Resistance Training, Blood Pressure, and Meta-Analyses

To the Editor:

We read with great interest the recent meta-analysis by Cornelissen et al\(^1\) evaluating the impact of resistance training on blood pressure. This is an area that certainly needs a great deal of clarification, and the finding that dynamic and isometric resistance training results in a decrease of 3.9/3.9 mm Hg in normotensive/prehypertensive participants and a 4.1/1.5-mm Hg decrease in hypertensives provides a useful synthesis of the existent literature. However, we feel there are some methodological issues that need to be considered when interpreting these data.

First, the authors have included articles for which blood pressure was not the primary outcome of interest. Although the inclusion of such secondary data certainly helps to provide as full a picture as possible, it does have the possibility to influence the effect estimates in their meta-analyses.\(^2,3\) For example, we have recently presented a meta-analysis of randomized, controlled trials assessing the impact of resistance exercise where blood pressure was the main outcome (included studies up to March 2010).\(^4\) Unsurprisingly our analysis yielded fewer studies (9 articles with 11 treatment groups) compared with Cornelissen et al\(^1\) (28 articles with 33 treatment groups). Although consistent in direction, our analysis showed a nonsignificant pooled effect of resistance training on change in systolic and diastolic blood pressure of 1.08/1.03 mm Hg. Although it is possible that the reduced sample size could account for this difference, it could also be accounted for by the bias generated by using studies where blood pressure was a secondary outcome.

Second, we were surprised that the authors did not follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statement\(^5\) with regard to the reporting of the search strategy used and screening procedure used. Specifically, the authors provide the key words used for the search but not the search strategy, which creates potential problems for reproducibility of the data. In addition, a clear diagram depicting the number of records retrieved, retained, and eliminated at various stages (duplicates, abstract screening, full-text screening, and qualitative/quantitative analysis) is normally provide in such analyses.\(^5\) Failing to provide this information creates the possibility of a selective reporting bias.

Although the main findings of our meta-analysis diverge from that of Cornelissen et al\(^1\), there is agreement between the 2 with regard to the demonstration of no detrimental effects of resistance exercise, that is, an increase in blood pressure or any intervention-related serious adverse events. Given this plus the other recognized benefits of resistance training, there seems to be no reason why individuals with high-normal blood pressure, prehypertension, or hypertension should not engage in a resistance exercise program. However, we would argue that we still need much more robust data before recommending it as a blood pressure–lowering therapy.

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Disclosures

None.

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