Does coordination predict maximal strength and strength gains in young female elite basketball?

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Introduction

Coordination is regarded as an important factor for the development of sport and condition skills (Meinel & Schnabel, 2015; Schnabel, 2014) and training of coordinative abilities such as balance can be linked to improvements in performance (Hrysomallis, 2011) and strength gains (Heitkamp, Horstmann, Mayer, Weller & Dickhuth, 2001).

Objectives

The purpose of this study was to examine if a basketball adjusted coordination level (CL) is related to maximal strength and predicts strength gains after a strength training intervention in young female elite basketball players.

Methods

A convenience sample of 14 female elite basketball players (age = 15.21 ± 1.31 years, height = 174.89 ± 8.55 cm, weight = 60.07 ± 5.48 kg) was tested in four coordination tasks (free throw, modified star excursion balance test, jumping laterally, dribbling course, Figure 1) and subsequently for their maximal isometric upper body strength (MIUBS) using a Dr. Wolff Backcheck device (Dr. Wolff Sports & Prevention GmbH). After 8 strength training sessions consisting of lower and upper body exercise MIUBS of the players was retested. A z-transformation was used to calculate CL from the four coordination tasks and the relationships were computed using Kendall's Tau. A paired t-test was conducted to assess differences between pre- and post-training MIUBS.

Figure 1. Coordination tasks

Results

Significant changes in MIUBS were observed after the training intervention (+35.79 ± 18.02 kg; $p \leq .001$; $d = 1.99$), albeit no significant correlations ($p \geq .05$) could be found between CL and pre-/ post-test MIUBS or strength gains after the intervention.

Discussion & Conclusion

While the importance of coordination is often presumed to be an important factor for physical abilities, coordination as evaluated in this study seems not to affect MIUBS or strength gains in young female elite basketball players. However, due to the small sample size the results should be regarded with caution. Further studies might include a dynamic strength test and investigate if these findings are similar in male athletes.

References

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