THE INFLUENCE OF PHYSICAL ACTIVITY ON SELF-ESTEEM IN THE EDUCATIONAL CONTEXT: A SYSTEMATIC REVIEW

INFLUENCIA DE LA ACTIVIDAD FÍSICA SOBRE LA AUTOESTIMA EN EL CONTEXTO EDUCATIVO: UNA REVISIÓN SISTEMÁTICA

José Manuel Armada-Crespo [1,2]
Rafael Francisco Caracuel-Cáliz [3,4]
Manuel Tomás Abad Robles [5]

[1] Departamento de Didácticas Específicas. Didáctica de la Expresión Corporal, Facultad de Ciencias de la Educación y Psicología, Universidad de Córdoba, España

[2] Grupo de Investigación en Deporte y Educación Física para el Desarrollo Persona y Social (GIDEPSO)

[3] Departamento de Educación, Facultad de Educación, Universidad Internacional de La Rioja, España

[4] Departamento de Educación, Facultad de Ciencias de la Educación, Universidad Internacional de Valencia, España

[5] Departamento de Didácticas Integradas, Facultad de Educación, Psicología y Ciencias del Deporte, Universidad de Huelva, España

Correspondence:
Rafael Francisco Caracuel Cáliz, rafaelfrancisco.caracuelcaliz@unir.net, rafaelfrancisco.caracuel@professor.universidadviu.com

Short title:
Influence of Physical Activity on Self-Esteem in the Educational Setting

How to cite this article:
Armada-Crespo, J.M., Caracuel-Caliz, R.F., & Abad Robles, M.T. (2025). The influence of physical activity on self-esteem in the educational context: a systematic review. *Cultura, Ciencia y Deporte, 20*(63), 2224. https://doi.org/10.12800/ccd.v20i63.2224

Received: 22 May 2024 / **Accepted:** 26 January 2025

Abstract

Self-esteem can be defined as the evaluation that a subject makes of him/herself in favour of a satisfactory, healthy and adaptive self-image. The concern for adequate self-esteem has led to the appearance of different lines of research, including Physical Activity and Physical Education. In this sense, several studies have addressed the benefits of Physical Activity in the educational environment on self-esteem, although there are few studies that gather conclusive results. For this reason, we present a systematic review, based on the PRISMA method, with the aim of identifying and analysing the programmes that have been carried out in relation to the work on self-esteem and physical activity in the Primary and Secondary Education stages. The databases Web of Science, Scopus, PubMed, Eric and PsycInfo were used for this review. Following a blind peer review of the quality of the papers, using the Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields, 10 articles were selected. The findings showed the positive influence of physical activity in education, either through planned programmes for the improvement of this variable or the simple performance of physical activity. The scarcity of research in this regard shows the need for further progress in this field, and in light of the results obtained, it seems necessary to create educational contexts, programmes and studies that promote the psychosocial well-being of students.

Keywords: Physical education, primary education, secondary education, self-esteem, well-being.

Resumen

La autoestima puede definirse como la evaluación que un sujeto hace hacia sí mismo en favor de una imagen propia satisfactoria, sana y adaptativa. La preocupación por una autoestima adecuada ha provocado la aparición de diferentes líneas de investigación, entre las que se encuentra la Actividad y la Educación Física. En ese sentido, diversos trabajos abordan las bondades que tiene la Actividad Física en el ámbito educativo sobre la autoestima, aunque son escasos los estudios que recogen resultados concluyentes. Por ello se presenta una revisión sistemática, basada en el método PRISMA, con el objetivo de identificar y analizar los programas que se han llevado a cabo en relación con el trabajo de la autoestima y la actividad física en las etapas de Educación Primaria y Secundaria. Para esta revisión se utilizaron las bases de datos Web of Science, Scopus, PubMed, Eric y PsycInfo. Tras un análisis de la calidad de los trabajos, por pares ciegos, mediante el Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields se seleccionaron 10 artículos. Los hallazgos encontrados evidenciaron la influencia positiva de la actividad física en el ámbito educativo, ya sea

mediante programas planificados para la mejora de esta variable o la simple realización de actividad física. La escasez de investigaciones en este sentido muestra la necesidad de seguir avanzando en este campo, y a luz de los resultados obtenidos, parece necesario la creación de contextos educativos, programas y estudios que promuevan el bienestar psicosocial del alumnado.

Palabras clave: Educación física, educación primaria, educación secundaria, autoestima, bienestar.

Introduction

The concept of self-esteem has become relevant in recent years in different scientific fields, including education, to predict behaviours such as bullying (Benítez-Sillero et al., 2021). This has led to the appearance of numerous studies in different lines and fields of action. In the case of the educational field in general, and Physical Education in particular, there is a growing interest in addressing emotional, social and/or psychological aspects (Armada-Crespo et al., 2013; Armada-Crespo et al., 2020; Armada-Crespo & Rosa-Jiménez, 2019; Baena-Morales et al., 2022; Benítez-Sillero et al., 2022; Boraita et al., 2023; Cronin et al., 2018; Pellicer, 2015; Pellicer, 2018; Yook et al., 2017). In this way, self-esteem can be defined as the evaluation or attitude that a person has towards him or herself, with the widespread intention of having a healthy, adaptive, high level of self-esteem and even defending it at times when it may be compromised (Bailey, 2017; Cronin et al., 2018; Hosogi et al., 2012; Pyszczynski et al., 2004; Salazar, 2008). All of this would imply self-satisfaction based on perceived self-image (Bisquerra, 2003; Hue, 2016).

Given that the environment closest to primary and secondary school students (family, neighbourhood and school) has a great influence on their self-esteem, it is necessary to create contexts in the educational environment that guarantee successful experiences for students, avoiding or preventing the risk of developing psychosocial problems (Hosogi et al., 2012). In this sense, different studies conclude that physical activity has a positive influence on self-esteem (Lubans et al., 2012; Pellicer, 2015, 2018; Vallejo & Alguacil-Jiménez, 2022; Yook et al., 2017). The contributions of Physical Education to psychological development and well-being place it in an advantageous position to improve students' self-esteem as it enhances life skills such as teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, problem solving and decision-making (Bailey, 2017; Cronin et al. 2018; Waldron, 2009; Yook et al., 2017). Moreover, as with the development of social skills (Pelegrín-Muñoz et al., 2010), the practice of physical activity in itself, whether in Physical Education classes or elsewhere, does not guarantee the development of self-esteem. It is the teacher who must guarantee Physical Education that improves and/or reinforces the self-esteem of his or her students (Navarro-Patón et al., 2019).

