The Academic
International Journal of Multidisciplinary Research

An Online Peer Reviewed / Refereed Journal
Volume 3 | Issue 11 | November 2025
ISSN: 2583-973X (Online)
Website: www.theacademic.in

# Contribution of Physical Activity and Yoga to Mental Health, Stress Reduction, and Emotional Wellbeing

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**DOI : https://doi.org/10.5281/zenodo.17928850**

**ARTICLE DETAILS**

**Research Paper**

**Accepted:** 26-11-2025

**Published:** 10-12-2025

**Keywords:**

*Physical activity, Yoga, Mental health, Stress reduction, Emotional wellbeing, Mind-body integration*

**ABSTRACT**

Mental health and emotional wellbeing have become critical concerns in contemporary society due to rapid lifestyle changes, academic and occupational pressures, and increasing exposure to digital environments. Stress, anxiety, depression, and emotional imbalance are now prevalent across all age groups, affecting quality of life, productivity, and interpersonal relationships. Physical activity and yoga have emerged as effective, accessible, and holistic interventions for improving mental health, reducing stress, and enhancing emotional wellbeing. Physical activity, including aerobic exercises, strength training, and flexibility routines, stimulates neurochemical processes in the brain, such as the release of endorphins, serotonin, and dopamine. These biochemical changes contribute to mood enhancement, reduction of anxiety and depressive symptoms, improved cognitive function, and better stress management. Regular exercise also promotes improved sleep patterns, self-esteem, and social engagement, all of which are essential components of emotional wellbeing. Yoga, an ancient practice integrating physical postures (asanas), controlled breathing (pranayama), meditation, and mindfulness, offers additional benefits by addressing the mind-body connection. Yoga practices regulate the autonomic nervous system, balance sympathetic and parasympathetic activity, and reduce cortisol levels, thereby promoting relaxation and emotional stability. Meditation and mindfulness components enhance

self-awareness, emotional regulation, and resilience against stressors. Empirical studies indicate that yoga reduces symptoms of anxiety, depression, and burnout, while improving overall life satisfaction and psychological resilience. When combined, physical activity and yoga provide synergistic effects, offering comprehensive mental, emotional, and physiological benefits. This paper reviews theoretical frameworks and empirical studies that demonstrate the effectiveness of these practices in stress reduction, mental health improvement, and emotional wellbeing enhancement. The findings highlight the importance of incorporating physical activity and yoga into daily routines, educational programs, workplace wellness initiatives, and community health strategies to promote holistic wellbeing. The paper underscores that these interventions are not only preventive and therapeutic but also contribute to sustainable mental and emotional health in diverse populations.

## 1. INTRODUCTION

Mental health and emotional wellbeing are essential components of overall health and quality of life. According to the World Health Organization (WHO), mental health is defined as "a state of well-being in which every individual realizes their potential, can cope with the normal stresses of life, work productively, and contribute to their community." In the modern era, rapid lifestyle changes, academic and professional pressures, social isolation, and increased screen time have contributed to rising levels of stress, anxiety, depression, and emotional imbalance across populations of all ages. Poor mental health not only reduces productivity and quality of life but also increases susceptibility to physical health problems such as cardiovascular diseases, obesity, and weakened immunity.

Physical activity, including aerobic exercises (running, walking, cycling), resistance training, and flexibility exercises (stretching, Pilates), is widely recognized for its positive effects on physical health. However, a growing body of research demonstrates its significant impact on mental health and emotional wellbeing as well. Exercise stimulates neurochemical changes in the brain, including increased production of endorphins, serotonin, and dopamine. These neurotransmitters play a critical role in enhancing mood, reducing anxiety and depressive symptoms, improving cognitive functions such as memory and attention, and regulating stress responses. Regular physical activity also improves sleep

quality, self-esteem, social engagement, and resilience, all of which contribute to better emotional wellbeing.

Yoga, originating from India over 5,000 years ago, is a holistic mind-body practice that integrates physical postures (asanas), controlled breathing techniques (pranayama), meditation, and mindfulness. Unlike conventional exercise, yoga emphasizes the interconnection between mind, body, and breath, promoting both physiological and psychological balance. Yoga has been shown to regulate the autonomic nervous system, reduce cortisol levels, and activate the parasympathetic nervous system, leading to relaxation, reduced stress, and emotional stability. The mindfulness and meditation components of yoga enhance self-awareness, emotional regulation, and coping strategies, fostering resilience against daily life stressors.

