their needs. 'Job fit' features included autonomy and the opportunity to form close relationships. These showed more variation between participants; priorities were influenced by family commitments, stage of life and personal preference. The resulting theoretical perspective indicates the features necessary for a job to be considered 'good' by the person doing it, whilst not adversely affecting their health. The model should have utility as a basis for measuring and improving job quality and the laudable goal of creating 'good jobs'. **Practitioner Summary:** Good work can contribute positively to health and well-being, but there is a lack of agreement regarding the concept of a 'good' job. A model of job quality has been constructed based on semi-structured worker interviews (n = 80). The model emphasises the need to take into account variation between individuals in their preferred work characteristics

Lamothe J and Guay S. Workplace violence and the meaning of work in healthcare workers: a phenomenological study. *Work*. 2017; 56(2):185-197.

<http://dx.doi.org/10.3233/WOR-172486>

Abstract: **BACKGROUND:** Workplace violence (WPV) has been associated with turnover intentions and reduced job satisfaction, yet the mechanisms behind such associations are still nebulous. Studying the way people make sense of their work in the context of WPV could lead to a better understanding of its consequences. **PURPOSE:** The objective of this exploratory study is to identify key features of meaning of work (MOW) in a group of healthcare workers and explain how these features can change following an act of WPV. **METHODS:** Researchers recruited 15 healthcare workers (11 women - 4 men) who had previously been the victim of a serious physical or sexual assault by a patient. A phenomenological approach was used. **RESULTS:** Two main themes were identified: MOW and relationships with others and MOW and relationship with the self. WPV might have the potential to trigger negative changes in the way some workers perceive their colleagues, their patients and their organisation. It can also interfere with their sense of self-accomplishment; all workers however, were still able to find positive meaning in 'contribution' and 'autonomy'. **CONCLUSION:** WPV has the potential to change certain aspects of MOW that could help explain

why WPV is associated with lowered job satisfaction, compassion fatigue, and higher turnover. Also, finding meaning through contribution and autonomy can be a form of resilience

Lin YP, Lin CC, Chen MM, and Lee KC. Short-Term efficacy of a "sit less, walk more" workplace intervention on improving cardiometabolic health and work productivity in office workers. Journal of Occupational & Environmental Medicine. 2017; 59(3):327-334.

<http://dx.doi.org/10.1097/JOM.0000000000000955>

Abstract: OBJECTIVE: The aim of this study was to test the short-term efficacy of the Sit Less, Walk More (SLWM) workplace intervention. METHODS: This was a quasi-experimental design. A total of 99 office workers from two workplaces participated in this study. The 12-week intervention included five components: monthly newsletters, motivational tools, pedometer challenge, environmental prompts, and walking route. The comparison group received monthly newsletters only. RESULTS: Generalized estimating equation analyses showed that the intervention group demonstrated significant improvements in weight ($P = 0.029$), waist circumference ($P = 0.038$), diastolic blood pressure ($P < 0.001$), walking ($P < 0.001$), moderate-intensity physical activity ($P = 0.014$), and total physical activity ($P = 0.003$) relative to the comparison group. A significant improvement in lost-productivity was observed in both groups ($P = 0.003$ to 0.008).

CONCLUSIONS: The SLWM workplace intervention can improve worker health and lost-productivity

McHugh G. Measuring dimensions of a healthy workplace climate: a user-friendly assessment tool. International Journal of Disability Management. 2017; 11(e1):1-11.

<http://dx.doi.org/10.1017/idm.2016.1>

McLellan DL, Williams JA, Katz JN, Pronk NP, Wagner GR, Caban-Martinez AJ, Nelson CC, and Sorensen G. Key organizational characteristics for integrated approaches to protect and promote worker health in smaller enterprises. Journal of Occupational & Environmental Medicine. 2017; 59(3):289-294.

<http://dx.doi.org/10.1097/JOM.0000000000000949>

Abstract: OBJECTIVE: The aim of this study was to investigate relationships between worksite organizational characteristics (size, industrial sector, leadership commitment, and organizational supports) and integrated approaches to protecting and promoting worker health implemented in smaller enterprises. METHODS: We analyzed web-based survey data of Human Resource Managers at 114 smaller enterprises (<750 employees) to identify organizational factors associated with levels of integrated approaches among their worksites.