In line with works that address Physical Education and aim to improve self-esteem are studies such as that of Klizas et al. (2012), obtaining significant improvements in the three main components of psychosocial adjustment, including self-esteem. In the same direction is the contribution of Yook et al. (2017) who, based on an intervention based on a new sport, aimed at working on play, emotional aspects and conscious yoga, obtained an improvement in resilience, happiness and self-esteem in students in South Korea. Another study that points to the benefits of physical activity on self-esteem is that proposed by Harrington et al. (2018) in the United Kingdom, where, through a programme with 1,752 women, different parameters of physical activity and sedentary lifestyle were evaluated, in addition to self-esteem, finding that the intervention favoured an improvement in these variables. Another experience with 217 adolescents aged 14-15 years, who received a physical activity programme twice a week for seven months in Physical Education classes, showed a trend towards better psychosocial adaptation and an increase in self-esteem and a decrease in anxiety (Kliziene et al., 2018). Along the same lines, the study by Andrade et al. (2020) with a programme of exergames, within Physical Education sessions, indicates that the use of this type of strategies favours the improvement of mood and has positive effects on students' self-esteem. Also noteworthy is the research by Yiğiter (2014) who randomly assigned 80 university women to the control and experimental groups, finding improvements in self-esteem and a significant decrease in hopelessness, in both variables, in the experimental group after participating in a physical activity programme.

Taking into account the above, the search for an improvement in psychosocial factors determines the need to plan and programme Physical Education to achieve these objectives and not only improvements in physical or motor aspects (Bailey, 2017; Benítez-Sillero et al., 2021; Navarro-Patón et al., 2019; Yook et al., 2017). In this sense, experiences such as those of DeBate and Thompson (2005) point to the complementary value in the combination of organised physical activity programmes that take into account mental well-being for the improvement of self-esteem (Lubans et al., 2012). The evidence presented suggests that physical activity has great potential for the improvement of physical self-perception and

self-esteem. It also appears that good physical self-perception and self-esteem are related to good mental health (Dale et al., 2019; Fox, 2000). In this line, a study with secondary school students shows that the relationship between self-esteem and physical fitness, alluding to the possibility that students who have a better self-esteem are also more physically active (Russo et al., 2019). More recently, the work of Boraita et al. (2023) relates a healthier lifestyle, including physical activity, to higher scores on indicators such as self-esteem.

In this sense, and coinciding with Fox (2000), although the experiences presented seem to demonstrate the relationship between physical activity and self-esteem, there are still few studies that analyse the characteristics of these educational interventions and their effects. The aim of the present study is based on this reality: to identify and analyse the programmes that have been carried out in relation to the work on self-esteem and physical activity in the Primary and Secondary Education stages.

Materials and Methods

This study focused on conducting a systematic review in order to recognise and analyse existing research on the development of self-esteem through physical activity. The PRISMA statement (Page et al., 2021) and the practical guide for systematic reviews with or without meta-analysis (Moher et al., 2015) were used to conduct this systematic review.

Inclusion Criteria

The inclusion criteria used in this study were: a) the full text had to be available; b) it had to be written in one of the selected languages: English, Spanish and Portuguese; c) it had to be a scientific study that included an analysis of self-esteem as a function of the practice of physical activity; d) it had to be carried out with students in Primary or Secondary Education. In addition, it is noteworthy that no time limit was applied in the selection of the articles in the sample, in order to be more exhaustive in the search. Consequently, manuscripts were included as a result of a selection process based on the different eligibility criteria mentioned above. In addition, the reference lists of the selected articles were analysed in order to make the search more comprehensive.

Search Strategy

The systematic review followed the PRISMA guidelines (Page et al., 2021). Firstly, it was agreed to use the following search phrase: (primary education OR primary school OR elementary school OR basic education OR Secondary School OR Compulsory Secondary Education OR Obligatory Secondary Education OR Secondary education) AND (Physical education) AND (Emotional intelligence OR Emotional Education OR Emotional skills OR Socio-emotional skills OR Socio-affective skills OR emotional competence OR emotional competency OR emotional competencies OR emotional competencies OR emotional intelligence model OR Emotional learning OR Socio-emotional learning OR Socio-affective learning) AND (Self-esteem) AND (intervention OR experimental OR quasi-experimental OR randomized controlled trial). We then searched for articles in five databases (Web of Science, Scopus, PubMed, Eric and PsycInfo) from 9 June to 15 July 2023. This search was divided into three blocks: 1) physical activity or education; 2) self-esteem; and 3) intervention, experimental, quasi-experimental, randomised controlled trial or descriptive study. After completing the search, duplicates were removed.

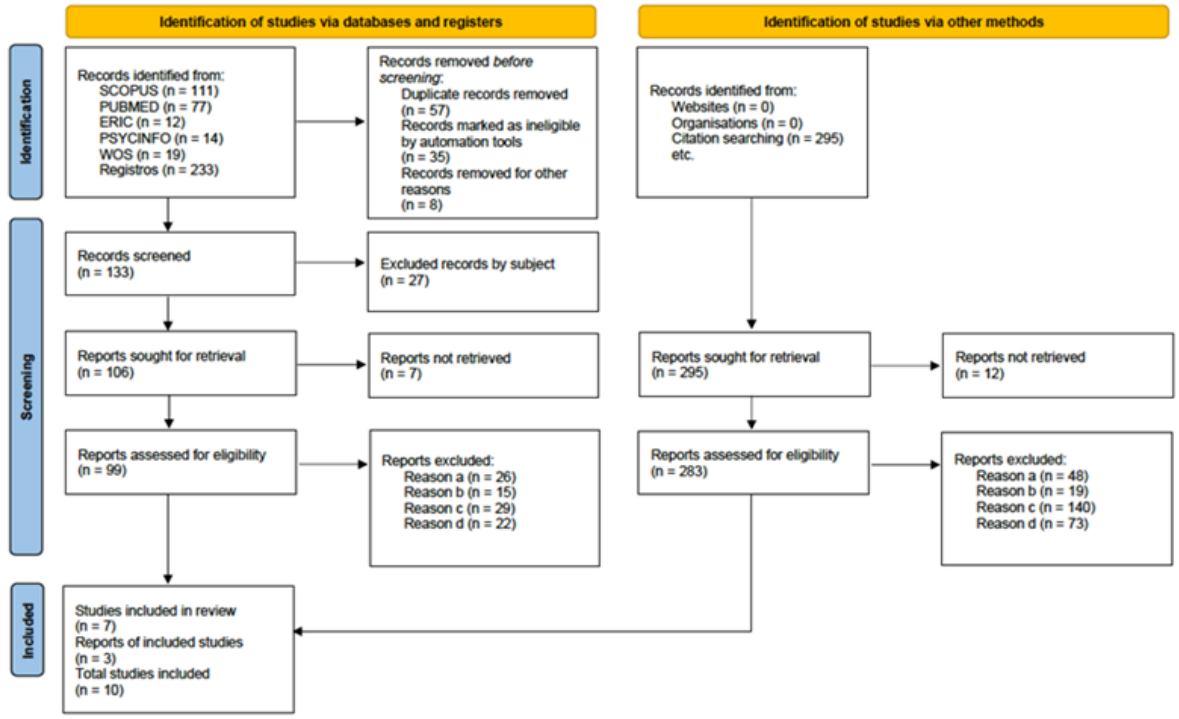
Study Selection and Data Processing

After completing the document search, the title and abstract of the papers were analysed in order to identify the most relevant ones and exclude those that did not meet the inclusion criteria. In this way, seven articles were selected for data analysis, focusing on the theme of self-esteem as the main element in the various investigations. After the analysis of the previously selected articles, a search was carried out by analysing the bibliographical references used in the included articles, which resulted in the incorporation of a further three studies. Below is a flow chart that visually represents the procedure followed for the selection of the articles that form part of the review (figure 1).