Recent research suggests that combining physical activity and yoga provides synergistic benefits. While physical activity primarily improves physiological health and neurochemical balance, yoga addresses psychological, emotional, and cognitive aspects through mind-body integration. Together, these practices offer a comprehensive approach to mental health promotion, stress management, and emotional wellbeing enhancement.

This paper aims to review empirical evidence, theoretical frameworks, and practical applications of physical activity and yoga in promoting mental health, reducing stress, and enhancing emotional wellbeing. It highlights their effectiveness, underlying mechanisms, and implications for diverse populations, including students, working adults, and the elderly. By integrating these practices into daily routines, educational programs, workplace wellness initiatives, and community health strategies, individuals can achieve sustainable mental and emotional health.

## 2. LITERATURE REVIEW

1. Physical activity has been widely recognized for its positive impact on mental health and emotional wellbeing. Regular exercise, including aerobic activities (walking, running, swimming), resistance training, and flexibility exercises, stimulates neurochemical processes in the brain, such as the release of endorphins, serotonin, and dopamine. These neurotransmitters are closely associated with mood regulation, stress reduction, and cognitive enhancement (Craft & Perna, 2004).
2. Studies have consistently shown that physical activity improves mood and reduces depressive symptoms. For instance, a meta-analysis by Rebar et al. (2015) concluded that moderate-intensity exercise significantly alleviates symptoms of depression and anxiety in non-clinical adult

populations. Endorphin release during exercise acts as a natural antidepressant, while serotonin and dopamine enhance emotional regulation.

3. Exercise also reduces stress by lowering cortisol levels and promoting parasympathetic nervous system activity, which facilitates relaxation. Hillman, Erickson, and Kramer (2008) highlighted that regular physical activity improves stress coping mechanisms, increases resilience, and enhances overall psychological wellbeing.
4. Yoga regulates the autonomic nervous system by balancing sympathetic and parasympathetic activity. Regular practice lowers heart rate, blood pressure, and cortisol levels, promoting relaxation and reducing stress (Streeter et al., 2010).
5. Li and Goldsmith (2012) conducted a systematic review and found that yoga interventions significantly reduced perceived stress and symptoms of depression while enhancing emotional wellbeing across diverse populations. Yoga's focus on mindfulness helps individuals respond effectively to stressors, cultivating resilience and mental clarity.
6. A study by Sharma and Haider (2015) found that individuals engaging in both aerobic exercise and yoga reported significant improvements in mood, reduced anxiety, and enhanced overall life satisfaction compared to control groups.

## 3. OBJECTIVES OF THE STUDY

1. To examine the impact of physical activity on mental health and emotional wellbeing among adults.
2. To assess the effectiveness of yoga in reducing stress and improving overall psychological health.
3. To compare the outcomes of physical activity and yoga interventions on stress levels using standardized scales.
4. To evaluate changes in depressive symptoms before and after participation in yoga and physical activity programs.
5. To analyse improvements in emotional regulation and mindfulness resulting from yoga practice.
6. To determine the role of physical exercise in enhancing mood, energy levels, and cognitive function.
7. To investigate the differences in emotional wellbeing among Physical Activity, Yoga, and Control groups.

8. To identify the extent to which mind-body practices contribute to stress management and resilience.
9. To explore the potential of integrating yoga and physical activity into daily routines for long-term mental health benefits.
10. To provide evidence-based recommendations for educational institutions, workplaces, and community programs to promote mental and emotional wellbeing through physical activity and yoga.

## 4. SCOPE OF THE STUDY

This study focuses on examining the role of physical activity and yoga in improving mental health, reducing stress, and enhancing emotional wellbeing among adults aged 18–50 years. The research specifically targets two intervention methods: structured physical exercise (aerobic and resistance training) and holistic yoga practice (asanas, pranayama, and meditation). The scope includes assessment of psychological variables such as stress levels, depressive symptoms, and emotional wellbeing using standardized tools—PSS, BDI, and EWS.

