

Deltreil G, Tardive P, Graczyk P, Escobar-Bach M, Descatha A

How to use biomechanical job exposure matrices (JEM) on job history for musculoskeletal disorders? New mathematical method on the example of severe knee pain

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ABSTRACT

INTRODUCTION - Musculoskeletal disorders related to work might follow with a cumulative effect during working life, such as degenerative disorders like osteoarthritis and knee pain. Biomechanical job exposure matrices (JEMs) are become more available, and before optimizing models using statistical methods, we aimed to compare if low level of exposure with high duration is equivalent to high level of exposure with low duration in the example on severe knee pain and carrying loads. **METHODS** - The CONSTANCES cohort is used with clean data from 66553 subjects, active at their inclusion with work trajectory coded. Participants' sex, age at inception, body mass index, known inflammatory disease of the joints, leisure activity and depression, and sever knee pain as outcome. "JEM Constances" was used with 0-4 for intensity/frequency of heavy lifting ("lifting") and duration (years). Using advanced logistic models, odds ratios of the highest quartile for the duration with low intensity/frequency and the highest quartile for the intensity/frequency with low duration were studied. **RESULTS** - The mean age is 49 years at inception with 46% of women, 21 years of employment. The OR of the highest quartile for the duration and low intensity/frequency is not significant for both exposures, whereas intensity/duration is significant for every duration. A dose response relationship was found for lifting for medium and long duration. **CONCLUSION** - Weighting intensity/frequency over duration seemed important. However, it will be necessary to compare different model with appropriate statistics, as well as other outcome and time to occurrence.

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