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Letter to the Editor on 'Effect of a 6-week core stability training program on active trunk repositioning: a randomised controlled trial'

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I have read the recent publication in the journal Physiotherapy Quarterly, titled 'Effect of a 6-week core stability training program on active trunk repositioning: a randomised controlled trial' https://doi.org/10.5114/pq.2023.117222 authored by Amal A. Elborady, Omaima E. Saleh, and Amira A.A. Abdallah, which presented preliminary evidence suggesting that core muscle training can enhance trunk proprioception in healthy volunteers. I would like to take this opportunity to address a few methodological concerns pertaining to the sample criteria, result presentations, and interpretation. Furthermore, I kindly request the authors' expert opinion regarding the scope of this study.

The authors' report highlights the remarkable impact of a six-week intervention on reducing the mean absolute error (AE) in the experimental group in comparison to the control group, across both trunk flexion positions. However, it is crucial to note a significant difference in the mean age between the experimental and control groups, which could potentially influence the true effectiveness of the exercise intervention on the study subjects. Furthermore, the article fails to provide any information regarding the study participants' engagement in regular exercise routines, including sports or leisure physical activities that could potentially enhance core muscle strength. This omission raises concerns about the potential confounding effect of age and exercise routines, thereby magnifying the results observed in the experimental group.

Secondly, the author has reported the statistical difference in p-values. We strongly urge the author to acknowledge the inherent limitations of p-values as a reliable measure of evidence strength. It is crucial to recognise that small *p*-values do not accurately reflect the true impact of an intervention in an experimental group when compared to a control group. In this particular study, the authors did not provide specific details regarding the calculation of sample size, but they did allocate 20 samples to each group. It is widely acknowledged that a study with a small sample size is considered weak, even if it manages to detect a statistically significant difference between two clinically important variables [1]. Therefore, it is highly recommended to calculate the effect size (Cohen's *d*) [2]an important consideration is the sample size required. This is calculated from several components; one of which is the target difference. This study aims to review the currently reported methods of elicitation of the target difference as well as to quantify the target differences used in Health Technology Assessment (HTA when designing Randomised Controlled Trials (RCTs), as emphasised by the CONSORT (Consolidated Standards of Reporting Trials) guideline.

It is important to note that the author observed a statistically significant decrease in absolute error in the experimental group compared to the control group. However, we have conducted a thorough analysis by calculating the effect size based on the mean and standard deviation of pre- and post-intervention measurements for both 30- and 60-degree trunk flexion. The calculated effect sizes for the experimental group are 4.09 (30°) and 2.56 (60°), while for the control group they are 2.76 (30°) and 1.16 (60°). It is evident that both the experimental and control groups exhibit a substantial effect size (0.8 or greater), which can be misleading when relying solely on p-values. In this study, both groups demonstrated a significant reduction in absolute error. Therefore, it is crucial to acknowledge the limitations of solely relying on p-values to evaluate the strength of evidence. The determination of sample size and effect size calculations play a significant role in ensuring the validity and reliability of study findings. By considering these factors, we can obtain a more comprehensive understanding of the outcomes and draw more accurate conclusions.

I applaud the authors for publishing a preliminary investigation on core muscle training and its impact on trunk proprioception. This study contributes significantly to enhancing the quality of rehabilitation services.

Disclosure statement

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Conflict of interest

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Reference

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