Quality Assessment

Once the articles were selected to be analysed in the review, they were subjected to a quality assessment using the Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields (Kmet et al., 2004) for quantitative studies. Each report was exposed to a total of 14 items, which were related to the research design, the characteristics of the sample, the methodology used, the data analysis, as well as the way in which the results and conclusions of the study are presented. These items were scored in relation to the degree of satisfaction or not of the items within each research study: 2 (satisfactory), 1 (partially satisfactory), 0 (not satisfactory) and NA (not applicable). The final score was obtained using the following formula [("satisfactory numbers" x 2) + ("partially satisfactory numbers" x 1) / 28 - ("not applicable numbers" x 2)]. The scores obtained were expressed as percentages, ranging from 0 to 100%. Two researchers assessed the quality of the studies individually, seeking the greatest possible objectivity.

Figure 1
Flow Diagram (PRISMA, 2020)



Data Collection

In an initial stage, data were collected from the selected articles. The information collected was then thoroughly checked, following the PRISMA guidelines (Page et al., 2021). Key elements included details about participants, intervention, comparisons, outcomes and study design, all in accordance with the structure. Two experts in the field conducted this research with the aim of assessing consistency in coding and determining the level of agreement between researchers in data extraction and selection (González-Valero et al., 2019). A 94% level of agreement was reached in the classification of articles, calculated by multiplying the number of matches by 100 and dividing it by the total number of categories defined for each study, followed by a further multiplication by 100.

Results

In the initial search of the databases, 233 results were found, of which 226 papers were eliminated due to duplication, relation to the studied topic and implementation of the inclusion/exclusion criteria. In addition, it is worth mentioning that three articles were selected by analysing the references of the selected articles in the databases. Thus, in the end, 10 articles were included in this systematic review, as they met all the inclusion criteria (see Figure 1).

Quality of Studies

Table 1
Assessment of the Quality of Studies

Studies	Observer 1	Observer 2
Tremblay et al. (2002)	.79	.85
Klizas et al. (2012)	.64	.79
Knox & Muros (2017)	1	.95
Theocharidou et al. (2018)	1	.87
Kliziene et al. (2018)	.57	.60
Russo et al. (2019)	1	.86
Andrade et al. (2020)	.79	.78
Zandi et al. (2021)	.71	.75
Boraita et al. (2022)	.64	.71
Kang & Kim (2023)	1	.90

Item quality scores were expressed as percentages, ranging from 0 to 100%, ranging from .57 to 1 (table 1). Inter-rater agreement was calculated using the intra-class correlation coefficient, yielding a score of .873 (p = .003), indicating a good degree of agreement (Koo & Li, 2016). After implementing inter-rater agreement, a conservative cut-off point was agreed upon for the selection of raters, including studies with scores of no less than 55%. Overall scores ranged from .57 to 1 (first observer) and .60 to .95 (second observer).

Results of the Studies

The data from the articles were coded according to the following units of analysis: (1) Author/s; (2) Country; (3) Context; (4) Subjects; (5) Age; (6) Methodology; (7) Type of study; (8) Duration; and (9) Protocol. The main characteristics of the studies analysed are presented below (table 2).

Table 2
Main Characteristics of the Study Sample

Author(s)	Country	Context	Subjects	Age	Methodology	Type of study	Duration	Protocol	
								Control group	Experimental group
Tremblay et al. (2000)	Canada	Primary Education	6923	NR	Quantitative	Descriptive correlational cross-sectional	NR	NGC	This study used data from the *Elementary School Climate Study* (Willms & Sloat, 1998). In the spring of 1996, a questionnaire was administered to the entire sixth grade population.
Klizas et al. (2012)	Lithuania	Secondary education	265 128 experimental group (women) 137 control group (women)	14 and 15 years	Quantitative	Experimental	7 months (twice a week)	Attended regular Physical Education classes that were not modified.	Participated in modified Physical Education classes, which included theoretical classes on communication disorders and practical classes with sports games and Pilates exercises.
Knox & Muros (2017)	Spain	Secondary education	456 221 (men) 235 (women)	11 to 14 years	Quantitative	Descriptive correlational cross-sectional	NR	NGC	Participants completed questionnaires on adherence to the Mediterranean diet, physical activity, self-esteem and health-related quality of life (HRQoL). Models were constructed to identify associations between adherence to the Mediterranean diet and physical activity on self-esteem.

Theocharidou et al. (2018)	Greece	Primary Education	32	10 to 12 years	Quantitative	Experimental	8 weeks (15 teaching hours, 2 hours per week +1)	NGC	The specific Creative Dance programme that was implemented was based on the combination of two teaching styles: a) Guided Discovery and b) Divergent Production as defined by Mosston & Ashworth (2008).
Kliziene et al. (2018)	Lithuania	Secondary education	428 217 experimental group 107 (men) 110 (women) 211 control group 112 (men) 99 (women)	14 and 15 years	Quantitative	Experimental	7 months (twice a week)	He did not receive any treatment and regularly attended Physical Education classes which were not modified.	Received an exercise intervention programme aimed at strengthening psychosocial coping behaviours during Physical Education classes.
Russo et al. (2019)	Italy	Secondary education	72 34 (men) 38 (women)	12 to 14 years old	Quantitative	Descriptive Cross-sectional correlational	NR	NGC	The effect of physical fitness on self-esteem was examined. The MOTORFIT tests and the IPAQ-C and Self-Esteem questionnaires were completed.
Andrade et al. (2020)	Brazil	Primary Education	140 68 experimental group 26 (men) 42 (women) 72 control group 33 (men) 39 (women)	7 to 11 years	Quantitative	Experimental	3 sessions	Attended three unmodified Physical Education classes	Practised *exergames* during the three Physical Education classes.
Zandi et al. (2021)	Iran	Secondary education	40 (women) 20 experimental group 20 control group	NR	Quantitative	Quasi-experimental	8 sessions	Did not receive any training	Mindfulness-based training sessions were given to the experimental group.
Boraita et al. (2023)	Spain	Secondary education	761	13 to 16 years old	Quantitative	Descriptive cross-sectional	NR	NGC	The same protocol was applied in all cases. This protocol included the following: Self-administered questionnaire, anthropometric measurements and physical fitness test.

