WebLog Journal of Physical Therapy and Rehabilitation

Letter to Editor
Published: 05 Mar, 2026

Letter to the Editor- "Comparative Effectiveness of Neuromuscular Re-Education Versus Conventional Strengthening on Sensorimotor Control, Dynamic Knee Stability, Pain Modulation, Gait Performance, and Fall Risk in Geriatric Patients with Knee Osteoarthritis. A Randomized Controlled Trial"

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Received Date: *04 Feb 2026*
Accepted Date: *03 Mar 2026*
Published Date: *05 Mar 2026*

Citation:
Meel T, Sharma S, Kumar R. Letter to the Editor- "Comparative Effectiveness of Neuromuscular Re-Education Versus Conventional Strengthening on Sensorimotor Control, Dynamic Knee Stability, Pain Modulation, Gait Performance, and Fall Risk in Geriatric Patients with Knee Osteoarthritis. A Randomized Controlled Trial". WebLog J Phys Ther Rehabil. wjptr.2026. c0504. https://doi.org/10.5281/ zenodo.19070291

Dear Editor,

We read with great interest the recently published randomized controlled trial by Krishna Prakash and Muthukrishnan titled "Comparative Effectiveness of Neuromuscular Re-Education Versus Conventional Strengthening on Sensorimotor Control, Dynamic Knee Stability, Pain Modulation, Gait Performance, and Fall Risk in Geriatric Patients with Knee Osteoarthritis" [1].

The authors should be applauded for tackling an essential and therapeutically relevant problem in geriatric rehabilitation. However, we would like to emphasize many methodological and interpretation aspects that require clarification to increase the validity and clinical usefulness of the findings.

A randomized controlled trial by Krishna Prakash and Muthukrishnan [1] compared the effectiveness of neuromuscular re-education (NMR) and traditional strengthening in senior individuals with knee osteoarthritis. The study answers a therapeutically significant topic, especially considering the rising emphasis on sensorimotor rehabilitation and fall prevention in older persons. While the authors are to be applauded for their comprehensive outcome evaluation, many methodological and interpretation issues deserve explanation to increase the validity and clinical application of the findings.

The authors describe the study as a randomized controlled trial and state that they followed CONSORT guidelines, which shows an effort to meet accepted standards for good-quality clinical research. However, the study does not mention prospective registration in a publicly accessible clinical trial registry. The lack of a trial registration number reduces transparency and raises concerns about possible selective outcome reporting or changes to the study protocol, which can affect the internal validity of a randomized trial [2].

The study includes a reasonably good sample size and reports statistically significant results for several outcomes, suggesting that the intervention had meaningful effects. However, the authors did not report a power analysis or an a priori sample size calculation. Without information on the expected effect size and statistical power, it is difficult to know whether the study was adequately powered. The authors describe the study as single-blind, it is not clearly mentioned who was actually blinded. Later descriptions suggest that only the outcome assessors were blinded. This inconsistency makes the study doubtful, lowers confidence in how well bias was controlled, and does not follow CONSORT Item 11a [3].

Although opaque sealed envelopes were used for allocation concealment, details regarding their preparation and numbering are not provided. This incomplete reporting limits assessment of potential selection bias and does not meet CONSORT Item 9 requirements [4].

Additionally, the use of the Y-Balance Test as a primary measure of dynamic knee stability in older adults with knee osteoarthritis requires further justification. While the test is reliable in younger and athletic populations, its validity in elderly individuals with knee osteoarthritis is not well established [5]. Assessors were blinded, participants could not be blinded, and the more engaging nature of the neuromuscular re-education program may have influenced subjective outcomes such as pain and fear of falling [6].

The study uses several balance-related and functional outcome measures to assess neuromuscular and functional performance in older adults with knee osteoarthritis, providing a broad evaluation. When several outcome measures that assess similar aspects are used without adjusting for multiple comparisons, there is a higher chance of finding statistically significant results simply by chance. This can lead to undue emphasis on positive findings while overlooking results that are not significant, which may misrepresent the true effect of the intervention [7].

The authors used commonly accepted parametric statistical tests, such as repeated measures ANOVA and independent t-tests, which are generally appropriate for comparing groups and assessing changes over time. However, the manuscript does not report any testing for data normality or equality of variances. Because parametric tests depend on these assumptions, the lack of normality checks (for example, Shapiro–Wilk or Kolmogorov–Smirnov tests) raises concerns about the accuracy of the statistical results, especially in an older population where data are often not normally distributed [8].

The study reports a large reduction in pain after neuromuscular re-education. However, for an exercise-only intervention, the decrease in pain (VAS from 6.2 to 0.4 over 12 weeks) appears unusually large compared with findings from most knee osteoarthritis exercise studies [9].

In conclusion, while the study offers useful early findings, these limitations suggest that the results should be interpreted with caution. Addressing these methodological and reporting issues in future studies would strengthen the evidence and improve its relevance for clinical practice.

Author Contribution

All authors made equal contribution to the conceptualization, drafting and final approval of this letter.

Ethical Statement

Ethical approval not required, as this letter is based on an appraisal of previous published literature and did not involve human participants.

Conflicts of Interest

The authors declare no conflicts of interest.

Funding

No funding was received for the preparation of this manuscript.

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