IWH Research Alert
February 22, 2019

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Aas RW, Haveraaen LA, Brouwers EPM, and Skarpaas LS. Who among patients with acquired brain injury returned to work after occupational rehabilitation? The rapid-return-to-work-cohort-study. Disability and Rehabilitation. 2018; 40(21):2561-2570.
https://doi.org/10.1080/09638288.2017.1354234

Abstract: BACKGROUND: Acquired brain injury (ABI) is known to be severely disabling. On average, 40% of employees return to work (RTW) within two years after injury. There is, however, limited research on what might contribute to successful RTW. AIM: To examine factors that might impact the time-to first RTW for patients with ABI, participating in a RTW-program. METHODS: The study was designed as a cohort study of patients on sick leave due to mild or moderate ABI (n = 137). The mean age of the patients was 51 years, and 58% were men. The most common diagnoses were stroke (75%) and traumatic brain injury (12%). Data were collected through questionnaires, and combined with register data on sickness absence. Survival analyses were used to analyse the effect of different variables on time to first RTW (full or partial), at one- and two-year follow-up. RESULTS: Generally, women (HR = 0.447; CI: 0.239-0.283) had higher RTW-rates than men, and patients with non-comorbid impairments returned to work earlier than patients with multiple impairments. Although not statistically significant, receiving individual consultations and participating in group-sessions were generally associated with a delayed RTW at both follow-up-times. The only service-related factor significantly associated with delayed RTW was meetings with the social insurance office (HR = 0.522; CI: 0.282-0.965), and only at one-year follow-up. CONCLUSIONS: Women and patients with non-comorbid impairments returned to work earlier than men and patients with multiple impairments. There seems to be an association between intense and long-lasting

participation in the RTW program and prolonged time-to first-RTW, even after controlling for level of cognitive impairments and comorbidity. Implications for Rehabilitation Acquired brain injury (ABI) is known to be severely disabling, and persons with ABI often experience difficulties in regard to returning to work. This study provides information on prognostic factors that might contribute to return to work (RTW) for patients with acquired brain injury, both at the individual level, but also in regard to service and timing characteristics. Knowledge about such factors provide rehabilitation professionals with information about effective service components that might help patients with ABI to RTW, and thus makes it possible to adapt and adjust the services to the patient's situation. Furthermore, having more knowledge on factors that contribute to RTW gives clinics the opportunity to select patients that might benefit the most from these services, thereby making them more effective

Bagheri ZS, Patel N, Li Y, Morrone K, Fernie G, and Dutta T. Slip resistance and wearability of safety footwear used on icy surfaces for outdoor municipal workers. Work. 2019; 62(1):37-47.
https://doi.org/10.3233/WOR-182840
Abstract: BACKGROUND: Outdoor workers experience high injury rates in the winter due to slipping on ice and snow. Our testing program has demonstrated that most safety footwear does not provide adequate slip-resistance and/or comfort in icy conditions. OBJECTIVE: Our objective was to determine which of the most commonly worn safety footwear available to outdoor municipal workers in Toronto, Ontario, Canada would best prevent slips on icy surfaces and which models had good wearability. METHODS: We selected 45 of the most popular types of winter footwear worn by these workers and applied our Maximum Achievable Angle (MAA) test method to rate the slip-resistance of the footwear. A ten-point rating scale was used for recording participants' perceptions of wearability. The MAA test measured the steepest ice-covered incline that participants can walk up and down without experiencing a slip. RESULTS: Of the 45 types of footwear tested, only one model achieved an MAA score of 8 degrees that exceeded our cut-off for acceptable performance set at 7 degrees. Secondary measures of performance including thermal insulation; wearability and heaviness of footwear tested were also ranked. CONCLUSION: Our results demonstrate that footwear manufactures have the opportunity to differentiate their footwear by investing in slip-resistant outsole materials

Bell JL, Collins JW, and Chiou S. Effectiveness of a no-cost-to-workers, slip-resistant footwear program for reducing slipping-related injuries in food service workers: a cluster randomized trial. Scandinavian Journal of Work, Environment & Health. 2018; [epub ahead of print].
https://doi.org/10.5271/sjweh.3790 **[open access]**
Abstract: Objective This study evaluated the effectiveness of a no-cost-to-workers, slip-resistant footwear (SRF) program in preventing workers' compensation injury claims caused by slipping on wet or greasy floors. Methods