Kang & Kim (2023)	South Korea	Secondary education	189 89 experimental group 87 control group	NR	Quantitative	Experimental	10 weeks	Received regular Physical Education classes	Mindfulness intervention

Table 3 details the variables (2), the instruments used (3), the objectives (4), together with the research findings (5). These results highlight the intricate nature of the factors that influence self-esteem. The collected results revealed a remarkable connection between physical activity and self-esteem in primary and secondary school students. In both groups, a positive relationship was observed between participation in physical activity and high levels of self-esteem. This link was further strengthened when considering that both females and males who engage in physical activity showed significantly higher levels of self-esteem. Furthermore, specific interventions, such as the implementation of Creative Dance and BrainDance programmes (Theocharidou et al., 2018) in primary school students, demonstrated a positive impact on imagination, creativity and self-esteem, highlighting the relevance of pedagogical approaches that incorporate physical activity to foster emotional and psychosocial well-being from an early age.

The importance of these findings in the educational context is also highlighted, as they suggest that interventions focused on promoting physical activity not only benefit students' general health, but also contribute significantly to the positive development of their self-esteem. These findings support the idea that school-based programmes that include physical activities, either through traditional Physical Education classes or through innovative approaches such as exergames (Andrade et al., 2020), can play a crucial role in improving students' self-perception, potentially influencing their emotional well-being and academic performance.

Table 3
Treatment Variables and Main Outcomes and Relationships of Physical Activity With Self-esteem

Studies	Objectives	Variables	Instruments	Main results
Tremblay et al. (2000)	To examine the relationships between reported levels of physical activity, body mass index, self-esteem, and reading and mathematics scores, while controlling for gender, family structure and socio-economic status.	Self-esteem Physical activity Body Mass Index Reading Mathematics Sex Family structure Socio-economic status	Students' academic test results. *Ad-hoc* questionnaire *Self Description Questionnaire* (Marsh & O'Neill, 1984)	Physical activity was negatively related to body mass index. Physical activity had a positive relationship with self-esteem and a trivial negative relationship with academic performance. The analysis revealed that both women and men who were more physically active had significantly higher levels of self-esteem.
Klizas et al. (2012)	To establish changes in psychosocial adjustment of adolescent girls in modified Physical Education classes.	Self-esteem Physical activity Psychosocial adaptation Domination Satisfaction with life	Rogers & Dymond Questionnaire (1954 Suldo & Huebner's (2006) Student Life Satisfaction Scale.	The psychosocial adjustment of the adolescent girls in the experimental group improved significantly after the experiment. After the experiment, 42.19% of the girls reported high life satisfaction.
Knox & Muros (2017)	To examine the association between adherence to the Mediterranean diet and physical activity with self-esteem across five components of health-related quality of life.	Self-esteem Physical activity Mediterranean diet Quality of life	*KIDSCREEN-27. The KIDSCREEN Group Europe* (2006) *International Society for the Advancement of Kinanthropometry* (Stewart et al., 2011). *Physical Activity Questionnaire for Older Children (PAQ-C)* *Mediterranean Diet Quality Index (KIDMED)* (Serra-Majem et al., 2004). *Rosenberg self-esteemscale* (Rosenberg, 1965)	Females reported less physical activity than males. Females reported lower HRQoL in terms of lower physical well-being, family relationships and autonomy and perception of the school environment in secondary school. Males only reported a lower perception of their school environment in secondary school. Physical activity was strongly associated with HRQoL, while Mediterranean diet was not. Priority should be given to physical activity interventions when the main goal is to improve children's HRQoL. Special attention should be given to the positive development of females, especially during the first years of secondary school.

Theocharidou et al. (2018)	To investigate the impact that a combined Creative Dance and Brain Dance programme based on the Laban Theory of Movement Analysis has on the HRQoL perceptions of primary school students when this programme is applied in the context of the primary school Physical Education curriculum.	Self-esteem Physical activity Creative dance Quality of life	The *Kidscreen-52* Questionnaire *(The KIDSCREEN Group Europe, 2006)*	Its application produced very good results in terms of improvisation, body control, balance and coordination, as well as kinaesthetic awareness and musical rhythmic skills.
Kliziene et al. (2018)	To examine the effects of physical intervention programmes on students' psychosocial adjustment, self-esteem and anxiety	Self-esteem Physical activity Psychosocial adaptation Anxiety	Rogers & Dymond Questionnaire (1954) used by (Klizas et al., 2012) *Richmond's Anxiety Scale* (1994) used by Dewaraja et al. (2006) and Klizas (2009)	The results of the intervention programme to improve psychosocial adjustment and its components (self-esteem, mastery, positive self-evaluation , emotional comfort, interiority and evaluation by others) and the decrease of anxiety in Physical Education classes, indicated that after the intervention there are certain tendencies towards an improvement of psychosocial adjustment that helps to overcome various critical situations.
Russo et al. (2019)	To analyse whether there are differences between women and men in terms of levels of self-esteem in relation to the amount of physical activity reported.	Self-esteem Physical activity Psychosocial characteristics	Self-Esteem Scale (Rosenberg, 1965) *IPAQ-C* (Kowalski et al., 1997) *MOTORFIT tests* (Perotta et al., 2011)	Participants who performed better on the MOTORFIT test reported higher self-esteem compared to less fit participants. However, a discrepancy emerged when self-esteem was analysed in terms of reported physical activity and no differences between the groups were observed.
Andrade et al. (2020)	To investigate the effect of *exergames* on children's mood and self-esteem and its comparison with traditional Physical Education classes.	Self-esteem Physical activity *Exergames* State of mind	*Ad-hoc* questionnaire Digital scale with stadiometer (Model Filizola PL 200 kg) Rosenberg Self-esteem Scale (Rosenberg, 1989) Brunel Mood Scale (BRUMS) (Brandt et al., 2016; Rohlfs et al., 2008)	The main results of the EG showed lower stress in girls ($p<0.05$; ES: 0.62; 95% CI: 0.17-1.05). In terms of sex comparisons, anger was lower in girls (F: 4.57; $p<0.05$; ES: 0.61; 95% CI: 0.11-1.11) in the EG. Vigour was higher in girls in the SG than in the PD group (F: 5.46; $p<0.05$; ES: 0.56; 95% CI: 0.12-1.01). The main results for the PD group indicated an increase in self-esteem in boys ($p<0.05$; ES: 0.58; 95% CI: 0.08-1.07) and a reduction in mental confusion in girls ($p<0.05$; ES 0.58; 95% CI: 0.15-1.06).
Zandi et al. (2021)	To investigate the effectiveness of mindfulness training on stress coping, test anxiety and happiness in promoting health in female high school students.	Self-esteem Anxiet Stress *Midfulness*	*Oxford Happiness* (Liaghatdar et al., 2008) *Sarason Exam Anxiety* (Sarason & Sarason, 1990) *Endler & Parker Stress Management* (Endler & Parker, 1994)	A significant difference was observed between the mean scores of participants in the experimental and control groups on the variables of problem-oriented, emotion-oriented and avoidant coping ($P < 0.05$). In addition, the results showed that at posttest there was a significant difference between the mean scores of test anxiety; happiness; and components of happiness, including life satisfaction, self-esteem, active well-being, satisfaction and positive mood ($P < 0.05$).

