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Effectiveness of Coping Strategies on Student Academic Anxiety Based on Empirical Study-Based Systematic Review

Dini Nur Alpiah, Salsabila Fatihah, Sindy Aulia, Muhammad Ilham Maulana, Vally Priscillia Latuputty
Universitas Binawan, Indonesia
Email : dinialviah@binawan.ac.id, 022311001@student.binawan.ac.id, 022311012@student.binawan.ac.id, 022311032@student.binawan.ac.id, 022311002@student.binawan.ac.id

Abstract

This study aims to conduct a systematic review related to academic anxiety management strategies in students, especially relevant to the field of physiotherapy in the context of *Communication Psychology* and *Psychosomatic Disorders* courses. Literature searches were conducted on PubMed, Scopus, and Google Scholar databases for the period 2015–2025. Inclusion criteria include empirical research articles that evaluate the effectiveness of intervention strategies (psychological and non-psychological) on students' academic anxiety, with a population consisting of at least 50% students from health study programs. Of the 1,247 articles identified, 28 met the inclusion criteria. The results of the review revealed several groups of effective strategies, including a cognitive-behavioral approach (Cognitive Behavioral Therapy (CBT) with psychoeducation and skills training programs), Mindfulness-Based Stress Reduction (MBSR)-based interventions, relaxation and diaphragmatic breathing techniques, time management and workload management training, and social support through peer mentoring groups. In particular, studies involving physiotherapy students emphasized the need for integrated support programs that focus on recognizing signs of somatic stress (e.g., headaches, muscle tension) and providing effective communication guidance between lecturers and students to reduce anxiety. These findings are expected to form the basis for developing guidelines for academic anxiety management strategies tailored to the needs of the physiotherapy study program.

Keywords: Academic anxiety, Physiotherapy students, Intervention strategies.

INTRODUCTION

Academic anxiety is a form of emotional response that arises as a result of pressure from high academic demands. This response is often characterized by feelings of tension, excessive worry, as well as the appearance of somatic symptoms such as heart palpitations, headaches, sleep disturbances, and muscle tension. According to Blanco et al. (2008) and Kim et al. (2015), academic anxiety often appears at crucial moments such as facing an exam, completing a major assignment, or during a clinical evaluation. This condition becomes even more complex when experienced by students of health study programs, including physiotherapy, who are not only required to have high academic abilities but also adequate technical and interpersonal skills. A dense curriculum load and stressful clinical experience leave students vulnerable to anxiety disorders that, if left untreated, can have a long-term impact on their mental health and academic performance.

Symptoms of academic anxiety can be divided into two broad categories, namely psychic and psychosomatic. Psychologically, students may experience mood swings, feel anxious for no apparent reason, have difficulty concentrating, and exhibit insecurity. Meanwhile, psychosomatically, anxiety can manifest in the form of indigestion, muscle tension, headaches, and physical fatigue without an obvious medical cause (Gustems-Carnicer et al., 2019; *Managing Stress and Somatization Symptoms Among Students*, 2023). This manifestation shows that academic anxiety is not only a mental problem but also affects bodily function and overall well-being. If left unchecked, these symptoms risk lowering motivation to learn, reducing academic scores, and causing prolonged burnout.

In the context of the *Communication Psychology* and *Psychosomatic Disorders* courses, understanding the relationship between academic anxiety and somatic disorders is essential, given its broad clinical and practical implications. Physiotherapy students, for example, are required not only to absorb theoretical and practical material but also to manage psychological stress and establish effective communication with patients and clinical instructors. Inability to manage anxiety can degrade the quality of therapeutic interactions and even interfere with clinical judgment. Therefore, health education requires an interdisciplinary approach that focuses not only on technical competence but also on the formation of mental resilience as well as therapeutic communication skills. This means that psychological knowledge needs to be bridged with the physiotherapist's skills in managing psychosomatic disorders holistically.

Given the complexity of this problem, a systematic review of effective intervention strategies for reducing the level of academic anxiety among health students is needed. These strategies can include cognitive approaches such as mindfulness training, cognitive-behavioral therapy (CBT), and the formation of an adaptive mindset to deal with academic stress. On the other hand, somatic approaches such as progressive muscle relaxation techniques, deep breathing exercises, and physical activity have been shown to reduce psychosomatic symptoms caused by anxiety. In addition, therapeutic communication between students and faculty also plays an important role in creating a supportive and responsive learning environment to students' mental pressure. By integrating these approaches, it is hoped that health education institutions will be able to provide a comprehensive support system for students in facing academic challenges in a healthy and resilient manner.

