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COMPARISON OF DIFFERENT SPRINT TRAINING SESSIONS WITH ASSISTED RUNNING: EFFECTS ON PERFORMANCE AND KINEMATICS IN 30-METER SPRINTS

Skujyte, A., Genitrini, M., Silinskas, V., Lukonaitiene, I., Bradauskiene, K., Trinkunas, E., Samozino, P., Kamandulis, S.

Lithuanian Sports university

INTRODUCTION:

Sprint training can be enhanced through assisted and resisted methods, which influence both sprint mechanics and overall performance. Assisted sprinting, typically involving towing mechanisms, has been studied using various towing forces, often providing constant full assistance. However, little is known about how adjusting these forces and setting specific speeds impact performance. Unlike full assistance, partial assistance reduces the towing force as the athlete approaches a certain speed, allowing for a more dynamic and adaptive sprinting experience. This method may require greater voluntary effort from the athlete, potentially leading to better training adaptations. Therefore, it was hypothesized that partial assistance sprinting would provide greater benefits compared to full assistance.

METHODS:

This study compared two assisted sprint training methods: fully assisted sprinting with a constant 6 kg towing force and partially assisted sprinting, where assistance diminished once the athlete approached 0.5 m/s below their supra-maximal speed. Twenty-four male youth football players (age: 17.0 ± 1.9 years, body mass: 69.7 ± 9.9 kg, height: 1.80 ± 0.06 m) participated in the study during their offseason. Eight athletes completed the fully assisted training, eight underwent partial assistance training, and the remaining participants formed a control group.

The subjects were tested in both a 30-meter regular sprint and a 30-meter fully assisted sprint. The training program consisted of four 30-meter assisted sprints performed twice a week for a total of 10 sessions. A motorized device provided precise assistance loads, while sprint times were measured using the Witty Gate timing system. Maximal speed and 5-meter average speed were recorded by the towing device. Additionally, stride length, stride frequency, contact time, and flight time were analyzed using the OptoJump Next modular system.

RESULTS:

Thirty-meter fully assisted sprint times significantly improved in both the fully and partially assisted groups ($p < 0.05$ for both). Additionally, contact times during both regular 30-meter sprinting and 30-meter fully assisted sprinting were significantly reduced ($p < 0.05$ for both). However, regular 30-meter sprint times remained unchanged.

CONCLUSION:

Both fully and partially assisted sprint training methods effectively enhance 30-meter assisted sprint performance. Additionally, both methods led to a significant reduction in contact times, which may contribute to improved stride efficiency and sprint mechanics. However, longer training periods might be needed for a significant improvement in a regular 30-meter run. These results help coaches refine sprint training strategies, enabling them to adjust assistance techniques to better suit individual athletes.

Topic: Coaching

Presentation Poster

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