Boraita et al. (2023)	Analysing differences in adolescent health-related lifestyles	Self-esteem Physical Activity Quality of life Adherence to the Mediterranean diet Sleeping hours Maximum oxygen consumption	*KIDSCREEN-27*, validated with Spanish adolescents by Aymerich et al. (2005). Rosenberg's self-esteem scale, adapted and validated in Spanish adolescents by Atienza et al. Physical Activity Questionnaire for Adolescents (PAQ-A), validated and adapted to Spanish by Martínez-Gómez et al. (2009). Quality of the Mediterranean Diet (KIDMED) developed by Serra-Majem et al. (2004). Oviedo Infrequency Scale (INF-OV) (Fonseca-Pedrero et al., 2009). *Course-Navette* Test VO2max in relation to body mass (ml/kg/min) using the formula stipulated by Léger et al (1988) SECA® scale (713, Hamburg, Germany) Holtain® stadiometer (Holtain Ltd.,Dyfed, UK)	Adolescent first-year students reported higher values for self-esteem, health-related quality of life, physical activity, adherence to the Mediterranean diet, hours of night-time sleep and maximal oxygen consumption. Some differences emerged according to gender. The associative analysis revealed negative correlations between age, lifestyle habits (physical activity, hours of sleep at night and adherence to the Mediterranean diet) and health indicators (VO2max, self-esteem and HRQOL), with a positive association with BMI
Kang & Kim (2023)	To investigate the effects of a mindfulness programme on stress, concentration, self-esteem and self-control in secondary school students.	Self-esteem Physical Activity Mindfulness Mental health Self-monitoring	*Perceived Stress Scale* (PSS) (Cohen et al., 1983) *Harris & Harris Concentration Exercise Grid* (Harris & Harris, 1984) *Rosenberg's Self Esteem Scale* (RSES) developed by (Rosenberg, 1965) which was modified and adapted by Do & Lee (2011). *Healthy Self-Regulation Subscale* (HSRS) adapted by Lee (2019)	The experimental group showed reduced stress and improved concentration, self-esteem and self-control compared to the control group.

Discussion

The aim of this systematic review was to identify and analyse the programmes that have been carried out in relation to the work on self-esteem and physical activity in primary and secondary education.

Comparing the studies by educational stage, it was observed that the studies carried out in Primary Education showed a positive relationship between physical activity and self-esteem in Physical Education classes (Andrade et al., 2020; Theocharidou et al., 2018; Tremblay et al., 2000). The influence of educational innovation with proposals such as Creative Dance and BrainDance (Theocharidou et al., 2018) and exergames (Andrade et al., 2020) and the tendency to plan Physical Education in favour of improving self-esteem were also observed in the aforementioned studies, especially in the most recent ones, although there were also notable experiences that described the influence on this psychological variable without specific planning for its improvement (Tremblay et al., 2000).

Looking at research in Secondary Education, and following the line of work in Primary Education, an improvement in self-esteem was noted after measurement in the different studies (Boraita et al., 2023; Kang & Kim, 2023; Klizas et al., 2012;

Kliziene et al., 2018; Knox & Muros, 2017; Russo et al., 2019; Zandi et al., 2021). In this way, there were experiences that showed the influence of school physical activity without specific programming aimed at improving self-esteem, but which yielded positive data that related both variables (Boraita et al., 2023; Knox & Muros, 2017; Russo et al., 2019), and works that addressed a specific programme to work on self-esteem, among other aspects, found equally positive results (Kang & Kim, 2023; Klizas et al., 2012; Kliziene et al., 2018; Zandi et al., 2021). Among the latter, experiences in mindfulness (Kang & Kim, 2023; Zandi et al., 2021) and programmes aimed at strengthening psychosocial adaptation (Kliziene et al., 2018) with sports games and Pilates (Klizas et al., 2012) were observed.

In line with the objectives pursued by the studies, the studies that aimed to describe self-esteem values without a specific intervention showed a more holistic approach to students since they measured aspects related to different spheres of life such as biological (BMI, gender and oxygen consumption); social (family structure and socioeconomic level); academic (reading and mathematics) or habits (physical activity, Mediterranean diet, quality of life and hours of sleep) (Boraita et al., 2023; Knox & Muros, 2017; Russo et al., 2019; Tremblay et al., 2000). These findings are consistent with Fox (2000) and Dale et al. (2019) who allude to the direct influence of physical activity on self-esteem. However, studies that planned programmes aimed at working on self-esteem through school physical activity had a more psychosocial focus, addressing variables such as psychosocial adjustment, mastery, life satisfaction, anxiety, stress, mindfulness, mental health and self-control (Andrade et al., 2020; Kang & Kim, 2023; Klizas et al., 2012; Kliziene et al., 2018; Theocharidou et al., 2018; Zandi et al., 2021), in addition to self-esteem and physical activity. These findings are close to approaches based on the need to plan physical activity not only in the motor aspect, but also seeking an improvement in psychosocial aspects (Bailey, 2017; Benítez-Sillero et al., 2021; DeBate & Thompson, 2005; Lubans et al., 2012; Navarro-Patón et al., 2019; Yook et al., 2017).

On the other hand, coinciding with Fox (2000), there are few studies that address physical activity at school and its possibilities for the "self" (self-esteem, self-image, self-perception). An increase in this type of work would facilitate the creation of educational contexts that guarantee successful experiences in this sense, as previous studies have shown (Hosogi et al., 2012).

The results of this study should be considered with some caution due to a series of limitations. In this sense, and as mentioned above, it is necessary to insist on the scarcity of literature that deals with the measurement and/or use of physical activity programmes in the educational context to improve self-esteem in primary and secondary school pupils. On the other hand, it is necessary to point out the fact that many studies succinctly describe the activities proposed in the programme, which prevents the replication of the experiences presented and, therefore, more studies in this sense. The diversity of instruments and variables involved in the different research studies is a determining factor here, an aspect that can make it difficult to incorporate or compare the work included in the study. Likewise, and continuing with the limitations, we can point out the language aspect (studies in English, Spanish and Portuguese have been taken into account) or the exclusion of educational stages that differ from Primary or Secondary Education.