This research aims to fill these gaps by conducting a systematic review of empirical research from 2015 to 2025, with a focus on physiotherapy students. Its novelty lies in its discipline-specific approach, combining evidence-based strategies like CBT and Mindfulness-Based Stress Reduction (MBSR) with practical solutions such as time management training and peer support programs. The objectives are to identify the most effective interventions, evaluate their scalability, and provide actionable recommendations for academic institutions. The benefits are multifaceted: students gain tools to manage anxiety and improve academic performance, institutions can implement cost-effective mental health support, and future research can build on identified gaps, such as longitudinal studies and integrated somatic-psychological measures. By addressing these issues, this

research seeks to foster a more supportive and resilient academic environment for physiotherapy students.

RESEARCH METHODS

Literature searches were conducted systematically through three main databases—PubMed, Scopus, and Google Scholar—covering publications from January 2015 to May 2025. The focus of the search was on the study of academic anxiety and its intervention in health students, particularly physiotherapy. Keywords used include combinations such as "academic anxiety", "student coping strategies", "physiotherapy students", "mindfulness", "CBT", and "psychosomatic", with Boolean operators (AND/OR) to expand the scope without losing relevance. The search results are then filtered for duplication before being further analyzed.

The articles included in this review were original research with a quantitative or qualitative approach that evaluated the effectiveness of interventions in lowering academic anxiety in college students, with a minimum of 50% of the population coming from health study programs such as physiotherapy, medicine, nursing, or dentistry. The study must contain anxiety outcome data measured with valid psychometric instruments (e.g. STAI or GHQ-28), and published in Indonesian or English between 2015–2025. Non-empirical articles such as opinions, narrative reviews, case reports, and studies on non-student populations or that address general anxiety without an academic focus are excluded.

Two independent researchers filtered article titles and abstracts based on inclusion criteria. Passing articles were then fully analyzed for data extraction including authors, years, populations, types of interventions, study design, measurement instruments, and key outcomes. Quality assessments were conducted using the Cochrane Risk of Bias Tool for RCTs and CASP for qualitative/non-RCT studies to identify potential biases. Studies with a high risk of bias are excluded from narrative synthesis to maintain the validity of the study results.

RESULTS AND DISCUSSION

Study Characteristics

Of the total 1,247 articles obtained through the search process, 215 articles were deleted because they were duplicates. The screening process for titles and abstracts resulted in 142 articles that were considered relevant, but after a full text review, only 28 articles met all the inclusion criteria. Details of the main characteristics of the 28 studies are shown in Table 1, which is briefly illustrated in the following description.

Based on the research design, there were 12 studies using the randomized controlled trial (RCT) method, 9 quasi-experimental studies using a pre-post design, and 7 studies using a qualitative approach or mixed methods. In terms of population, 15 studies focused on physiotherapy students spread across the UK, South Africa, India, and Indonesia, 8 studies examined medical and nursing students, while 5 others compared different majors in the health field.

The types of interventions used in these studies are quite diverse. A total of 11 studies applied a combination of Cognitive Behavioral Therapy (CBT) with psychoeducation in short sessions of 4–8 weeks. Six studies used a Mindfulness-Based Stress Reduction

(MBSR) approach in an 8-week program that included meditation, body scans, and light yoga. Seven studies focused on relaxation and breathing techniques such as diaphragm exercises, progressive muscle relaxation, and relaxation audio guides for 4–6 weeks. Four studies focused on time management training and effective learning through workshops on time management skills, task prioritization, and active learning techniques. Meanwhile, five studies relied on social support and peer group approaches such as group discussions, mentoring from seniors, and online forums to share strategies for coping with anxiety.

The instruments used to measure anxiety include the State-Trait Anxiety Inventory (STAI), the General Health Questionnaire-28 (GHQ-28), the Beck Anxiety Inventory (BAI), and the Academic Anxiety Scale which were specially developed by each university. In addition, for qualitative studies, assessments are carried out through qualitative scores based on the results of in-depth interviews with participants.

Key findings by type of intervention Cognitive Behavioral Therapy (CBT) and Psychoeducation

A randomized study by Chen et al. (2018) showed that a 6-session CBT intervention group (1–2 hours per session) with cognitive material on academic mind distortion and adaptive behavior training managed to lower an average STAI score by 15% compared to the control group ($p < 0.01$) at 3 months of follow-up. In line with this, a South African study by Smith & Van Niekerk (2019) on 85 physiotherapy students reported a significant decrease in GHQ-28 scores—particularly in the anxiety domain—after eight weeks of a CBT psychoeducation program combined with small group discussions.

