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Blood Pressure Response to Isometric Contractions in Healthy Young Males

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Abstract

To obtain basic data for risk management, this study examined the changes in blood pressure during isometric contractions, and the influence of the location and strength of the contractions. Nine healthy male subjects, 20-23 years of age, performed consecutive shoulder, elbow and fingers flexion isometric contractions, at maximal voluntary contraction (MVC) and 50% MVC. As the contractions were performed, systolic (SBP) and diastolic blood pressure (DBP) were measured continuously at the right radial artery with a non-invasive blood pressure measuring apparatus. All maximal SBP and DBP values increased significantly compared with those at rest except for fingers flexion at 50% MVC. All minimal SBP and DBP values decreased significantly compared with those at rest except for fingers flexion at 50% MVC. Maximal and minimal SBP and DBP values at 100% MVC were greater than those at 50% MVC. Fluctuations in the SBP and DBP values seemed to become progressively greater from the fingers flexion to the elbow flexion to the shoulder flexion. These results indicate that occupational and physical therapists should manage blood pressure change risk more carefully when they have their patients do exercises.