It is necessary for future research to continue to advance in the study of the variables that occupy the study, both individually and jointly. This could be done by broadening the search by language, including more educational stages or even non-formal and informal educational settings. It would also be of interest to carry out searches that encompass different psychosocial variables with physical activity, in order to find out the influence of the latter on other psychological and relational aspects of pupils. Likewise, a detailed study of different physical activities could be undertaken, according to their categorization, in order to find out the influence of each of them on the psychosocial variables of interest.

Conclusions

Several conclusions can be drawn from the findings of this study. Firstly, after identifying and analysing the studies that relate physical activity at school age and self-esteem, it can be concluded that physical activity at school age has a positive influence on students' self-esteem. Likewise, studies that combine a psychosocial approach with physical activity, and that also plan physical activity to influence psychosocial variables, have an influence on students' self-esteem and well-being. Likewise, studies that focus on the description of different spheres of life, taking physical activity as a reference point, show higher values and values closer to well-being in students who practise physical activity than in those who do not.

The main practical application of the study carried out lies in describing and presenting a scenario to the scientific and educational community about the state of the question. All this can allow Physical Education teachers to learn about the work already carried out, develop programmes, plan actions and measure the activities carried out in the educational environment in order to continue describing and providing knowledge of the influence exerted by physical activity on psychosocial variables in general, and on self-esteem in particular, in favour of pupils with greater biopsychosocial well-being.

Ethics Committee Statement

Not applicable

Conflict of Interest Statement

The funding agencies or institutions had no influence on the design of the study, the analysis of the data or the interpretation of the results.

Funding

This research did not receive funding.

Authors' Contribution

Conceptualization J.M. & R.F.; Methodology J.M., R.F. & M.T.; Software J.M., R.F. & M.T.; Validation J.M. & R.F.; Formal Analysis J.M., R.F. & M.T.; Investigation J.M., R.F. & M.T.; Resources J.M. & R.F.; Data Curation J.M. & R.F.; Writing – Original Draft J.M. & R.F.; Writing – Review & Editing M.T; Visualization J.M., R.F. & M.T.; Supervision J.M., R.F. & M.T.; Project Administration J.M., R.F. & M.T.; Funding Acquisition J.M., R.F. & M.T.

Data Availability Statement

Data available from articles indexed in the Web of Science, Scopus and PubMed, Eric and PsycInfo.

References

Andrade, A., Cruz, W. M. da, Correia, C. K., Santos, A. L. G., & Bevilacqua, G. G. (2020). Effect of practice exergames on the mood states and self-esteem of elementary school boys and girls during physical education classes: A cluster-randomized controlled natural experiment. *PLOS ONE, 15*(6), e0232392. https://doi.org/10.1371/journal.pone.0232392

Armada-Crespo, J. M., González López, I., & Montávez Martín, M. (2013). La expresión corporal: un proyecto para la inclusión. *RETOS. Nuevas Tendencias en Educación Física, Deporte y Recreación, 24,* 107–112. https://dialnet.unirioja.es/descarga/articulo/4482483.pdf

Armada-Crespo, J. M., Montávez Martín, M., & González López, I. (2020). Influencia de la Expresión Corporal en el desarrollo de las Habilidades Socioafectivas en Educación Secundaria. *Movimento (ESEFID/UFRGS), 26*, e26080. https://doi.org/10.22456/1982-8918.104634

Armada-Crespo, J., & Rosa-Jiménez, A. (2019). La expresión corporal en un aula de convivencia: una herramienta para la mejora de la autoestima. *Tándem: Didáctica de La Educación Física*, 66, 7-12. https://www.grao.com/revistas/arte-corporal-propuestas-educativas-para-la-inclusion-32700?contenido=365913

Atienza, F. L., Moreno, Y., & Balaguer, I. (2000). Análisis de la dimensionalidad de la Escala de Autoestima de Rosenberg en una muestra de adolescentes valencianos. *Revista de Psicología Universitas Tarraconensis, 22*, 29–42.

Aymerich, M., Berra, S., Guillamón, I., Herdman, M., Alonso, J., Ravens-Sieberer, U., & Rajmil, L. (2005). Desarrollo de la versión en español del KIDSCREEN, un cuestionario de calidad de vida para la población infantil y adolescente. *Gaceta Sanitaria, 19*(2), 93–102. https://doi.org/10.1157/13074363

Baena-Morales, S., Ferriz-Valero, A., & García-Taino, O. (2022). Influence of cooperative strategies and mindfulness on the perception and control of emotions in primary physical education. A proposal to improve sustainability in the social dimension. *Journal of Physical Education and Sport, 22*(7), 1590-1598. https://doi.org/10.7752/jpes.2022.07200

Bailey, R. (2017). Sport, physical activity and educational achievement – towards an explanatory model. *Sport in Society, 20*(7), 768–788. https://doi.org/10.1080/17430437.2016.1207756

Benítez-Sillero, J. D., Corredor-Corredor, D., Córdoba-Alcaide, F., & Calmaestra, J. (2021). Intervention programme to prevent bullying in adolescents in physical education classes (PREBULLPE): a quasi-experimental study. *Physical Education and Sport Pedagogy, 26(*1), 36–50. https://doi.org/10.1080/17408989.2020.1799968

Benítez-Sillero, J. de D., Armada-Crespo, J. M., Morente-Montero, Á., & Moreno, E. M. (2022). Relación entre la empatía en la adolescencia con los diferentes tipos de actividad física practicada. *Publicaciones, 52*(2), 245–279. https://doi.org/10.30827/publicaciones.v52i2.22231

Bisquerra, R. (2003). Educación emocional y competencias básicas para la vida. Revista de *Investigación Educativa, 21*(1), 7–43. https://revistas.um.es/rie/article/view/99071

Boraita, R. J., Dalmau Torres, J. M., Ibort, E. G., & Alsina, D. A. (2023). Analysis of the Lifestyle and Psychological Well-being of Adolescents: Age-related Differences. *Child Indicators Research, 16(*1), 109–134. https://doi.org/10.1007/s12187-022-09977-7

Brandt, R., Herrero, D., Massetti, T., Crocetta, T. B., Guarnieri, R., de Mello-Monteiro, C. B., da Silveira-Viana, M., Bevilacqua, G. G., de Abreu, L. C., & Andrade, A. (2016). The Brunel Mood Scale Rating in Mental Health for Physically Active and Apparently Healthy Populations. *Health, 08*(02), 125–132. https://doi.org/10.4236/health.2016.82015

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior, 24(*4), 385. https://doi.org/10.2307/2136404

Cronin, L. D., Allen, J., Mulvenna, C., & Russell, P. (2018). An investigation of the relationships between the teaching climate, students' perceived life skills development and well-being within physical education. *Physical Education and Sport Pedagogy, 23*(2), 181–196. https://doi.org/10.1080/17408989.2017.1371684

Dale, L. P., Vanderloo, L., Moore, S., & Faulkner, G. (2019). Physical activity and depression, anxiety, and self-esteem in children and youth: An umbrella systematic review. Mental Health and *Physical Activity, 16*, 66–79. https://doi.org/10.1016/j.mhpa.2018.12.001

De Bate, R. D., & Thompson, S. H. (2005). Girls on the Run: Improvements in self-esteem, body size satisfaction and eating attitudes/behaviors. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity, 10*(1), 25–32. https://doi.org/10.1007/BF03353416

Dewaraja, R., Sato, H., & Ogawa, T. (2006). Anxiety in tsunami-affected children in Sri Lanka measured by Revised Children's Manifest Anxiety Scale and Synthetic House–Tree–Person Test. *International Congress Series*, 1287, 74–78. https://doi.org/10.1016/j.ics.2005.12.035

Do, K. H., & Lee, J. M. (2011). Structural relationships among adolescents' internet addiction, self-esteem, self-control, and aggression. *Korean Home Management Association, 29*(3), 59–69.

