BSMMUJ-18.4–84712   Kannan M *et al*. | monikannan2612@gmail.com | 0009-0001-8970-4279

Perspective

Final title: Integrating Brain Gym exercises and progressive muscle relaxation in a college student with neurasthenia: A case report

Title at submission: Integrating Brain Gym exercises and progressive muscle relaxation among college student with neurasthenia: A case study

Reviewer B: Taslim Uddin, ORCID: 0000-0002-2884-9212

The manuscript presents a case report exploring the combined effect of Brain Gym exercises and Progressive Muscle Relaxation on fatigue and sleep quality in a college student diagnosed with neurasthenia. Its novelty is that it combines two commonly used therapeutic modalities (Brain Gym + PMR) not previously studied together in this context. The topic is clinically relevant given the increasing prevalence of stress-related fatigue in student populations.

It is structured and readable; however, several significant scientific, methodological, and interpretive concerns limit its suitability for publication in its current form.

1. Comment   Major Weakness: Brain Gym remains controversial and is widely considered pseudoscientific in evidence-based medical literature. With concerns in
   a) Lack of validated neurophysiological mechanisms,
   b) b) Most Brain Gym claims (hemispheric balancing, neuroplasticity improvement) are unsubstantiated/disproven, and
   c) Without adequate justification, using this technique may compromise scientific rigor.

Response   a) Thank you for raising this important concern. While we acknowledge that some of the early theoretical explanations of Brain Gym (such as hemispheric balancing) lack strong neurophysiological validation, we would like to clarify that our use of Brain Gym in this case report is based on available empirical evidence supporting its functional benefits, not its theoretical claims. In introduction we have highlighted it in (Page 4, Line 95 to 98).
   b) We sincerely appreciate the reviewer's comments. In the context of a case report, our intention is not to establish mechanistic pathways but to document the clinical response to a safe, low-risk intervention supported by previously published studies showing functional benefits. Case reports typically focus on clinical observations, safety, and existing supportive literature rather than mechanistic validation, and we have ensured transparency by clearly stating the evidence base and limitations in our manuscript. We have highlighted it (Page7, Line 182 to185) in discussion.
   c) We have justified it in discussion (Page 7, Line 194 to195).

2. Comment   Diagnostic Ambiguity: Neurasthenia is obsolete in DSM 5 and largely replaced by somatic symptom disorder or chronic fatigue–related diagnoses.
   a) Diagnosis relies solely on ICD-10 criteria without exclusion of other conditions.
   b) No psychiatric, neurological, or medical screening is reported.

Response   a) Thank you for your thoughtful comments regarding the diagnostic boundaries of neurasthenia. We agree that the status of neurasthenia has been debated internationally. As the reviewer notes, neurasthenia is no longer included as a distinct category in DSM-5, where symptoms are often subsumed under somatic symptom disorder, chronic fatigue–related conditions, or mood and anxiety disorders. However, the diagnosis continues to remain valid in ICD-10, where it is still widely used in several countries, particularly in Asia and parts of Europe (that is also stated in the reference you have provided), Our case was therefore evaluated strictly according to ICD-10 criteria, in line with the diagnostic system routinely used in our clinical setting. We have highlighted it in (Page 5, Line 114) in case description.
   b) In description in (Page 5, line 118 to 120), we have added statement that the patient under went   routine clinical assessment, and no red-flag medical, neurological, or psychiatric symptoms were identified during evaluation, and it has been justified.

3. Comment   The manuscript claims the intervention "effectively reduces fatigue and enhances sleep quality," which is not possible to infer from a single case report lacking control.

Response   "We thank the reviewer for highlighting the concern regarding interpretation overreach. To address this, we have revised the manuscript to use more cautious language. Specifically, we now describe the intervention as 'a low-risk, exploratory intervention' that can be considered an evidence-based, non-pharmacological strategy associated with improvements in fatigue and sleep disturbances in this young adult, rather than claiming definitive efficacy. We also emphasize the need for further studies with longer follow-up to confirm generalizability and long-term effectiveness.

