

Developing the Methods for the Study of Static and Dynamic Balance

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Abstract : Static and dynamic balance are essential in daily and sports life. Many factors have been identified as influencing static balance control. Therefore, the aim of this study was to apply the (XCoM) method and other relevant variables (CoP, CoM, Fh, KE, P, Q, and, AI) to investigate sport related activities such as hopping and jumping. Many studies have represented the CoP data without mentioning its accuracy, so several experiments were done to establish the agreement between the CoP and the projected CoM in a static condition. Five male healthy (Mean \pm SD:- age 24.6 years \pm 4.5, height 177 cm \pm 6.3, body mass 72.8 kg \pm 6.6) participated in this study. Results found that The implementation of the XCoM method was found to be practical for evaluating both static and dynamic balance. The general findings were that the CoP, the CoM, the XCoM, Fh, and Q were more informative than the other variables (e.g. KE, P, and AI) during static and dynamic balance. The XCoM method was found to be applicable to dynamic balance as well as static balance.

Keywords : centre of mass, static balance, dynamic balance, extrapolated centre of mass

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