Endler, N. S., & Parker, J. D. A. (1994). Assessment of multidimensional coping: Task, emotion, and avoidance strategies. *Psychological Assessment, 6*(1), 50–60. https://doi.org/10.1037/1040-3590.6.1.50

Fonseca-Pedrero, E., Paíno-Piñeiro, M., Lemos-Giráldez, S., Villazón-García, Ú., & Muñiz, J. (2009). Validation of the Schizotypal Personality Questionnaire—Brief Form in adolescents. *Schizophrenia Research, 111*(1–3), 53–60. https://doi.org/10.1016/j.schres.2009.03.006

Fox, K. R. (2000). Self-esteem, self-perceptions and exercise. *International Journal of Sport Psychology, 31*, 228–240.

González-Valero, G., Ubago-Jiménez, J. L., Castro-Sánchez, M., García-Martínez, I., & Sánchez Zafra, M. (2019). Prevención y tratamiento de lesiones lumbares con herramientas físico-médicas. Una revisión sistemática. *Sportis. Scientific Journal of School Sport, Physical Education and Psychomotricity, 5(*2), 232–249. https://doi.org/10.17979/sportis.2019.5.2.3409

Harrington, D. M., Davies, M. J., Bodicoat, D. H., Charles, J. M., Chudasama, Y. V., Gorely, T., Khunti, K., Plekhanova, T., Rowlands, A. V., Sherar, L. B., Tudor Edwards, R., Yates, T., & Edwardson, C. L. (2018). Effectiveness of the 'Girls Active' school-based physical activity programme: A cluster randomised controlled trial. *International Journal of Behavioral Nutrition and Physical Activity, 15*(1), 40. https://doi.org/10.1186/s12966-018-0664-6

Harris, D. V., & Harris, B. L. (1984). *The athlete's guide to sports psychology: Mental skills for physical people*. Leisure Press. https://archive.org/details/athletesguidetos00harr

Hosogi, M., Okada, A., Fujii, C., Noguchi, K., & Watanabe, K. (2012). Importance and usefulness of evaluating self-esteem in children. *BioPsychoSocial Medicine, 6*(1), 9. https://doi.org/10.1186/1751-0759-6-9

Hue, C. (2016). Inteligencia emocional y bienestar. In J. L. Soler, L. Aparicio, O. Díaz, E. Escolano & A. Rodríguez (Eds.), *Inteligencia Emocional y Bienestar II: reflexiones, experiencias profesionales e investigaciones* (pp. 32–44). Ediciones Universidad de San Jorge. https://dialnet.unirioja.es/servlet/libro?codigo=655308

Kang, M.-J., & Kim, H. (2023). Development and Evaluation of a Blended Learning Mindfulness Program for High School Students During the COVID-19 Pandemic. *The Journal of School Nursing, 39*(2), 172–180. https://doi.org/10.1177/10598405221095346

Klizas, S. (2009). *Psychosocial adjustment for students of middle school age and its strengthening during lessons of physical education*. LKKA.

Klizas, Š., Malinauskas, R., Karanauskienė, D., Senikienė, Ž., & Klizienė, I. (2012). Changes in Psychosocial Adjustment of Adolescent Girls in the Lessons of Physical Education. *Medicina, 48*(9), 69. https://doi.org/10.3390/medicina48090069

Kliziene, I., Klizas, S., Cizauskas, G., & Sipaviciene, S. (2018). Effects of a 7-month Exercise Intervention Programme on the Psychosocial Adjustment and Decrease of Anxiety Among Adolescents. *European Journal of Contemporary Education, 7*(1), 127-136. https://doi.org/10.13187/ejced.2018.1.127

Kmet, L. M., Lee, R. C., & Cook, L. S. (2004). *Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields*. Alberta Heritage Foundation for Medical Research. https://doi.org/10.7939/R37M04F16

Knox, E. C. L., & Muros, J. J. (2017). Gender and school-stage associations with health-related behaviours and health-related quality of life in Spanish children. *International Journal of Mental Health Promotion, 19*(5), 278–288. https://doi.org/10.1080/14623730.2017.1345689

Koo, T. K., & Li, M. Y. (2016). A guideline of selecting and reporting intraclass correlation coefficients for reliability research. *Journal of Chiropractic Medicine*, *15*(2), 155–163. https://doi.org/10.1016/j.jcm.2016.02.012

Kowalski, K. C., Crocker, P. R. E., & Kowalski, N. P. (1997). Convergent Validity of the Physical Activity Questionnaire for Adolescents. *Pediatric Exercise Science, 9*(4), 342–352. https://doi.org/10.1123/pes.9.4.342

Lee, H. J. (2019). *Development and effects of school-based mindfulness program for high school girls.* Seoul National University.

Léger, L. A., Mercier, D., Gadoury, C., & Lambert, J. (1988). The multistage 20 metre shuttle run test for aerobic fitness. *Journal of Sports Sciences, 6*(2), 93–101. https://doi.org/10.1080/02640418808729800

Liaghatdar, M. J., Jafari, E., Abedi, M. R., & Samiee, F. (2008). Reliability and Validity of the Oxford Happiness Inventory among University Students in Iran. *The Spanish Journal of Psychology, 11*(1), 310–313. https://doi.org/10.1017/S1138741600004340

Lubans, D. R., Plotnikoff, R. C., & Lubans, N. J. (2012). Review: A systematic review of the impact of physical activity programmes on social and emotional well-being in at-risk youth. *Child and Adolescent Mental Health, 17*(1), 2–13. https://doi.org/10.1111/j.1475-3588.2011.00623.x

Marsh, H. W., & O'Neill, R. (1984). Self description questionnaire III: The contruct validity of multidimensional self-concept ratings by late adolescents. *Journal of Educational Measurement, 21*(2), 153–174. https://doi.org/10.1111/j.1745-3984.1984.tb00227.x

