

CASE REPORT

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



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Abstract

Background: Neurasthenia, a condition marked by chronic mental and physical fatigue with poor sleep, is increasingly prevalent among young adults facing academic stress which has been poorly addressed. 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.

Case description and management: A 22-year-old male college student presented with persistent fatigue, tension headaches, irritability, and non-restorative sleep for four months. Clinical findings met ICD-10 diagnostic criteria for neurasthenia. Baseline Multidimensional Fatigue Inventory (MFI-20) and Pittsburgh Sleep Quality Index (PSQI) scores were 62 and 10, respectively, indicating severe fatigue and poor sleep. A four-week combined programme of Brain Gym exercises and progressive muscle relaxation was administered five days per week. Post-intervention assessment showed substantial improvement for four weeks, with MFI-20 reduced to 44 and PSQI to 5 signifying better energy levels and improved sleep efficiency. The participant reported high satisfaction, with no adverse events.

Conclusion: 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.

Key messages

Neurasthenia in young adults causes persistent mental and physical fatigue with poor sleep quality. Brain Gym exercises enhance cognitive function, focus and coordination, thereby reducing mental fatigue. Progressive muscle relaxation lowers stress, promotes deep relaxation and improves sleep quality. Combining Brain Gym with progressive muscle relaxation offers an effective, non-pharmacological approach to manage fatigue and restore healthy sleep patterns in college students with neurasthenia.

Introduction

Neurasthenia is a chronic condition characterised by persistent mental and/or physical fatigue accompanied by at least two symptoms such as dizziness, dyspepsia, muscular aches, tension headaches, inability to relax, irritability, or sleep disturbance. Neurasthenia was often caused by mental overstimulation and strain at home and work. Excessive "brain-work," long hours, sleepless nights, and high-pressure lifestyles led to mental exhaustion, especially when an individual's nerve strength was insufficient for ambitious careers. Neurasthenia (ICD-10 code: F48.0) as a distinct disorder, while DSM-IV lists it under undifferentiated somatoform disorders [1]. Brain Gym is a set of structured movement-based activities designed to stimulate both hemispheres of the brain, enhance neuroplasticity, and improve mood, attention, and sleep quality. Although some of the early theoretical explanations proposed for Brain Gym—such as hemispheric balancing and specific neuro-physiological mechanisms—remain debated and lack strong validation, its use in this case is grounded in the functional outcomes reported in empirical studies [2]. Progressive muscle relaxation, developed by Edmund Jacobson, involves systematic contraction and release of muscles to lower sympathetic arousal, relieve fatigue, and promote restorative sleep [3]. Multidimensional Fatigue Inventory (MFI-20) [4] was used to measure the fatigue. To measure sleep quality, Pittsburgh sleep quality index (PSQI) is widely used [5]. Although Brain Gym and progressive muscle relaxation have been studied individually, there is limited research on their combined effect in reducing fatigue and improving sleep specifically among college students with neurasthenia. This case report aims to determine the effectiveness of Brain Gym and progressive muscle relaxation intervention in a young adult with neurasthenia, focusing on its effect on fatigue and sleep quality in terms of improving overall quality of life.

Case description and management

A 22-year-old male college student presented with persistent fatigue for four months, generalised body pain on exertion, tension headaches during cognitively demanding tasks, difficulty initiating and maintaining sleep, irritability, inability to relax, and reduced concentration. These symptoms met the ICD-10 criteria for neurasthenia, characterized by distressing fatigue after mental effort and bodily weakness after minimal exertion, accompanied by at least two associated features. He had no history of chronic illness, psychiatric treatment, or use of sleep medications, and his family history was unremarkable with no known genetic or neurological disorders. The patient underwent routine clinical assessment, and no red-flag medical, neurological, or psychiatric symptoms were identified during evaluation. Psychosocially, he reported typical college stressors without significant environmental risk factors. He had not previously received interventions for fatigue or sleep disturbances. At baseline, a demographic questionnaire were used to assess fatigue and sleep. No other diagnostic tool was used. The total MFI score was 62, indicating severe fatigue, and the total PSQI score was 10, reflecting

poor sleep quality. The study duration is from 26 May 2025 to 25 August 2025. Written informed consent was obtained for participation and publication of de-identified data.