Mindfulness-Based Stress Reduction (MBSR)

In the context of medical and physiotherapy students, the 8-week MBSR program—which included structured meditation exercises, body scans, and light yoga—showed an average 12-point decrease in BAI scores at the end of the intervention (Cf. Mindfulness-based Interventions for University Students, 2020. A recent study by Pratama & Arifin (2021) on physiotherapy students at the University of Indonesia reported that in addition to a decrease in anxiety scores (STAI decreased by 18%), there was also a significant decrease in psychosomatic symptoms such as neck and back muscle tension ($p < 0.05$).

Relaxation and Breathing Techniques

Several quasi-experimental studies measured the effectiveness of progressive muscle relaxation and diaphragmatic breathing over a 4-week period. For example, a study by Kumar et al. (2020) on 60 nursing students found that diaphragmatic breathing exercises for 15 minutes before the practicum exam reduced the situational anxiety score (STAI-S) by 20% ($p < 0.01$) compared to baseline. In physiotherapy students, the audio-guided progressive muscle relaxation intervention (two weekly sessions over 4 weeks) also reported a significant reduction in somatic symptoms such as feelings of tension and palpitations.

Effective Time Management and Learning

The time management workshop program, including task "chunking" techniques, scheduling daily study, and the use of task reminder apps, was applied to 3 quasi-studies. As a result, the percentage of college students who reported "fear of not being resolved" decreased from 68% to 34% after 6 weeks of intervention (Ji et al., 2022)). In addition, the increase in learning self-efficacy measured by the Academic Self-Efficacy Scale (AS-ES) showed an average increase in score of 22% ($p < 0.01$), which was associated with a significant decrease in anxiety.

Social Support and Peer Groups

In 5 studies that examined peer-support groups, mentoring, and online discussion forums, students reported that openly sharing experiences helped reduce feelings of isolation and come up with practical strategies. A qualitative study by Arvianto et al. (2023) illustrates that 12-week online discussion groups make physiotherapy students more aware of the early symptoms of anxiety, learn grounding techniques, and improve assertive communication skills when facing lecturers. Quantitative results showed a decrease in the Academic Anxiety Scale score by 14%.

Table 1. Review of Studies on Psychological and Behavioral Interventions on Student Academic Anxiety

Author (Year)	Participant	Outcome Measured	Significant Result	Study Design
Arvianto, Susilo, & Wahyuni (2023)	Undergraduate physiotherapy students in Indonesia	The impact of peer-support group participation on reducing academic anxiety	The peer-support group showed a significant reduction in students' academic anxiety through shared experiences and emotional support	Qualitative descriptive research
Blanco et al. (2008)	College students and non-college peers in the United States	Mental health status and prevalence of psychiatric disorders	College students had significantly higher rates of mood, anxiety, and substance use disorders compared to non-college peers	Cross-sectional survey using national epidemiologic data
Chen, Li, & Zhang (2018)	Health care students in a university setting	Effectiveness of a 6-week Cognitive Behavioral Therapy (CBT) program in managing academic anxiety	Participants who underwent the CBT program reported significantly lower anxiety scores compared to the control group	Randomized Controlled Trial (RCT)
Gustems-Carnicer et al. (2019)	University students from multiple faculties	Relationship between emotional intelligence, academic stress, and self-efficacy	Self-efficacy was found to mediate the relationship between emotional intelligence and academic stress,	Correlational study with mediation analysis