Martínez-Gómez, D., Martínez-de-Haro, V., Pozo, T., Well, G. J., Villagra, A., Calle, M. E., Marcos, A., & Veiga, O. L. (2009). Fiabilidad y validez del cuestionario de actividad física PAQ-A en adolescentes españoles. *Revista Española de Salud Pública, 83*, 427–439. https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1135-57272009000300008

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews, 4(*1), 1. https://doi.org/10.1186/2046-4053-4-1

Navarro-Patón, R., Pazos-Couto, J. M., Rodríguez-Fernández, J. E., & Arufe-Giráldez, V. (2019). Measuring physical self-concept of schoolchildren aged 10 to 16 on physical education lessons. *Journal of Human Sport and Exercise, 15*(1). https://doi.org/10.14198/jhse.2020.151.01

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., & Moher, D. (2021). Updating guidance for reporting systematic reviews: development of the PRISMA 2020 statement. *Journal of Clinical Epidemiology, 134*, 103–112. https://doi.org/10.1016/j.jclinepi.2021.02.003

Pelegrín-Muñoz, A., Garcés de Los Fayos-Ruiz, E., & Cantón-Chirivella, E. (2010). Estudio de conductas prosociales y antisociales: Comparación entre niños y adolescentes que practican y no practican deporte. *Informació Psicológica, 99*, 64–78. https://www.informaciopsicologica.info/revista/article/view/149

Pellicer, I. (2015). NeuroEF. *La revolución de la Educación Física desde la Neurociencia*. Inde.

Pellicer, I. (2018). *Educación Física emocional. De la teoría a la práctica*. Inde.

Perotta, F., Corona, F., & Cozzarelli, C. (2011). The efficacy of the project motorfit: Educational Actions through physical activity in schools. *Sport Science, 4*(1), 34–39.

PRISMA (2020). PRISMA 2020 flow diagram. https://www.prisma-statement.org/prisma-2020-flow-diagram

Pyszczynski, T., Greenberg, J., Solomon, S., Arndt, J., & Schimel, J. (2004). Why Do People Need Self-Esteem? A Theoretical and Empirical Review. *Psychological Bulletin, 130*(3), 435–468. https://doi.org/10.1037/0033-2909.130.3.435

Richmond, R. (1994). *Revised children's manifest anxiety scale*. CA: Western Psychological Services.

Rogers, C. R., & Dymond, R. F. (1954). *Psychotherapy and personality change*. University of Chicago Press.

Rohlfs, I. C. P. de M., Rotta, T. M., Luft, C. D. B., Andrade, A., Krebs, R. J., & Carvalho, T. de. (2008). A Escala de Humor de Brunel (Brums): instrumento para detecção precoce da síndrome do excesso de treinamento. *Revista Brasileira de Medicina Do Esporte, 14(*3), 176–181. https://doi.org/10.1590/S1517-86922008000300003

Rosenberg, M. (1965). *Rosenberg self-esteem scale (SES). Society and self-image*. Princeton Univ Press.

Rosenberg, M. (1989). *Determinants of Self-Esteem*. Cit Class.

Russo, G., Nigro, F., Raiola, G., & Ceciliani, A. (2019). Self-esteem in physically active middle school students. *Journal of Physical Education and Sport, 2019*(5), 1984–1988. https://cris.unibo.it/handle/11585/703920

Salazar, Z. (2008). Adolescencia e imagen corporal en la época de la delgadez. *Reflexiones, 87*(2), 67–80. https://www.redalyc.org/articulo.oa?id=72912555004

Sarason, I. G., & Sarason, B. R. S. (1990). Test anxiety. En H. Leitenberg (Ed.), *Handbook of social and evaluation anxiety* (pp. 475-496). Plenum Press. https://doi.org/10.1007/978-1-4899-2504-6

Serra-Majem, L., Ribas, L., Ngo, J., Ortega, R. M., García, A., Pérez-Rodrigo, C., & Aranceta, J. (2004). Food, youth and the Mediterranean diet in Spain: Development of KIDMED, Mediterranean Diet Quality Index in children and adolescents. *Public Health Nutrition*, 7(7), 931-935. https://doi.org/10.1079/PHN2004556

Stewart, A., Marfell-Jones, M., Olds, T., & de Ridder, H. (2011). *International standards for anthropometric assessment.* International Society for the Advancement of Kinanthropometry.

Suldo, S. M., & Huebner, E. S. (2006). Is Extremely High Life Satisfaction During Adolescence Advantageous? *Social Indicators Research, 78*(2), 179–203. https://doi.org/10.1007/s11205-005-8208-2

The KIDSCREEN Group Europe. (2006). *The KIDSCREEN Questionnaires – Quality of life questionnaires for children and adolescents*. Pabst Science.

Theocharidou, O., Lykesas, G., Giossos, I., Chatzopoulos, D., & Koutsouba, M. (2018). The positive effects of a combined program of creative dance and BrainDance on health-related quality of life as perceived by primary school students. *Physical Culture and Sport. Studies and Research, 79*(1), 42-52. https://doi.org/10.2478/pcssr-2018-0019

Tremblay, M. S., Inman, J. W., & Willms, J. D. (2000). The relationship between physical activity, self-esteem, and academic achievement in 12-year-old children. *Pediatric Exercise Science, 12*(3), 312-323. https://doi.org/10.1123/pes.12.3.312

Vallejo, A. G., & Alguacil Jiménez, M. (2022). Influencia de la actividad físico-deportiva en el rendimiento académico, la autoestima y el autoconcepto de las adolescentes: el caso de la isla de Tenerife. *RETOS. Nuevas Tendencias en Educación Física, Deporte y Recreación*, 46, 120-128. https://doi.org/10.47197/retos.v46.93496

Waldron, J. J. (2009). Development of life skills and involvement in the Girls on Track program. *Women in Sport and Physical Activity Journal, 18*(2), 60-73. https://doi.org/10.1123/wspaj.18.2.60

Yiğiter, K. (2014). The effects of participation in regular exercise on self-esteem and hopelessness of female university students. *Social Behavior and Personality: An International Journal, 42*(8), 1233-1243. https://doi.org/10.2224/sbp.2014.42.8.1233

Yook, Y.-S., Kang, S.-J., & Park, I. (2017). Effects of physical activity intervention combining a new sport and mindfulness yoga on psychological characteristics in adolescents. *International Journal of Sport and Exercise Psychology, 15*(2), 109-117. https://doi.org/10.1080/1612197X.2015.1069878

Zandi, H., Amirinejhad, A., Azizifar, A., Aibod, S., Veisani, Y., & Mohamadian, F. (2021). The effectiveness of mindfulness training on coping with stress, exam anxiety, and happiness to promote health. *Journal of Education and Health Promotion*, 10, 1-8. https://doi.org/10.4103/jehp.jehp_616_20