This wording reflects the observed outcomes while maintaining appropriate caution for a single-case report.

We have highlighted it (Page 7, Line 194 to 195) in discussion.

4. Comment

Literature Review Issues: Some citations do not match the claims made.

Response

We appreciate the reviewer's observation regarding citation–content alignment. In response, we carefully reviewed all references and updated them to ensure accuracy and relevance. Specifically, Reference 3 and Reference 5 in the previous submission were replaced with more recent and appropriate sources that directly support the statements made in the manuscript. Additionally, References 7 and 8 were previously cited at the end without appropriate placement in the text. This has now been corrected: both references are inserted at their proper positions within the manuscript where their supporting evidence is discussed, ensuring clear linkage between claims and citations. These revisions improve the scientific accuracy and consistency of the manuscript.

We have highlighted it in (Page 9, Line 235 to 237 and 242 to 243) in reference.

Reviewer c: Iffat Islam Khan, ORCID: [0009-0000-0008-0184](#)

5. Comment

Title should clearly reflect a single case, not an experimental study. Like " A college student" , " A case report"

Response

The title has been revised as per the comment. Revised title is "Integrating Brain Gym exercises and progressive muscle relaxation among college student with neurasthenia: A case report

6. Comment

The aim of this 'study' should be replaced with 'case report' (Page 2, Line 32).

Response

The objective has been revised as per suggestion (Page 2, Line 32). The case report aims to assess the combined effect of Brain Gym activities and progressive muscle relaxation on fatigue and sleep disturbances in a young adult with neurasthenia in terms of improving mental health outcomes

7. Comment

Keep conclusion descriptive, not causal.

Response

The conclusion has been revised as "This case demonstrates that integrating brain gym with progressive muscle relaxation may effectively reduce fatigue and enhance sleep quality in college students with neurasthenia, supporting a safe and accessible therapeutic strategy to improve mental health and quality of life."

8. Comment

As this is a single case, findings cannot be generalised."

Response

The findings of this study has been revised.

9. Comment

Frequently used plural terms such as "participants," "study population," and "findings" . Corrections needed

Response

The corrections have been made through out the manuscript.

Executive editor: M Mostafa Zaman, ORCID: [0000-0002-1736-1342](#)

10. Comment

Please review and confirm the content. Kindly answer the author queries raised.
AQ 1: Please provide the ICD-10 code.
AQ 2: Please provide the reference number.
In addition, please provide the full name of Monisha K, Monisha B, and Santhana Lakshmi S.

Response

Thank you for your message. I have reviewed the content thoroughly and addressed all the queries raised.
Comments:
AQ1: The ICD-10 code for neurasthenia is F48.0.
AQ2: The Reference number is added and the reference number is [8]Please let me know if any further corrections to be done in future.
Regarding the queries related to the author's name expansion, please find the required expansions provided below.
Monisha Kannan, Vignesh Srinivasan, Prathap Suganthirababu, Santhana Lakshmi Sivakumar, Yamini Umasankar, Monishaa Bakthavatsalam.

11. Comment

The reference number 8 is not the correct reference for the MFI-20. It was developed by a Dutch research team led by Dr. Ellen Smets, B. Garssen, B. Bonke, and J.C.J.M. De Haes, first described in 1995, to assess different dimensions of fatigue in patients, especially those with chronic illnesses like cancer. Abuar AB et all, and many others have used it. The credit should be given to the scientists who developed it.

Response

Thank you for your observation regarding the MFI-20 reference. I would like to provide the correct original reference and give due credit to the developers of the scale. Due to reference constraints, I was unable to include it earlier, but I would like to properly acknowledge the authors now.
[11] Smets EM, Garssen B, Bonke BD, De Haes JC. The multidimensional fatigue inventory (MFI): Psychometric qualities of an instrument to assess fatigue. Journal of Psychosomatic Research. 1995 Apr 1;39(3):315–325.
Kindly add the above as the 11th reference and cite it in-text as [11] next to the mention of MFI-20.