RESEARCH PAPER

To Compare The Effect Of Mitchell Relaxation Method And Mindfulness-Based Stress Reduction In Improving Physical Stress Among Physiotherapy Students—An Evidence-Based Study

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ABSTRACT

Background: Physiotherapy students often experience high levels of stress due to academic demands, clinical exposure, and performance pressure. Physical stress can impair their concentration, academic performance, and well-being. Various stress management techniques have been introduced, including the Mitchell Relaxation Method (MRM) and Mindfulness-Based Stress Reduction (MBSR).

Purpose: To compare the effectiveness of MRM and MBSR in reducing physical stress among physiotherapy students.

Methodology: This study was a Randomized Controlled Trial conducted at SBS University. Seventy-three students were randomly assigned into two groups: Group A received MRM, and Group B received MBSR. Pre- and post-intervention assessments were done using the Perceived Stress Scale (PSS), General Health Questionnaire (GHQ), and Heart Rate (HR). The intervention lasted four weeks with 3 sessions per week.

Results: Both groups showed significant reduction in stress levels post-intervention. However, the MBSR group demonstrated slightly greater improvement in psychological parameters (GHQ), while the MRM group showed more improvement in physical parameters (HR).

Conclusion: Both MRM and MBSR are effective in reducing stress among physiotherapy students. MRM may be more suitable for addressing physical stress, while MBSR may be better for psychological stress.

Clinical Implication: Incorporating structured relaxation techniques like MRM and MBSR into academic routines may enhance well-being and performance in physiotherapy students.

Keywords: Physiotherapy students, Mitchell Relaxation Method, Mindfulness-Based Stress Reduction, stress, Perceived Stress Scale, General Health Questionnaire

How to cite this article: Gaur D, Kumari R, Verma V. To Compare The Effect Of Mitchell Relaxation Method And Mindfulness-Based Stress Reduction In Improving Physical Stress Among Physiotherapy Students—An Evidence-Based Study. Int J Drug Deliv Technol. 2026;16(7s): 981-985; DOI: 10.25258/ijddt.16.7s.105.

INTRODUCTION

Stress is the way human beings react physically and mentally to the changes that occur in their life in the form of certain events, situations, incidents or experiences. People experience stress in different way and for different manner. The reaction of the person is based upon the perception of an event or a situation.

Physical therapists use interventions like exercise, postural instruction, and orthotic devices to modify the physical stresses applied to body tissues. Physical stress is defined as the force applied to a given area of biological tissue, and interventions that modify physical stress have been shown to decrease impairments, functional limitations, disability, and pain in various patient populations. The Physical Stress Theory (PST) is a general theory based on fundamental principles that govern the adaptive response of biological tissues to physical stress. The PST focuses on the physical stresses that influence all biological tissues, which are formed from groups of specialized cells that cooperate to perform one or more functions within the body. The four fundamental types of tissue are epithelial, connective, muscular, and nervous. The PST identifies common principles from the literature that may be used to predict adaptive tissue changes in response to physical stress. The PST can be applied most easily to the care of patients with primary problems involving the musculoskeletal and integumentary systems, but also has potential applications for patients with primary problems involving the cardiovascular pulmonary and neuromuscular systems. The PST relates to a continuum of care and has direct applications for issues related to wellness and the prevention of physical disabilities.

Managing Physical Stress:- Rest and Recovery Allowing the body time to rest and recover is essential for managing physical stress. This includes getting adequate sleep, taking breaks during physical activity, and incorporating rest days into exercise routines .Nutrition Proper nutrition is crucial for supporting the body's response to physical stress. A balanced diet that includes sufficient protein, carbohydrates, fats, vitamins, and minerals can help the body repair and rebuild tissues. Hydration Staying hydrated is

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important for maintaining normal physiological functions and preventing dehydration, which can exacerbate physical stress.
Stress Reduction Techniques such as (1) **Mindfulness-Based Stress Reduction (MBSR)** and (2) **Mitchell Relaxation Methods** can help reduce the overall stress burden on the body and promote recovery.

