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Flying High: the influence of a six-week resistance training programme on elite trampoline athlete performance

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INTRODUCTION:

There are few data on training interventions in elite athletes, particularly in gymnasts. In trampoline gymnastics, the ability to attain and maintain high time of flight (ToF) is an important component in competition for two reasons: 1) it is directly scored, and 2) it allows gymnasts to perform routines at greater heights and potentially execute more complex skills. The purpose of the study was to investigate the effects of a 6-week isometric training programme on time of flight (ToF) in highly trained gymnasts.

METHODS:

Fourteen national level trampoline athletes (10 females, 4 males, age = 15 ± 2 years; mass = 55.0 ± 8.2 kg; stature = 163.7 ± 6.5 cm) volunteered to participate. In a parallel group design, athletes were allocated to either an intervention; INT (6 weeks of maximal isometric strength training incorporated into normal training) or control; CON (normal training) group. The INT consisted of 3-5 sets of 5 repetitions of maximal isometric contractions at 3 joint angles (150, 120 degree knee joint angle and plantar flexion at full knee extension) twice per week. Participants performed a battery of tests consisting of counter movement jump (CMJ), isometric squat (ISO at 150 and 120 degrees knee flexion; 180 degrees being full extension), and 20-max trampoline (20-max) test before and after the intervention.

RESULTS:

There was a significant interaction where the INT group increased ToF in the 20-max test by 2.8% compared to a 0.2% increase in CON ($P = 0.021$). Only isometric strength at 150 degrees changed differently between groups, where the INT group increased by 27% vs 5% in the CON ($P = 0.02$). No other changes were observed in CMJ.

CONCLUSION:

The improvements in ToF highlight the applicability of joint-specific isometric training to enhance a fundamental performance index (maximal ToF) for highly trained trampoline athletes. This simple, but effective intervention, illustrates the translation of strength training to a sport-specific performance index.

Topic: Training and Testing

Presentation: Poster

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