The study population was a dynamic cohort of food service workers from 226 school districts' kindergarten through 12th grade food service operations. A two-arm cluster randomized controlled study design was implemented, with school districts randomized to the intervention group receiving SRF. Data were analyzed according to the intent-to-treat principle. Logistic regression was used to analyze dichotomous response data (injured based on workers' compensation injury claims data, or not injured, for each month worked). Changes in slipping injury rates from baseline to post-intervention follow-up periods were compared between treatment groups. Results The probability of a slipping injury was reduced significantly in the intervention group, from a baseline measure of 3.54 slipping injuries per 10 000 worker-months to 1.18 slipping injuries per 10 000 worker-months in the follow-up period [adjusted odds ratio (OR adj) 0.33, 95% confidence interval (CI) 0.17-0.63]. In the control group, slipping injuries were 2.01 per 10 000 worker-months in the baseline, and 2.30 per 10 000 worker-months in the follow-up. The interaction between treatment group and time period (baseline or follow-up) indicated that the decline seen in the intervention group was significantly different than the increase seen in the control group (OR adj0.29, 95% CI 0.11-0.74, adjusted for age >55 years). Conclusions This study provides evidence for the effectiveness of a no-cost-to-workers SRF program in reducing slipping-related workers' compensation injury claims in food service workers

Bellon JA, Conejo-Ceron S, Cortes-Abela C, Pena-Andreu JM, Garcia-Rodriguez A, and Moreno-Peral P. Effectiveness of psychological and educational interventions for the prevention of depression in the workplace: a systematic review and meta-analysis. Scandinavian Journal of Work, Environment & Health. 2018; [epub ahead of print].
https://doi.org/10.5271/sjweh.3791   [open access]
Abstract: Objectives Psychological and educational interventions for the prevention of depression have a small-to-moderate effect. However, little is known about their effectiveness in the workplace. We aimed to evaluate the effectiveness of such interventions through a systematic review and meta-analysis of randomized controlled trials (RCT). Methods We searched PubMed, PsycINFO, EMBASE, CENTRAL, CIS-DOC and Open Grey for RCT. Search was supplemented with manual searches of reference lists of relevant meta-analyses and trials. We included RCT that assessed either the incidence of depression or the reduction of depressive symptoms, which excluded participants with baseline depression. Measurements were required to have been made using validated instruments and participants recruited in the workplace. Independent evaluators selected studies, evaluated risk bias (Cochrane Collaboration's tool) and extracted from RCT. The combined OR was estimated using the fixed-effects model. Heterogeneity was measured by I $(2)$and Cochrane's Q. Results Of the 1963 abstracts reviewed, 69 were selected for review in fulltext. Only three RCT met our inclusion criteria, representing 1246 workers from three different countries and continents. The combined odds ratio was 0.25 [95% confidence

interval (CI) 0.11-0.60, P=0.002]; I (2)=0% and Q=0.389 (P=0.823). The risk of bias was low in one RCT and moderate and high in the other two, respectively. Conclusion Psychological or educational interventions in the workplace may prevent depression, although the quality of evidence was low