Relaxation techniques like the **Mitchell Relaxation Method (MRM)**, based on reciprocal inhibition and diaphragmatic breathing, have been used to counteract physical tension. Similarly, **Mindfulness-Based Stress Reduction (MBSR)** focuses on present-moment awareness and has been shown to reduce emotional and cognitive stress.
While both techniques are proven to reduce stress, there is limited direct comparison, particularly among physiotherapy students in India.

METHODOLOGY

STUDY DESIGN: This study was conducted as a **Randomized Controlled Trial (RCT)** to compare the effects of the Mitchell Relaxation Method and Mindfulness-Based Stress Reduction (MBSR) on stress levels among physiotherapy students.

RESEARCH SETTING: The study was conducted at **Sardar Bhagwan Singh University**, located in **Balawala, Uttarakhand**. All intervention sessions and assessments were carried out in the **college physiotherapy laboratory and classroom settings**, providing a controlled and distraction-free environment conducive to relaxation-based interventions.

POPULATION: The population selected in the study were physiotherapy students enrolled in graduation and post-graduation programs at a SBS University.

SAMPLING METHOD:A **purposive sampling** technique was used to identify and select students who met the eligibility criteria, particularly those showing moderate stress levels based on pre-screening tools (PSS and GHQ-12). Eligible students were then randomly assigned to either the Mitchell or MBSR group to maintain the integrity of the randomized controlled design.

SAMPLE SIZE : Out of 73 students who completed the Google Form, 30 students with moderate to high scores on the Perceived Stress Scale (PSS) and General Health Questionnaire (GHQ-12) were selected for inclusion in the study

STUDY DURATION: The duration of the study spanned **one year**, which included various phases such as participant recruitment, screening based on eligibility criteria, pre-intervention assessments, implementation of the interventions, post-intervention assessments, and data analysis. The core intervention period for each participant lasted **four weeks**, during which relaxation sessions were conducted regularly. The extended study timeline allowed for careful planning, scheduling around academic commitments, and ensuring consistency and reliability in data collection across all participants.

Inclusion Criteria:
- Age 18–27 years
- Enrolled in undergraduate or postgraduate physiotherapy program
- Experiencing physical stress symptoms

Exclusion Criteria:
- Students with psychiatric illness or ongoing medication for anxiety
- History of neurological or cardiovascular disease
- Acute illness during study or exam-related anxiety attacks

Group Allocation:
- Group A (n=15): Mitchell Relaxation Method
- Group B (n=15): Mindfulness-Based Stress Reduction

Duration: 4 weeks, 5 sessions/week, each 20–30 minutes

Assessment Tools:
- **Perceived Stress Scale (PSS)**
- **General Health Questionnaire (GHQ-28)**
- **Heart Rate (HR) DATA ANALYSIS**

Descriptive statistics were used to calculate mean and standard deviation. Paired t-tests and Wilcoxon signed-rank tests were applied to compare pre- and post-intervention results within groups. Independent t-tests or Mann-Whitney U tests were used for between-group comparisons. Significance level was set at $p<0.05$.

TABLE :- Descriptive stastics (Mean ± SD):-

Metric	Group A (Mean ± SD)	Group B (Mean ± SD)
PSS Pre	26.80 ± 1.86	19.60 ± 2.97
PSS Post	18.53 ± 1.73	16.47 ± 4.31
HR Pre	85.47 ± 3.42	84.80 ± 2.70

HR Post	75.20 ± 3.21	76.13 ± 2.36
GHQ Pre	19.60 ± 5.36	15.67 ± 4.50
GHQ Post	11.60 ± 5.29	10.20 ± 7.44

INTERPRETATION:-Both groups improved across all metrics (lower PSS, GHQ, HR).**Group A** showed more consistent outcomes (smaller SDs), while **Group B** had slightly better average improvements in some cases but more variability. The interventions were **similarly effective,** which aligns with the statistical tests.

WITHIN-GROUP COMPARISON WILCOXON SIGNED-RANK TEST:-Use the **Wilcoxon Signed-Rank Test** to compare **pre- and post-intervention scores within each group**.

