

Abstract

Title: Evaluation of training effect with elements of proprioceptive neuromuscular facilitation on shooting velocity by female handball players of the 1st league in the Czech Republic

Objectives: The aim of this study is to determine, whether completing an exercise program based on elements of proprioceptive neuromuscular facilitation and using elastic band resistance can influence shooting velocity by female handball players.

Methods: In this randomized control study 25 female handball players, who are playing the 1st league in Havlíčkův Brod, were divided into experimental (n = 13) and control group (n = 12). Both groups underwent an initial shooting velocity measurement (PRE) using radar gun Stalker Pro II. Then experimental group completed 6-week exercise program, based on D2 flexion and extension from proprioceptive neuromuscular facilitation against elastic band resistance. The control group did not perform any exercise like that. Both groups otherwise completed the same training program during the preparatory phase. After that the shooting velocity was again measured (POST). The results were statistically processed in the Jamovi using two-way repeated measures ANOVA.

Results: There was a statistically significant improvement in shooting velocity of the control and experimental groups in the state of POST ($p < 0,001$, $\eta^2 = 0,240$, $d = 1,124$). The experimental group did not achieve a statistically significant improvement in shooting velocity with $d > 1$ ($p > 0,793$, $\eta^2 < 0,001$, $d < 0,001$) after six weeks of exercise against elastic resistance using diagonals from PNF.

Keywords: handball, shooting velocity, proprioceptive neuromuscular facilitation, elastic band resistance