SPECIAL ISSUE: EPIDEMIOLOGICAL STUDIES OF WORKPLACE MUSCULOSKELETAL DISORDERS

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This article describes a prospective cohort study using the revised NIOSH lifting equation to predict risk of low-back pain (LBP). Both peak lifting index (PLI) and peak composite lifting index (PCLI) were significantly associated with increased risk of LBP. Both PLI and PCLI are useful metrics for estimating job physical exposure.

29 Cumulative Spine Loading and Clinically Meaningful Declines in Low-Back Function
William S. Marras, Sue A. Ferguson, Steven A. Lavender, Riley E. Splittstoesser, and Gang Yang
The objective of this study was to assess the role of cumulative spine loading measures in the development of a clinically meaningful decline in low-back function. Cumulative rest time was an important factor for predicting an individual's risk for a clinically meaningful decline in low-back function.

44 The NIOSH Lifting Equation and Low-Back Pain, Part 2: Association With Seeking Care in the BackWorks Prospective Cohort Study
Arun Garg, Jay M. Kapellusch, Kurt T. Hegmann, J. Steven Moore, Sruthi Boda, Parag Bhoyar, Matthew S. Thiese, Andrew Merryweather, Gwen Deckow-Schaefer, Donald Bloswick, and Elizabeth J. Malloy
This article describes a prospective cohort study using the revised NIOSH lifting equation to predict the risk of seeking care for low-back pain (SC-LBP). Peak lifting index (PLI) and peak cumulative lifting index (PCLI) were significantly associated with increased risk of SC-LBP. PLI and PCLI are useful metrics for estimating exposure to biomechanical stressors.

58 Are Workers Who Leave a Job Exposed to Similar Physical Demands as Workers Who Develop Clinically Meaningful Declines in Low-Back Function?
Sue A. Ferguson, William S. Marras, Steven A. Lavender, Riley E. Splittstoesser, and Gang Yang
The objective was to quantify differences in exposures for those who stayed on a job (survivors) versus those who left the job (turnover). Of the job exposure measures, 6% were significantly different between turnover employees and cases compared with 69% between turnover employees and noncases.

73 Efficacy of the Revised NIOSH Lifting Equation to Predict Risk of Low-Back Pain Associated With Manual Lifting: A One-Year Prospective Study
Ming-Lun Lu, Thomas R. Waters, Edward Krieg, and Dwight Werren
Data suggest that the composite lifting index (CLI) > 2 may be useful for predicting self-reported low-back pain. More research is needed to clarify the exposure-response relationship between the CLI and low-back pain.

86 Low-Back Pain Ratings for Lifetime, 1-Month Period, and Point Prevalences in a Large Occupational Population
This cross-sectional study reports lifetime low-back pain prevalence, 1-month period prevalence, and point prevalence stratified by pain ratings. Lifetime prevalence, 1-month period prevalence, and point prevalence for any low-back pain were 63.4%, 44.0%, and 20.8% respectively. Higher pain rating thresholds yield lower prevalence measures and may impact assessments of risk factors.

98 The Strain Index and ACGIH TLV for HAL: Risk of Trigger Digit in the WISTAH Prospective Cohort
Jay M. Kapellusch, Arun Garg, Kurt T. Hegmann, Matthew S. Thiese, and Elizabeth J. Malloy
The Strain Index (SI) and the ACGIH Threshold Limit Value (TLV) for hand activity level (HAL) were used to predict risk of trigger digit in a prospective cohort. Using survival analysis, we found that both the SI and TLV for HAL were associated with increased risk of trigger digit while adjusting for relevant demographic and medical history factors.
A Prospective Study of Musculoskeletal Outcomes Among Manufacturing Workers: I. Effects of Physical Risk Factors
Fredric Gerr, Nathan B. Fethke, Linda Merlino, Dan Anton, John Rosecrance, Michael P. Jones, Michele Marcus, and Alysha R. Meyers

Previous studies have produced inconsistent associations between physical exposures and risk of musculoskeletal symptoms and disorders (MSDs). In this prospective study of manufacturing workers, modest risk elevations were observed between several physical factors and MSDs. The strongest associations were observed when physical exposures were characterized with the Strain Index.

