

# Impact Of Physical Activity on Adolescents with Anxiety Disorders and Depression: A Systematic Review

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## Abstract

*The aim of this study was to conduct a systematic review of the existing scientific literature on the impact of physical activity on adolescents with anxiety disorders and depression. The scientific literature was reviewed following the PRISMA guidelines in the Web of Science, PubMed, ScienceDirect and Refseek databases. The keywords used were: “Physical Activity”, adolescents”, associated with the words ‘anxiety and depression’. The sample consisted of 24 scientific articles, which met the inclusion criteria. The most significant results showed that the constant practice of physical activity benefits the mental health of adolescents, reducing anxiety and depression, and improving their mood and ability to adapt to different daily situations. Physical activity helps to modify the way adolescents view their emotional problems, acting as an antidepressant by positively impacting the central nervous system and promoting personal acceptance.*

**Keywords:** Systematic Review, Physical Activity, Anxiety, Depression, Adolescents.

## INTRODUCTION

Nowadays, human beings have various ways of working to improve their healthy living conditions. In this sense, physical activity and mental health are closely related, generating fundamental benefits for a better quality of life. However, it is crucial to maintain consistency for this relationship to produce significant results, which can be integrated into daily habits. Physical activity (PA) has a positive impact on various functions of the human body, such as cardiovascular function and the central nervous system, among others. Its benefits are essential to promote well-being and help prevent various diseases. In addition, PA contributes to regulate functions such as sleep, feeding and sexual response, influencing human development (Castineyra-Mendoza et al., 2024).

Adolescence is a crucial stage for the proper development of emotional components important for mental health. Implementing healthy strategies, such as promoting physical activity habits, allows adolescents to be more assertive in finding solutions to their problems. It also helps them manage their emotions. PA is significant, but having a primary support network amplifies its adaptive impact on adolescents (Del Conde Schnaider et al., 2022). Processes related to physical activity generate feelings of well-being and energy, improving the quality of sleep and memory processes, and increasing the ability to cope with the vicissitudes of daily life. Therefore, physical activity has a crucial impact on mental health, contributing to mitigate alterations such as anxiety and depression (Franco-Gallego et al., 2024).

There are a number of situations that affect the mental health of adolescents. The greater the exposure to risk factors, the greater the negative influences on their mental well-being. Adversities may be related to social pressures, identity processes, heteronormativity and social models present in the media. These factors can

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aggravate an adolescent's reality, affecting his or her perception and future goals, and generating concerns about how to adjust to external expectations (Garcia et al., 2024).

Physical activity helps to counteract changes in mood and provides benefits in various functions of the individual. It is important to note that there is no age limit to benefit from physical activity, which offers advantages to all people who decide to incorporate it into their daily lives. Among the most outstanding benefits are increased muscle tone and mass, improved cognitive processing and a harmonious relationship with locomotion, as well as balance and proprioception. At the emotional level, PA helps to release tensions, improves mood and facilitates coping with daily problems, reducing anxiety and sadness (Villaquirán Hurtado et al., 2020).

On the psychological level, physical activity has positive effects on self-esteem, body image and self-concept. It improves functional status, promotes independence and reduces the incidence of physical and mental health problems. Likewise, PA has become a fundamental alternative to improve behaviors related to attention deficit hyperactivity disorder (ADHD), significantly alleviating symptoms in children with ADHD. Therefore, the relationship between mental health and PA is crucial in human development (Mahindru et al., 2023).

It is important to point out that in human development there is a period with particular characteristics: adolescence. During this stage, significant changes are manifested in various areas of life, visible in the biopsychosocial sphere. In addition, young people are more vulnerable to face difficulties if they do not have the necessary tools to address mental and physical health problems (Trejo et al., 2023).

Therefore, the purpose of this study is to conduct a systematic review of the existing scientific literature on the impact of physical activity on adolescents with anxiety disorders and depression.

