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Synergistic Effects of Yoga and Buddhist Meditation on Mental Health and Academic Achievement: A Pathway to Advancing SDGs among Thai University Students

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Abstract

University students often face significant mental health challenges due to academic pressures, lifestyle changes, and social transitions. This study investigates the combined effects of yoga and anapanasati meditation on the mental health and academic performance of university students. A total of sixty students from Walailak University participated in a 12-week intervention program, which included regular yoga practice and guided anapanasati meditation sessions. The study measured psychological, social, and environmental well-being using validated questionnaires (Cronbach's alpha = 0.96). The results indicated statistically significant improvements in mental health metrics and measurable gains in academic performance, with notable gains in social relationships and energy levels. This research highlights the synergistic benefits of yoga and meditation in promoting holistic student development, suggesting their potential value for integration into university curricula to support student's overall well-being and academic success. This research also aligns with global sustainability goals by emphasizing mental well-being and quality education.

Keywords: Yoga and Meditation; Mental Health Development; Academic Achievement; Anapanasati Practice; University Students.

Introduction

Mental health issues among university students are a global concern, with academic demands, financial pressures, and social challenges contributing to increasingly prevalent issues such as anxiety (20%), depression (25%), and stress-related disorders (World Health Organization, 2022). These challenges not only hinder academic performance but also compromise overall quality of life of the students in studies as well as their health. Addressing these concerns requires innovative interventions that promote resilience, mental clarity, and emotional well-being (Carbel et al., 2011). Yoga, a mind-body practice, has gained recognition for its holistic approach to improving physical and mental health. Through postures (asanas), breath control (pranayama), and meditation, yoga reduces stress, enhances flexibility, and promotes mindfulness (Bond et al., 2011). Similarly, Buddhist meditation practices, particularly Anapanasati, focus on mindfulness of breathing to cultivate emotional balance and mental clarity, (Field 1990). These practices are individually effective in addressing stress-related issues; however, their combined application within educational settings remains underexplored. Yoga and Buddhist meditation practices have

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been globally recognized, particularly in countries such as India and Japan, for their potential to enhance cognitive performance and mental resilience.

Previous studies have shown the effectiveness of yoga and meditation in various domains (Dawson et al., 2020). For instance, (Goyal et al., 2014) reported that yoga can mitigate the activation of the hypothalamic-pituitary-adrenal (HPA) axis, thereby reducing cortisol levels and improving stress management. Similarly, research on meditation has demonstrated its capacity to enhance psychological flexibility and emotional regulation (Bond et al., 2011; Goyal et al., 2014). Combining these approaches may offer a comprehensive intervention, addressing not only the physical and psychological aspects of well-being but also enhancing cognitive functions critically for academic success (Javnbahkt et al., 2009). By evaluating the outcomes of this integrated program, this study provides valuable insights into the role of holistic practices in higher education and their potential to foster a supportive and resilient academic environment.

Significance of Research

University students often encounter a range of mental health challenges, largely driven by academic pressures, lifestyle adjustments, and social transitions. The demands of coursework, exams, and extracurricular commitments can lead to heightened levels of stress, anxiety, and depression, which in turn affect their overall well-being and academic performance (Michalsen et al., 2005). Given the increasing recognition of mental health concerns in higher education, there is a growing interest in exploring interventions that support mental health of the students while enhancing their academic outcomes. Among these interventions, practices like yoga and anapanasati meditation have gained attention for their potential to alleviate stress and promote holistic well-being (Moyer et al., 2004).

Yoga, an ancient practice rooted in physical postures, breath control, and meditation, has long been associated with various physical and psychological benefits. In recent years, a growing body of research has highlighted yoga's positive impact on reducing stress, improving mood, and enhancing cognitive function (Iamwattanaseri et al., 2009). Yoga's emphasis on mindfulness, relaxation, and body awareness helps students manage academic pressures, facilitating a more balanced approach to learning and personal development. Additionally, it has been shown to improve sleep patterns, reduce anxiety, and increase overall energy levels, all of which are essential for academic success and emotional resilience.

Anapanasati meditation (Buddhist special form of meditation) a form of mindfulness meditation that focuses on breath awareness, is another powerful tool for managing mental health. This practice involves paying close attention to the breath as it naturally flows in and out, helping to cultivate a state of present-moment awareness (Valencia et al., 2022). Research has demonstrated that regular meditation practice reduces symptoms of anxiety, depression, and stress by promoting emotional regulation and mental clarity. For students, anapanasati meditation offers an effective strategy to cope with the mental and emotional demands of university life, fostering greater focus, concentration, and relaxation.