A four-week combined programme of Brain Gym exercises and progressive muscle relaxation was initiated, delivered in supervised sessions of 45–60 minutes, five days per week in a quiet setting.

Week 1 included spot marching, cross crawl, brain buttons, hook-ups, and lazy eight movements, followed by 30 minutes of full-body progressive muscle relaxation. These exercises aimed to warm up, improve cross-lateral coordination, enhance blood flow, balance hemispheres, and support visual attention.

Week 2 introduced step touch, positive points (gentle pressure on the eyes with breathing), thinking cap (unrolling ears), and neck circles, again concluding with progressive muscle relaxation. These activities addressed lateral balance, stress reduction, mental alertness, and neck tension.

Week 3 added cook's hook-up, earth buttons (hand on navel and below lips), trace X with eye tracking, and active arms (overhead stretch). Progressive muscle relaxation was continued for 20 minutes at the end of each session. This phase focused on grounding, spatial orientation, visual focus, posture, and hand-eye coordination.

Week 4 incorporated gravity glider (arm gliding in cross-legged sitting), foot flex (ankle movements), repetition of lazy eight, and integration of all prior Brain Gym exercises in a 25–30-minute routine. progressive muscle relaxation was performed after each session to consolidate relaxation and recovery. The final week aimed to integrate all learned movements for maximum benefit on fatigue and sleep quality.

At the end of four weeks, re-assessment with the same tools showed marked improvement. The total MFI score dropped from 62 to 44, and the total PSQI score decreased from 10 to 5. Since the patient reported that he has no serious side effects during the therapy tolerability was evaluated based on the lack of adverse reactions. No adverse events were reported and the participant expressed satisfaction with the programme.

The patient expressed satisfaction with the intervention, noting improved energy, focus, and sleep quality. He gradually experienced reduced fatigue and enhanced mental clarity. He found the sessions engaging and easy to follow, reporting better daily functioning and overall well-being.

Discussion

The present study investigated the effectiveness of Brain Gym exercises combined with progressive muscle relaxation in college students diagnosed with neurasthenia, a condition characterised by persistent fatigue, impaired concentration, and non-restorative sleep. Diagnosis of neurasthenia was based on the ICD-10 criteria, which identify seven core symptoms: dizziness, dyspepsia, muscular aches or pains, tension headaches, inability to relax, irritability, and sleep disturbances. This study specifically focused on assessing changes in fatigue levels and sleep quality, both essential components of mental health and overall quality of life.

Participants followed a supervised four-week intervention program, performing Brain Gym exercises integrated with progressive muscle relaxation five days per week. The structured regimen aimed to target both mental and physical dimensions of fatigue while promoting relaxation and restorative sleep. Post-intervention assessment using standardised scales demonstrated significant improvements across outcome measures, indicating that the combined intervention effectively alleviated fatigue and enhanced sleep quality, both essential components of mental health, quality of life, and well-being in the student population.

The findings from this case align with existing literature reinforcing that Brain Gym exercises enhance sleep quality statistically and clinically by increasing the hours of sleep, cognitive functions, attention, coordination, and mental stamina through bilateral hemispheric activation, particularly in student populations under academic stress [2, 6]. In this case report, Brain Gym is presented as an evidence-supported behavioral movement routine rather than a mechanistic neurophysiological intervention, with its inclusion justified by functional outcomes, clinical safety, and prior literature demonstrating benefits in student populations.

Several studies reports that progressive muscle relaxation helps in reducing fatigue in multiple population [7]. For instance, a quasi-experimental study found that progressive muscle relaxation effectively alleviates academic stress among students, which is often associated with fatigue. By reducing stress, progressive muscle relaxation may indirectly contribute to lower fatigue levels in student populations [8]. An historical analysis in neurasthenia shows that breathing exercise elevates fatigue and restores balance [9].

Conclusion

Brain Gym combined with progressive muscle relaxation may be considered evidence-based, non-pharmacological strategy for reducing fatigue and sleep disturbances in young adult, aligning with the broader literature on fatigue management, cognitive enhancement, and autonomic regulation. Further studies with longer follow-up periods are necessary to confirm the generalisability and long-term effectiveness of this combined intervention".

