

Effects of Exercise Training in Hypoxia Versus Normoxia on Vascular Health: Comments on Clinical Importance

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Dear Editor,

We read with great interest the paper by Montero and Lundby published in *Sports Medicine* in June 2016 [1]. The authors conducted a systematic review and meta-analysis to clarify the impact on vascular adaptations of exercise training performed in hypoxic versus normoxic conditions. The results showed that the standardized mean differences (SMDs) with 95 % confidence intervals (CI) for skeletal muscle capillarization and vascular dilator function in exercise training performed in hypoxia versus normoxia were 0.40 (95 % CI 0.10–0.70) and 0.67 (95 % CI 0.17–1.18), respectively.

Although the statistical methodology used was correct and the data were interesting, some methodological and statistical issues should be considered. Most importantly, while SMDs of 0.40 and 0.67 for mean skeletal muscle

capillarization and vascular dilator function were statistically significant, clinically these differences were unimportant. It is crucial to emphasize that clinical importance and statistical significance are different concepts, and that clinical importance carries more weight than statistical significance. A significant *p* value is likely to be obtained as a result of a larger sample size, lower standard deviation, and greater mean difference [2]. Data pooling in meta-analyses results in a larger sample size and can easily lead to a significant *p* value.

The take-home message for readers is that they should exercise clinical judgment when interpreting data.

Compliance with ethical standards

Conflict of interest Mohadeseh Sani, Erfan Ayubi, Salman Khazaei, and Kamyar Mansori declare that they have no conflicts of interest relevant to the content of this letter.

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