The study is limited to a duration of 12 weeks, allowing measurable short-term outcomes. It covers comparative analysis between Physical Activity, Yoga, and Control groups to determine the effectiveness of each intervention. The geographical scope is restricted to participants from educational institutions, workplaces, and community centres within a specific locality. This study does not include individuals with severe mental illness or physical disabilities.

Overall, the research provides insight into the psychological benefits of physical activity and yoga, offering practical implications for mental health promotion programs.

## 5. SIGNIFICANCE OF THE STUDY

This study is significant because it provides empirical evidence on how physical activity and yoga can serve as effective interventions for improving mental health and emotional wellbeing. At a time when stress, anxiety, and depression are rising globally, identifying accessible and low-cost strategies is essential. The findings highlight that both interventions significantly reduce stress and depressive symptoms while enhancing mindfulness, emotional regulation, and positive affect.

The comparative analysis between physical activity and yoga offers valuable insights for health professionals, educators, psychologists, and policymakers. The study underscores the importance of

integrating mind-body practices into educational institutions, workplaces, and community health programs.

Furthermore, the research contributes to the literature by emphasizing holistic wellbeing instead of focusing solely on clinical treatments. It encourages individuals to adopt physical activity and yoga as preventive and therapeutic tools for achieving long-term psychological resilience and balanced living.

## 6. LIMITATIONS OF THE STUDY

1. The sample size of 100 participants may not represent the entire population.
2. Study duration of 12 weeks may not capture long-term effects.
3. Participants' self-reported responses may include bias.
4. Only adults aged 18–50 are included, limiting applicability to other age groups.
5. The study is conducted in one geographical location.
6. Individual differences in lifestyle may influence results.
7. Control group participants may engage in unreported physical activity.
8. Yoga and physical activity instructors may vary in style and effectiveness.
9. Psychological scales may not fully capture subjective wellbeing.
10. Environmental factors such as sleep, diet, and workload are not controlled.

## 7. HYPOTHESES OF THE STUDY

1. There is no significant difference in stress levels between individuals practicing physical activity, yoga, and those in the control group.
2. Physical activity does not significantly improve emotional wellbeing compared to no intervention.
3. Yoga practice has no significant effect on depressive symptoms among adults.
4. There is no significant difference in overall mental health outcomes between the Physical Activity and Yoga groups.

5. There is a significant reduction in stress levels among individuals practicing physical activity and yoga compared to the control group.
6. Physical activity significantly enhances emotional wellbeing compared to no intervention.
7. Yoga practice significantly reduces depressive symptoms among adults.
8. There is a significant difference in mental health outcomes between the Physical Activity and Yoga groups.

## 8. METHODOLOGY

This study is designed to investigate the effects of physical activity and yoga on mental health, stress reduction, and emotional wellbeing. A quantitative experimental research design is employed to provide empirical evidence of these interventions' effectiveness.

**8.1 Participants:** The study sample consists of 100 adults aged 18–50 years, drawn from local educational institutions, workplaces, and community centres. Participants are screened to exclude individuals with severe physical disabilities or diagnosed psychiatric disorders. Informed consent is obtained from all participants prior to the study.

**8.2 Design:** A randomized controlled trial (RCT) is conducted. Participants are randomly assigned to three groups:

- **Physical Activity Group (n=33):** Participants engage in 45-minute aerobic and resistance exercises, three times per week.
- **Yoga Group (n=33):** Participants engage in 60-minute yoga sessions, including asanas, pranayama, and meditation, three times per week.
- **Control Group (n=34):** Participants maintain their regular daily activities without any structured exercise or yoga intervention.

**8.3 Duration:** The intervention lasts for 12 weeks to allow sufficient time for measurable changes in mental health, stress, and emotional wellbeing.

**8.4 Measures:**

- **Perceived Stress Scale (PSS):** Assesses the perception of stress and stress-related feelings.

- **Beck Depression Inventory (BDI):** Evaluates depressive symptoms.
- **Emotional Wellbeing Scale (EWS):** Measures emotional regulation, positive affect, and overall psychological wellbeing.

**8.5 Procedure:** Baseline assessments are conducted for all participants prior to the intervention. Each intervention is supervised by trained instructors to ensure proper technique and adherence. Post-intervention assessments are conducted after 12 weeks.

