

PODIUM

Journal of Science and Technology in Physical Culture

Volume 19
Issue 3

2024

University of Pinar del Río "Hermanos Saíz Montes de Oca"







Original article

Methodological Strategy for the Inclusion of Students with Obesity in Physical Education lessons

*Estrategia metodológica para la inclusión de estudiantes con obesidad, en las clases de
Educación Física*

*Estratégia metodológica para inclusão de alunos com obesidade nas aulas de Educação
Física*

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Recibido: 01/06/2024

Aprobado: 22/08/2024



ABSTRACT

The issue of obesity is considered one of the most worrying by the world's civil community, and Physical Education is an effective tool to reduce its harmful impacts on the daily and academic life of students, in schools and outside of them. The objective of the research was to design a methodological strategy for the inclusion of overweight and obese students in Physical Education classes; inclusion was conceived in terms of promoting feelings of acceptance, cooperation and tolerance towards them. Scientific observation, anthropometric measurement and interviews with parents were used as empirical methods. The strategy addressed as fundamental directions the acceptance and collaboration of students and teachers who care for the group and the development of methodological actions to reduce weight gain in students, through physical activity and other psychological and interpersonal activities. The results showed improvement in body weight control, as a consequence of the teacher's mastery, the cooperation of students and the support of family and friends.

Keywords: Inclusive Physical Education, methodological strategy, obesity

RESUMEN

El tema de la obesidad es considerado como uno de los más preocupantes por la comunidad civil mundial, y encuentra en la Educación Física una herramienta efectiva para reducir sus impactos nocivos en la vida cotidiana y académica de los estudiantes, en los centros educativos y fuera de ellos. El objetivo de la investigación se dirigió a diseñar una estrategia metodológica, para la inclusión de los estudiantes con sobrepeso y obesidad en la clase de Educación Física; la inclusión se concibió referida a promover sentimientos de aceptación, cooperación y tolerancia hacia ellos. Se utilizaron como métodos empíricos la observación científica, la medición antropométrica y la entrevista a los padres. La estrategia abordó como direcciones fundamentales la aceptación y colaboración de los estudiantes y profesores que atienden al grupo y el desarrollo de acciones metodológicas para reducir el aumento del peso en los estudiantes, mediante la actividad física y otras de orden psicológico e interpersonal. Los resultados mostraron mejoría en el control del peso corporal,



consecuencia de la maestría del profesor, la cooperación de los estudiantes y el apoyo de familiares y amigos.

Palabras clave: Educación Física inclusiva, estrategia metodológica, obesidad

RESUMO

A questão da obesidade é considerada uma das mais preocupantes pela comunidade civil global, e encontra na Educação Física uma ferramenta eficaz para reduzir os seus impactos nocivos na vida diária e acadêmica dos alunos, nos centros educacionais e fora da escola. O objetivo da pesquisa foi traçar uma estratégia metodológica para inclusão de alunos com sobrepeso e obesidade nas aulas de Educação Física; A inclusão foi concebida como referindo-se à promoção de sentimentos de aceitação, cooperação e tolerância para com eles. Observação científica, medidas antropométricas e entrevistas com os pais foram utilizadas como métodos empíricos. A estratégia abordou como direcionamentos fundamentais a aceitação e colaboração dos alunos e professores que atendem o grupo e o desenvolvimento de ações metodológicas para redução do ganho de peso nos alunos, por meio de atividade física e outras atividades psicológicas e interpessoais. Os resultados mostraram melhora no controle do peso corporal, consequência da expertise do professor, da cooperação dos alunos e do apoio de familiares e amigos.

Palavras-chave: Educação Física Inclusiva, estratégia metodológica, obesidade

INTRODUCTION

For modern man, health issues are no longer just the domain of medical science. The foundations related to the desired physical, mental and social well-being are so complex that traditions, emotions, cultures and ways of thinking and acting of every human being often come to the surface.

This is why, areas of knowledge such as Physical Education (PE) become a therapeutic pillar when starting a methodology to treat imbalances such as obesity, without ignoring



interdisciplinarity from a range of physical, psychological and cultural components whose behavioral results in contemporary times encourage to rethink and rework inclusive educational designs.

In pioneering works such as that of Tolsa (2011) referring to the topic discussed, as a propaedeutic and intervention method towards a more inclusive climate, it is advocated the contextualization of the curriculum, in favor of a methodological guide for teachers and students. In his reflections he points out that the student should not be considered at an interpersonal disadvantage, but rather as an active agent who has the potential to carry out activities such as throwing, stopping objects, swimming, rowing, skating, dancing, and in which it is not necessary to set execution times.

