Biomechanical risk factors for distal upper extremity tendinosis.

Carisa Harris, PhD ,Oguz Akkas, PhD, Stephen Bao, PhD, Jia-Hua Lin, PhD, Alysha R. Meyers, PhD, David Rempel, PhD, and Robert G. Radwin, PhD.

Background: Elbow epicondylitis and wrist tendinosis are distal upper extremity musculoskeletal disorders (DUE MSDs) that continue to be prevalent and costly in the workplace. The purpose of this study was to assess the relationship between biomechanical risk factors and distal upper extremity tendinosis (hand/wrist/elbow) using combined data from 3 large prospective studies in the United States.

Methods: Subjects from NIOSH, SHARP and UC San Francisco with individual exposure and health outcome data were combined for this analysis. Case criteria included a positive maneuver and the presence of one of five core signs (tenderness to palpation, redness, swelling, crepitance, or warmth). Approximately ten minutes of video was recorded for each task of each participant and analyzed frame-by-frame using multi-video task analysis (MVTA) (Yen, 1995).

Results: 1,442 subjects (44% female) with an average age of 40 years (SD=11) were included in this analysis. Being female (HR=2.86; 95%CI: 1.76-4.66) and over 40 years of age (HR=2.19; 95%CI: 1.04-4.59) increased the rate of hand/wrist tendinosis & elbow epicondylitis. Spending more than 25% time in forceful hand exertion was the primary exposure associated with distal upper extremity tendinosis. Total repetition rate had an elevated effect estimate but with wide confidence intervals (HR= 1.44; 95%CI: 0.74-2.81).

Conclusion: Similar to the findings on carpal tunnel syndrome, the % time spent in forceful exertion was an important risk factor associated with hand/wrist tendinosis and elbow epicondylitis; efforts to reduce the % time spent in forceful hand exertion may be beneficial for reducing the rate of distal upper extremity disorders including hand/wrist tendonopathies, epicondylitis, and carpal tunnel syndrome.

BOLOGNA
ITALY
2 • 5
SEPTEMBER 2019

PREMUS 2019

10th International Scientific Conference on the Prevention of Work-Related Musculoskeletal Disorders

From research to evidence based sustainable interventions and practices