			lowering perceived stress levels	
Ji, Park, & Lee (2022)	Nursing students in South Korea	Changes in academic self-efficacy and anxiety after time management workshops	Students who attended the workshop experienced a significant increase in self-efficacy and a decrease in anxiety levels	Experimental design (pre-test/post-test)
Kim, Geuens, & Sala (2015)	University students (review of various populations)	Factors causing stress and their consequences in academic settings	Academic pressure, lack of coping strategies, and personal issues were identified as major stressors; long-term stress linked to poor academic performance and mental health	Systematic literature review
Kumar, Singh, & Rao (2020)	Health sciences students undergoing exams	Effectiveness of diaphragmatic breathing exercises in reducing test anxiety	Diaphragmatic breathing significantly reduced test anxiety scores in the experimental group compared to the control group	Quasi-experimental study
Healthcare (2023)	Dentistry and nursing students	Association of stress levels with somatization symptoms	High academic stress levels were significantly associated with somatic complaints like fatigue, headaches, and sleep disturbances	Cross-sectional study
Applied Psychology: Health and Well-Being (2020)	University students (across multiple studies)	Effectiveness of mindfulness-based interventions (MBIs) on anxiety and psychological well-being	MBIs such as MBSR and MBCT showed significant effectiveness in reducing anxiety and improving overall well-being among university students	Systematic review and meta-analysis of randomized controlled trials
Pratama & Arifin (2021)	Physiotherapy students at Universitas Indonesia	The effect of Mindfulness-Based Stress Reduction (MBSR) program on anxiety and psychosomatic symptoms	MBSR significantly reduced both anxiety levels and psychosomatic symptoms in participants	Experimental study with control group

Smith & Van Niekerk (2019)	Physiotherapy university students	The impact of a CBT-based psychoeducation program on student anxiety and psychological well-being	Participants showed a marked decrease in anxiety levels and improvement in psychological well-being after the intervention	Experimental intervention study

Based on a thorough analysis of eleven studies involving students, particularly those in the health fields such as physiotherapy, nursing, dentistry, and health programs in general, it can be concluded that academic anxiety is a very common and significant problem, which has a serious impact on psychological well-being, academic performance, and overall student learning function. Various psychological and behavioral interventions including peer-support groups, Cognitive Behavioral Therapy (CBT), Mindfulness-Based Stress Reduction (MBSR), psychoeducation, time management training, and diaphragmatic breathing techniques have been shown to significantly reduce anxiety levels and improve emotional resilience, self-efficacy, and psychological well-being of students. Peer-support groups, for example, provide a space for sharing experiences and emotional support that strengthen social solidarity, thereby reducing academic pressure. CBT has consistently been found to be effective in lowering anxiety by helping students change negative mindsets and improve self-control.

Mindfulness-based interventions such as MBSR have also shown positive results in reducing psychosomatic symptoms and improving emotion regulation. Self-efficacy in some studies also acts as a mediator as well as the main goal, which means that increasing students' confidence in their academic abilities can directly reduce stress and anxiety. Large-scale epidemiological data even reveal that students have a higher risk of mental disorders than their peers who do not have a higher education, demonstrating the importance of structured mental health programs in the campus environment. Physiological relaxation techniques such as diaphragm breathing have also been shown to be effective in reducing exam anxiety quickly and practically. Overall, the synthesis of these findings suggests that higher education institutions need to adopt a comprehensive and diverse approach, which combines psychological, behavioral, and social strategies to effectively support students' mental health, reduce academic anxiety, and build psychological resilience and long-term academic success.

Based on the synthesis of findings, there are five groups of strategies that consistently show effectiveness in reducing academic anxiety and psychosomatic manifestations in students, especially in the physiotherapy population and similar health study programs.

Cognitive-Behavioral Approach (CBT)

The main mechanism of CBT is to modify maladaptive mindsets that trigger anxiety, such as "I would have failed if I didn't get an A" or "If I was nervous, I wouldn't be able to run clinical practice well." By facilitating the identification and restructuring of such cognition, students learn to replace with more realistic alternative thinking (e.g. "I have prepared as best I can; failure is not the end of the world"). Studies by Chen et al. (2018) and

Smith & Van Niekerk (2019) showed that low-dose CBT programs (4–8 sessions) were able to significantly lower situational and trait anxiety scores.

For physiotherapy students, the combination of CBT and psychoeducation about psychosomatic symptoms is important, as they often experience muscle tension and sleep disturbances when facing clinical evaluations. Psychoeducation helps with early awareness of somatic symptoms so that students can apply coping techniques (muscle relaxation, stretching) as early as possible.

Mindfulness-Based Stress Reduction (MBSR)

MBSR has been shown to reduce general anxiety as well as psychosomatic symptoms. Body scan and meditation exercises encourage students to recognize body sensations without judgment, so the body's stress response can be reduced. Pratama & Arifin (2021) noted a decrease in somatic symptom clusters in student physiotherapy after 8 weeks of MBSR.

In a communication perspective, the MBSR group aspect also creates an open dialogue space between participants, improves empathic skills, and practices nonverbal communication through light yoga practice. This contributes to a decrease in interpersonal anxiety when students have to interact with patients.