Bosman LC, Roelen CAM, Twisk JWR, Eekhout I, and Heymans MW. Development of prediction models for sick leave due to musculoskeletal disorders. Journal of Occupational Rehabilitation. 2019; [epub ahead of print].
https://doi.org/10.1007/s10926-018-09825-y
Abstract: Purpose The aim of this study was to develop prediction models to determine the risk of sick leave due to musculoskeletal disorders (MSD) in non-sick listed employees and to compare models for short-term (i.e., 3 months) and long-term (i.e., 12 months) predictions. Methods Cohort study including 49,158 Dutch employees who participated in occupational health checks between 2009 and 2015 and sick leave data recorded during 12 months follow-up. Prediction models for MSD sick leave within 3 and 12 months after the health check were developed with logistic regression analysis using routinely assessed health check variables. The performance of the prediction models was evaluated with explained variance (Nagelkerke's R-square), calibration (Hosmer-Lemeshow test) and discrimination (area under the receiver operating characteristic curve, AUC) measures. Results A total of 376 (0.8%) and 1193 (2.4%) employees had MSD sick leave within 3 and 12 months after the health check. The prediction models included similar predictor variables (educational level, musculoskeletal complaints, distress, supervisor social support, work-home interference, intrinsic motivation, development opportunities, and work pace). The explained variances were 7.6% and 8.8% for the model with 3 and 12 months follow-up, respectively. Both prediction models showed adequate calibration and discriminated between employees with and without MSD sick leave 3 months (AUC = 0.761; Interquartile range [IQR] 0.759-0.763) and 12 months (AUC = 0.740; IQR 0.738-0.741) after the health check. Conclusion The prediction models could be used to determine the risk of MSD sick leave in non-sick listed employees and invite them to preventive consultations with occupational health providers

Brouwer S and Boot CRL. The Science and politics of work disability prevention. Scandinavian Journal of Work, Environment & Health. 2019; [epub ahead of print].
https://doi.org/10.5271/sjweh.3805   [open access]
Abstract: This book focusses on one of today's biggest social and labor market challenges: how to deal with the rising cost of illness and disability benefits across advanced economies. It reflects on the development and evaluation of activation-oriented work disability policies in 13 countries, aiming to tighten the inflow of benefit recipients and to maximize labor-force participation of people with disabling health conditions.

Burdorf A. Prevention strategies for sickness absence: sick individuals or sick populations? Scandinavian Journal of Work, Environment & Health. 2019; [epub ahead of print].
https://doi.org/10.5271/sjweh.3807   [open access]

Chambers AJ, Robertson MM, and Baker NA. The effect of sit-stand desks on office worker behavioral and health outcomes: a scoping review. Applied Ergonomics. 2019; 78:37-53.
https://doi.org/10.1016/j.apergo.2019.01.015

Chang J, Han S, AbouRizk SM, and Kanerva J. Stratified statistical analysis for effectiveness evaluation of frontline worker safety intervention: case study of construction steel fabrication. Safety Science. 2019; 115:89-102.
https://doi.org/10.1016/j.ssci.2019.01.030

Etuknwa A, Daniels K, and Eib C. Sustainable return to work: a systematic review focusing on personal and social factors. Journal of Occupational Rehabilitation. 2019; [epub ahead of print].
https://doi.org/10.1007/s10926-019-09832-7

Abstract: Purpose A systematic review was conducted to evaluate the impact of important personal and social factors on sustainable return to work (RTW) after ill-health due musculoskeletal disorders (MSDs) and common mental disorders (CMDs) and to compare the effects of these personal and social factors across both conditions. Sustainable RTW is defined as a stable full-time or part-time RTW to either original or modified job for a period of at least 3 months without relapse or sickness absence re-occurrence. Methods A literature search was conducted in 13 databases and 79 studies were selected for the review, of which the methodological design was graded as very high, high and low quality. Results The most consistent evidence for achieving sustainable RTW for both MSDs and CMDs was from support from line managers or supervisors and co-workers, positive attitude, self-efficacy, young age and higher education levels. Job crafting, economic status, length of absence and job contract/security showed promising results, but too few studies exist to draw definite conclusions. Results regarding gender were inconsistent. Conclusions This review demonstrates that a variety of personal and social factors have positive and negative influences on sustainable RTW. We suggest that the social environment and how it interrelates with personal factors like attitudes and self-efficacy should be studied in more detail in the future as the inter-relationship between these factors appears to impact positively on sustainable RTW outcomes. Areas for future research include more high-quality studies on job crafting, economic status/income, length of absence, job contract/security and gender

Masi D, Cagno E, Farne S, and Hasle P. Design of OSH interventions: a model to improve their actual implementation. Safety Science. 2019; 115:51-65.
https://doi.org/10.1016/j.ssci.2019.01.009

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Oehling J and Barry DJ. Using machine learning methods in airline flight data monitoring to generate new operational safety knowledge from existing data. Safety Science. 2019; 114:89-104.
https://doi.org/10.1016/j.ssci.2018.12.018

