ELASTIC PROPERTIES OF M. VASTUS LATERALIS APONEUROSES

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The purpose of this study was to quantify the elastic properties of m. vastus lateralis aponeuroses in vivo in isometric voluntary contraction. High quality athletes (n=54) developed maximum knee extension moment in two isometric conditions: slow (time of maximum moment arise 3-4 s) and fast (time of maximum moment arise less then 1 s). The torque-time dependence was measured by dynamometer Biodex, elongation of the aponeuroses vastus lateralis was measured by ultrasonography (ultrasonic apparatus Aloka 3500, Japan). Mathematical model applied to calculate the force developed by m. vastus lateralis. The relationship between muscle force and elongation of aponeuroses was defined as stiffness of aponeuroses m. vastus lateralis.

Stiffness depends on time of contraction. In fast isometric contraction, stiffness of aponeuroses 50% higher then in lower time isometric contraction. The rapid increase of muscle stiffness in fast muscle contraction has a favorable effect on storage and recoil of elastic muscle energy.

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