Abstract

BACKGROUND: The literature reports that the eccentric muscular action produces greater force and lower myoelectric activity than the concentric muscular action, while the heart rate (HR) responses are bigger during concentric contraction. OBJECTIVES: To investigate the maximum average torque (MAT), surface electromyographic (SEMG) and the heart rate (HR) responses during different types of muscular contraction and angular velocities in older men. METHODS: Twelve healthy men (61.7±1.6 years) performed concentric (C) and eccentric (E) isokinetic knee extension-flexion at 60º/s and 120º/s. SEMG activity was recorded from vastus lateralis muscle and normalized by Root Mean Square - RMS (μV) of maximal isometric knee extension at 60º. HR (beats/min) and was recorded at rest and throughout each contraction. The data were analyzed by the Friedman test for repeated measures with post hoc Dunn’s test (p<0.05). RESULTS: The median values of MAT (N.m/kg) was smaller and the RMS (μV) was larger during concentric contraction (C60º/s=2.80 and 0.99; C120º/s=2.46 and 1.0) than eccentric (E60º/s=3.94 and 0.85; E120º/s=4.08 and 0.89), respectively. The HR variation was similar in the four conditions studied. CONCLUSION: The magnitude of MAT and RMS responses in older men were dependent of the nature of the muscular action and independent of the angular velocity, whereas HR response was not influenced by these factors.

Keywords

Elderly, heart rate, isokinetic, exercise, surface electromyography.