Evaluation of Alternate Category Structures for the Strain Index: An Empirical Analysis
Alysha R. Meyers, Fredric Gerr, and Nathan B. Fethke

Empirically derived alternative Strain Index (SI) risk categories developed for this study were compared with the original SI risk categories by examination of associations with incident hand-arm symptoms among 276 manufacturing workers. Although significant associations were observed for both SI risk categorization methods, model fit statistics favored the alternative approach.

The Impact of Posture on Wrist Tendinosis Among Blue-Collar Workers: The San Francisco Study
Carisa Harris-Adamson, Doohee You, Ellen A. Eisen, Robert Goldberg, and David Rempel

A prospective study of 413 production workers assessed the relationship between wrist posture and incidence of wrist tendinosis. Median wrist flexion of more than 7° was associated with an increased risk of wrist tendinosis. Peak wrist deviation across all tasks did not predict increased risk.

The Association Between Combination of Hand Force and Forearm Posture and Incidence of Lateral Epicondylitis in a Working Population
Z. Joyce Fan, Barbara A. Silverstein, Stephen Bao, Dave K. Bonauto, Ninica L. Howard, and Caroline K. Smith

The incidence rate of lateral epicondylitis (LE) on the dominant side was 4.91/100 person years. Adjusted for age and gender, the combined effect of forearm pronation ≥ 45°, and time spent with forceful exertion, including power grip, lifting, and duty cycle, were significant predictors of dominant-side LE.

Using Job-Title-Based Physical Exposures From O*NET in an Epidemiological Study of Carpal Tunnel Syndrome
Bradley Evanoff, Angelique Zeringue, Alfred Franzblau, and Ann Marie Dale

This large prospective cohort study found strong relationships between new cases of carpal tunnel syndrome and workplace physical demands of force and repetitive motion obtained from linking job titles to O*NET. Although subject to exposure misclassification, this approach is useful for large studies of working populations for which more precise exposure data are not available.

A Prospective Study of Musculoskeletal Outcomes Among Manufacturing Workers: II. Effects of Psychosocial Stress and Work Organization Factors
Fredric Gerr, Nathan B. Fethke, Dan Anton, Linda Merlino, John Rosecrance, Michele Marcus, and Michael P. Jones

In addition to physical exposures, occupational psychosocial stress and work organization practices are potential risk factors for musculoskeletal disorders (MSDs). In this prospective study of manufacturing workers, strong associations were observed between these factors and MSDs. Prevention of MSDs in manufacturing settings may require attention to both physical and nonphysical exposures.

Impacts of Differences in Epidemiological Case Definitions on Prevalence for Upper-Extremity Musculoskeletal Disorders

Variations in epidemiological case definitions for shoulder tendinosis, lateral epicondylalgia, and carpal tunnel syndrome have impacts on their prevalence, with prevalence ratios ranging from 1.21 to 3.43-fold differences compared with more specific definitions. Whether these wide-ranging differences in prevalence have impacts on purported risk factors remains to be determined.

Provisional Recommended Weight Limits for Manual Lifting During Pregnancy
Thomas R. Waters, Leslie A. MacDonald, Stephen D. Hudock, and Donald E. Goddard

The National Institute for Occupational Safety and Health (NIOSH) Revised Lifting Equation was adapted to derive provisional recommended weight limits for pregnant workers and to establish guidelines for clinicians. Supporting literature, decision logic, and computational details are presented. The results should be useful for ergonomists and practitioners in the evaluation and redesign of lifting tasks performed by pregnant workers, and for clinicians to advise appropriate physical activity restrictions when task redesign options are limited.

Musculoskeletal Pain and Reported Workplace Assault: A Prospective Study of Clinical Staff in Nursing Homes
Helena Miranda, Laura Punnett, Rebecca J. Gore, and the ProCare Research Team

Recent physical assault by residents or their visitors was reported by about one-half of nursing home workers; 25% experienced such assaults in three consecutive years. Musculoskeletal pain outcomes (severity, interference with work or sleep, co-occurrence with depressive symptoms) were predicted by prior assault history and especially by repeated experiences.

Reference Values for Physical Performance Measures in the Aging Working Population
Mark R. Cote, Anne Kenny, Jeffrey Dussetschleger, Dana Fan, Ashok Chaurasia, and Martin Cherniack

Applying recognized reference values to aging manufacturing workers appears to seriously underpredict dynamic physical performance, but not weight or blood pressure. Whether the cause is selection or preservation is unclear; nevertheless, the results contradict using published predictive values as a reference.