## **METHODOLOGY**

The methodological process is based on a quantitative approach, with an emphasis on a systematic bibliometric review. This was carried out according to the criteria established by the PRISMA statement (2020), using Boolean equations for the search process. This approach allowed the execution, selection, management, analysis and typification of relevant texts in various publications, including open access scientific journals (Open Journal System, OJS). The exploration was performed using results from subscription databases, such as PubMed, ScienceDirect, Web of Science and Refseek.

The selected variables of analysis are: Physical Activity, adolescents, anxiety and depression. The sample is composed of 24 scientific publications chosen from various primary and secondary sources, considering a time period of the last five years (2019-2024) and covering research in Spanish and English.

### **Inclusion Criteria**

In the inclusion criteria, research published in the last five years was considered, reviewing the established study variables. Publications in Spanish and English were included, since these are the languages with the highest number of scientific publications and contain the necessary information to develop the components that support physical activity and mental health.

### **Exclusion Criteria**

Considering the research process, exclusion criteria were established, through which texts that did not meet the requirements of being research papers, reflections, books or book chapters were discarded. Likewise, other types of publications that were not linked to the variables explored in this research were excluded.

### **Search Strategies**

The identification was made through a survey in various databases, selecting those texts that were aligned with the contributions and focus of the subject of interest. Scientific research published in the last five years in different languages, mainly Spanish and English, was studied, covering the variables of physical activity, adolescents, anxiety and depression.

**Table 1. Search methods**

<p>“Actividad Física” and “Adolescentes” or = “Afectaciones” not = “Niños” “Ejercicios Físicos” and “Adolescencia” or “Ansiedad” or “Depresión” not = “adultos mayor” “Alteraciones” and “Comportamiento” or “Jovenes” not Discapacidad “Estado de animo” and “Trastorno” or “Puber” not Personalidad “Depresión” and “Entrenamiento físico” or “Ansiedades” or “Adolescencia” not desarrollo “Ansiedades” and “Emociones” or “Practica física” or “afectaciones” not “Deterioro” “Physical Activity” and “Adolescents” or = “Affections” not = “Children” “Physical Exercises” and “Adolescence” or “Anxiety” or “Depression” not = “older adults” “Alterations” and “Behavior” or “Young People” ” not Disability “Mood” and “Disorder” or “Puber” not Personality “Depression” and “Physical training” or “Anxiety” or “Adolescence” not development “Anxiety” and “Emotions” or “Physical practice” or “ effects” not “Deterioration”</p>
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The information gathering process was carried out through databases containing acquired scientific papers, such as PubMed, ScienceDirect, Web of Science and Refseek. In addition, Boolean equations (see Table 2) were used to strengthen the bibliometric exploration that supports this scientific work.

**Table 2. Search equations**

Documentary Bases	Search equations Variables
Pubmed	<p>Actividad Física” and “Adolescentes” or = “Afectaciones” not = “Niños” “Ejercicios Físicos” and “Adolescencia” or “Ansiedad” or “Depresión” not = “adultos mayor” “Alteraciones” and “Comportamiento” or “Jovenes” not Discapacidad “Estado de animo” and “Trastorno” or “Puber” not Personalidad “Depresión” and “Entrenamiento físico” or “Ansiedades” or “Adolescencia” not desarrollo “Ansiedades” and “Emociones” or “Practica física” or “afectaciones” not “Deterioro” “Physical Activity” and “Adolescents” or = “Affections” not = “Children” “Physical Exercises” and “Adolescence” or “Anxiety” or “Depression” not = “older adults” “Alterations” and “Behavior” or “Young People” ” not Disability “Mood” and “Disorder” or “Puber” not Personality “Depression” and “Physical training” or “Anxiety” or “Adolescence” not development “Anxiety” and “Emotions” or “Physical practice” or “ effects” not “Deterioration”</p>
Web of science	<p>“Physical Activity” and “Adolescents” or = “Affections” not = “Children” “Physical Exercises” and “Adolescence” or “Anxiety” or “Depression” not = “older adults” “Alterations” and “Behavior” or “Young People” ” not Disability “Mood” and “Disorder” or “Puber” not Personality “Depression” and “Physical training” or “Anxiety” or “Adolescence” not development “Anxiety” and “Emotions” or “Physical practice” or “ effects” not “Deterioration”</p>
Springer	<p>“Depresión” and “Entrenamiento físico” or “Ansiedades” or “Adolescencia” not desarrollo “Ansiedades” and “Emociones” or “Practica física” or “afectaciones” not “Deterioro” “Physical Activity” and “Adolescents” or = “Affections” not = “Children” “Physical Exercises” and “Adolescence” or “Anxiety” or “Depression” not = “older adults”</p>
Refseek.	<p>“Depresión” not = “older adults” “Alterations” and “Behavior” or “Young People” ” not Disability “Mood” and “Disorder” or “Puber” not Personality “Depression” and “Physical training” or “Anxiety” or “Adolescence” not development “Anxiety” and “Emotions” or “Physical practice” or “ effects” not “Deterioration”</p>

