

CHANGES IN THE STIFFNESS OF THIGH MUSCLES IN THE LEFT AND RIGHT LIMBS DURING SIX WEEKS OF PLYOMETRIC TRAINING IN VOLLEYBALL PLAYERS

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Abstract

Introduction. Monitoring muscle stiffness in athletes can be a good method of assessing fatigue caused by high training loads, and the early detection of fatigue can help prevent the occurrence of micro-trauma in the muscles that can cause contusions. The research carried out by Wilson et al. [1] confirmed that an optimal level of muscle stiffness is significantly correlated with high muscle loads. The aim of the current study was to determine changes in muscle stiffness of the left and right thighs during six weeks of plyometric training (PT) in volleyball players. **Material and methods.** The study involved 16 volleyball players from the second-league Opole University of Technology Club (age = 21.12 ± 1.66 years, height = 191.62 ± 5.73 cm, and weight = 86.25 ± 6.66 kg) with at least five years of competitive experience (7.5 ± 2.44 years). Muscle stiffness was measured during three stages of the plyometric training using a MYOTON PRO device (Estonia). **Results.** An RM-ANOVA analysis showed a significant difference in the resting stiffness of the semitendinosus (posterior thigh) muscles of the left and right limbs before the plyometric training began, but no significant differences were found in the stiffness of these muscles in the fourth or sixth weeks of training. The results of the measurement performed for the anterior muscles of the thigh did not reveal a significant difference in the stiffness of the left limb compared to that of the right limb in subsequent weeks of training. **Conclusion.** The loads used in plyometric training in volleyball players caused a decrease in the differences in muscle stiffness between the left and right limbs, and in both limbs, adaptation trended towards an increase or a decrease in stiffness.

Key words: muscle parameters, jumping training in volleyball, Myoton PRO