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CHANGES OF MUSCULOSKELETAL SYMPTOMS, ERGONOMIC RISK, JOB STRESS, AND WORK INTENSITY OVER 12 YEARS IN A AUTOMOBILE COMPONENT FACTORY

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Introduction The purpose of this study is to evaluate the relationship between musculoskeletal disorder (MSDs) symptoms and risk factors of MSDs in Korean automobile component manufacturers across times.

Methods This study has been tracking blue collar workers in a factory via 5 consecutive surveys from 2004 to 2016. A questionnaire survey was conducted on all of the blue collar workers at the target workplace. About 10% of the blue collar workers has been selected and asked to participate in field surveys. Ergonomic risk factors were subdivided into categories such as musculoskeletal burden, ANSI checklist, ACGIH TLV for Hand activity, RULA and etc. Job stress was estimated by Korean Occupational Stress Scale (KOSS). Work intensity was classified into three categories; absolute, relative work intensity and work flexibility.

Result The prevalence of MSDs according to criteria 1(P1) decreased from 89.3% in 2010 to 79.5% in 2016. The prevalence of MSDs according to criteria 2, 3, and 4 (P2, P3, and P4) also decreased. Aspect of ergonomic risk factors, the longer the exposure time to musculoskeletal burdening work, the higher the prevalence of MSDs. First grade of ANSI checklist increased by time while those of 2nd and 3rd decreased. Overall, ergonomic risk factor has generally declined because of working environment improvement. In workplace stress assessment, the high job stress group had increased until 2010 then had decreased since 2010. In subcategories of KOSS, physical environment were high in MSD symptom group. In work intensity survey, symptom positive group had consistently scored high in all absolute and relative work intensity and work flexibility. Whereas both absolute and relative work intensity decreased since 2010, work flexibility increased in 2016 from 2013.

Discussion This study shows the effects of multiple risk factors on MSD symptoms. In depth analysis considering repetitive measure of longitudinal data will be shown.

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WORK-RELATED RISK FACTORS FOR LUMBOSACRAL RADICULOPATHY: SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction Clinicians need to know whether lumbosacral radiculopathy (LRS) can be attributed to work. Therefore the association between work-related risk factors and clinically assessed LRS has to be established.

Methods A systematic review was performed using Pubmed and Embase until March 2017. Inclusion criteria were that LRS was diagnosed by a clinician and exposed workers were compared to workers less or not exposed. A quality assessment and a meta-analysis were performed.

Result The search resulted in 7350 references and 24 studies fulfilled the inclusion criteria: 19 studies were rated as having a high risk of bias and five as having a low risk of bias. The median number of LRS participants per study were 209 (IQR 124–504). The meta-analysis revealed significant associations with heavy physically demanding work (OR=2.0, 95% CI: 1.5 to 2.8), bending and/or twisting of the trunk (OR=2.4, 95% CI: 1.7 to 3.6), and lifting and carrying in combination with bending and/or twisting of the trunk (OR=2.8, 95% CI: 2.2 to 3.7). Professional driving and sitting were not significantly associated with LRS.

Discussion Evidence is available that LRS can be classified as a work-related disease depending on the level of exposure to bending of the trunk and/or lifting and carrying in physically demanding work. A policy to prevent LRS should focus on work-related risk factors since no other modifiable risk factors are known.

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CONSTRUCTION ERGONOMICS: A SUPPORT WORK MANUFACTURER'S PERCEPTIONS AND PRACTICES

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Introduction Ergonomics hazards in construction include ergonomic stresses such as bending, lifting, and repetitive movement and vibration; environmental stresses such as heat, sun, noise, poor illumination, and wet or damp work; skin and respiratory exposure to chemicals and dust, as well as mental stress. In South Africa, these may add to the health problems experienced by construction workers because of poor community health, substance abuse, and inadequate health services. The erection and dismantling of support work are major activities on projects that entail a reinforced concrete structure, and present a range of ergonomics challenges.

Methods A self-administered questionnaire survey was conducted among staff of a support work manufacturer and supplier attending two workshops presented by the author to determine, inter alia, the importance of project parameters, and ergonomics during the six project stages, the frequency at which their organisation considers ergonomics relative to various occasions, and temporary works design related aspects, and the extent to which temporary works design related aspects impact on ergonomics.

Results Findings include: ergonomics is important in general, and during most of the seven project stages; ergonomics is considered relative to most occasions, especially during detailed design, and relative to most temporary works design related aspects, and there is a high level of awareness in terms of the extent to which temporary works design related aspects impact on ergonomics.