**Data Collection Process**

Data collection was carried out following the PRISMA methodology, with the aim of selecting research texts that address various areas of knowledge and record study variables that contribute significantly to the topic in question. The aim is to provide answers to the scientific community, based on the characteristics identified in each contribution made by experts in the field. Likewise, systematic reviews allow the generation of theoretical postulates that offer fundamental resources on the subject under investigation.

**Table 3. Cross-referencing of search terms in the databases**

Crosses/ databases	Pubmed	Web of science	Springer	Total
Actividad Física” <b>and</b> “Adolescentes” <b>or</b> = “Afectaciones” <b>not</b> = “Niños”	312	928	650	1890
“Ejercicios Fisicos” <b>and</b> “Adolescencia” <b>or</b> “Ansiedad” <b>or</b> “Depresion” <b>not</b> = “adultos mayor”	705	105	1600	2410
“Alteraciones” <b>and</b> “Comportamiento” <b>or</b> “Jóvenes” <b>not</b> Discapacidad	220	130	600	3100
“Depresión” <b>and</b> “Entrenamiento fisico” <b>or</b> “Ansiedades” <b>or</b> “Adolescencia” <b>not</b> desarrollo	720	202	1228	2150
Total	1957	1365	4078	9550

### Choice of Studies

In the selection of the research papers, a period of the last five years was considered, in relation to the variables developed. Scientific research that was duplicated or did not meet the selection criteria was discarded. In addition, only scientific texts that were complete and available were chosen, excluding abstracts and research notes (Hutton et al., 2016).

