the change in the curvature of the spine from C7 to S1 in either a standing or seated position. The SCMD is described in detail with an illustrated example.

30.
WORKERS' POSTURAL BALANCE RESPONSE ON DRY SURFACE CAN PREDICT THEIR BALANCE PERFORMANCE ON SLIPPERY SURFACE.

A. Bhattacharya, P. Succop, University of Cincinnati, Cincinnati, OH; M. Lu, NIOSH, Cincinnati, OH; L. Kincl, University of Oregon, Eugene, OR.

More than 50% of workplace falls are associated with slip events. Although frictional properties of surface should theoretically dictate slip events, there is sufficient evidence in the literature that workers' postural balance characteristics play a much more significant role in predicting slip event. There are occupations such as construction and delivery workers where work is performed under a variety of suboptimal environments. The purpose of this research was to analyze data from 40 industrial workers to determine whether the workers' postural balance during an ideal baseline condition can predict their incidence of slip events during task performance on slippery surface. The baseline condition involved the workers standing on a dry surface, with new shoes and in good lighting. A PEAK video analysis system was used to capture slip events while the workers performed simulated industrial tasks (reaching and lifting a weight and rapid bending at the waist), standing on slippery surfaces with known coefficient of friction (0.35, 0.18 and 0.11). A Poisson regression analysis showed that baseline postural sway area (SA), sway length (SL) and sway excursion in the medio-lateral and anterior-posterior directions was positively associated with incidence of slip events. A logistic model fit to the data showed a statistically significant (all p-values < 0.002) association between the probability of a slip event and the workers' postural balance measures. In summary, the above findings indicate that workers who showed poorer postural balance during baseline testing actually had more slip events during task performance on a slippery surface. The results from this study will be useful in identifying workplace surface risk factors and the types of tasks that require further modification to prevent slips. Possibly specialized postural balance improvement training program for maintaining safe upright balance may yield a positive effect when carrying out tasks on slippery surfaces.

31.
LOWER EXTREMITY BALANCE DEMAND FOR CONSTRUCTION WORKERS ON STILTS.

S. Chiou, C. Pan, J. Zwiener, D. Cantis, M. Ronaghi, National Institute for Occupational Safety and Health (NIOSH), Morgantown, WV.

Falls are one of the leading causes of traumatic injuries in the construction industry, largely attributable to tasks being performed at elevations. Stilts are equipment commonly used for drywall finishing, painting, and ceiling work that create an inherent fall risk from height. Previous researchers hypothesized that stilts may place workers at increased risk for knee injuries and falls; however, the balance-control mechanism behind such a hypothesis has not been quantitatively established. This study was conducted to examine the balance demands in sagittal and frontal planes and to evaluate stresses of lower extremities during gait with stilts. Kinetic and kinematics data were collected from 20 construction workers (age: 35.8±7.7 years) while walking with stilts at different heights (24 or 40

inches). The inverse dynamics approach was used to calculate internal joint moments. Results from repeated-measure ANOVA indicated that there was a significant increase in peak hip extension (1.37 Nm/kg), knee flexion (0.68 Nm/kg), and ankle plantar flexion (0.95 Nm/kg) moments on 40-inch stilts compared with no stilts (all p values < 0.0001). As the height of the stilt increased, lower extremity joint moments increased, suggesting more muscle activities were needed to maintain balance. In the frontal plane, the ankle joint produced a significant adduction moment (0.54 Nm/kg) on stilts during the second half of the stance phase. Hip muscles appeared to play a dominant role in progression from one step to another. Movement in the medial-lateral direction required an increased involvement of ankle muscles to maintain stability on stilts. Findings from this study indicate that stilts place the greatest increase in balance demands on the hip joints, followed by ankle and knee. To reduce the balance demands of lower extremities, it is suggested that workers avoid prolonged use of stilts, especially when stilts are elevated at high levels.

32.
RESTAURANT WORKER SLIPPERINESS PERCEPTION.

T. Courtney, Y. Huang, S. Verma, W. Chang, K. Li, A. Filiaggi, Liberty Mutual Research Institute for Safety, Hopkinton, MA.

Slips, trips, and falls are a substantial injury burden in the global workplace with slipperiness contributing to 40-50% of fall-related injuries. Restaurant environments are particularly challenged by STF. Recent reports in the literature suggest that worker self-reports may be a reasonably good indicator of floor slipperiness. This study explored factors that may influence workers' self-reports of slipperiness in fast-food restaurants. One hundred twenty-six workers in 10 fast-food restaurants were recruited to participate in a study of floor slipperiness. Ratings of floor slipperiness were collected through multilingual, written questionnaire along with age, gender, shift length, shoe type, and slip history. Shoe condition and visible shoe contamination were assessed by the investigators. Floor friction was also measured. Restaurants were ranked based on global mean friction score. Multivariate linear regression assessed the degree of association between worker perception of slipperiness and personal factors, floor/shoe conditions, and occupational slip history. Participants averaged 34.5 work hours per week, had a mean age of 30 years, and had worked in their specific location an average of 34.5 (median = 17) months. Results from multivariate regression showed that lower restaurant ranking based on friction score, younger age, visible footwear contamination, and a prior history of occupational slipping and/or falling in the past 4 weeks were significantly associated with worker perception of slipperiness. A recent workplace history of slipping increased slipperiness perception but may have reduced worker sensitivity to variations in floor friction. Visible shoe contamination increased perception of slipperiness indicating that more effective control measures for gross contamination are needed. Less sensitivity in ratings from older workers may reflect decreased sensory and motor perception indicating the potential for increased slip risk. Slipperiness ratings were moderately correlated with floor friction indicating that worker ratings may be a useful adjunct to workplace investigations of slipperiness.

Posted May 30, 2006

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