

Potential Confounding Effects of Intensity on Training Response

Dear Editor-in-Chief,

We read with great interest the important study by Zinner et al. (1) that suggested a greater risk of nonresponding when recreational runners complete both polarized (POL) and high-intensity (HIGH) training mesocycles, when compared to a low intensity (LOW) mesocycle. Although this study presents several methodological strengths and valuable information, we feel compelled to point out some potential challenges in the interpretation of the results.

First, from a coaching perspective, we would argue that the loads completed in all the training programs were very demanding, based on the training background of the novice runners who served as participants. This is not a trivial issue given the high number of evaluations conducted, including eight maximal efforts over 8 wk, which, when added to the training workload (volume–intensity), may well have induced suboptimal adaptations or even overreaching in some cases. For this group of runners, the training plus testing may have been an excessive load increase. In our experience as both researchers and coaches, a lower total workload, independent of intensity distribution, might be expected to induce a better performance outcome in the three experimental groups in this study (1). For instance, a previous study (2) with active nonrunners showed significant improvements in running performance after 4 wk of interval versus continuous training regimes equated by total load, but with an importantly lower training volume when compared to the current study (1). Furthermore, this is especially relevant in the POL and HIGH groups because only these groups were exposed to the highly demanding 4×4 min sessions (3). Therefore, although the minimum dose for optimal adaptations in novice runners remains to be clarified in further studies, we would like to know the authors' opinion about these issues, considering also that habitual (nontraining) physical activity has been previously demonstrated to influence aerobic adaptations of recreational runners (4).

Second, the methods selected for training prescription and monitoring are not without some limitations. For instance, as the **AQ2** TRIMP load was increased by 50% during the 3-wk mesocycle, based on the 4-wk wash-in mesocycle, the POL group seems likely to have been exposed to a greater training load than the other groups as they exhibited a significantly greater weekly TRIMP during the wash-in mesocycle. Further, the intensity distribution of POL (see Table 1) during the 3-wk mesocycle is not a good reproduction of the typical training distribution described in previous studies for recreational and subelite runners (5,6), as it presents an excess of time in Z2 (i.e., 13.4 ± 16.4), concurrently with lower time spent in Z1

(i.e., 69.7 ± 16.3). This is a serious concern, particularly given the abnormally frequent total exposure to high-intensity running plus maximal testing. Executing low-intensity sessions as prescribed is considered fundamental to the polarized model, and this likely did not occur in this study. Thus, although we do acknowledge the challenges inherent in implementing a study with these specific characteristics, it would be important to know the authors' suggestions, based on their experience, for better control of these aspects in further studies.

Finally, it is surprising that this work did not include the evaluation of maximum aerobic speed, a key parameter for endurance running evaluation. Maximum aerobic speed integrates maximum oxygen consumption ($\dot{V}O_{2\max}$) and running economy (RE) and has been previously demonstrated to discriminate performance level in runners (7). In this respect, another potential limitation refers to the methods selected for RE determination. We do not know if the selected velocity ($9 \text{ km}\cdot\text{h}^{-1}$) was a valid submaximal velocity for all runners (see Table 2). Interpreting the RE testing is further complicated by the short duration of stages (3 min) during incremental tests (8). Thus, this strongly questions the validity of the improved RE reported only in the LOW group, which is the only significant difference between groups.

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DOI: 10.1249/MSS.0000000000001989

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AUTHOR PLEASE ANSWER ALL QUERIES

AQ1 = Please check if authors name are correctly captured for given names (in red) and surnames (in blue) for indexing after publication.

AQ2 = Please spell out TRIMP.

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