

Impact of eight weeks of plyometric training on jump parameters in junior badminton players

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Introduction

Plyometric training is popular among individuals involved in dynamic sports, and plyometric exercises such as jumping, hopping, skipping and bounding are executed with the goal of increasing dynamic muscular performance, especially jumping. Much less information is available on the effectiveness of plyometric training (PT) in badminton, where jumping height (e.g. forehand overhead jump-smash) is important for success. The aim of the study was to investigate the effects of an eight-week periodized PT program on jumping height, agility and power among male and female junior badminton players, using high-impact bilateral plyometric exercises.

Methods

Starting and finishing with the biomechanical diagnostics of the squat jump (SJ), counter movement jump (CMJ), and drop jump (DJ) on force plates, kinematic analysis of forehand overhead smashes, anthropometric data as well as force data for pre- and post-test were analyzed. Before and after the biomechanical diagnostics, the players (n=11) undertook an eight week period of plyometric training (2 units per week) with a total of 2286 jumps. Eight male and three female junior badminton players (age: 16.0 ± 1.6 years, height: 175.5 ± 9.9 cm, mass: 69.3 ± 11.4 kg) were tested in jumping height and forehand overhead jump-smashes performance.

Results

The effect of the eight-week plyometric training in junior badminton players significantly increased height of the squat jump ($p < 0.05$; $d_z = 0.8$) and the drop jump ($p < 0.05$; $d_z = 1.1$). The height of the counter movement jump increased non-significantly ($p > 0.05$; $d_z = 0.3$). Consequently, this form of training is considered essential for the development of junior badminton players. Moreover, the study has shown that the contact height of the overhead smash was not increased with improved plyometric strength training ($p > 0.05$). Therefore, in complex movements, like the badminton smash, the focus must also be on technical training.

Conclusion

This study provides information on a physical increase in performance in combination with a technical component (jump-smash). It is considered to be important to include short-term plyometric programs during in-season preparation in order to improve these kinds of complex badminton-specific dynamic performance. The results of this study can directly be assimilated into specific badminton training.