

## Comparison of Five Methods Used To Determine Low Back Disorder Risk in a Manufacturing Environment

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**Study Design.** Five methods for quantifying work-related low back disorder (LBD) risk were used to assess 178 autoworkers from 93 randomly selected production jobs.

**Objective.** To determine if five occupational LBD risk evaluation methods yielded similar assessments of manual material handling tasks.

**Summary of Background Data.** Several techniques are available for quantifying LBD risk in the workplace and are used in industry for job evaluation and redesign. It is unknown whether the methods yield similar results.

**Methods.** The five job evaluation methods were the 1993 National Institute for Occupational Safety and Health model, the Static Strength Prediction Program, the Lumbar Motion Monitor model, and two variations of the United Auto Workers (UAW)-General Motors Ergonomic Risk Factor Checklist. These methods were selected because they represent common practice within the automotive industry, the result of governmental efforts to protect the workforce, or models thought to be the most scientifically advanced.

**Results.** Intercorrelations between methods ranged between 0.21 and 0.80. Pairwise analysis of risk group classifications identified biases on the part of the National Institute for Occupational Safety and Health equation, which considered jobs to be of higher risk relative to other methods, and on the part of the Static Strength Prediction Program, which considered nearly all the jobs sampled to be low risk.

**Conclusions.** There is little agreement among the five quantitative ergonomic analysis methods used. In part, this may be because of their differential focus on acute versus cumulative trauma, thereby suggesting that greater consideration needs to be given to the underlying causes of LBD within a facility before selecting an ergonomic evaluation method. [Key words: ergonomics, low back disorder, low back pain, Lumbar Motion Monitor, National Institute for Occupational Safety and Health, prevention, risk factors, Static Strength Prediction Program]  
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