RESEARCH ARTICLE

Enhancing Self-Esteem in Students with Morbid Obesity to Integrate Them into Physical Education Classes Through Recreational Sports Activities

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Abstract

The present study aimed to investigate the effectiveness of an intervention program based on recreational physical activity in improving the level of self-confidence among a sample of school-attending students suffering from obesity. This was done with the objective of enhancing their self-confidence and facilitating their integration within the context of regular physical education classes. To test this hypothesis, the study employed the experimental method using a one-group design. The sample consisted (n = 87) male and female students aged between 15 and 18 years, who were purposively selected based on the obesity criterion. Data were collected using a self-esteem scale developed by the researchers. Statistical analyses showed a positive and statistically significant effect of recreational physical activity on the level of self-esteem among participants, which positively influenced their willingness to integrate and participate in organized physical activities within the school environment.

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1. Introduction:

Severe obesity among children and adolescents is a global health issue with increasingly epidemic dimensions, whose effects extend beyond physiological aspects to include profound psychological and social consequences (World Health Organization, 2020). In addition to the well-known health risks such as heart disease and diabetes (Reilly et al., 2003), excess weight is associated with major psychological challenges, foremost among them being low self-esteem, which can negatively affect multiple aspects of these students' lives, including their social interactions, peer relationships, and participation in school activities—especially physical education classes (Strauss, 2000). In this context, the search for effective intervention strategies aimed at enhancing self-esteem in this group of students gains paramount importance on both academic and practical levels.

This topic is grounded in solid theoretical foundations from developmental psychology and the sociology of health. Identity formation theories during adolescence (Erikson, 1968) and self-esteem theories (Rosenberg, 1965) point to the pivotal role of social interaction and the sense of physical competence in building a positive self-concept among youth. Obese students often face a social stigma rooted in negative stereotypes associated with excess weight (Crandall & Moriarty, 1995), and negative self-perceptions regarding their bodies (Thompson & Smolak, 2001), leading to feelings of inferiority and inadequacy, and thus a noticeable decline in their self-esteem levels (Puhl & Heuer, 2010).

Conversely, physical education is considered a fundamental component of global school curricula, aiming to achieve integration between the physical, psychological, and social development of students (UNESCO, 2015). However, **overweight students may face difficulties integrating effectively into these classes** due to potential physical limitations, fear of ridicule or negative judgment by peers and teachers, and previous negative experiences that left psychological impacts. This increases their sense of isolation and negatively affects their self-esteem and willingness to participate (Kirk, 2010).

Despite the growing body of research literature addressing the impact of physical activity on the physical health aspects of individuals with obesity (e.g., Tremblay et al., 2011), there is still a relative lack of in-depth understanding regarding the specific mechanisms through which **recreational sports activities**, in particular, can contribute to enhancing self-esteem in this vulnerable group of students and facilitate their positive integration into physical education classes. Moreover, further studies are needed to explore the **qualitative characteristics of the most effective recreational activities** in achieving these dual objectives, while taking into account individual differences and the various cultural and social contexts that influence self-perception and sports participation.

2.1 General Research Question

Does participation in recreational sports activities within a dedicated program help improve self-esteem in students with obesity and thus facilitate their integration into classroom physical activities?

2.2 Sub-questions

- Are there statistically significant differences in all dimensions of the self-esteem scale (cognitive, emotional, and social) between the pre-test and post-test measurements?
- Are there differences between males and females in the pre-test and post-test measurements? And what are the acceptance levels of both genders toward integration into classroom activities?

2.3 General Hypothesis

Participation in recreational sports activities within a dedicated program helps improve self-esteem in students with obesity.

2.4 Sub-hypotheses

- Participation in recreational activities within a dedicated program contributes to improving all dimensions of the self-esteem scale (cognitive, emotional, social, and body image).
- There are differences between males and females in the improvement of self-esteem across all dimensions of the scale.

2.5 Study Objectives

- To identify the effectiveness of recreational physical activity in improving self-esteem among students with obesity, and thus facilitating their integration into regular physical education classes.

- To determine whether there is a change in all dimensions of self-esteem (cognitive, emotional, and social) included in the scale after the implementation of the proposed program.

- To identify whether there are gender differences in the levels of improvement, as well as in their integration into physical education classes.

1. **Research Methodology:**

2. The researcher chose the scientific method that emphasizes studying causes and effects (the experimental method) due to its suitability for the nature of the research problem, which involves evaluating the impact of a specific activity (recreational program) on another factor (self-esteem). Within this general methodology, the researcher opted for a straightforward design that involved monitoring the same group of students, measuring their self-esteem before and after applying the recreational program, and comparing the results to determine if the program led to any improvement.

