Abstract

Title: Effect of trunk stabilization on throwing velocity in heptathlon and decathlon athletes

Background: Throwing disciplines are an important part of combined track and field events. A stable trunk is a necessary component of the kinematic chain in the generation of force during throwing. Throwing is usually ineffective if the leg and trunk muscles are unable to generate sufficient force or if there is no transfer of energy to the throwing arm. This paper examines the effect of trunk stabilization on throwing velocity.

Objective: The aim of the study was to investigate whether it is possible to increase the throwing velocity of heptathlon and decathlon athletes by using exercises aimed at improving trunk stabilization.

Methods: Measurement of throwing velocity using sports radar, assessment of trunk stabilization level using Janda's stereotype of push-up, Kolar's bear test and deep squat test and McGill′s torso muscular endurance test battery.

Results: During the ten-week intervention focused on trunk stabilization, the experimental group experienced an average improvement in throwing velocity of 5.76 km/h (8.9%). The control group, continuing with standard training, experienced only a slight improvement in throwing velocity of 1 km/h (2%). In the evaluation of trunk stabilization, the experimental group showed an improvement in their rating after the intervention, while the control group showed no deterioration or a slight improvement. Evaluation of trunk stabilization using the McGill test battery showed a significant improvement in the experimental group's performance. The control group achieved a slight improvement, with statistical significance achieved in only one test. The intervention targeting trunk stabilization had a significant effect on the throwing velocity of the youth heptathlon and decathlon athletes, whereas standard training did not bring a significant improvement.

Key words: core stabilization, throwing velocity, track&field athletics, heptathlon, decathlon