

Electromyographical Analysis Of Scapular Stabilizers Using Bodyblade[®], Cuff Weights and Thera-band[®] Resistance

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The scapular stabilizers are key to the normal mechanics of the glenohumeral joint during overhead movements. The Bodyblade[®] is a unique training device that uses vibration, rather than traditional resistance, to overload the muscles. Research regarding the influence of vibration on motor unit firing has not included the Bodyblade[®] and has focused on whole body vibration. To assess which device would produce the greatest muscle activity of the scapular stabilizers during a typical rehabilitation session.

METHODS

Thirty subjects performed 10 repetitions of shoulder flexion and abduction using the three devices. EMG data were collected from the upper trapezius (UT), lower trapezius (LT), and serratus anterior (SA) of subjects' dominant shoulders during flexion and abduction using Bodyblade[®], cuff weight and Thera-Band[®] resistance. Data for each movement were analyzed using 3 (condition) x 10 (repetition) repeated measures ANOVAs for each muscle.

RESULTS

During shoulder flexion and abduction, the normalized root mean squared (Nrms) EMG's of the UT, LT and SA and the normalized integrated (NInt) EMG of the UT were significantly greater using the Bodyblade[®] than the Thera-Band[®] or cuff weight. During shoulder abduction, the LT NIntEMG was greater with the Bodyblade[®] than the Thera-Band[®], while during both flexion and abduction, the Bodyblade[®] and Thera-Band[®] produced significantly greater NIntEMG's than the cuff weights.

CONCLUSION

The significantly greater muscular activity produced in the scapular stabilizers by the Bodyblade[®] under most conditions, suggests that this device might be more effective for training the scapular stabilizers than traditional resistance techniques.