5-2: Study Population and Sample: The study population consisted of secondary schools in the Baraki region, part of the Directorate of Education for East Algiers, totaling seven high schools. To achieve the study's objectives, the researcher applied the self-esteem scale to a stratified random sample of 107 students. However, 20 students were excluded due to health issues preventing participation in physical activities or parental refusal, resulting in a final sample of 87 overweight or obese students, aged 15 to 18 years, with a body mass index (BMI) ranging from 36 to over 40. These students exhibited clear signs of severe obesity, with weights significantly exceeding their heights, as shown in the table below.

Table 1: Distribution of Sample Participants and Anthropometric Measurements

Gender	Number	Weight	Weight Std. Dev.	Height	Height Std. Dev.	Average BMI
Male	58	102	±14.785	1.64	±32.751	37.92
Female	29	96	±17.531	1.57	±29.711	38.95

6 . Study Domains:

6.1 Human Domain: The study targeted **87** male and female students from the Baraki region's secondary schools for the main study, and three additional students from the study population but outside the main sample for the preliminary study to test the self-esteem measurement tool developed by the researcher.
6.2 Spatial Domain: The study was conducted at several secondary schools in the Baraki region, including Tarik Ibn Ziyad 1 and 2, and Bahaa Makawi Secondary School, selected due to their proximity to each other.

1.3 Temporal Domain: The study spanned from January 2025 to the end of March 2025.

7.Study Tools:
To achieve the study's objectives, several tools were employed, the most important of which were the self-esteem scale designed by the researcher and the recreational sports program. The following section details each tool and the steps taken to design and apply them.
7.1 Self-Esteem Scale: The researcher reviewed a range of previous studies related to self-esteem and examined similar scales used in earlier research, such as the study "Effect of a School-Based Intervention on Self-Esteem, Body Image, Eating Attitudes and Behavior of Adolescents with Obesity in Selected Schools of Kerala - A Pilot Study" by **Cebi Paul and Usha V.K: published in 2021.**
Note: This study used the Rosenberg Self-Esteem Scale, among others, to identify dimensions relevant to the obese population, including cognitive, emotional, and social aspects. The researcher then defined these dimensions operationally to simplify the process of formulating scale items. The initial version of the scale included 36 items, evenly distributed across the three dimensions, and was applied to a preliminary sample of three students to verify psychometric properties such as validity and reliability.
Note: A preliminary experimental pilot study implemented a school-based intervention and utilized the Rosenberg Self-Esteem Scale.

Other studies identified dimensions suitable for individuals with obesity, including the cognitive, emotional, and social dimensions. The researcher defined self-esteem and its dimensions operationally to facilitate the formulation of statements. Based on this, the initial version of the scale was drafted, consisting of 36 items equally distributed across the three dimensions. It was then applied to a pilot sample of three students to verify its psychometric properties, including validity and reliability, through various methodological procedures.

1-1: Validity of the Self-Esteem Scale:

Validity refers to the scale's ability to measure what it is intended to measure, ensuring that items belong to the respective dimensions and that these dimensions collectively form the overall score. Validity was verified as follows: Validity is defined as "the accuracy of test questions in terms of their formulation, content, and the way they are administered to the respondents to achieve the test's intended purpose." (Abdel Rahman, Al-Badawi, 2007, p.345).

7-1-2: Content Validity:

This refers to the extent to which the test measures the content it aims to assess. Content validity requires two elements: item validity and sampling validity. Item validity focuses on whether the test items represent the intended content, while sampling validity considers whether the test sample comprehensively covers the content. (Al-Dhameen, 2007, p.113).

The scale items were formulated based on previous studies and research. The initial version of the scale was presented to a committee of specialists, including faculty members in psychology and mental health at the institute, who reviewed the clarity, accuracy, and linguistic soundness of the items. Based on their feedback, some modifications were made to certain items. Most reviewers emphasized the balance between positive and negative items. After this review, the final scale consisted of 30 items, distributed equally across the following dimensions: cognitive (10 items), emotional (10 items), and social (10 items).

The researcher also evaluated internal consistency validity for both the items and dimensions, as well as discriminant validity.

7-2: Reliability of the Self-Esteem Scale:

Reliability refers to the consistency of the scale in producing similar results upon repeated administration, ensuring that the true variance is as high as possible compared to the overall variance or minimizing the error variance (Abdel-Aisawi, 2012, pp.198-200). The researcher verified the reliability of the self-esteem scale by analyzing the pilot sample data, using methods such as Cronbach's alpha and split-half reliability.

7-2: Scoring the Self-Esteem Scale:

The final version of the self-esteem scale comprised 30 items, equally distributed across three dimensions: cognitive, emotional, and social (10 items each). A five-point Likert scale was used for responses, ranging from "Strongly Agree," "Agree," "Neutral," "Disagree," to "Strongly Disagree." Positive items were scored as 5, 4, 3, 2, 1, respectively, while negative items were scored in reverse: 1, 2, 3, 4, 5. Accordingly, the maximum possible total score is $30 \times 5 = 150$, and the minimum possible score is $30 \times 1 = 30$.