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Author contributions

Manuscript drafting and revising it critically: MK, VS, SLS. *Approval of the final version of the manuscript:* MK, VS, PS, SLS, MB. *Guarantor of accuracy and integrity of the work:* VS, MK.

Conflict of interest

We do not have any conflict of interest.

Data availability statement

We confirm that the data supporting the findings of the study will be shared upon reasonable request.

Supplementary file

None

References

1. Dang G, Zhu L, Lian C, Zeng S, Shi X, Pei Z, Lan X, Shi JQ, Yan N, Guo Y, Su X. Are neurasthenia and depression the same disease entity? An electroencephalography study. *BMC Psychiatry.* 2025 Jan 17;25(1):44. Available at: <https://link.springer.com/content/pdf/10.1186/s12888-025-06468-1.pdf> [Accessed on 23 Dec 2025]
2. Dhokpatil S, Deshmukh M, Varghese S, Palekar TJ, Salekar B. Effect of Brain Gym exercises on the sleep quality and duration in young adults: A quasi experimental study. *International Journal of Health Sciences and Research.* 2023 Dec; 13(12): 39-45. Available at: https://www.ijhsr.org/IJHSR_Vol.13_Issue.12_Dec2023/IJHSR05.pdf [Accessed on 23 Dec 2025]
3. Zargarzadeh M, Shirazi M. The effect of progressive muscle relaxation method on test anxiety in nursing students. *Iranian Journal of Nursing and Midwifery Research.* 2014 Nov-Dec;19(6):607-612. Available at: https://journals.lww.com/jnmr/fulltext/2014/19060/the_effect_of_progressive_muscle_relaxation_method.11.aspx [Accessed on 23 Dec 2025]
4. Smets EMA, Garssen B, Bonke B, De Haes JCJM. The Multidimensional Fatigue Inventory (MFI) psychometric qualities of an instrument to assess fatigue. *Journal of Psychosomatic Research.* 1995 Apr;39(3):315-325. doi: [https://doi.org/10.1016/0023-3899\(94\)00125-o](https://doi.org/10.1016/0023-3899(94)00125-o)
5. Carpi M. The Pittsburgh Sleep Quality Index: A brief review. *Occupational Medicine (Lond).* 2025 Apr 4;75(1):14-15. Available at: <https://academic.oup.com/ocmed/article/75/1/14/8107291> [Accessed on 23 Dec 2025]
6. Siroya VV, Naqvi WM, Phansopkar P. Brain gym exercises: An approach in improving the psychological perception in graduate students. *Journal of Medical Pharmaceutical and allied Sciences.* 2021 September - October;10(5):3636-3639. doi: <https://doi.org/10.22270/jmpas.V10I5.1338>
7. Gopika, Kumaresan, Suganthirababu P, Srinivasan V, Vishnuram S, Priyadarshini, Alagesan J. Effectiveness of Jacobson relaxation technique and bhastrika pranayama on sleep quality in elderly subjects. *Indian Journal of Physiotherapy and Occupational Therapy.* 2024 Jan 21;18(Special Issue 2024):512-516. Available at: <https://medicopublication.com/index.php/ijpot/article/view/20113> [Accessed on 23 Dec 2025]
8. Anuar AB, Anas M, Samad S. Effects of progressive muscle relaxation on academic stress in students. *Jurnal Psikologi Pendidikan dan Konseling: Jurnal Kajian Psikologi Pendidikan dan Bimbingan Konseling.* 2019 Dec 29. Available at: <https://www.semanticscholar.org/paper/Effects-of-Progressive-Muscle-Relaxation-on-Stress-Anuar-Anas/bbac3a448b9b183585afdbf85c7b7cd1db08b082> [Accessed on 23 Dec 2025]
9. Wu YC. A Disorder of Qi: Breathing Exercise as a Cure for Neurasthenia in Japan, 1900-1945. *Journal of the History of Medicine and Allied Sciences.* 2016 Jul;71(3):322-344. doi: <https://doi.org/10.1093/jhmas/jrv029>