

The Effects of Preview and Task Symmetry on Trunk Muscle Response to Sudden Loading

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The effect of warning time (preview) and task symmetry on the trunk muscular response to sudden loading conditions was investigated. Eleven subjects were asked to catch falling weights with four levels of preview (0, 100, 200, and 400 ms) in sagittally symmetric posture and asymmetric posture. For each of the eight muscles sampled with surface electrodes, the integrated electromyographic (EMG) signal was interpreted in terms of its peak value, mean value, onset rate, and lead/lag time with reference to the weight drop. Results show linear relationships between preview times and peak EMG, preview times and mean EMG, and preview times and lead times. The results show significant change when going from symmetric to asymmetric conditions across most dependent measures. Analysis of peak changes in compression were performed across all conditions but yielded unexpected results.