Ineffective normobaric LHTL: room confinement or inappropriate training intensity?

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TO THE EDITOR: To explain an ineffective live high-train low (LHTL) in normobaric hypoxia (e.g., where the athletes slept in hypoxic chamber), Siebenman et al. (4) suggested that the recommended 16 h/day of room confinement may lead to a reduction in plasma volume: 13.8% and 20.1% in the placebo and LHTL group after 3 wk, respectively. To our view, this argument is not relevant for the following reasons.

In a Nordic ski study (2), the control group showed an 11.2% reduction in blood volume despite that they were not requested to stay in a room since the study was not blinded. These subjects were not maintained in a “room confinement.”

In bed rest studies with 6° head-down tilt for 2 wk or in a horizontal position (1), the plasma volume reduction ranged between 9 and 13%, i.e., lesser than the decrease observed in the Siebenman et al. (4) study despite a much more constraining protocol.

Finally, we point out that the subjects were not requested to stay in their room after the hypoxic period (i.e., W 1 POST and W 2 POST). During these 15 days, the subjects were back to “normal” life and training whereas their plasma and blood volumes remained significantly lower than the baseline values.

In our view, on the basis of the detailed analysis of the training content, a hypothesis centered on an inappropriate training can explain more objectively the effects observed in this study.

During the LHTL exposure (W 1 to W 4), at least 30% of the training time was spent above 80% maximal heart rate (HRmax) with 8% of time above 90% HRmax. This distribution of intensity of training is in contradiction with the training usually observed in the high-level endurance sport (3) where “polarized” training is as follows: 80 to 90% of the training time at an intensity less than 75–80% HRmax, 5 to 10% between 80% to 90% of HRmax, and 5 to 10% higher than 90% HRmax. This observation of an inappropriate (i.e., too intensive training) performed is even more relevant when the training is combined with hypoxic stimulus as in the LHTL group.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the authors.

AUTHOR CONTRIBUTIONS

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