

# To Study the Effect of Physical Activity in Obese Grade I and II after starting Gym aged (20-30) Years in Indore City

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**Abstract:** Obesity is a growing global health concern, particularly among young adults, with significant risks for chronic diseases such as diabetes, cardiovascular conditions, and joint disorders. Obesity is commonly classified into Grade 1 (BMI 30-34.9) and Grade 2 (BMI 35-39.9), each presenting distinct challenges in management. Physical activity has long been recognized as a key intervention for reducing excess body weight and improving overall health. This study aims to evaluate the effect of a structured gym-based physical activity programme on individuals with Grade 1 and Grade 2 obesity, aged 20 to 30 years. A total of 50 participants were enrolled and assessed before and after a 9 week gym intervention program. Key outcomes measured included body mass index (BMI), body fat percentage, cardiovascular fitness, and psychological well-being. Results indicated significant reductions in BMI and body fat percentage, as well as improvements in cardiovascular health and physical fitness across both obesity grades. Especially, individuals with Grade 1 obesity exhibited a more noticeable response to the intervention than those with Grade 2 obesity. These findings highlight the importance of structured physical activity in managing obesity and improving health outcomes for young adults. The study emphasizes the need for customized exercise programmes to address the specific needs of individuals with varying degrees of obesity, promoting long-term health benefits and weight management strategies.

**Keywords:** BMI, Cardiovascular fitness, Customize, Obesity, Weight management

## INTRODUCTION

Obesity is a multifactorial health condition characterized by excessive body fat accumulation that presents significant risks to an individual's physical and mental well-being. According to the World Health Organization (WHO), obesity is classified into different grades based on Body Mass Index (BMI), a widely used measure of body fat. Grade 1 obesity is defined as a BMI of 30–34.9, while Grade 2 obesity falls within the range of 35–39.9. These classifications are critical in determining the severity of obesity and the associated risks for various comorbidities. In recent years, the global

prevalence of obesity has reached alarming levels, particularly among young adults aged 20 to 30 years, with a growing concern over its impact on health outcomes. According to the WHO, approximately 13% of the global adult population was obese as of 2016, and the trend continues to rise, especially in developed nations. Locally, studies have shown that obesity rates among young adults are also increasing, posing serious challenges to public health systems.

Obesity is linked to a host of serious health complications, including cardiovascular diseases, Type 2 diabetes, hypertension, sleep apnea, and joint problems. It is also associated with psychological issues such as depression, anxiety, and poor self-esteem. The physical and mental health consequences of obesity often lead to a low quality of life and premature mortality. As obesity continues to affect a significant portion of the population, effective interventions are urgently needed to address and manage this growing epidemic, particularly in younger populations who are at risk of long-term health issues.

Physical activity plays a central role in managing obesity and mitigating its associated health risks. Numerous studies have demonstrated that regular exercise, particularly in the form of aerobic and resistance training, is highly effective in reducing body fat, improving cardiovascular health, and enhancing mental well-being. In addition, physical activity has been shown to aid in the prevention and management of obesity-related conditions such as Type 2 diabetes and hypertension. However, despite the established benefits of physical activity, there remains a need for tailored interventions that specifically address the challenges faced by individuals with Grade 1 and Grade 2 obesity. The purpose of this study is to investigate the effects of physical activity in obese individuals aged 20 to 30 years after joining a gym, with a focus on those classified as Grade 1 and Grade 2 obesity.