In the work of Núñez (2013), obesity in students is addressed as an imaginary of beliefs, where the role of the teacher is fundamental, since trends prevail such as that PE is more for boys, since for girls it is uncomfortable to sweat or get disheveled.

Many of the causes of obesity are attributed to a lack of physical activity and an excess of foods rich in fat and carbohydrates. Physical inactivity is the fourth cause of death in low- and middle-income countries; it is also directly related to the second and third causes of death in developed countries, directly related to overweight, obesity and the quality of life of adolescents. (Monroy, Calero and Fernández, 2018).

In order to discover more about the causality of overweight students, it is productive to consult the research of Vilapriñó et al. (2016) who address the most common activities they do in their free time (Table 1):



Table 1. Relationship between type of activity that promotes overweight, percentage of students who do it

Type of activities	% of children who do it
✓ watch television	70
✓ play with the computer	70
✓ play at home	70
✓ play sports	17
✓ play outdoor games	12
✓ eat healthy foods, such as vegetables and dairy products	33
✓ eat four meals a day	13

It is important to clarify that in some cases these figures vary by school and are related to the different attitude that each student assumes, based on the accompaniment of family members in the development of these activities. As can be seen, most of the activities in which they participate require fewer motor skills and eventually, less contact with the natural environment, with the consumption of healthy food and with the correct timing of food intake; very notable causes of why their body weight increases.

Other researchers are dedicated to proposing solutions from proposals to lose weight through physical activity; in the work of Calero et al. (2016) it is shown that by following a systematic order of physical exercises one can lose weight, especially if the methodology is taken into consideration, which occurs in three stages: the first one is adaptation, followed by intervention and maintenance. This study brings together characteristics that guide and facilitate the treatment to lose weight in a healthy way, which is why it is considered global, progressive, varied, motivated, safe and fun.

In terms of intervention, not everyone assumes the gym and its instructors as the ideal setting for losing weight in a sustained manner, but Gárate et al. (2017) conceive it differently; for these authors, the path under study is the one assumed by a team of specialists consisting of a kinesiologist, a PE teacher, a nutritionist and a psychologist. At first glance, this seems like a pretext to turn obesity into a disease, and although it is not



conceptually, it is potentially. The psychological damage that can be caused by poor management of an obese student in a classroom as a result of bullying , and the consequences that it can unleash in the future, are not strange.

From another perspective, the phenomenon of obesity is a physiological disorder that, according to Delgado et al. (2019), deserves to be part of a training session. In this case, it is high-intensity Interval training is a proposal incorporated into PE classes in Chile, which seeks, among other objectives, to combat school obesity, which is very common in primary schools, through high-intensity training. The work shows a classification of the treatment by age and results, and everything seems to be effective if cardiorespiratory control and breaks during intense exercise sessions are taken into consideration, mainly carried out through responsibly timed running.

Alves et al. (2019) defend the idea of combating obesity in young people by preparing them in different types of exercises that develop muscle strength, flexibility, body mass index and body fat; these authors subjected a group of young people with obesity to a 10-week training regimen to determine which capacities are most affected and these turned out to be muscle strength and body composition, very relevant data that are taken into account when training for a sport where being obese could be a common characteristic.

Rodríguez et al. (2019) proposed a methodological alternative based on the implementation of a group of exercises from aerobic musical gymnastics, to reduce obesity levels in adults of the popular council 122 of Vista Alegre, Holguín municipality, Cuba, obesity levels that were significantly reduced; the way that was used to corroborate the validity of the proposal was the statistical method and the application of different statistical techniques such as the Willcoxon test , Kolmogoro-Smirnov test and the test of difference of means for related samples played a fundamental role.

Everything seems to indicate that the flow of research presented in recent years has been more focused on how to reduce obesity than on examining what other elements are related to its rise. Cadenas et al. (2020), in a study that covers both the field and the laboratory, determine what relationship is established between physical condition, physical activity



and academic achievements, in students with obesity; the study confirms that there is no relevant association between physical activity and academic achievement, the associations are more given with muscle strength, speed and agility.

In order to reduce obesity, the work of Trujillo et al. (2020) makes a metabolic proposal to regulate the ingestion processes loaded with fats and calories, puts an oatmeal and apple smoothie in its place and recommends combining this type of nutrition with physical activity, but does not specify which one it is.