7-3: Recreational Sports Program:

After reviewing various studies and programs related to recreational sports, the initial version of this program was designed and presented to numerous experts in the field. The focus was on ensuring the program aligned with the needs and interests of the target community, offering a diverse range of activities.

Additionally, it was emphasized that the program should be periodically evaluated to ensure it meets its intended goals. The finalized program included the following key sports: football, basketball, volleyball, walking, athletics, aerobics, cardio exercises, and others. The sessions were held once a week, each lasting an hour and a half. The primary purpose was not weight loss but rather to develop the participants' social and personal skills, foster social integration, promote communication, spread a culture of sports and recreation, and, perhaps most importantly,

break the barrier of fear. This fear includes concerns about social rejection, bullying, failure, and other similar anxieties.

A significant component added to this program was the inclusion of sessions focused on encouragement and confidence-building, which was made possible through collaboration with psychological counseling and guidance consultants.

7-4: Anthropometric Measurement Tools:

- Weight scale and measuring tape for assessing weight and height.
- Pedagogical tools used in recreational sports sessions provided by the institution where the experiment was conducted.

Statistical Tools:

The Statistical Package for the Social Sciences (SPSS) software, version IBM 25.0, was utilized for data analysis.

8: Results and Discussion:

This section presents the study's findings and their interpretation, addressing the research questions and verifying the validity of the hypotheses.

To answer the first question: "Are there statistically significant differences in all dimensions of the self-esteem scale (cognitive, emotional, and social) between pre- and post-test measurements?" the Student's t-test for independent samples was used. The results were as follows:

Table 2: Student's t-test for Differences between Pre- and Post-Measurements for the Self-Esteem Scale across All Three Dimensions.

Dimension	Test Type	Sample Size	t-value	Significance (p-value)	rrb (Effect Size)
Cognitive	Pre-test	87	7.387	0.000	0.99
	Post-test	87			
Emotional	Pre-test	87	13.217	0.000	0.99
	Post-test	87			
Social	Pre-test	87	8.741	0.000	0.99
	Post-test	87			
Self-Esteem (Overall)	Pre-test	87	7.213	0.000	0.99
	Post-test	87			

Table 02 Analysis:

Table 02 indicates that all calculated t-values were greater than the critical t-value across the three dimensions as well as for the overall self-esteem scale. This confirms that there were significant differences between the means, favoring the post-test results. Therefore, the following hypothesis should be accepted:
"There are statistically significant differences between the pre-test and post-test in favor of the post-test."
The table also shows that all these differences favored the post-test measurements, with effect sizes (rrb) exceeding 0.9, indicating a substantial impact of the program on this experimental group.

The researcher attributes these results to the initial self-esteem disturbances observed in the students before the program. The primary objective of the intervention was to improve self-esteem, which likely contributed to altering and correcting some of the negative perceptions and beliefs these students had about themselves. This shift from negative to positive self-assessment was supported by the provision of positive behavioral models, helping students respond more effectively in situations that typically trigger dissatisfaction and poor self-esteem.

As a result, the program likely enhanced the students' ability to confront challenging circumstances, adapt to external environments, and feel more capable of overcoming obstacles. This is reflected in the observed positive impact, emphasizing the importance of guiding adolescents away from isolation, depression, and self-imposed social withdrawal. The program aimed to introduce innovative solutions that encouraged more optimistic thinking, allowing participants to adopt a more joyful and socially engaged lifestyle without the psychological burdens of imaginary fears or distorted self-concepts.

This finding aligns with the view of **Aaron Beck (2006, p.165)**, who asserted that an individual's perception of their physical condition can be more influential in shaping their feelings and emotions than the actual physical state itself. This approach aligns with the researcher's primary goal, which focused not on altering the adolescents' morphology through weight loss but rather on fostering a more positive self-image and greater self-esteem, enabling them to overcome the psychological challenges they face.

The researcher also credits these outcomes to the follow-up counseling sessions, which prepared the students psychologically for active participation in the program. These sessions also involved training the program instructors to use motivational language that fostered a supportive atmosphere, helping overweight students feel more comfortable and emotionally secure.

Data Normality Testing:

Understanding the normal distribution of sample data is a critical requirement for conducting a t-test. Although the male sample size exceeded 30, making this step technically optional, the researcher opted to confirm normality using the **Shapiro-Wilk** test to ensure data robustness.

In this case, the null hypothesis (H0) assumes that the sample data follow a normal distribution. The results are presented in Table 03:

Table 03: Shapiro-Wilk Test for Normality of Sample Data.

