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Evolution of the maximum running speed during an overspeed intervention

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INTRODUCTION

In sports training, overspeed (OS) is widely used by coaches to improve maximum running speed (MRS).

One of the most commonly used methods to generate OS stimuli is the towing system (TS), both with non-motorized and motorized devices (Cecilia-Gallego et al., 2022).

Among the motorized devices currently available, we highlight the 1080 Sprint (1080 Motion, Lidingö, Sweden; https://1080motion.com/products/1080-sprint/) and the Dynaspeed (Ergotest Technology AS, Langesund, Norway; https://www.musclelabsystem.com/dynaspeed/), which gives us clear and immediate results (Gleadhill et al, 2023).

However, despite its widespread use in practice, there is not enough scientific literature confirming the effectiveness of overspeed training.

https://www.1080motion.com/products/sprint2

METHODS:

Seeking an ecological approach, it was decided to carry out a study, with an intervention within the overall training planning, of 10 OS sessions using the 1080Sprint device.

The main objective of the study was to analyze the effects of OS training with TS on the MRS of the participants. The V30m (m/s) variable was obtained with the data from the 1080Sprint during the 30-meter sprint of the initial unassisted sprint of each session.

To assess the V30m variable differences between sessions, a one-way repeated measures ANOVA was used. If a significant main effect was reported (i.e., $p \leq 0.05$), planned contrasts were specified to assess the differences between sessions.

A simple planned contrast was applied to compare the mean of each session (S2 to S10) to the mean of the S1 session. The level of significance was set at 0.05 for all tests. All statistical analyses were performed using JASP for Mac (version 0.16.4; JASP Team (2021), University of Amsterdam, The Netherlands).

Table 1: Weekly training schedule during the intervention.

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Week -1			Fam 1 / Anth 1	Rest	Fam 2 / Anth 2	Rest	Rest
Week 1	Pre-Test	ST & TT	OS S1	TT	OS S2	Rest	Rest
Week 2	OS S3	ST & TT	OS S4	TT	OS S5	Rest	Rest
Week 3	OS S6	ST & TT	OS S7	Rest	OS S8	Rest	Rest
Week 4	OS S9	ST & TT	OS S10	Rest	TT	Rest	Rest
Week 5	ST & TT	Rest	Post-Test				

Fam: familiarization session with 1080Sprint; Anth: anthropometric measures; ST: strength training; TT: technical training; OS S: overspeed sessions

RESULTS:

A significant main effect of the training session was reported in the V30m variable (F = 3.73, p = 0.004, ω^2 = 0.064). The simple planned contrasts between the different training sessions (S2 to S10) and the first one (S1) revealed lower V30m values at S6 than at S1 (MD = -0.24 m·s-1 95% CI [-0.44, -0.03], p = 0.025, d = -0.45, 95% CI [-0.83, -0.05]) and higher V30m values at S10 than at S1 (MD = 0.25 m·s-1 95% CI [0.05, 0.46], p = 0.018, d = 0.48, 95% CI [0.08, 0.86]). The other between-sessions contrasts did not reach statistically significant values either. However, if we consider the V30m variable, we see that the sample of participants improves (p=0.018; d: 0.48 95%CI: 0.08-0.86) its MRS from session 1 to session 10 in a significant way.
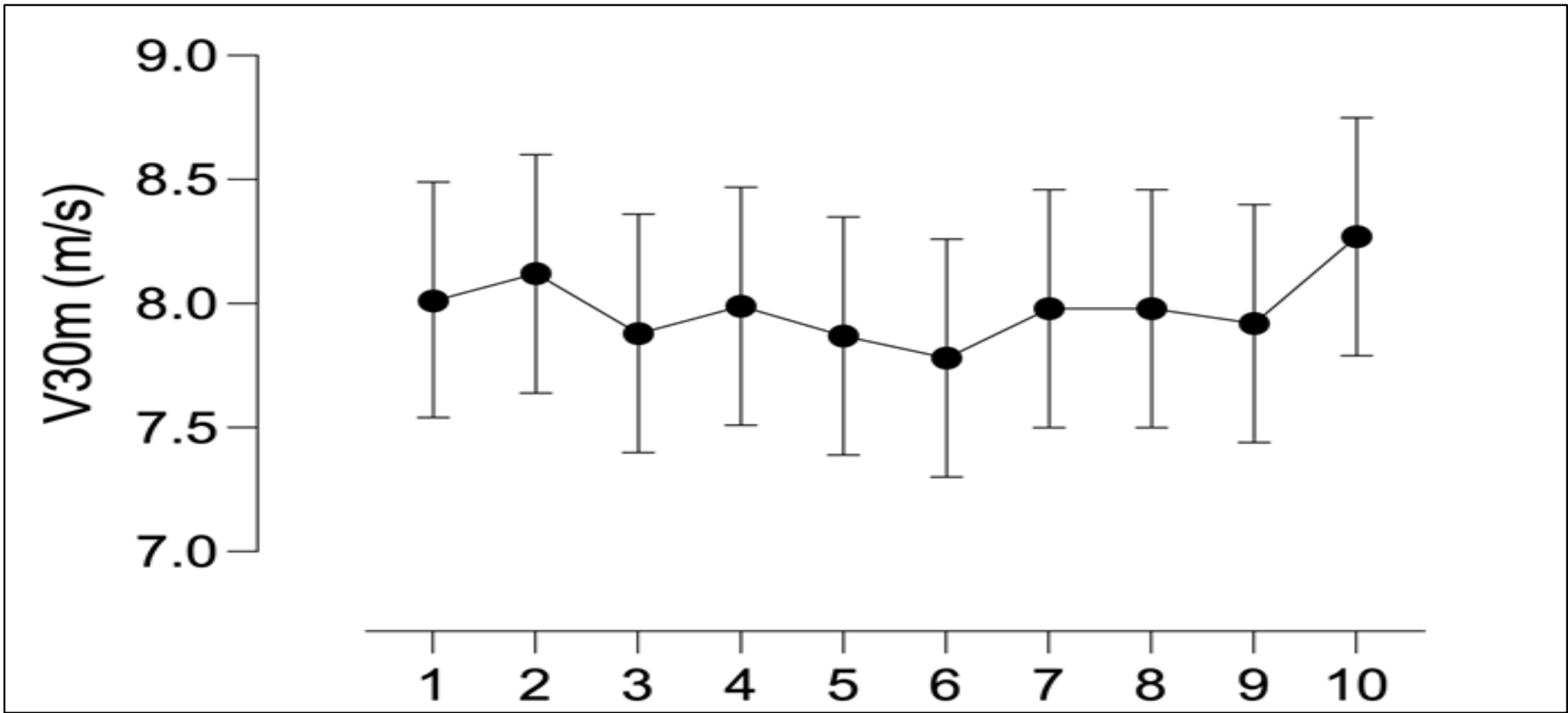

Figure 1: Mean and 95% confidence interval values of the mean velocity of 30 m from a flying start (V30m) variable at different training sessions.

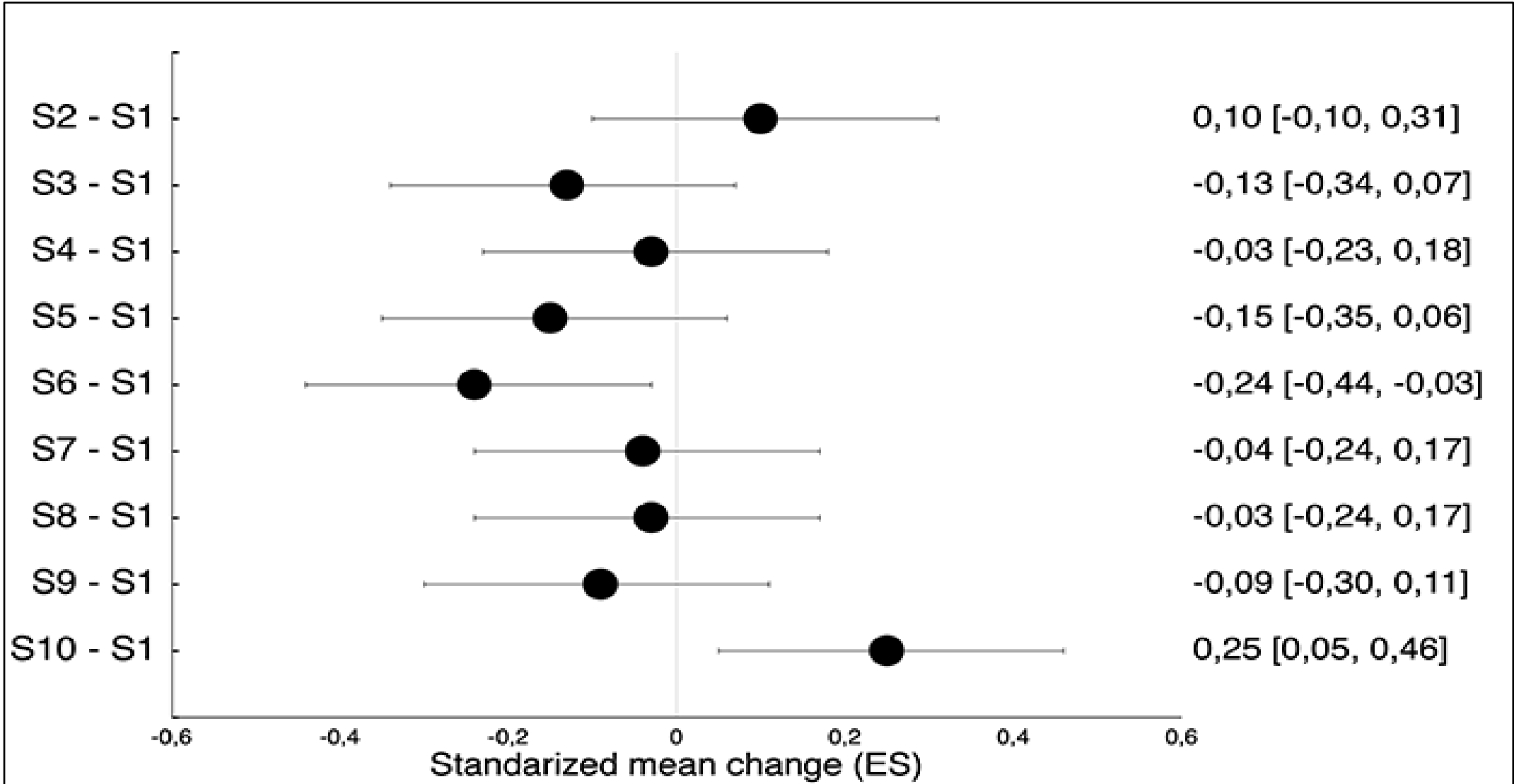|	
S2 - S1	0,10 [-0,10, 0,31]
S3 - S1	-0,13 [-0,34, 0,07]
S4 - S1	-0,03 [-0,23, 0,18]
S5 - S1	-0,15 [-0,35, 0,06]
S6 - S1	-0,24 [-0,44, -0,03]
S7 - S1	-0,04 [-0,24, 0,17]
S8 - S1	-0,03 [-0,24, 0,17]
S9 - S1	-0,09 [-0,30, 0,11]
S10 - S1	0,25 [0,05, 0,46]

Figure 2: Mean differences and 95% confidence interval values between the mean velocity of 30m from a flying start (V30m) of each training session and the S1 session.

DISCUSSION AND CONCLUSIONS

The inter-session follow-up can provide us with a different vision from the one of the post-test intervention only, since on the day of the test, individual casuistry may appear, causing changes in performance.

Overspeed training still necessitates a robust theoretical framework to conclusively establish its effectiveness.

The gradual integration of advanced technologies, such as the 1080 Sprint system, will enhance the capacity to collect and disseminate comprehensive data on this form of training.

Additional research, including the proposed study, is essential to substantiate these preliminary findings within a broader athletic population.

Ultimately, the systematic and scientifically controlled application of this intervention to elite sprinters would offer valuable insights into its efficacy at the highest performance levels.

REFERENCES:

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