Discussion The findings indicate that there is a higher level of awareness regarding ergonomics among the sample stratum than the general built environment population, especially permanent works designers. However, the source of ergonomics knowledge is informal as opposed to formal, and the respondents' self-rating of their ergonomics, construction ergonomics,

and designing for construction ergonomics skills, resonates with the findings of other research. There is a need for construction ergonomics to be embedded in tertiary built environment programmes, ergonomics continuing professional development (CPD), a construction industry ergonomics standard, and ergonomics practice notes.

817 SECONDARY PREVENTION OF LOW BACK PAIN IN THE OCCUPATIONAL HEALTH: EFFECTIVENESS AND COST-EFFECTIVENESS OF AN EARLY MANAGEMENT PROGRAM

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Introduction Low back pain (LBP) is one of the leading causes of disability all over the world. We performed a secondary prevention program of LBP among employees that reported mild or moderate level low back symptoms in a large forestry industry complex.

Methods First, respondents of an employee survey (n=2480; response rate 71%) were eligible into this study, if they fulfilled pre-defined low back (LB) specific risk assessment criteria. Secondly, eligible employees (n=505, 66% males, 45 y) were divided into two sub-cohorts, 'Mild' and 'Moderate' LBP, according to recent LB pain intensity. Sub-cohort Mild (n=181, 47 refused) was randomised into two intervention arms, both receiving back book information and the other arm also additional face-to-face patient information. Sub-cohort Moderate (n=126, 17 refused) was randomised into three groups, receiving either one of two active exercise interventions or LB specific advice from their occupational health (OH) physician. All intervention arms in Mild and Moderate were controlled by their respective natural course (NC) of LBP groups (n=83 and n=50, respectively). Primary outcomes were disability (Roland-Morris Disability Questionnaire (0–18) and Oswestry Disability sum index, 0–50), LB pain (Visual Analogue Scale, 0–100 mm) and total sickness absence days (SA).

Results Mild: Compared to NC, pain, disability and SA decreased after both interventions and back book information alone was also cost-effective. Moderate: Compared to NC, pain and disability decreased after both active interventions but SA did not. OH physician's advice was not effective. Interventions in Moderate were not cost-effective in two years.

Discussion Simple patient information was effective and also cost-effective in mild LBP. Active LB specific interventions were effective but not cost-effective after two years in moderate LBP. OH physician's advice was not effective. Population based LB specific risk assessment seems feasible. In general, proactive management of LBP is recommendable in the OH setting.

852 WORK-BREAK SCHEDULES FOR PREVENTING MUSCULOSKELETAL DISORDERS IN WORKERS – A COCHRANE REVIEW

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Introduction Repetitive and monotonous work, especially manual work, is very common in modern industrial operations, resulting in an increased risk of musculoskeletal disorders. It is therefore important to find an appropriate intervention counteracting or preventing the repetitive and monotonous character of work tasks, for example by work-breaks. This review aims to assess the effectiveness of work-breaks (compared to no work-breaks or regular work-break schedules) for preventing work-related musculoskeletal disorders in workers. A work-break can be defined as any scheduled work-interruption that is not related to work, which includes the following characteristics: frequency (amount, timing), duration, or type (e.g. active or passive).

Methods We will search the literature (e.g., CENTRAL, PubMed) for randomised, quasi-randomised, and cluster-randomised studies without language restrictions. We will include trials that have enrolled adult workers without musculoskeletal symptoms and that have assessed one or more of the following work-break interventions: changes in break duration, frequency, timing, or type. Two review authors will independently consider retrieved records for eligibility and extract the data.

Result The extracted data will be summarised and two review authors will independently assess the risk of bias for each study regarding random sequence allocation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, and selective outcome reporting (criteria as outlined in the Cochrane Handbook). The meta-analysis will initially be performed including all studies. Thereafter a sensitivity analysis confined to trials at low risk of bias will be conducted. The heterogeneity of the results of included studies will be assessed by visual inspection of the forest plots and consideration of trial characteristics, e.g. work-break characteristics.

Discussion The results of this Cochrane Review will provide insights into the effectiveness of work-break interventions and provide direction for optimising current prevention approaches and help prioritise future fields of research.

893 REDUCTION OF LEG SWELLING BY COMPRESSION STOCKINGS WITH DIFFERENT COMPRESSION INTENSITIES DURING A TWO HOUR STANDING EXPOSURE – A PILOT STUDY

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Introduction Lower leg swelling is considered to be a risk factor of venous disorders among workers exposed to prolonged standing. Compression stockings might be effective in reducing lower leg swelling; however, little is known about the effect of different compression intensities. The aim of this study was