

## Commentary

# Commentary to: Relationship Between Plantar Pressure, Body Mass Index and Balance in Children: A Cross-Sectional Study

Jiayi Chen<sup>1</sup><sup>1</sup>Department of Stomatology, Suzhou Wujiang District Hospital of Traditional Chinese Medicine, Suzhou, PR China**Keywords:** Balance, Body Mass Index, Children, Normal, Plantar Pressure

## To the Editor:

I read with great interest the article entitled “Relationship Between Plantar Pressure, Body Mass Index and Balance in Children: A Cross-Sectional Study” by Ali et al., recently published in the Journal of Musculoskeletal and Neuronal Interactions (JMNI)<sup>1</sup>. The authors should be commended for addressing an important and clinically relevant topic, as childhood overweight and obesity continue to pose significant challenges to musculoskeletal health and functional performance.

First, the role of foot posture as an effect modifier rather than solely a confounder. Although the high prevalence of flatfoot was reported, foot posture was not incorporated into the main statistical modeling. Given its biomechanical impact on load distribution and mediolateral stability, foot posture may interact with BMI in influencing balance outcomes. I suggest reanalyzing the data using multivariable linear regression models that include BMI category and foot posture simultaneously, with an interaction term (BMI × foot posture). Additionally, a stratified analysis comparing normal-arch and flatfoot subgroups could determine whether the association between BMI and stability indices remains consistent across structural phenotypes. A sensitivity analysis excluding participants with flatfoot would further clarify the robustness of the results.

Second, normalization of plantar pressure variables.

Peak plantar pressure is inherently influenced by absolute body mass. Without normalization, it is difficult to distinguish whether higher pressures reflect biomechanical redistribution or simply greater vertical loading. Reanalysis using body-weight-normalized peak pressure (e.g., pressure per kg or relative to contact area) could help disentangle structural versus load-dependent effects. Subsequent regression modeling with Biodex stability indices (APSI, MLSI, OSI) as dependent variables and normalized pressure as predictors would clarify whether pressure distribution independently explains balance impairment beyond BMI alone.

These additional analyses could be conducted using the existing dataset and would strengthen causal interpretation without requiring new data collection. By clarifying interaction effects and load normalization, the study could provide more precise guidance for screening and intervention strategies in overweight and obese children.

I appreciate the authors' valuable contribution and hope these suggestions may support further methodological refinement.

### Author Contributions

*Jiayi Chen contributed to all aspects of the work and approved the final version of the manuscript.*

### Acknowledgements

*The author acknowledges that ChatGPT-5 was used during manuscript preparation to assist with sentence structure and language editing. The author confirms that all AI-assisted content was reviewed and verified, and the author takes full responsibility for the integrity, accuracy, and originality of the work.*

The author has no conflict of interest.

Corresponding author: Jiayi Chen, MDS, Dachun Road 999, Wujiang District, Suzhou City, Jiangsu Province, PR China

E-mail: [cjy13912736738@163.com](mailto:cjy13912736738@163.com)

Edited by: G. Lyritis

Accepted 17 February 2026

## Reference

1. Ali MS, Aly SM, Usama M. Relationship Between Plantar Pressure, Body Mass Index and Balance in Children: A Cross-Sectional Study. J Musculoskelet Neuronal Interact. 2025 Dec 1;25(4):414-421.

