PERFORMANCE ADAPTATIONS TO SHORT-TERM SLED TOWING AND SPRINT TRAINING

Pedro E. Alcaraz, José L.L. Elvira*, and José M. Palao

Department of Physical Activity and Sport Sciences. UCAM, Murcia (Spain)
***Physical Education and Sport Area. UMH, Elche, Alicante (Spain)**

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INTRODUCTION: The use of resisted sprinting techniques is common both in athletics and in a variety of sports (Cronin and Hansen, 2006). However, previous research has focused in studying the performance when applying these methods on untrained subjects (Zafeiridis *et al.*, 2005; Kristensen *et al.*, 2006). Considering that the magnitudes and time courses of the neural adaptations in the neuromuscular system in elite athletes may differ from those adaptations reported for untrained athletes (Hakkinen et al., 1987), the results from those papers may not be representative of the experienced subjects. Therefore, the aim of the study was to examine the effects of resisted and unloaded sprint training programs on acceleration, transition and maximum speed performance on experienced athletes.

METHOD: Eight female and 14 male elite athletes performed 3 wk of sprint, jump, resisted and resistance training (standardization; 5 days per week) before adopting one of two different programs for 4 wk: 1) resisted (RS) (8% body mass) (n = 11) or traditional (TS) (n = 11) sprint training. Before and after the training programs the subjects performed four 50 m runs from the starting blocks, the best trial was selected, 4 photocells were placed at 1 m, 16 m, 31 m, and 51 m from the star line. A T-test for dependent samples was used ($P \leq 0.05$).

RESULTS: Sprint time changes of each training group are shown in Table 1.

Table 1. Sprint times (T) of 1-16 m (acceleration), 16-31 m (transition), 31-51 m (maximum velocity phase), 1-51 m, and 1-31 m run sections. * = different from pre-test sprint time.

		$T_{1\text{-}16}$ (s)	$T_{16\text{-}31}$ (s)	$T_{31\text{-}51}$ (s)	$T_{1\text{-}51}$ (s)	$T_{1\text{-}31}$ (s)
Resisted	Pre	2.32 ± 0.17	1.78 ± 0.15	2.28 ± 0.22	6.45 ± 0.52	4.15 ± 0.30
	Post	2.36 ± 0.17	1.74 ± 0.14*	2.25 ± 0.19	6.40 ± 0.48	4.11 ± 0.27
	Δ %	1.7	-2.2	-1.3	-0.8	-1.0
Traditional	Pre	2.24 ± 0.11	1.70 ± 0.10	2.20 ± 0.14	6.18 ± 0.35	3.97 ± 0.21
	Post	2.26 ± 0.09	1.68 ± 0.09	2.16 ± 0.11*	6.17 ± 0.29	3.96 ± 0.16
	Δ %	0.9	-1.2	-1.8	-0.2	-0.3

DISCUSSION: The RS significantly improved the time in the transition phase, while the TS improved performance in the maximum velocity phase. In contrast with the study of Zafeiridis *et al*. (2005), neither of the groups had significant effects on times in the acceleration phase.

CONCLUSION: Resisted sprint training with 8% body mass sled towing for 4 wk improves transition performance (16-31 m), while traditional sprint training improves performance in the maximum velocity phase (31-51 m) in elite athletes.

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