

## Enhanced Performance after Repeated Sprint Training in Hypoxia: False or Reality?

Dear Editor-in-Chief

Anyone working with highly trained athletes will be doubtful toward any intervention that increases exercise performance by 55% after six training sessions, as recently reported by Faiss et al. (1). They conclude that 2 wk (six sessions) of repeated-sprint training conducted in hypoxia (RSH) improves repeated-sprint (RS) performance compared with control training conducted in normoxia (RSN). This assertion was based on an impressive 55% increase in the number of repeated sprints to exhaustion after RSH, whereas this remained unchanged after RSN. In our view, however, it seems that the conclusions drawn by Faiss et al. (1) stem from a flawed criterion for exhaustion (i.e., task failure).

The authors set task failure when the peak power in a given sprint was below 70% of the highest peak sprint power recorded during the RS test, which was always found in the first or second sprint. In turn, such highest peak sprint power "...was requested to reach at least 95% of the best (highest) peak power of two isolated sprints ... to avoid any pacing strategy" (1). In this regard, the seemingly lower highest peak sprint power recorded during the RS test compared with that found during the two isolated sprints in the RSH group after training (500 vs 528 W), which was less marked in the RSN group (525 vs 532 W), is problematic. Herein, if the aforementioned criterion of task failure (<70% peak sprint power) is applied with the highest peak sprint power

during the two isolated sprints as the benchmark, the number of repeated sprints to exhaustion in the RS test would be identical after training in RSH and RSN groups (12 vs 12), and hence, this suggests that RSH is by no means a more effective training strategy than RSN.

In summary, there seem to be fundamental shortcomings in the work of Faiss et al. (1) that need to be clarified. Until then, caution should be exercised before proposing RSH as an advantageous method to improve exercise performance in cross-country skiers.

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### REFERENCE

1. Faiss R, Willis S, Born DP, et al. Repeated double-poling sprint training in hypoxia by competitive cross-country skiers. *Med Sci Sports Exerc.* 2015;47(4):809–17.