Like many countries, Ecuador has been devoting significant efforts to combat sedentary lifestyles and promote more active lifestyles in the population. The figures are discouraging, between 2000 and 2020 the highest number of obese children under five years of age was recorded in the region, in addition one in three school-age children and one in four adolescents are obese (SaludSA, 2023). It is noted that the national prevalence of excess weight in adolescents is 23.3% for males, and 28.8% for females and by age stratum, the group with the highest prevalence of obesity is 12 to 14 years old, with 27.0%, while in 15 to 19 years it is reported at 24.5%. From this, the objective was to design a methodological strategy for the inclusion of overweight and obese students in the classroom of PE.

MATERIALS AND METHODS

This research was framed in the pragmatic paradigm, with a mixed approach and sequential explanatory design (Hernández Sampieri y Mendoza Torres, 2018; Hernández Sampieri, et al., 2020), according to the manipulation of the variables, it was non-experimental and cross-sectional, applied and field, developed in Higher Basic students during the 2024-2025 school year of a bilingual intercultural community educational unit in the City of Machala, El Oro Province, Ecuador . The population and sample (Table 2).



Table 2. Relation of Population-Sample participating in the study

Curso	Paralelos	Edad	Estudiantes matriculados			Estudiantes participantes en la investigación		
			Matricula	Hembras	Varones	Hembras	Varones	Total, por paralelo
8VO	A	12-ene	33	15	18	12	14	26
9NO	A	13-ene	26	11	15	11	13	24
	B		27	13	14	13	13	26
10MO	A	14-ene	35	18	17	13	11	24
Total			121	57	64	49	51	100

The following techniques belonging to the empirical method were used:

1. Anthropometric measurement, using instruments such as measuring tapes and high-precision digital scales, a measurement was made that included:

- weight in kilos.
- height.
- body mass index (BMI).

This measurement was carried out with the aim of knowing to what extent the students were or were not obese, for this purpose the correspondence between height and weight was compared to know the volume of body mass that characterized each one.

2. Scientific observation focused on two fundamental objectives: the development of the PE class, and the characteristics of the sports area with a view to compliance with inclusion in the PE class.

Regarding the PE class, it was observed:

- special activities for students with obesity.
- level of relationship of the other students with respect to those who presented obesity.
- specification of inclusive activities in the teacher's planning.

Regarding the characteristics of the sports area, it was observed:



- general measurements of space.
- sports equipment, conditions in the sports area to work with obese students.
- 3. Interview with parents of students with obesity.
- Possible causes that generated obesity in students.

RESULTS AND DISCUSSION

In relation to the anthropometric examination of a person, in the case of Ecuador, to know if a person is obese, it is necessary to know the following basic elements:

- BMI. This is a person's weight in kilograms divided by the square of their height in meters;
- If BMI is less than 18.5, they are in the underweight range.
- If BMI is between 25.0 and 29.9, they are within the overweight range.
- If the BMI is 30.0 or higher, it is within the obesity range (Ortega et al., 2024).

After using this information, cases of overweight and obese students were determined. The results are shown below (Table 3).

Table 3. Ratio of students overweight and obese by group:

Groups	Number of overweight students	Number of obese students
8th A	1 (27,58) 1 (27, 53)	
9th A	1 (26,98)	
9th B	1 (28,81) 1 (27,36)	
10th A	1 (25.86)	1 (30.29)

It is important to highlight that although the majority of the students were overweight, it is very likely that without an effective intervention treatment they can become obese in a very short period of time since the BMI of the overweight are very close to the obese limit (30).



When observing PE activities at the Upper Basic sub-level, it was found that some students who were possibly overweight or obese had difficulties in developing motor, coordination, physical activities and teamwork, and the potential of the PE class to carry out differentiated work with respect to overweight students was not exploited.

Students between the ages of 12 and 14 had a multifunctional court for indoor games and basketball available for recreational, physical and sports activities. It was observed that, in general, these spaces did not comply with the official measurements for basketball, with a measurement of 32m x 16m. There was also a volleyball court measuring 18m x 9m, and a dirt patio used as a soccer field with an area of 40m x 80m, which, although it did not comply with the official measurements, was used systematically by the students.

In the interview with parents, it was highlighted that the students had a poor diet (potatoes, chicken, fried foods, soft drinks, excessive bread and rice with fried eggs) and little practice of activities such as walks or recreational play, to mitigate the problem. It was highlighted that these students traveled to school on school buses and motorcycles, even though they lived close to the school, so physical exercise was not an option for them.

In the development of PE activities, an inclusive class was held with strategic activities adapted to their requirements; however, sometimes overweight and obese students felt frustrated and powerless to perform a more intense exercise like their classmates. Low self-esteem and apathy for the development of recreational and physical activities were perceived, which had a negative impact on their physical, mental, emotional, cognitive and social state.