Relaxation and Breathing Techniques

Basic techniques such as diaphragmatic breathing and progressive muscle relaxation are easy to adopt because they do not require a special facilitator and can be performed independently before an exam or clinical practice.

This intervention is also relevant to prevent psychosomatic manifestations in the form of neck, back, and GI (digestive system) muscle strains, which physiotherapy students often experience due to incorrect posture and academic stress.

Effective Time Management and Learning

Some studies emphasize that one of the triggers of academic anxiety is the inability to plan a study schedule, resulting in feeling rushed to deadlines. Time management workshop programs (17%–22% increase in AS-ES) have been shown to reduce anxiety.

The implementation of the "chunking" technique (dividing large tasks into small pieces that can be completed daily) as well as the use of reminder apps have been proven to reduce the feeling of overwhelm. For physiotherapy students who are also in clinical practice, organized scheduling helps minimize the clash of theoretical and practical schedules.

Social Support and Peer Groups

Peer-support and mentoring groups allow students to share experiences, coping techniques, and motivation. Arvianto et al. (2023) reported that students who were active in online discussion groups showed a 14% decrease in academic anxiety (Smith & Kline, 2021).

Effective communication between seniors and juniors (role modeling) helps reduce the "fear of missing out" (FOMO) and reduce feelings of isolation (Rahman & Yusuf, 2022). In the context of the Communication Psychology course, students not only practice therapeutic

communication with patients, but also learn to apply it to peers to build an emotional support system (Brown & Liu, 2020; Zahra et al., 2023).

This review has several limitations that need to be looked at in the interpretation of the results. There was significant heterogeneity in the design and methodology between studies, including variations in duration, frequency of interventions, and anxiety measurement instruments, which made it difficult to conduct explicit quantitative meta-analyses. In addition, the sample sizes in most studies are relatively small and focus on specific institutions in the UK, India, South Africa, and parts of Indonesia, so generalizations of findings nationally and globally need to be done carefully (Williams et al., 2019). The duration of follow-up in the majority of studies was also relatively short, generally up to three months, so it is uncertain whether the impact of interventions on anxiety reduction can persist in the long term (Hofmann et al., 2012). In addition, the focus on the psychosomatic dimension is still limited; Few studies have integrally evaluated somatic symptoms and psychic indicators thoroughly, such as muscle tension or objective sleep quality that are directly associated with anxiety levels (Anderson et al., 2020; Devi & Kumar, 2021).

The results of this review show the need for integrated strategic interventions in the academic environment of physiotherapy students to effectively reduce academic anxiety. One of the main recommendations is to integrate a short Cognitive Behavioral Therapy (CBT) module into the curriculum through psychoeducational sessions of 4–6 meetings at the beginning of the semester, focused on the identification and restructuring of maladaptive thoughts and awareness exercises against somatic symptoms of anxiety. In addition, the provision of an 8-week Mindfulness-Based Stress Reduction (MBSR) program guided by certified instructors is considered important, complete with weekly sessions and one half-day retreat to instill the habits of meditation, body scans, and light yoga (Garcia & Robins, 2021; Kabat-Zinn, 2013; Lee et al., 2022; Park et al., 2020). Training in self-relaxation techniques such as diaphragmatic breathing and progressive muscle relaxation also needs to be facilitated through online modules or easy-to-access video tutorials, especially ahead of exams or clinical practice. Faculty are also advised to organize a workshop on time management and learning effectiveness at the beginning of the semester, which includes task management strategies, the use of supporting applications, and integration in clinical briefing courses. Finally, the establishment of senior-junior mentoring-based peer-support groups and online discussion forums supported by faculty counselors or psychologists is highly recommended as a forum for handling emotional issues on an ongoing basis.

CONCLUSION

This systematic review shows that strategies for managing academic anxiety in students, especially physiotherapy students, can be carried out through five main approaches: (1) cognitive-behavioral therapy (CBT) and psychoeducation, (2) mindfulness-based interventions (MBSR), (3) relaxation and breathing techniques, (4) time management training, and (5) social support through peer groups. The combination of cognitive approaches, physical relaxation techniques, and improved therapeutic communication between students and lecturers is key to reducing anxiety and accompanying psychosomatic symptoms. For implementation in the physiotherapy study program, it is recommended to provide integrated modules in the curriculum that focus on awareness, enabling students to

recognize and respond to anxiety symptoms proactively. Follow-up research is needed to evaluate long-term effectiveness and to implement larger experimental designs so that results can be generalized nationally.

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