Both yoga and anapanasati meditation, when practiced together, create a synergistic effect that promotes overall well-being (Ross et al., 2010). These practices complement each other by enhancing emotional stability, improving social relationships, and fostering a positive mindset. For university students, this combination of physical and mental practices can significantly improve academic performance by enhancing focus, reducing stress, and increasing resilience to challenges. Therefore, this study seeks to explore the combined effects of yoga and anapanasati

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meditation on the mental health and academic performance of university students, providing valuable insights into the potential benefits of integrating these practices into university curriculum for student development. This study addresses the gap by integrating yoga with anapanasati meditation to examine their synergistic effects on mental health and academic performance among Thai university students. To implement this research, in Thailand, the intensive 12-week academic terms, coupled with extracurricular activities, can exacerbate these issues, leading to chronic sleep deprivation, diminished physical activity, and poor mental health. The primary goal of this study was to assess the impact of an integrated yoga and anapanasati meditation program on the mental health and academic performance among the university students. Specifically, the study aimed to: (i) evaluate improvements in physical, psychological, and social well-being, (ii) measure changes in academic performance through cumulative grade point average (GPA) data, and (iii) explore participant's subjective experiences to understand the perceived benefits and limitations of the program.

Subject and Methodology

This study focused on undergraduate students at Walailak University, providing a culturally specific context for the integration of yoga and anapanasati meditation practices. It aimed to offer insights into the feasibility and effectiveness of such programs in a university setting while contributing to the broader discourse on mental health interventions in higher education. The findings are intended to inform policy development for mental health and academic support initiatives in educational institutions worldwide.

The importance of this study is to employe a quasi-experimental design to evaluate the impact of a combined yoga and Buddhist (anapanasati) meditation program on mental health and academic performance. Conducted over 12 weeks, the intervention aimed to integrate mindfulness practices with physical activity to address multiple dimensions of student well-being. The study was approved by the institutional review board of Walailak University, ensuring adherence to ethical research practices (Moyer et al., 2011). The study involved 60 second and third-year undergraduate students from Walailak University, aged between 18 and 22 years. Participants were recruited through university announcements and screened for eligibility. Inclusion criteria required students to have no prior experience with yoga or meditation, no diagnosed mental health conditions, and the ability to commit to the 12-week program. (Figure 1) shows the Thailand Buddhist monastery training centre for Walailak university students.



Figure 1: Buddhist monastery in Thailand under yoga and anapanasati meditation (Photo taken by authors at Seangerang Temple, Nakhon Si Thammarat, Thailand).

Categories	Yoga group	Anapanasati meditation		
		group		
Total participants (no.	30 students	30 students		
of. Persons)				
Age (years)	18-22	18-22		
Gender (no. of. Persons)	Male 20, female 25	Male 28, female 17		
Height (feet)	5.50 ± 0.25	5.65 ± 0.25		
Body weight (kg)	56.5 ± 6.25	58.0 ± 7.15		
Year of study	II- and III-year students	II- and III-year students		
Prior experience with	10% had previous experience,	15% had previous		
yoga	90% no prior experience	experience, 85% no prior		
		experience		
Prior experience with	20% had prior meditation	5% had prior meditation		
meditation	experience, 80% had none	experience, 95% had none		
Frequency of practice	25% practiced yoga	20% practiced yoga		
	occasionally, 75% were	occasionally, 80% were		
	beginners	beginners		
Interest in meditation	70% interested in learning	80% interested in learning		
	meditation	meditation		
Physical health status	85% reported average	90% reported average		
	physical health	physical health		
Mental health status	50% reported moderate stress	55% reported moderate stress		
Smoking habits	25% were smokers, 75% were	15% were smokers, 85%		
	non-smokers	were non-smokers		
Drinking habits	10% were smokers, 90% were	20% were smokers, 80%		
	non-smokers	were non-smokers		
Motivation for	50% for physical fitness, 50%	60% for stress reduction,		
participation	for stress reduction	40% for mental clarity		

Table 1: The student's background of the yoga and anapanasati meditation group.

Exclusion criteria included physical injuries, chronic illnesses, or conflicting academic responsibilities. All participants provided informed consent before enrollment. The intervention framework consisted of four weekly sessions, each lasting 95 to 120 minutes. Sessions were structured as following steps i) Opening and centering (5 to 10 minutes): Brief mindfulness exercises to transition participants into a focused state, ii) Yoga practice (60 to 70 minutes): A series of 30 yoga postures targeting physical, mental, and emotional well-being. The sequence included warm-up stretches, standing poses, seated poses, and relaxation techniques (Woodyard, 2011), iii) Anapanasati meditation (10 to 15 minutes): Participants practiced Anapanasati meditation, emphasizing breath awareness to cultivate mindfulness and emotional balance (Singh et al., 2012), and iv) Closing reflection (5 to 10 minutes): Group discussions to share experiences and reinforce key concepts.

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Figure 2: Yoga and meditation practice atmosphere of students from Walailak University: (a) normal yoga exercise, (b) hard yoga practice, (c) anapanasati meditation, and (d) relaxation at the end of the session.

The research utilized several instruments, including a 30-posture yoga sequence, a mental health questionnaire, and structured breathing meditation accompanied by music. The mental health questionnaire developed and rigorously tested for reliability (Cronbach's Alpha = 0.96) to assess participant's mental well-being, coping strategies, and general student demographics using a 5-point Likert scale. The student's background of the yoga and anapanasati meditation group is illustrated in (Table 1). (Figure 2) shows the yoga and meditation practice atmosphere of students from Walailak University.

Data Collection Analysis

Certified yoga instructors and meditation practitioners facilitated the sessions, ensuring consistent delivery and adherence to the program's objectives with the assessment tools of mental health evaluation, academic performance and qualitative feedback through a validated 5-point Likert scale questionnaire assessed physical, psychological, and social well-being. The questionnaire's reliability was confirmed (Cronbach's alpha = 0.96), cumulative GPA data were collected before and after the intervention to measure changes in academic achievement, and

semi-structured interviews were conducted with a subset of participants to gain insights into their experiences and perceived benefits of the program, respectively.

Pre-intervention data were collected one week before the program's start, while post-intervention data were gathered in the week following its completion. Participants completed self-reported questionnaires under supervised conditions to minimize bias. GPA data were obtained from the university's academic records with participant's consent. Quantitative data were analyzed using statistical package for the social sciences (SPSS) version 26. Paired t-tests were conducted to compare pre- and post-intervention scores for mental health and GPA. Statistical significance was set at p < 0.05. Thematic analysis was used to interpret qualitative data from participant interviews from the research paper, (Field 2009).

Results and Discussion

In this study, a research tool was developed to assess student's mental health by gathering information across three key areas: general demographic details, mental health status, and coping strategies. Part 1 focuses on collecting basic demographic data, such as the student's year of study, gender, academic major, school, and their cumulative grade point average (GPA) for the current semester. Part 2 evaluates the student's mental health using a 5-level Likert scale, which measures various mental health conditions. Each level corresponds to specific mental health indicators, as defined by Singh et al. (2012), providing a structured approach to assess and understand mental well-being. Part 3 examines the coping strategies students employ to manage stress and mental health challenges. This section offers valuable insights into the students' emotional resilience and their strategies for navigating the pressures of daily life.

Part A: General Information of Respondents

The study provided an overview of the respondents' general demographic data, including gender, year of study, current GPA, residency status, parental marital status, family income, monthly allowance, and the sources of income students receive from part-time work or other activities during their studies. General information of respondents based on the questionnaire from 60 students is tabulated in (Table 2). Out of the 60 students invited to participate, 49 completed the questionnaire. Descriptive statistics were employed for the analysis. The first section of the questionnaire gathered general information about the respondents, including their gender, academic major, school, and current GPA. The second section focused on self-assessment, using a 5-point Likert scale to evaluate student's mental health and well-being both before and after completing the SRE61-103 Yoga course. The data were then analyzed using descriptive statistics, which provided an understanding of the mean scores and standard deviations of student's responses. As it is reflected in the diverse group of students who took part in the SRE61-103 Yoga course, it has concluded that the unique journeys each of them is on both academically and personally. This journey, like the practice of yoga itself, is filled with challenges, triumphs, and growth, each contributing to the whole of their experience (Raugh et al., 2024).

General information	Categories	Number	%
Sex	Male	12	20.0
	Female	48	80.0
Year	II	24	40.0
	III	36	60.0
Current GPA	Below 2.00	2	3.30

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	2.00-2.50	18	30.0
	2.51-3.00	19	31.7
	3.01-3.50	16	26.7
	3.51-4.00	5	8.30
Accommodation	Family	2	3.30
	University	34	56.7
	residence		
	Private	24	40.0
	dormitory		
Parent's marital status	Live together	53	88.3
	Separated	2	3.30
	Divorced	5	8.30
Family income	Having	32	53.3
	everything		
	Have	24	40.0
	enough/nothing		
	left to store		
	Not enough/in	-	-
	debt		
	Not enough,	4	6.7
	dependent		
	others		
The sufficiency of the	Having	23	38.3
allowance the student	everything		
receives	Have	36	60.0
	enough/Nothing		
	left to store		
	Not	1	1.70
	enough/have		
	debt		
	Not enough,	-	-
	must rely on		
	others		
Source of income	Parents	56	93.3
	Scholarships	4	6.70
	Working	4	6.70
	Not working	56	93 3

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Table 2. General information of respondents based on the questionnaire from 60 students.

From the date according to (Table 2), amongst the 60 students who participated in the study, the majority were female, with 48 out of 60 identifying as women. The balance between students of 24 were in their second year, and 36 were in their third year, indicating that many students are seeking ways to manage their academic pressures as they advance in their studies. Also, from the student's current GPAs, the practice of yoga and meditation might offer valuable support in navigating the ups and downs of their academic lives. A small number, only 2 students, had a

GPA below 2.00, while the majority were performing at a more moderate level. About 31.7% of students fell within the 2.51-3.00 GPA range, showing that many students are balancing academic pressure with the realities of student life. A few, 8.3%, were achieving a GPA of 3.51-4.00, showing that some students are already excelling, perhaps finding that yoga helps maintain their mental clarity and focus. Accommodation also reflects the varied lives of these students from their answers. More than half (56.7%) live in university residences, while 40% stay in private dormitories. A small number, just 3.3%, live with their families. This speaks to the diversity of backgrounds and living situations, which can influence how students experience stress and how they cope. Equally important is the impact of family dynamics on students. The overwhelming majority of students, 88.3%, have parents who are together, while a smaller portion, 13.6%, come from separated or divorced families. These family structures shape how students view themselves and the world around them, which is why fostering emotional resilience through practices like yoga and meditation is essential.

The financial landscape of the students also tells a story. More than half (53.3%) report having 'everything' they need in terms of family income, while 40% state they have enough but nothing left to save. A small percentage, just 6.7%, report relying on others for support. When it comes to the sufficiency of their monthly allowance, 60% of students say they have enough to meet their needs, with a small group, 1.7%, indicating they are struggling financially. This financial balance plays a big role in how students manage stress and prioritize self-care practices like yoga (Woodyard et al., 2011). Most students (93.3%) receive their primary source of income from their parents, while a smaller portion (6.7%) rely on scholarships or part-time work. This highlights the importance of having a support system, whether it's financial or emotional, as students face the demands of their education. It has been concluded that the beauty of yoga is that it offers something for everyone which is related to mental stress and physical problems. Whether students are living in university dorms or with family, managing academic pressures, or balancing financial concerns, the practice allows them to center themselves, develop resilience, and find calm amidst the chaos of student life (Lemay et al., 2019). Through the practice of mindfulness and meditation, they learn to let go of stress, focus their minds, and nurture their mental and emotional health.

Part 2: Assessment of Student's Mental Health

General Self-Assessment

General self-assessment levels before and after the SRE61-103 yoga class have been taken from the individuals and classified according to the level of assessment. The study examined the self-assessment levels completed by students before and after attending the SRE61-103 yoga course is illustrated in (Table 3). The results, from (Table 3), reveal significant insights into the students' perceptions of their mental health, well-being, and coping abilities. By comparing the self-assessments taken prior to and following the yoga course, the analysis provides a clear picture of the impact the practice has had on students' overall state of mind and personal growth. The findings from this section highlight improvements in various aspects of mental and emotional health, demonstrating the positive influence of yoga on the student's lives.

Salf aggaggmont	Before			After		
Sen-assessment	Ā	S.D.	Level	Ā	S.D.	Level
Physical health components	3.28	0.61	Moderate	3.49	0.59	High

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Psychological component	3.78	0.51	High	3.96	0.52	High
Social and environment relations	3.83	0.56	High	4.06	0.56	High
Average	3.73	0.49	High	3.96	0.50	High

Table 3. General self-assessment level before and after the class of SRE61-103 yoga class.

Before the course began, many students reported a moderate level of physical health, with an average score of 3.28. The numbers told a story of students who were navigating the demands of university life, often feeling stressed and physically drained. While they had a baseline understanding of what it meant to take care of their bodies, there was still room for growth. As we began practicing yoga and engaging in mindfulness, students began to tap into their body's potential for strength and flexibility. By the end of the course, their self-assessment scores in physical health rose to an impressive high level, averaging 3.49. The practice of yoga, with its emphasis on mindful movement and breath, created space for students to reconnect with their bodies, release tension, and cultivate vitality. Psychologically, the students began with a high self-assessment score of 3.78, which indicates that they were already in a relatively good state mentally. However, the pressures of academic life, along with the general demands of being a university student, can weigh heavily on the mind. Through the course, students learned tools for emotional regulation, mindfulness, and mental clarity (Khalsa et al., 2016). By the end of the course, their psychological well-being had improved even further, with an average score of 3.96. The gentle, consistent practice of meditation and yoga helped students develop resilience, enhancing their ability to manage stress, stay grounded, and maintain a sense of calm even amidst the chaos of university life. Overall, the total self-assessment score before the course was 3.73, categorized as high, reflecting students who were relatively well, but still seeking improvement. After the course, their total self-assessment rose to 3.96, indicating a noticeable shift towards a more balanced, healthier state. These results confirm the transformative power of yoga and meditation—not only in improving physical health, but also in enhancing psychological wellbeing and social connections.

Self-Assessment of Physical Health

After completing the yoga class, students reported improved physical health, with an average self-assessment score rising to 3.28. They experienced increased flexibility, reduced tension, and enhanced energy levels, reflecting a positive shift in their overall physical well-being. Self-assessment level of students after the yoga class based on the physical health is shown in (Table 4).

Solf according to	Before			After		
Sen-assessment	Ā	S.D.	Level	x	S.D.	Level
Satisfaction with their	2 57	0.80	Uich	4 20	0.69	High
health	5.57	0.89	nıgli	4.20	0.08	nigii
Students with						
headache, abdominal	3.00	1.28	Moderate	1.23	1.23	Moderate
pain, body pain						
The students have	4.08	0.77	High	4.40	0.62	High

enough strength to do						
things daily.						
Satisfaction with sleep each day	3.63	0.90	High	3.85	0.86	Moderate
Necessity for medical treatment	2.12	1.26	Least	2.10	1.41	Least
Average	3.28	0.61	Moderate	3.49	0.59	High

Table 4: Self-assessment level before and after the class of SRE61-103 yoga class based on physical health.

From (Table 4), at the beginning of the course, students reported a high level of satisfaction with their health, with an average score of 3.57, but as the weeks passed and they dedicated themselves to their yoga practice, their satisfaction with their health improved further, rising to 4.20. This increase in satisfaction was not just a number; it was reflected in the way they moved through their day more present, more aware, and more connected to their bodies. Before the course, many students experienced moderate discomfort, including headaches, abdominal pain, and body aches, with a score of 3.00. These are common symptoms of stress, poor posture, or long hours spent studying. Yet, after weeks of practicing yoga, students reported a significant reduction in these physical complaints, with their score dropping to 1.23. Through mindful breathing, gentle stretches, and restorative poses, students began to release built-up tension and find relief from their physical discomforts (Nanthakumar et al., 2018).

One of the most profound improvements was in the energy levels of the students. Initially, the average score for how well students felt they had the strength to handle their daily tasks was 4.08 which was a solid score. But after incorporating yoga into their routine, their energy and strength increased even further, with a post-course score of 4.40. Sleep is another area where students saw significant improvements. Before starting the yoga course, students rated their satisfaction with sleep at 3.63. Yoga's calming effects helped many of them develop better sleep patterns, leading to a post-course rating of 3.85. While not a huge leap, the shift indicates that students were experiencing more restful nights, an important foundation for overall well-being. Overall, the total self-assessment score before the course was 3.28, categorized as moderate. However, by the end of the course, this score rose to 3.49, indicating a noticeable improvement in their physical health. These results show how yoga can positively influence not just the body but also the mind, helping students feel more balanced, more energized, and better equipped to face the demands of student life.

Self-Assessment of Psychological Improvements

After completing the yoga course, students reported significant psychological improvement. Their self-assessment scores increased, reflecting enhanced mental clarity, emotional regulation, and reduced stress. Yoga helped them build resilience, improve focus, and cultivate a deeper sense of calm and balance in their daily lives. (Table 5) shows the self-assessment level of student's psychological improvement before and after yoga course. The self-assessments, taken before and after the course, offer a glimpse into how yoga and meditation helped cultivate peace, emotional well-being, and a renewed sense of purpose (Yazdani et al., 2014).

Salf aggaggment	Before			After		
Sen-assessment	Ā	S.D.	Level	Ā	S.D.	Level
Satisfaction in life (peace)	3.93	0.76	High	4.25	0.73	Highest
Concentration in studying and working	3.72	0.74	High	4.08	0.72	High
Feelings of love and self-satisfaction	4.15	0.78	High	4.32	0.79	Highest
Appearance recognition	3.93	0.86	High	4.22	0.76	Highest
Negativefeelingstowardslonelinessand depression	2.60	1.03	Low	2.38	1.29	Low
Feeling that life has a meaning	4.37	0.66	High	4.50	0.70	Highest

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Table 5: Self-assessment level of student's psychological improvement before and after yoga course.

High

3.96

0.83

High

0.51

3.78

Average

Before the course, many students expressed a high level of satisfaction with their lives, averaging 3.93 on the scale. They felt at peace, but there was still room for deeper fulfillment. After weeks of yoga, mindfulness, and meditation, this score rose to an impressive highest level of 4.25. The combination of focused breathwork and grounding practices allowed students to reconnect with their inner peace, helping them cultivate a deeper sense of satisfaction and contentment in their daily lives. Concentration was another area where students saw notable improvement. Initially, their ability to concentrate on their studies and work was rated as high at 3.72, but it increased to 4.08 by the end of the course. Students shared how their minds felt clearer, less distracted, and more focused, both in class and in their personal tasks. Yoga's emphasis on mindfulness taught them how to stay present and focused in each moment, a skill they carried beyond the mat. The students' sense of love and self-satisfaction also flourished during the course. Before the class, their self-assessment score was 4.15, reflecting a high sense of self-esteem and affection. By the end, this score increased to 4.32, representing a deeper connection with themselves and their worth. Through practices of self-compassion and positive affirmations, yoga allowed students to cultivate love for themselves, which in turn radiated outwards into their relationships and interactions.

Appearance recognition, or the way students viewed their own bodies, also improved. Starting with a score of 3.93, students felt good about their appearance, but by the end of the course, their self-image had become even stronger, reaching a score of 4.22. Yoga not only helped them grow physically stronger and more flexible but also allowed them to appreciate their bodies for what they were capable of, rather than focusing on societal standards. Finally, the sense that life has meaning something so vital to mental well-being was rated highly before the course at 4.37. By the end of the program, this score rose to 4.50, reflecting a stronger sense of purpose and connection to their studies, their peers, and themselves.

Self-Assessment of Social and Environmental Relations

After completing the yoga course, students reported significant improvement in their social and **Journal of Posthumanism**

environmental relations. Their self-assessment scores increased, reflecting enhanced connections with peers and a stronger sense of belonging within their environment, fostering a supportive and harmonious community. (Table 6) shows the self-assessment level of student's social and environmental relations before and after yoga course. From (Table 6) before beginning the course, many students rated their satisfaction with life, studies, and their environment highly. Their score of 4.03 for general satisfaction was promising, but as they immersed themselves in yoga and mindfulness practices, a noticeable shift occurred.

Salf aggaggment	Before			After			
Sen-assessment	Ā	S.D.	Level	Ā	S.D.	Level	
Feeling of satisfaction	4.03	0.78	High	4.25	0.93	High	
Satisfaction in studies	3.78	0.85	High	3.90	0.99	High	
Patience in being friendly	4.03	0.76	High	4.18	0.91	High	
Satisfaction in helping	4.08	0.70	High	4.38	0.67	High	
Feeling that life is safe	4.07	0.83	High	4.27	0.84	High	
Satisfaction in residential conditions	3.88	0.68	High	4.28	0.88	High	
Have a chance to relax	3.80	0.68	High	4.18	0.81	High	
Ability to ground manually	3.82	0.86	High	3.97	0.90	High	
Satisfaction with GPA	3.67	0.78	High	4.03	0.78	High	
Ability to think	3.78	0.80	High	4.00	0.80	High	
Interest in learning	3.87	0.69	High	4.12	0.78	High	
Average	3.83	0.56	High	4.09	0.56	High	

 Table 6: Self-assessment level of student's social and environmental relations before and after yoga course.

By the end of the course, the satisfaction score rose to 4.25, signifying a deeper sense of contentment and balance. Students shared how yoga taught them to appreciate the present moment, which enhanced their overall perspective on life, including their relationships and surroundings. In terms of academic satisfaction, students' self-assessments showed growth as well. Before the course, their satisfaction with studies was rated at 3.78, and by the end, this score increased to 3.90. Yoga helped them manage stress more effectively, improve their focus, and engage more fully in their academic pursuits. The practice encouraged them to stay grounded and calm, allowing them to approach their studies with greater patience and enthusiasm. The students also reported a notable improvement in their ability to be friendly and patient with others. Initially, they scored 4.03 for patience in social interactions. By the end of the course, this score increased slightly to 4.18. Yoga's emphasis on mindfulness and compassion helped them cultivate patience and empathy, enriching their relationships with friends, classmates, and teachers. Moreover, satisfaction of students in helping others grew as their sense of interconnectedness deepened. Their score increased from 4.08 to 4.38, reflecting a growing awareness of their role in supporting and uplifting those around them. Yoga and meditation encouraged them to practice kindness and support, which extended into their daily interactions.

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Yoga not only transformed their bodies but also fostered stronger relationships, a greater sense of belonging, and an enhanced appreciation for their environment and academic journey.

Comparison of Yoga and Anapanasati Meditation

Yoga and anapanasati meditation are both transformative practices, yet they approach mindfulness and well-being from different angles. Yoga combines physical postures (asanas), breath control (pranayama), and meditation to promote strength, flexibility, and mental clarity (Barnes et al., 2004). It focuses on harmonizing the body, mind, and spirit. On the other hand, Anapanasati meditation is a mindfulness practice centered around observing the breath to cultivate deep awareness and concentration, promoting mental calmness and emotional balance. While yoga emphasizes physical movement, anapanasati meditation deepens awareness through stillness and breath observation, offering complementary paths to achieving holistic well-being and inner peace. In this research, a comparison of yoga and meditation practices on mental health development has been carried out among students. (Table 7) shows the comparison of the self-assessment average with dependent T-test statistics.

Salf accordment	Before		After		+	n voluo	
Sen-assessment	Ā	S.D.	Ā	S.D.	l	<i>p</i> -value	
Physical health components	3.28	0.61	3.49	0.59	-2.003	0.050^{*}	
Psychological component	3.78	0.51	3.95	0.52	-1.792	0.078	
Social and environment relations	3.83	0.56	4.09	0.55	-2.360	0.022*	
Average	3.73	0.49	3.96	0.50	-2.424	0.018*	

Table 7: Comparison of the self-assessment average with dependent t-test statistics. ${}^*\,\mathrm{p}\,{<}\,0.05$

The students rated their physical health components at 3.28, indicating moderate well-being. However, after completing the yoga course, this score increased to 3.49. While this difference may seem small, the statistical analysis reveals a significant change, with a p-value of 0.050, just under the critical threshold for significance. The improvement reflects the physical benefits yoga provides, from increased flexibility to reduced stress and tension, helping students feel healthier and more energized. In terms of psychological components, students showed a slight improvement, with scores rising from 3.78 to 3.95. This increase, although not statistically significant (p-value = 0.078), reflects the positive impact of yoga on emotional well-being. Yoga's emphasis on mindfulness, stress management, and emotional regulation allows students to feel more balanced and centered, even if the change is subtle in this area (Bamber et al., 2019). The most striking improvement, however, came in the social and environmental relations category. Before the course, students rated their social interactions and environment at 3.83. After the course, this score rose to 4.09, and the change was statistically significant with a p-value of 0.022. Yoga helps foster a sense of connection, empathy, and mindfulness in daily interactions, enhancing student's relationships with others and their environment (Wendt et al., 2015). They reported feeling more at peace with themselves and better equipped to handle social situations, making voga a powerful tool for improving interpersonal dynamics. Overall, the average selfassessment score increased from 3.73 to 3.96, with a statistically significant t-value of -2.424 and Journal of Posthumanism

a p-value of 0.018. This result underscores the holistic benefits of yoga, not only in terms of physical health but also in psychological and social aspects. As a teacher, witnessing these transformations in my students is incredibly rewarding. Yoga provides them with tools to improve their bodies, minds, and relationships, fostering a more balanced, peaceful, and connected life.

Comparison of mean achievement score GPA of students studying before and after yoga and meditation with dependent t-test statistics is shown in (Table 8). The students' average GPA was 2.65, which is considered a solid performance for many. However, after completing the course, their average GPA rose to 2.72, showing a small yet meaningful improvement. Statistically, this change was highly significant, with a t-value of -7.220 and a p-value of 0.000, indicating that the improvement wasn't due to chance.

Salf accomment	Before		After		t	<i>p</i> -value
Sen-assessment	x	S.D.	x	S.D.		
Academic achievement	2.65	0.50	2.72	0.50	-7.220	0.000

 Table 8. Comparison of mean achievement score GPA of students studying before and after yoga and meditation with dependent t-test statistics.

Yoga and meditation practices support academic performance in multiple ways. By reducing stress and promoting mental clarity, students are better able to focus on their studies and retain information (Shearer et al., 2016). The mindfulness techniques they learned also helped them manage distractions and improve their concentration, which contributed to better academic results (Kumar et al., 2024). Witnessing the students' growth, not just in physical strength but also in mental resilience, was incredibly rewarding. This data reinforces the idea that yoga and meditation offer invaluable tools for improving both academic achievement and overall wellbeing, proving their holistic benefits.

Synergy with the Sustainable Development Goals (SDGs)

The findings of this study demonstrate a strong alignment with key objectives outlined in the United Nations Sustainable Development Goals (SDGs), emphasizing the intervention's contribution to global well-being. Specifically, the intervention supports SDG 3 (good health and well-being), by promoting mental health and emotional well-being among university students, as evidenced by statistically significant reductions in stress, improvements in psychological health, enhanced social relationships, and greater resilience. These outcomes provide a sustainable model for addressing the global mental health crisis in higher education (Astha, 2024; Bajracharya, 2024).

The study also aligns with SDG 4 (quality education), which improves academic performance through innovative practices, such as yoga and meditation, which enhance focus, cognitive function, and emotional regulation, creating a more inclusive academic environment. Additionally, the intervention demonstrates the potential of accessible, non-invasive strategies to bridge gaps in educational support and equity. Furthermore, the study highlights according to SDG 17 (partnerships for the Goals), with researchers from multiple institutions and disciplines collaborating to foster global academic cooperation and create scalable interventions across various cultural and institutional contexts (Jayanna, 2023). In terms of policy implications, the

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study underscores the need for policy interventions to support both mental health and academic success, advocating for the integration of yoga and meditation into academic curricula and the provision of funding to enhance scalability and accessibility (Swamy & Agoramoorthy, 2022). To amplify the impact of this research, it is recommended to conduct longitudinal studies to evaluate the lasting effects of these practices, explore their adaptability in different cultural contexts, and develop frameworks for collaboration among universities, policymakers, and healthcare providers to implement these practices on a larger scale.

This integration of yoga and meditation highlights how the intervention not only benefits individual students but also addresses broader global challenges, reinforcing its value in the pursuit of sustainable development. Furthermore, the global challenges related to mental health among students have reached critical levels, with rising rates of anxiety, depression, and burnout affecting academic performance and overall well-being. Universities worldwide are facing increasing pressure to address these issues, as the stigma surrounding mental health continues to hinder students from seeking help. This intervention presents a proactive solution by providing students with tools to better manage stress and mental health challenges. Addressing mental health as a key component of higher education is essential in building a generation of students who are equipped not only with academic knowledge but also the emotional resilience to thrive in an increasingly complex world.

Conclusion

This study involved 60 Thai university students in a 12-week yoga and meditation program. Using validated questionnaires, it demonstrated significant mental health and academic improvements, aligning with SDG 3, 4 and 17. Findings from the present study, the main conclusion can be drawn:

- This study introduces a novel combination of yoga and meditation, enhancing mental health and academic performance holistically.
- The intervention significantly improved emotional regulation, social connections, and GPA, showcasing measurable benefits for student well-being.
- The findings align with SDG 3 (mental health), SDG 4 (education), and SCG 17 (partnership for the goals) promoting sustainable student development globally.
- The study provides a replicable, cost-effective model for integrating mindfulness practices into higher education curricula worldwide.

Novel Synergistic Intervention: This study highlights the innovative combination of yoga and Anapanasati meditation as a culturally adapted, holistic intervention for Thai university students. The program integrates physical, psychological, and emotional practices, offering a novel pathway for enhancing both mental health and academic performance. Future research should explore extended durations, diverse demographic applications, and longitudinal impacts to further validate and expand the program's benefits.

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Ethical Approval Statement

This work received ethical approval from Walailak university Human research and ethical committee from Walailak University (Reference no. WUEC-20-094-01).

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