RESULTS: The companies' mean integration score was 13.6 (SD = 9.6) of a possible 44. In multivariate analyses, having a safety committee ($P = 0.035$) and top leadership support for health promotion (HP) ($P = 0.004$) were positively associated with higher integration scores. CONCLUSIONS: Smaller enterprises

in one U.S. region have relatively low levels of implementing integrated safety and promotion approaches. Having a safety committee and leadership support for HP may be important contributors to implementing integrated approaches in smaller enterprises

Munch Nielsen C, Gupta N, Knudsen LE, and Holtermann A. Association of objectively measured occupational walking and standing still with low back pain: a cross-sectional study. *Ergonomics*. 2017; 60(1):118-126.

<http://dx.doi.org/10.1080/00140139.2016.1164901>

Abstract: OBJECTIVES: This cross-sectional study investigated the association of objectively measured walking and standing still time at work with low back pain (LBP) intensity among blue-collar workers. DESIGN: A cross-sectional study. METHODS: 187 workers attached two accelerometers for diurnal standing still and walking measurements, which were categorised using tertiles. Workers' self-reported LBP intensity (scale 0-9) was categorised into low (0-5) and high pain (6-9). RESULTS: Of the 187 workers, 17% reported a high level of LBP. Results of the multi-adjusted logistic regression analysis demonstrated a negative association between walking and high LBP intensity (OR 0.24 CL 95% 0.07 to 0.79). The results between standing still and high LBP intensity were mixed and non-significant. CONCLUSION: Blue-collar workers who walk more at work tend to have low LBP. These results should be verified using objective measures in a prospective design. Practitioner Summary: Most studies on the association of occupational walking and standing still with LBP have used poor self-reported measures. This study investigated the association of objectively measured time spent walking and standing still at work with LBP among blue-collar workers. A significant negative association between walking and LBP was found. However, because of the cross-sectional design, these results should be further investigated in prospective studies

Palali A and van Ours JC. Workplace accidents and workplace safety: on under-reporting and temporary jobs. *Labour*. 2017; 31(1):1-14.

<http://dx.doi.org/10.1111/labr.12088>

Salminen S, Perttula P, Hirvonen M, Perkiö-Makela M, and Vartiainen M. Link between haste and occupational injury. *Work*. 2017; 56(1):119-124.

<http://dx.doi.org/10.3233/WOR-162471>

Abstract: BACKGROUND: It is claimed that haste has increased in modern work life. Only a few studies on professional drivers show that haste increases the risk of occupational injury. OBJECTIVE: The aim of this study was to examine the relationship between haste and occupational injury in a large, representative sample of Finnish employees. METHODS: The material comes from the Finnish National Work and Health, which have been carried every three years since 1977. The final study group included 12 926 currently working employees, aged 25 to 64. The data were collected through computer-assisted telephone interviews (CATI). RESULTS: Employees who worked in haste rather or very often (25%) were involved in occupational injuries significantly more often than

those working in haste less often (8%, $p < 0.001$). Constant interruptions increased the risk of occupational injury (OR = 12.06, 95% CI 8.48 to 17.16). Experiencing very much stress at work was also connected to occupational injury (OR = 2.80, 95% CI 1.13 to 6.95). Feeling negative emotions at work was related to haste (OR = 3.53, 95% CI 1.54 to 8.11). CONCLUSIONS: This study showed a correlation between haste and occupational injuries. It focused on the participants' need to hurry in order to get their job finished. However, the way in which different individuals experienced haste varied

Schmidt L, Sjostrom J, and Antonsson AB. Is ownership the decisive factor in collaborations between occupational health services and client companies? *Work*. 2017; 56(2):309-318.

<http://dx.doi.org/10.3233/WOR-172498>

Abstract: BACKGROUND: Swedish employers are required to use external resources such as Occupational Health Services (OHS providers) if their own knowledge of occupational health and safety is insufficient. Some large employers have their own in-house OHS units but it is more common to engage the services of an external provider. However, no studies have been carried out from a critical perspective regarding how ownership of the OHS provider is related to a successful collaboration with client companies. OBJECTIVES: This study explores the extent to which the six key factors for a successful collaboration are related to ownership and seeks to identify the challenges that the different models of ownership pose. METHODS: Interviews with 15 client companies and their OHS providers were conducted in order to identify key factors in achieving a successful collaboration with an OHS provider. This study utilizes existing data to identify challenges related to ownership. RESULTS: Two key factors were identified with challenges related to ownership of the OHS provider: The importance of having a long-term perspective when building a relationship; and ensuring that collaboration extends beyond the client's HR Department to the various organisational levels of the company. CONCLUSIONS: Whatever form the ownership of an OHS provider may take, each comes with its own specific set of challenges that must be managed in order to achieve a successful collaboration with the client company

Sundar V. Operationalizing workplace accommodations for individuals with disabilities: a scoping review. *Work*. 2017; 56(1):135-155.