Scale	Gender	Test Type	Test Value	Degrees of Freedom (df)	Significance (sig)
Self-Esteem	Males	Pre-test	0.154	27	0.018
		Post-test	0.213		03.00
	Females	Pre-test	0.207	07	0.029
		Post-test	0.314		0.423

From the table above, it is observed that the samples do not follow a normal distribution. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted. Consequently, the researcher resorted to non-parametric statistical tests to identify the differences, with the **Mann-Whitney** test being one of the most prominent.

To answer the second research question, the **Wilcoxon** test was used to assess the differences between the pre-test and post-test self-esteem measurements and its various dimensions for the group members, based on the second hypothesis, which states:

"Are there differences between males and females in the post-test measurement? And what are the levels of acceptance for both genders in integrating within classroom activities?"

Table 03: Table Showing the Differences Between Males and Females in the Post-Test of the Self-Esteem Scale and Its Various Dimensions

Scale	Gender	Sample Size	Mean Ranks	Sum of Ranks	U Value	Z Value	Sig. Value	Significance
Cognitive	Males	28	19.48	554.50	112.500	-1.213	0.626	Not Significant
	Females	09	17.50	157.50				
Emotional	Males	28	21.86	612.00	97.00	-0.275	0.784	Not Significant
	Females	09	10.11	91.00				
Social	Males	28	18.73	524.00	118.50	-2.884	0.004	0.05
	Females	09	19.83	178.50				
Self-Esteem (Overall)	Males	28	19.86	556.00	102.00	-0.862	0.389	Not Significant
	Females	09	16.33	147.00				

From the results in the table, it is noted that the differences between the genders were not as significant as might have been expected, indicating that there are no statistically significant differences between males and females, thus rejecting the null hypothesis and accepting the alternative that there are no differences, except for the **social dimension**, which favored males. However, this difference was not particularly large.

The researcher attributes these results to the environment in which girls live and the various dangers and fears they face daily, as well as the societal perspective on girls. Despite the fact that girls have become more liberated and self-confident than before, and despite the results showing that the social dimension was the main factor creating the difference, this understanding, as women being a sensitive creature who is predominantly emotional and more sensitive than males—this is confirmed by all research and studies.

Regarding the current study and its findings, we observe that the female participants have almost the same perspective on self-esteem, even with the development achieved through the recreational sports program and

with the help of psychological counselors. Thus, it can be said that the program had an impact on both genders. It was also noted that the sample members were eager to engage in physical activity, but the only obstacle they faced remained how they could integrate into the physical education class and with their so-called "normal" classmates.

The researcher attributes this result to the fact that the high school students who underwent the experiment, whether male or female, developed a certain level of self-appreciation. They feel that their bodies and appearance are good as they are and function efficiently, which is a form of positivity. Moreover, they perceive others' views as positive, or they no longer give much importance to these views. They feel somewhat confident in themselves regarding their self-esteem. Constant preoccupation with body image, ignoring others' opinions, and family support help students form friendships with others.

This result agrees with the study by Al-Shuqairat (2010), whose findings indicated no gender differences in self-esteem, and the study by Khattab (2015), which also concluded that there were no differences in self-esteem. However, it differs from the study by Tora and colleagues (2005), which found statistically significant differences in self-esteem between males and females, as well as the study by Elvie and Forst (2004), which concluded that males perceive their bodies as less than what they desire. It also differs from the study by Bouars (2017), which found that the rate of body dysmorphic disorder was high.

Regarding the social dimension:
The differences in averages between males and females showed the following:
The results were consistent with the study by Chapman et al. (1995), whose findings indicated that social fears—such as mockery, bullying, and the negative view of those with less-than-slender physiques—are more prevalent among females than males. The results also align with the study by Khidr and Yassin (2011), which found statistically significant gender-based differences in social fears. Similarly, Al-Shuqairat (2010) indicated that females scored higher than males on the social fears scale, and the study by Mohamed (2008) showed that university students suffer from high levels of social fear, with differences according to gender in favor of females. These results are also consistent with those of Sentaros and Mywartikel (2017), which showed a rise in the social dimension among the study sample due to criticism and comments from others—especially in the case of females.

Conclusion

The results confirm that students suffering from obesity showed increases in various values of self-esteem and its three dimensions: cognitive, social, and emotional, compared to the pre-measurements. This was evident through statistical data, all of which were positive. Also, the post-test results of the self-esteem scale for males were somewhat similar to those for females, with no differences except in the social dimension, where there were some differences—although slight, they were objective and can be considered.

Nevertheless, it is not possible to distinguish whether the practice (i.e., the sports program) is what led to these values, or whether there are other factors that cannot be identified without a multi-faceted study that takes into account many variables affecting self-esteem in this group. Longitudinal monitoring may also help answer this question.

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