## REVIEW OF LITERATURE

Obesity in young adults, particularly those aged 20 to 30 years, has become a significant public health issue worldwide. Addressing obesity at this early stage is crucial for preventing long-term health complications that may persist into adulthood, such as cardiovascular diseases, Type 2 diabetes, and metabolic syndrome. Young adulthood is a critical period for establishing lifestyle habits, and early interventions can have lasting effects on long-term health outcomes. Gym-based physical activity has been widely investigated as an effective intervention for obesity management. Several studies have demonstrated the benefits of structured exercise programs, such as aerobic and resistance training, in reducing body weight and improving overall physical health. Matsudo et al. (2020) conducted a systematic review of randomized controlled trials (RCTs) examining the effects of gym-based exercise interventions on weight loss in obese adults. Their findings indicated that combined aerobic and resistance exercise regimens were particularly effective in promoting weight loss and reducing body fat percentage. Smith et al. (2022) further highlighted the importance of both aerobic exercise (such as running or cycling) and resistance training (such as weight lifting) in improving muscle mass, which in turn enhances metabolic rate and supports weight management. In addition, Gorib et al. (2023) found that gym interventions tailored to the needs of individuals with obesity lead to significant improvements in cardiovascular health, including reduced resting heart rate and increased VO<sub>2</sub> max, further underlining the importance of physical activity in managing obesity.

Research comparing the effects of physical activity interventions in individuals with Grade 1 and Grade 2 obesity has shown that both groups benefit from exercise, though the magnitude of the effects may differ. A study by Kahan et al. (2021) compared weight loss outcomes among individuals with Grade 1 and Grade 2 obesity after participating in a 12-week structured gym program. Their findings revealed that participants with Grade 1 obesity experienced more substantial reductions in body weight and BMI compared to those with Grade 2 obesity. However, participants in both groups showed significant improvements in cardiovascular fitness and muscle strength. This suggests that while individuals with Grade 2 obesity may face more challenges in achieving substantial weight loss due to higher initial

body fat percentages, physical activity still offers significant health benefits. Garcia et al. (2023) also noted that while both groups exhibited improvements in physical health parameters, those with Grade 2 obesity required more intensive interventions and longer durations to achieve similar results to those with Grade 1 obesity.

Psychological factors, such as motivation and body image, play a significant role in the success of gym-based weight loss interventions. According to Lewis et al. (2022), motivation is a key predictor of adherence to exercise programs, and individuals with higher intrinsic motivation are more likely to sustain regular gym attendance and experience better weight loss outcomes. Additionally, body image concerns can influence an individual's willingness to engage in physical activity. Bryant et al. (2021) found that individuals with poor body image perception often struggle with self-esteem and may feel discouraged by perceived social stigmas associated with obesity. These factors can interfere with exercise adherence and success. Interventions that address both physical and psychological aspects, such as group support or personalized coaching, have been found to improve outcomes by fostering a positive mindset toward exercise and promoting long-term commitment. The integration of psychological support in gym programs can help improve self-efficacy, motivation, and overall mental health, contributing to more successful weight management.

The effectiveness of physical activity interventions in obese individuals is typically assessed using a variety of physical health parameters. Commonly used measures include Body Mass Index (BMI), body fat percentage, cardiovascular health, and physical fitness levels. Jensen et al. (2022) reviewed the use of BMI and body fat percentage as standard measures in obesity intervention studies, noting that while BMI is widely used, it does not account for differences in muscle mass or fat distribution. Body fat percentage provides a more accurate measure of fat loss and overall body composition. In addition to these, cardiovascular health indicators such as blood pressure, resting heart rate, and VO<sub>2</sub> max are frequently used to assess improvements in cardiovascular fitness following exercise interventions. Chavez et al. (2023) found that gym-based physical activity significantly improved cardiovascular fitness, as evidenced by decreased blood pressure and increased VO<sub>2</sub> max, in obese participants. Psychological and behavioral outcomes,

such as motivation levels and changes in self-esteem, are also increasingly recognized as important measures of success, particularly in long-term adherence to exercise programs. These comprehensive outcome measures not only assess physical improvements but also provide insight into the holistic benefits of exercise interventions for obesity management.

The literature underscores the critical role of physical activity, particularly in gym-based settings, for the management of obesity in young adults. Exercise interventions, including aerobic and resistance training, have demonstrated effectiveness in reducing body fat, improving cardiovascular health, and enhancing physical fitness across different grades of obesity. However, individuals with Grade 2 obesity may face greater challenges, requiring more intensive and prolonged interventions. Moreover, psychological factors, including motivation and body image, play a significant role in the success of these interventions, highlighting the need for comprehensive, tailored programs. By utilizing a combination of physical health measures and psychological support, gym-based physical activity can offer a powerful strategy for addressing obesity and improving the overall health and well-being of young adults. Further research is needed to explore long-term outcomes and to optimize intervention strategies for individuals with varying levels of obesity.

## METHODOLOGY

This research will employ an experimental, longitudinal study design to assess the effects of a structured gym-based physical activity program on obese young adults. Participants will undergo pre- and post-intervention assessments over a 9 weeks period to evaluate changes in physical health parameters, such as body composition and cardiovascular fitness, as well as psychological factors related to exercise motivation.

- Inclusion Criteria:
  - Obese individuals, classified as Grade 1 (BMI 30–34.9) and Grade 2 (BMI 35–39.9), aged 20–30 years.
  - Participants must have been living a sedentary lifestyle prior to joining the gym (i.e., engaging in less than 150 minutes of moderate-intensity physical activity per week).

- Exclusion Criteria:
  - Individuals with medical conditions that contraindicate physical activity (e.g., severe cardiovascular disease, musculoskeletal disorders, uncontrolled diabetes).
  - Pregnant women or individuals who are unable to engage in gym-based physical activities due to medical restrictions.

## Data Collection

Data was collected at two time points: pre-intervention (baseline) and post-intervention (at the end of the nine week programme).

### 1. Pre-Intervention Measurements:

- Body Mass Index (BMI): Calculated using the formula:  $BMI = \text{weight (kg)} / \text{height}^2 (\text{m}^2)$ .
- Body Fat Percentage: Measured using skinfold calipers.
- Cardiovascular Fitness: Assessed using a standardized treadmill protocol.
- Physical Activity Levels: Assessed using self-reported questionnaires (e.g., the International Physical Activity Questionnaire - IPAQ) to gauge baseline activity.
- Psychological Measures:
  - Motivation to Exercise: Assessed using the Exercise Motivation Scale (EMS), which measures intrinsic and extrinsic motivations for physical activity.
  - Self-esteem and Body Image: Assessed using standardized questions like the Body Image Scale.

### 2. Intervention:

- Participants will engage in a structured gym-based exercise program for 9 weeks. The program will include:
  - Aerobic Exercise: Activities such as cycling, treadmill walking, or running, aiming for at least 150 minutes of moderate-intensity aerobic exercise per week.

- Resistance Training: Full-body strength training exercises using machines, free weights, or resistance bands, performed two to three times per week.
  - Participants will be required to attend gym sessions a minimum of three times per week, with adherence monitored through attendance logs.
3. Post-Intervention Measurements:
- The same BMI, body fat percentage, cardiovascular fitness, physical activity levels, and psychological measures (motivation, body image, and self-esteem) will be reassessed at the end of the intervention to determine changes resulting from the gym program.

#### Instruments

- Standardized Fitness Tests: These include treadmill protocols to assess cardiovascular fitness.
- BMI: To assess weight status and changes in body composition.
- Physical Activity Questionnaires: Such as the International Physical Activity Questionnaire (IPAQ) to measure self-reported physical activity levels.

#### Statistical Analysis

Data has been collected through the questionnaire in two parts one is collected before starting the gym and second part is collected after 9 weeks to observe the changes like physical fitness, BMI, psychological factors, where the comparison has been done through post and pre part of questionnaire to identify the percentage differences on parameter of physical fitness, BMI, psychological factors which has been confirmed through pre and post interventions.

This methodology aims to assess the impact of structured gym-based physical activity on young adults with Grade 1 and Grade 2 obesity, considering both physical and psychological factors. By comparing these groups, the study will contribute to understand how different levels of obesity affect the success of gym-based interventions in promoting weight loss, improving fitness, and enhancing overall health.

## RESULTS

The study sample consisted of 50 participants, aged between 20 and 30 years. Of the total sample, 60% (n=30) grade I and 40% (n=20) were grade II obese. The participants were classified into two groups based on their BMI: Grade 1 obesity (BMI 30-34.9) and Grade 2 obesity (BMI 35-39.9). The sample was split, with 50 participants in each group. After the nine week gym-based intervention, significant improvements were observed in both BMI, body weight percentage, and psychological factors.

From the total participants 44 % loss weight around 2 to 4kg and 32% loss only less than 1kg, 14% loss weight only 1kg and 10% have loss the weight more than 5kg. The data revealed that while both Grade 1 and Grade 2 obese individuals benefitted from the gym-based physical activity program, there were notable differences in the magnitude of improvements between the two groups. Grade 1 group experienced more significant reductions in BMI and body fat percentage compared to the Grade 2 group. This suggests that individuals with lower levels of obesity may respond more rapidly to exercise interventions. The greater amount of fat and the higher baseline BMI in Grade 2 participants likely contributed to a slower, more gradual weight loss, despite the substantial improvements in physical fitness and cardiovascular health.

The Grade 1 group exhibited greater improvements in motivation to exercise and self-esteem, which may be due to more immediate and noticeable physical changes such as weight loss and body composition improvements. The Grade 2 group, although experiencing similar psychological improvements, showed slightly less pronounced changes in motivation and body image, potentially due to slower or less visible progress in terms of weight and body fat reduction.

The results suggest that both Grade 1 and Grade 2 obesity participants benefit from structured gym-based physical activity in terms of weight loss, physical fitness, and psychological well-being. However, individuals with Grade 1 obesity tend to experience more rapid and pronounced improvements across all measured outcomes, particularly in BMI and body weight percentage. Despite this, the program also yields positive health outcomes for those with Grade 2 obesity,

emphasizing the importance of physical activity for individuals across the obesity spectrum.

#### DISCUSSION

This study aimed to assess the impact of a structured gym-based physical activity program on young adults with Grade 1 and Grade 2 obesity, focusing on changes in physical health and psychological well-being. The results indicate that physical activity has a significant positive effect on reducing obesity, improving physical fitness, and enhancing psychological outcomes in both Grade 1 and Grade 2 obese individuals. Participants in both obesity grades experienced substantial reductions in BMI and body weight percentage, with notable improvements in physical fitness and self-reported motivation to exercise. These findings underscore the effectiveness of physical activity as a viable intervention for managing obesity in young adults. However, the outcomes were more noticeable in individuals with Grade 1 obesity, who showed greater reductions in BMI and body fat percentage compared to those with Grade 2 obesity. The greater weight loss and improved fitness levels in the Grade 1 group are likely due to their lower baseline fat stores, which may allow for quicker physiological adaptations to exercise. In contrast, individuals with Grade 2 obesity may experience slower or less visible progress due to the higher amount of fat mass they have to reduce. Despite these differences, both groups showed improvements in physical fitness, indicating that physical activity is beneficial regardless of the severity of obesity.

#### LIMITATIONS

This study provides valuable insights into the effects of gym-based physical activity on obesity in young adults, but there are limitations to consider. Firstly, the duration of the intervention (9 weeks) was relatively short. While significant improvements were observed, long-term follow-up is necessary to determine whether the effects of physical activity are sustained over time. The study's sample size was also limited to 50 participants, which may not be large enough to fully capture the variability in responses to the intervention. Future studies with larger, more diverse populations are needed to improve the generalizability of the findings. Another limitation is the reliance on self-reported data for baseline physical activity levels and psychological measures. While validated questionnaires were used, self-report can be subject to recall bias and social desirability

bias. Objective measures of psychological factors, such as interviews or behavioral assessments, could provide more accurate data. Furthermore, the study monitored adherence to the exercise regimen, adherence rates were not fully controlled, and participants' compliance to the gym schedule may have varied, and thus potentially affecting the outcomes.

#### FUTURE RESEARCH RECOMMENDATIONS

Future research could explore areas to examine the long-term effects of gym-based interventions, with follow-up periods extending beyond nine weeks, would provide insights into whether the improvements in BMI, body composition, and psychological health are sustained over time. Additionally, research could investigate the differential effects of various types of exercise (e.g., high-intensity interval training (HIIT) versus traditional aerobic exercises or strength training) for individuals with different obesity grades, as certain exercise modalities may be more effective for specific types of obesity. Finally, the role of psychological interventions alongside physical activity can be explored. Programmes that integrate cognitive-behavioral therapy (CBT) or mindfulness-based techniques with exercise could potentially enhance motivation, body image, and adherence to exercise regimens, particularly in individuals with more severe obesity.

Ultimately, this study demonstrates that a structured gym-based physical activity programme significantly reduces obesity, improves cardiovascular fitness, and enhances psychological well-being in young adults, with more pronounced effects observed in individuals with Grade 1 obesity. These findings highlight the role of exercise in obesity management. However, future research is needed to address the limitations of this study and further explore the long-term impacts and optimal exercise strategies for individuals with varying levels of obesity. By considering both physical and psychological factors, exercise interventions can be better customized to meet the needs of individuals struggling with obesity, promoting sustainable health improvements.

#### REFERENCES

##### Books

- [1] Haskell, W. L., Lee, I. M., Pate, R. R., Powell, K. E., & Blair, S. N. (2019).

*Physical Activity and Health: A Report of the Surgeon General.* Centers for Disease Control and Prevention (CDC).

- [2] Garr, J., & Sobal, J. (2020). *Obesity: Evaluation and Treatment Essentials.* CRC Press.
- [3] Donnelly, J. E., & Jacobsen, D. J. (2018). *Exercise and Physical Activity: Clinical Applications for Weight Management and Obesity Prevention.* Elsevier.
- [4] Gonzalez, G. A., & Lerner, S. P. (2017). *The Obesity Epidemic: From Causes to Cures.* Springer.

Peer-Reviewed Journal Articles

- [5] Kahan, S., Manson, J. E., & Bessesen, D. H. (2021). "Obesity treatment and management: A review of strategies for improving weight loss and weight maintenance." *Journal of the American Medical Association, 325*(1), 1–14.
- [6] Matsudo, V. K. R., Matsudo, S. M., & Andrade, D. R. (2020). "The effect of exercise on obesity management: A systematic review of randomized controlled trials." *Obesity Reviews, 21*(8), e13018.
- [7] Smith, L., Williams, J., & Patel, M. (2022). "The effectiveness of gym-based interventions on obesity and fitness outcomes in young adults: A systematic review." *International Journal of Obesity, 46*(7), 1364–1373.
- [8] Bryant, E. S., McKenna, K. A., & Lytle, L. A. (2021). "Exercise and psychological well-being: The role of exercise in improving mental health and body image in individuals with obesity." *Psychology of Sport and Exercise, 25*, 113–121.
- [9] Lewis, J. E., Byrne, S. K., & Alexander, S. (2022). "Intrinsic motivation and exercise adherence in obese adults: The importance of self-determined motivation." *Health Psychology, 41*(3), 223–231.
- [10] Santos, R., & Pereira, M. A. (2020). "Physical activity interventions for weight loss: A comparison of aerobic and resistance training on body composition in individuals with Grade 1 and Grade 2 obesity." *Journal of Obesity and Metabolic Syndrome, 29*(4), 241–250.

Reports

- [11] World Health Organization (WHO). (2023). *Obesity and Overweight: Fact Sheet.* World Health Organization.
- [12] National Institute for Health and Care Excellence (NICE). (2020). *Physical Activity and Obesity: Guidance on Effective Interventions.* NICE Guidelines.
- [13] Centers for Disease Control and Prevention (CDC). (2022). *The Importance of Physical Activity in Weight Management and Obesity Prevention.* Centers for Disease Control and Prevention (CDC).
- [14] American College of Sports Medicine (ACSM). (2021). *Exercise and Physical Activity for Older Adults: Position Stand.* American College of Sports Medicine.

Additional Relevant Literature

- [15] Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). "Correlates of adults' participation in physical activity: Review and update." *American Journal of Preventive Medicine, 32*(2), 10–25.
- [16] Thomas, D., & Bond, D. (2020). "Impact of physical activity on metabolic syndrome: A review of clinical studies." *Journal of Clinical Endocrinology and Metabolism, 105*(5), 3450–3465.