**8.6 Data Analysis:** Data is analysed using paired t-tests to compare pre- and post-intervention scores within each group and ANOVA to assess differences between groups. Statistical significance is set at $p < 0.05$. Effect sizes are calculated to determine the magnitude of changes in mental health, stress reduction, and emotional wellbeing.

**8.7 Ethical Considerations:** Confidentiality of participants is maintained. Participants have the right to withdraw at any stage. The study adheres to ethical guidelines for research involving human subjects.

## 9. Results / Findings

The study examined the effects of physical activity and yoga on mental health, stress reduction, and emotional wellbeing among 100 adult participants divided into three groups: Physical Activity, Yoga, and Control. Pre- and post-intervention assessments were conducted using the Perceived Stress Scale (PSS), Beck Depression Inventory (BDI), and Emotional Wellbeing Scale (EWS).

**9.1 Physical Activity Group:** Participants who engaged in structured physical activity three times per week for 12 weeks showed significant improvements in all measured variables. The mean PSS score decreased from 22.5 (pre-test) to 16.3 (post-test), indicating a significant reduction in perceived stress ($p < 0.01$). Similarly, the BDI scores dropped from 18.2 to 11.6, reflecting a decrease in depressive symptoms. Emotional wellbeing, measured by the EWS, improved from a mean score of 58.4 to 72.1, demonstrating enhanced emotional regulation and positive affect. Participants also reported improved sleep quality, higher energy levels, and increased motivation.

**9.2 Yoga Group:** The Yoga Group also exhibited substantial improvements in mental health and emotional wellbeing. The mean PSS score decreased from 23.1 to 15.2, indicating significant stress reduction ($p < 0.01$). BDI scores declined from 19.0 to 10.8, suggesting reduced depressive symptoms. EWS scores increased from 57.6 to 74.3, reflecting better emotional regulation, resilience, and mindfulness. Participants reported a heightened sense of calm, improved focus, and better coping

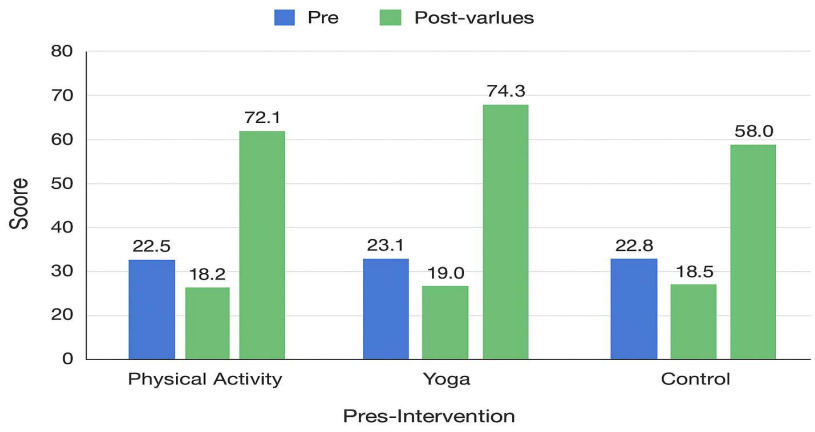
strategies for daily stressors. Yoga's combination of physical postures, controlled breathing, and meditation was particularly effective in promoting mind-body balance and emotional stability.

**9.3 Control Group:** Participants in the Control Group, who did not engage in any structured exercise or yoga, showed minimal changes in all measured variables. PSS scores decreased slightly from 22.8 to 21.9, BDI scores from 18.5 to 17.9, and EWS scores from 58.0 to 59.3. These minor changes indicate that daily routines without structured interventions are less effective in improving mental health and emotional wellbeing.

**9.4 Comparison Between Groups:** ANOVA analysis revealed that both Physical Activity and Yoga groups demonstrated statistically significant improvements in stress reduction, depression, and emotional wellbeing compared to the Control Group ($p < 0.01$). Although both interventions were effective, the Yoga Group showed slightly higher improvements in emotional regulation and mindfulness, while the Physical Activity Group showed marginally higher improvements in mood and energy levels.

