Elbow Torque Ellipses: Investigation of the mutual influences of rotation, flexion, and extension torques

Most strength tests are restricted to measuring joint torques only in main directions like flexion or pronation. However, for an advanced strength prediction model, information about maximum possible joint torques in intermediate directions also has to be known. This paper concentrates on obtaining functions for maximum joint torques in arbitrary directions in the elbow. Therefore, isometric joint torque measurements have been conducted with 20 young males applying joint torques in eight different directions in one posture (90 degrees elbow flexion, 0 degrees shoulder flexion, neutral forearm rotation). It turns out that the appearance of the resulting shape can be best predicted using ellipse segments. Furthermore, a standardized ellipse could be obtained for the measurement posture. This helps to predict maximum joint torques in any other direction by knowing only one of the main joint torques.

Zeitschriftentitel: Work: A Journal of Prevention, Assessment and Rehabilitation
Jahr: 2012
Band: 41
Heft / Issue: Supplement 1/ 2012
Seiten: 2260--2267
Occurences:
- Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Produktionstechnik > Lehrstuhl für Ergonomie (Prof. Bengler) > 2012

Entries: