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LETTER TO THE EDITOR

Comment on: "The Effectiveness of Resisted Sled Training (RST) for Sprint Performance: A Systematic Review and Meta-Analysis"

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Dear Editor,

We read with great interest the article "The Effectiveness of Resisted Sled Training (RST) for Sprint Performance: A Systematic Review and Meta-Analysis" by Alcaraz et al. [1]. The authors made an outstanding contribution to resisted sled training (RST) by systematically reviewing the impact of RST on sprint performance and providing comprehensive answers to practical questions. However, we noticed potential errors that may affect the conclusion of this article.

In a subgroup analysis [1], the authors divided the load of RST into either < 20% body mass (BM) or ≥ 20% BM and reported that these two groups had a standardized mean difference of − 0.61 (95% confidence interval [CI] − 0.97 to − 0.25) and − 0.45 (95% CI − 0.99 to 0.10), respectively. Therefore, the authors concluded that the effect on performance improvement was moderate when comparing loads < 20% BM and loads ≥ 20% BM, with no significant improvements ($p = 0.11$) achieved with loads ≥ 20% BM.

However, we noticed that Alcaraz et al. [1] appeared to make a mistake when categorizing the data reported by Kawamori et al. [2]. More specifically, Kawamori et al. [2] found a significant effect for both light and heavy sleds training for a 10-m sprint, with the light sleds group improved from 2.06 ± 0.1 s to 2.00 ± 0.10 s, and the heavy sleds group improved from 2.05 ± 0.07 s to 1.94 ± 0.08 s. Alcaraz et al. [1] categorized the light sleds group data into the ≥ 20% BM subgroup and the heavy sleds group data into the < 20% BM subgroup, which may have affected the subgroup analysis results. In fact, after entering the correct data into Revman 5.4 (see Fig. 1), we found that the < 20% BM group and the ≥ 20% BM group have a standardized mean difference of − 0.54 (95% CI − 0.87 to − 0.21) and − 0.71 (95% CI − 1.39 to − 0.02), respectively. In addition, we found significant improvements for both loads < 20% BM ($p = 0.001$) and ≥ 20% BM ($p = 0.04$). Although only three studies used loads ≥ 20% BM and the sample size was only 26, the results mentioned above indicated that RST with loads ≥ 20% BM might be more effective than RST with loads < 20% BM, contradicting Alcaraz et al.'s conclusions.

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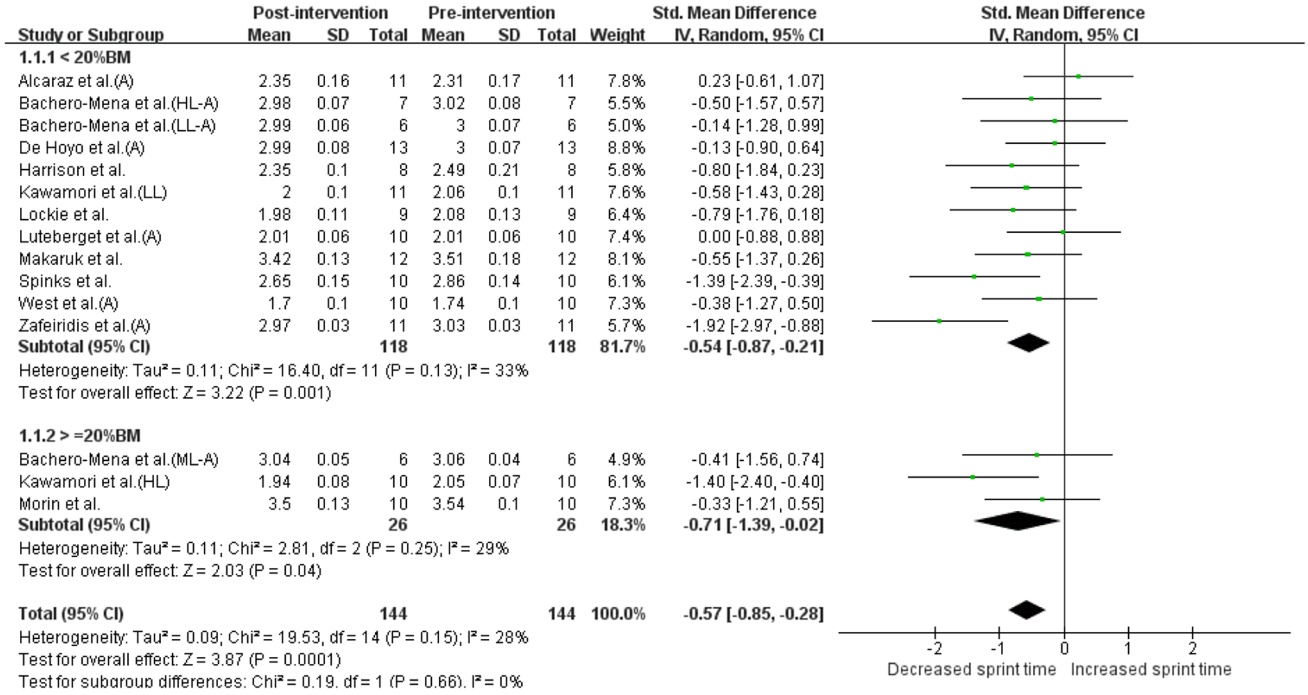

Fig. 1 Standardized mean difference between post-intervention and pre-intervention for sprint time in the acceleration phase based on different loads (corrected subgroup analysis results). Squares represent the standardized mean difference for each trial. Diamonds represent the pooled standardized mean difference across trials. *A* acceleration phase, *BM* body mass, *CI* confidence interval, *HL* high load, *IV* independent variable, *LL* low load, *ML* moderate load, *SD* standard deviation, *Std.* standardized

In summary, we suggest that researchers and practitioners interpret the RST loads subgroup analysis results in the Alcaraz et al. [1] review cautiously.

Declarations

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Conflict of interest Kai Xu, Yimeng Xu, Jing Zhou, and Ran Wang have no conflicts of interest that are directly relevant to the content of this letter.

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