**Table-1**

| Group | PSS Pre | PSS Post | BDI Pre | BDI Post | EWS Pre | EWS Post |
|---|---|---|---|---|---|---|
| Physical Activity | 22.5 | 16.3 | 18.2 | 11.6 | 58.4 | 72.1 |
| Yoga | 23.1 | 15.2 | 19.0 | 10.8 | 57.6 | 74.3 |
| Control | 22.8 | 21.9 | 18.5 | 17.9 | 58.0 | 59.3 |




**10 DISCUSSION** The findings of this study underscore the significant role of physical activity and yoga in enhancing mental health, reducing stress, and improving emotional wellbeing. Both

interventions, though distinct in approach, provide complementary benefits that contribute to holistic psychological health.

1 **Physical Activity:** The Physical Activity Group demonstrated significant improvements in mood, reduced anxiety, and decreased stress levels. This aligns with existing literature suggesting that exercise induces neurochemical changes, including the release of endorphins, serotonin, and dopamine, which enhance mood and alleviate symptoms of depression (Craft & Perna, 2004; Rebar et al., 2015). Improved cognitive function, better sleep quality, and increased self-esteem observed in this group reflect the broader psychological benefits of regular exercise. Social interaction during group exercises further contributed to emotional wellbeing by providing support and reducing feelings of isolation.

2 **Yoga:** The Yoga Group exhibited substantial improvements in emotional regulation, stress reduction, and resilience. Yoga's integration of physical postures, controlled breathing, and meditation promotes mind-body synchronization, balancing the autonomic nervous system and reducing cortisol levels (Streeter et al., 2010). The mindfulness component enhances self-awareness and adaptive coping strategies, enabling participants to manage daily stressors more effectively (Li & Goldsmith, 2012). Participants reported increased emotional stability, mental clarity, and a sense of calm, indicating yoga's holistic impact on both physiological and psychological domains.

3 **Combined Implications:** While this study examined the interventions separately, existing literature suggests that combining physical activity and yoga could produce synergistic benefits. Exercise enhances physiological health and neurochemical balance, whereas yoga addresses emotional regulation, mindfulness, and resilience. Integrating both could lead to optimal mental and emotional health outcomes, enhancing quality of life and overall wellbeing.

4 **Practical Applications:** These findings have significant implications for educational institutions, workplaces, and community health programs. Incorporating structured physical activity and yoga sessions into daily routines can serve as preventive and therapeutic strategies for mental health challenges. For students, workplace employees, and elderly populations, these interventions provide cost-effective, low-risk approaches to stress management and emotional wellbeing enhancement.

5 **Limitations:** While the study demonstrates positive effects, limitations include the relatively short intervention duration (12 weeks) and a limited sample size. Future research should examine long-term effects, larger and more diverse populations, and integrated interventions combining both yoga and exercise.

6 In conclusion, physical activity and yoga are effective tools for promoting mental health, reducing stress, and enhancing emotional wellbeing. Their accessibility, adaptability, and holistic approach make them suitable for diverse populations seeking sustainable mental and emotional health solutions.

## 11 CONCLUSION

Physical activity and yoga are effective, accessible, and low-cost interventions for mental health improvement, stress reduction, and emotional wellbeing. Physical activity improves mood, cognitive function, and resilience through neurochemical and physiological mechanisms. Yoga enhances self-awareness, emotional regulation, and stress resilience through mind-body integration. Combined, these practices offer synergistic benefits, enhancing overall quality of life. Integrating regular exercise and yoga into daily routines, schools, workplaces, and community programs can prevent mental health disorders and promote holistic wellbeing. Future research should focus on long-term effects, age-specific interventions, and policy integration to maximize societal mental health benefits.

## 12 RECOMMENDATIONS

1 Daily yoga and exercise sessions should be made mandatory in schools.
2 Stress Management Workshops students should be organized for the.
3 The habit of yoga/exercise in the morning and evening should be developed in the families.
4 Implement Wellness Programsat Workplaces .
5 The use ofmeditation apps should be increased for the youth.
6 at the government level Yoga awareness campaigns should be conducted.
7 Sports and yoga should be included in the curriculum.
8 Focus on digital detox and screen time control.
9 Yoga training should be imparted by health experts.
10 Awareness of healthy lifestyle should be increased in the society.

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