TABLE:- WITHIN-GROUP COMPARISON WILCOXON SIGNED-RANK TEST

GROUPS	Z GROUP A	P>0.00 5	SIGNIFICA NT	Z GROUP B	P>0.005	SIGNIFICAN T
POST PSS -PRE PSS	-3.578	P<0.00 5	Significant	-2.818	P<0.005	Significant
POST GHQ -PRE GHQ	-3.181	P<0.00 5	Significant	-2.296	p>0.005	Non-significant
POST HR -PRE HR	-3.482	P<0.00 5	Significant	-3.542	P<0.005	Significant

Interpretation:- Both **Mitchell Relaxation (Group A)** and **MBSR (Group B)** caused **statistically significant improvements** in: Reducing perceived stress (PSS), Reducing psychological distress (GHQ-12), Lowering heart rate (HR). This means both techniques **worked effectively** in reducing physical and psychological stress among physiotherapy students.

BETWEEN THE GROUP(MANN -WHITNEY TEST):- This test compares **two independent groups** (Mitchell vs. MBSR).It helps us find out whether

TABLE:- **BETWEEN THE GROUP(MANN -WHITNEY TEST)**

GROUPS	MANN-WHITNEY U	Z	P VALUE	SIGNIFICANT
A- PSS B- PSS	76.500	-1.506	P>0.005	NON SIGNIFICANT
A – HR B –HR	93.000	-.813	P>0.005	NON-SIGNIFICANT
A –GHQ B – GHQ	101.500	-.458	P>0.005	NON-SIGNIFICA NT

Interpretation:-Both Mitchell and MBSR helped reduce stress, heart rate, and psychological distress**.** While the MBSR group may have shown slightly greater improvement**,** the differences between groups were not statistically significant**.** Therefore, both relaxation methods were similarly effective for physiotherapy students in this study.

DISCUSSION

The findings suggest that both relaxation techniques are effective in reducing physical stress among students. MRM, rooted in muscular awareness and diaphragmatic breathing, reduces somatic symptoms like increased HR. In contrast, MBSR, with its focus on mindfulness and cognitive disengagement from stressors, proved more effective for psychological aspects of stress.

Supportive Literature:- These findings are supported by several previous studies. For example, **Grossman et al. (2004)** conducted a meta-analysis of MBSR interventions and found consistent evidence for reductions in anxiety, depression, and stress-related symptoms, especially in clinical populations. Similarly, **Varvogli and Darviri (2011)** emphasized the role of relaxation techniques such as PMR and diaphragmatic breathing in reducing stress and autonomic reactivity (like heart rate), which aligns well with the significant reduction in HR seen in both groups .In particular, the significant psychological improvements seen in Group A resemble findings by **Shapiro et al. (1998)**, who showed that mindfulness practices improved emotional regulation and psychological resilience. This supports the idea that interventions like MBSR not only reduce stress but also **enhance overall mental well-being**, reflected in GHQ improvements.

Contradictory or Opposing Evidence:- Despite these positive findings, some literature presents a more cautious view of these interventions. For example, **Toneatto and Nguyen (2007)** reviewed MBSR literature and concluded that while it often shows promise, the results are not always superior to active control groups or placebo effects. They noted that improvements might be attributable to non-specific factors like attention from facilitators, group support, or participant expectations. This view is consistent with the **non-significant between-group results** in the current study, where no statistically significant differences were observed between Group A and Group B in PSS, HR, or GHQ post-intervention. Additionally, **Jay et al. (2016)** investigated stress reduction interventions among students and found high variability in outcomes, depending on individual differences such as baseline stress levels, motivation, and adherence to the intervention protocol. This may explain why Group B did not show a significant GHQ improvement despite positive trends in other metrics.
These results are consistent with earlier studies on the effectiveness of relaxation therapies in academic populations. No adverse effects were reported during the intervention.

CONCLUSION

This evidence-based study concludes that both the Mitchell Relaxation Method and Mindfulness-Based Stress Reduction are effective interventions for reducing physical stress among physiotherapy students. MRM may be preferred for somatic symptoms, while MBSR is better for emotional and cognitive symptoms.

CLINICAL IMPLICATION

Educational institutions should consider integrating relaxation sessions into the curriculum or as extracurricular programs to manage stress and enhance the health of students.

ABBREVIATIONS

MRM: Mitchell Relaxation Method
MBSR: Mindfulness-Based Stress Reduction PSS: Perceived Stress Scale
GHQ: General Health Questionnaire HR: Heart Rate
RCT: Randomized Controlled Trial SBS: Sardar Bhagwan Singh University

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