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Letter to Editor
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Letter to the Editor -"Effectiveness of Multimodal Ergonomic Interventions Versus Standard Postural Education for Smartphone-Related Postural Dysfunction: A Three-Arm Randomized Controlled Trial"

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To the Editor,

We read with considerable interest the three-arm randomized controlled trial (RCT) by Muthukrishnan and Rajadurai (2026) comparing Multimodal Ergonomic Intervention (MEI), Wearable Posture Biofeedback Training (WPBT), and Standard Postural Education (SPE) for smartphone-related postural dysfunction (SRPD). The study addresses a clinically significant and growing public health burden, and the authors are commended for their prospective CTRI registration, assessor-blinding, and intention-to-treat (ITT) analysis. However, several methodological concerns — evaluated against the CONSORT 2010 framework for parallel-group RCTs [1] — merit attention before the findings can be applied with full confidence in clinical and educational practice.

Allocation Concealment and Blinding (CONSORT Items 10, 11a, 11b)

The authors describe sequentially numbered, opaque, sealed envelope (SNOSE) allocation concealment, which is methodologically sound when implemented rigorously. However, the manuscript does not explicitly state who prepared, stored, and opened the envelopes, nor whether a statistician or independent third party was responsible for the sequence generation independently of the clinical team. This omission is notable because inadequate separation between sequence generation and allocation concealment is associated with inflated treatment effect estimates [2]. Schulz et al. clearly delineate that adequate concealment requires that the person enrolling participants should be unable to foresee the assignment [1]. Future authors should explicitly confirm that the treating physiotherapist had no access to the randomization list at the point of enrollment.

Furthermore, while participant and therapist blinding is appropriately acknowledged as infeasible, the authors do not describe any formal check of assessor blinding integrity (e.g., whether the blinded assessor was ever inadvertently unblinded, and at what frequency). Fergusson et al. have demonstrated that failure to verify assessor blinding is a common and consequential reporting gap in physiotherapy RCTs [3].

Incomplete Reporting of the Exercise Protocol and Intervention Fidelity (CONSORT Item 5)

The CONSORT 2010 extension for non-pharmacological trials (CONSORT-NPT) [4] and the Template for Intervention Description and Replication (TIDieR) checklist [5] mandate that interventions be described with sufficient precision to permit replication. The MEI exercise protocol, although partially described (chin tucks, cervical retraction, deep cervical flexor activation, thoracic extension, scapular retraction), lacks key replication parameters: progression criteria across the 8 weeks, rest intervals between sets, definitions of load progression for Theraband exercises, and the criteria determining when a participant had achieved correct technique. Similarly, the behavioral modification component references motivational interviewing but does not specify the theoretical fidelity framework used, the training or credentials of the counselors delivering these sessions, or whether motivational interviewing fidelity was assessed using validated tools such as the MITI

(Motivational Interviewing Treatment Integrity) scale [6]. Without these details, independent replication and clinical translation are substantially impeded.

Primary Outcome and Minimal Clinically Important Difference Justification (CONSORT Items 6a, 12b)

The craniovertebral angle (CVA) is established as a valid and reliable measure of forward head posture [7], and the authors correctly cite the minimal detectable change (MDC) of 5.0°. However, the Minimum Clinically Important Difference (MCID) stated as "5–6°" is referenced without a specific citation. The MCID for CVA in SRPD populations has not been rigorously validated in adequately powered psychometric studies; existing estimates derive primarily from pain and disability-anchored constructs in neck pain populations rather than SRPD-specific cohorts [7]. Claiming that the 9.4° CVA improvement in Group A is "clinically meaningful" based on an MCID of uncertain provenance potentially overstates the clinical significance of the findings. The authors should clarify the source population and methodology underlying their MCID estimate.

Additionally, the Thoracic Kyphosis Index (TKI) is designated as a co-primary outcome, yet the paper does not state a pre-specified primary endpoint hierarchy, nor does it apply a formal multiplicity correction for two co-primary outcomes. This increases the Type I error rate and constitutes a deviation from CONSORT Item 6a, which requires that primary outcomes be specified with a "completely defined" pre-specified analysis plan [1].

Single-Center Design, Generalizability, and Socioeconomic Confounding (CONSORT Items 4a, 21)

The trial was conducted at a single outpatient physiotherapy and occupational health department in Tamil Nadu, India, with a predominantly young adult sample (mean age 26.4–27.3 years). The authors acknowledge this limitation but do not quantify the degree to which the occupational and socioeconomic profile of the study population may restrict generalizability. Ergonomic modification feasibility is strongly influenced by economic resources, housing conditions, and employment type [8] — factors that systematically vary across Indian and global populations. The MEI component requiring physical workstation restructuring and ergonomic accessories (phone stands, holders) may be substantially less achievable in lower-income settings, limiting external validity. A socioeconomic stratification analysis or at minimum a description of the occupational distribution and economic profile of the sample would strengthen the generalizability appraisal.

Smartphone Addiction Scale—Short Version (SAS-SV): Psychometric Appropriateness and Cultural Validation (CONSORT Item 6a)

The SAS-SV [9] was employed as a secondary behavioral outcome measure. While the SAS-SV has demonstrated reliability and validity in Korean and several other cultural contexts [9], its psychometric properties in Indian Tamil-speaking populations have not been independently validated. Cross-cultural adaptation studies indicate that smartphone addiction instruments may require linguistic and conceptual modification for different socio-cultural contexts, as usage patterns and cultural attitudes toward smartphone use differ significantly [10]. The authors should clarify whether a culturally validated Indian version of the SAS-SV was used or whether the instrument was forward-back translated and piloted prior to deployment.

Absence of Long-Term Follow-Up Data (CONSORT Item 13b)

The 8-week assessment window, while adequate for demonstrating short-term efficacy, is insufficient to establish durability of postural correction. The literature on biofeedback-based postural interventions has documented postural relapse following device cessation in the absence of comprehensive behavioral reinforcement [11]. The authors' recommendation of an integrated MEI-WPBT protocol is clinically intuitive, but without 6- or 12-month follow-up data, the trajectory of postural correction, behavioral maintenance, and SAS-SV outcomes remains speculative. Future trials should incorporate planned long-term assessment points as co-primary or key secondary endpoints, as recommended by CONSORT Item 13b [1].

Wearable Device Brand Heterogeneity and Dose-Response Data (CONSORT Items 5, 7a)

The WPBT group used either the Lumo Lift or the Upright GO 2, two devices with distinct sensor configurations, feedback algorithms, and calibration interfaces. While the authors state that device brand heterogeneity was "minimized but not eliminated," this introduces a potentially uncontrolled source of variance in Group B outcomes. Sensor accuracy and feedback threshold sensitivity differ meaningfully between inertial measurement unit-based wearable posture devices [12]. The manuscript does not report the distribution of device allocation within Group B, nor does it present any device-specific subgroup analysis or test of device-type as a covariate. This limits confidence in the internal validity of the WPBT arm's effect estimates.

Furthermore, the manuscript lacks cumulative wear-time data (total daily hours of WPBT device use per participant), alert frequency data, and dose-response analyses that would clarify the relationship between sensor engagement and postural outcomes — information that is essential for clinical prescription of wearable biofeedback [12].

Author Contribution

All authors contributed equally to the conceptualization, drafting, and final approval of this author.

Ethical Statement

Ethical approval was not required because this author is based solely on the appraisal of previously published literature.

Conflict of Interest

The authors declare no conflict of interest.

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