In the dialogue held with the school authorities, they expressed their satisfaction and support for a greater push for the development of inclusive physical activities and a nutritional campaign at the level of classroom tutoring with the Ministry of Health, to strengthen awareness and practice of a healthy life.

Based on these results, the need for an intervention proposal is established and for this reason a methodological strategy is developed and applied to improve the inclusion of



overweight and obese students in the PE class. The strategy focused on two fundamental directions aimed at the acceptance and collaboration of the students and teachers who attend the group, and to develop a group of methodological actions to reduce weight gain in students, through physical activity and others that reinforce this ability in the psychological and interpersonal order.

As part of the first direction it was established:

- create a supportive and cooperative environment in the classroom, so that overweight and obese students do not feel marginalized, but rather supported in carrying out teaching activities.
- provide the methodologies and means necessary for these students to be able to carry out activities according to their characteristics; the procedures and objectives in the practice of sports and physical activity must be flexible and adjustable.

In the second direction, work was done towards:

- the development of physical exercises, so that the student progressively loses weight.
- the creation of a necessary guide so that the student can eat healthy meals at the appropriate times.
- extension work and dialogue with the family, to avoid illnesses that can be caused by poor nutrition or a sedentary posture.
- planning and carrying out activities at school to facilitate participation, improve self-esteem and at the same time help them burn calories by cleaning and sanitizing the school and green areas.

As an empirical assessment of this methodological strategy, a survey was applied to collect the opinion of school teachers and family members. The instrument included the following indicators:

1. Assessment of improvement in body weight.
2. Assessment of the work of the PE teacher and his/her activities to improve the student's obesity situation



3. Assessment of group treatment, based on accepting and collaborating with students who suffer from this problem.

Ten school teachers, parents, and seven family and community members were involved in the pilot implementation of the strategy, for a total of 20 respondents (Table 4).

Table 4. Assessment of the impact of the methodological strategy, based on a survey

Indicators	B (Good)	R (Average)	M (Poor)
1	18	2	
2	16	4	
3	16	4	

As can be seen, the best results were in the improvement of body weight, a consequence of the teacher's mastery, the cooperation of the students and the support of family and friends.

Regarding the need to propose strategies to reduce obesity and overweight, in some points it coincides with previous works, and in other cases, there are some contributions to the practice that make a difference. In the case of the work of Iraheta et al. (2020), it frames a strategy with similar characteristics to the one proposed in this research; however, the distinctions regarding the psychological and interpersonal dimension with the participation of the family and members of the educational group of the school are not so notable.

In Rebollo et al. (2021) research, it is highlighted the evaluation component for the treatment of children and adolescents with Down syndrome and obesity. These authors agree that the evaluation should not only be quantitative but also qualitative, since attitudes are part of the content in PE classes. In addition, advances in science and technology should be used to make evaluation methods more flexible in an efficient way, using the online route and the Moodle platform.

In the dimension referring to health as an essential component of this strategy, it is agreed with Casas's (2022) criteria who warns that the threat of bad habits in the use of free time such as excessive surfing on the Internet or stopping at domestic activities cause the body



to suffer inactivity and as a result cardiac activity is also affected; that is why obesity and overweight should be treated not only from the perspective of aesthetics, but with the precaution of taking care of the state of health.

To support health, there is also the work of Correa et al. (2023), who see obesity as a danger for endocrine diseases and diabetes. It is estimated that there are more than 1.9 billion overweight people and more than 650 million people with obesity worldwide; however, these chronic diseases can be combated if rational use is made of physical activity and sport, which is why many works agree with this method that in the short or long term offer very favorable results (Johnson et al., 2023; Ortega et al., 2024).

CONCLUSIONS

A proposal was presented to reduce obesity and overweight levels in students, based on the theoretical and practical contributions of authors specializing in the subject. It was taken into consideration that the effects of obesity and overweight not only covered the limits of aesthetics but also the levels of self-esteem, integration in the group and the performance of activities, where agility and flexibility were fundamental elements.

The methodological strategy was developed with the intention of reinforcing the methods applied by the PE teacher in an educational unit in Ecuador. When this proposal was established, very positive acceptance states were obtained from classmates, teachers and family members close to the personal and academic life of these students. The inclusion of teaching from the treatment of overweight and obese students was covered, who with perseverance, will and practice can coexist with the rest of the group in a harmonious way.

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Conflict of interest statement:

The author declares that there are no conflicts of interest.

Author's contribution:

The author is responsible for writing the work and analyzing the documents.



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