<http://dx.doi.org/10.3233/WOR-162472>

Abstract: BACKGROUND: The provision of workplace accommodations is a proven strategy in supporting individuals with disabilities at work. Accommodations include a wide range of supports and strategies that are not very well defined beyond the Americans with Disabilities Act in the United States. Understanding the landscape of accommodations is important to measure the impact of programs that support employment of individuals with disabilities. OBJECTIVE: To conduct a scoping review and thematic analysis of research literature to identify how workplace accommodations are operationalized and to

identify knowledge gaps in its conceptualization. **METHODS:** Keywords searches were conducted in seven electronic databases. Title, abstract, and full text screening was conducted followed by a thematic analysis of the content to identify how workplace accommodations are operationalized. **RESULTS:** Overall, 47 studies were selected for review. 433 different types of accommodations were identified, of which assistive technology and specialized equipment represented the most frequently reported type of accommodation (40%). A very small percentage of studies included policy changes (9%) and human assistance (5%) as an accommodation strategy. **CONCLUSIONS:** This scoping review aims to clarify how accommodations are operationalized in the research literature. Key knowledge gaps identified include the systematic exclusion of certain types of supports or disability types

Vikne H, Jebens E, Elka S, Knardahl S, and Veiersted KB. Working suspended in a harness rig: a comparative study of musculoskeletal health complaints in rope access technicians and controls. *Work*. 2017; 56(2):291-300.

<http://dx.doi.org/10.3233/WOR-172490>

Abstract: **BACKGROUND:** Rope access technique is an alternative method for gaining access to challenging work locations. There is limited knowledge about possible adverse effects of this technique on the workers' health. **OBJECTIVE:** To compare the frequency of bodily regions with pain in rope access technicians with craft workers and the working population in general. **METHODS:** The one-month prevalence of pain in the head, neck, distal upper extremities, lower back and lower extremities was recorded in rope access technicians (n = 95), "craft workers" (n = 289) and "all occupations" (n = 1563). **RESULTS:** An increased prevalence of pain in the neck, distal upper extremities and lower extremities was found for the rope access technicians compared with all occupations (p-values <0.01). Compared with the craft workers, relatively more rope access technicians reported pain in the lower extremity region (p <0.01) while the groups were similar for the other body regions. **CONCLUSIONS:** The prevalence of pain in the lower extremities was higher in rope access technicians compared with craft workers, while no differences were found for other body regions. The increased prevalence of pain in the neck and distal upper extremities in the technicians compared with all occupations may therefore be related to the work tasks and not the access technique

Walker GH, Salmon PM, Bedinger M, and Stanton NA. Quantum ergonomics: shifting the paradigm of the systems agenda. *Ergonomics*. 2017; 60(2):157-166.

<http://dx.doi.org/10.1080/00140139.2016.1231840>

Abstract: A paradigm is an accepted world view. If we do not continually question our paradigm then wider trends and movements will overtake the discipline leaving it ill adapted to future challenges. This Special Issue is an opportunity to keep systems thinking at the forefront of ergonomics theory and practice.

Systems thinking prompts us to ask whether ergonomics, as a discipline, has been too timid? Too preoccupied with the resolution of immediate problems with industrial-age methods when, approaching fast, are developments which could render these operating assumptions an irrelevance. Practical case studies are presented to show how abstract systems problems can be tackled head-on to deliver highly innovative and cost-effective insights. The strategic direction of the discipline foregrounds high-quality systems problems. These are something the discipline is well able to respond to provided that the appropriate operating paradigms are selected. Practitioner Summary: High-quality systems problems are the future of the discipline. How do we convert obtuse sounding systems concepts into practical interventions? In this paper, the essence of systems thinking is distilled and practical case studies used to demonstrate the benefits of this new paradigm