Sanders T, Wynne-Jones G, Nio OB, Artus M, and Foster N. Acceptability of a vocational advice service for patients consulting in primary care with musculoskeletal pain: a qualitative exploration of the experiences of general practitioners, vocational advisers and patients. Scandinavian Journal of Public Health. 2019; 47(1):78-85.
https://doi.org/10.1177/1403494817723194

Abstract: AIMS: Using qualitative interviews, this study explored the experiences of GPs, vocational advisers and patients towards a new vocational advice (VA) service in primary care. METHODS: This study was nested within the Study of Work and Pain (SWAP) cluster randomised controlled trial. The SWAP trial located a VA service within three general practices in Staffordshire. Interviews took place with 10 GPs 12 months after the introduction of the VA service, four vocational advisers whilst the VA service was running and 20 patients on discharge from the VA service. The data were analysed using the constant comparative method, which is a variation of grounded theory. RESULTS: The key factors determining the acceptability and perceived effectiveness of the VA service from the perspective of the three groups of stakeholders were (1) the timing of referrals to the VA, (2) the perceived lack of patient demand for the service and (3) role uncertainty experienced by VAs. CONCLUSIONS: Early vocational intervention may not be appropriate for all musculoskeletal patients with work difficulties. Indeed, many patients felt they did not require the support of a VA, either because they had self-limiting work difficulties and/or already had support mechanisms in place to return to work. Future VA interventions may be better implemented in a targeted way so that appropriate patients are identified with characteristics which can best be addressed by the VA service

Suni JH, Kolu P, Tokola K, Raitanen J, Rinne M, Taulaniemi A, et al. Effectiveness and cost-effectiveness of neuromuscular exercise and back care counseling in female healthcare workers with recurrent non-specific low back pain: a blinded four-arm randomized controlled trial. BMC Public Health. 2018; 18(1):1376.
https://doi.org/10.1186/s12889-018-6293-9   [open access]

Abstract: BACKGROUND: Registered healthcare workers worldwide have a high prevalence of work-related musculoskeletal disorders, particularly of the back. Multidisciplinary interventions among these workers have improved fear avoidance beliefs, but not low back pain (LBP) and related sickness absences, cost-effectiveness studies are scarce. Our purpose was to investigate the effectiveness and cost-effectiveness of three intervention-arms (combined neuromuscular exercise and back care counselling or either alone) compared with non-treatment. METHODS: We randomly assigned female healthcare

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workers with recurrent non-specific LBP to one of four study-arms: Combined neuromuscular exercise and back care counseling; Exercise; Counseling; and no intervention Control. We assessed the effectiveness of the interventions on intensity of LBP, pain interfering with work and fear avoidance beliefs against the Control, and calculated the incremental cost-effectiveness ratios for sickness absence and QALY. RESULTS: We conducted three sub-studies in consecutive years of 2011, 2012, and 2013 to reach an adequate sample size. All together 219 women were randomized within each sub-study, of whom 74 and 68% had adequate questionnaire data at 6 and 12 months, respectively. No adverse events occurred. Compliance rates varied between intervention-arms. After 12 months, the Combined-arm showed reduced intensity of LBP (p = 0.006; effect size 0.70, confidence interval 0.23 to 1.17) and pain interfering with work (p = 0.011) compared with the Control-arm. Work-related fear of pain was reduced in both the Combined- (p = 0.003) and Exercise-arm (p = 0.002). Physical activity-related fear was reduced only in the Exercise-arm (p = 0.008). During the study period (0-12 months) mean total costs were lowest in the Combined-arm (euro476 vs. euro1062-euro1992, p < 0.001) as were the mean number of sickness absence days (0.15 vs. 2.29-4.17, p = 0.025). None of the intervention-arms was cost-effective for sickness absence. There was 85% probability of exercise-arm being cost-effective if willing to pay euro3550 for QALY gained. CONCLUSIONS: Exercise once a week for 6 months combined with five sessions of back care counseling after working hours in real-life settings effectively reduced the intensity of LBP, work interference due to LBP, and fear of pain, but was not cost-effective. TRIAL REGISTRATION: ClinicalTrials.gov, NCT01465698 November 7, 2011 (prospective)

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