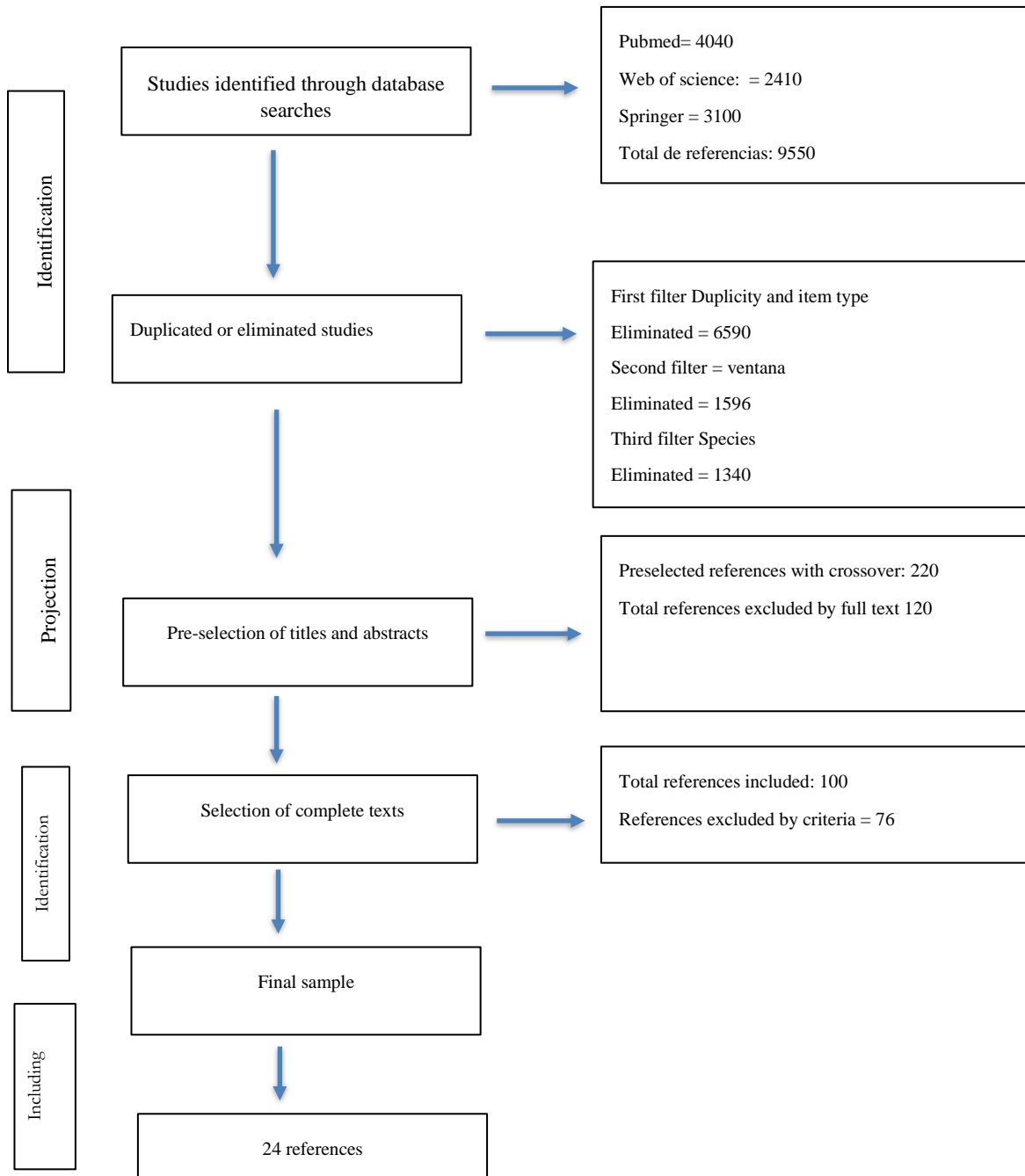
**Table 4. Process of identification, elimination and selection of items**

Equation	Databases	No filter	No access	Revisions / incomplete / duplicates	Do not comply Criteria	Selection
Actividad Física” <b>and</b> “Adolescentes” <b>or</b> = “Afectaciones” <b>not</b> = “Niños”	Pubmed Web of science Springer	1890	890	420	574	6
“Ejercicios Fisicos” <b>and</b> “Adolescencia” <b>or</b> “Ansiedad” <b>or</b> “Depresion” <b>not</b> = “adultos mayor”	Pubmed Web of science Springer	2410	1200	810	390	10
“Alteraciones” <b>and</b> “Comportamiento” <b>or</b> “Jovenes” <b>not</b> Discapacidad	Pubmed Web of science Springer	3100	2700	200	196	4
“Depresion” <b>and</b> “Entrenamiento fisico” <b>or</b> “Ansiedades” <b>or</b> “Adolescencia” <b>not</b> desarrollo	Pubmed Web of science Springer	2150	1800	166	180	4
Total		9550	6590	1596	1340	24

## RESULTS

### Data Extraction

Figure 1. Flowchart of study selection



**Table 5. Summary of included articles**

N	Author	Title	DOI	Method	Results	Sample/ ages
1	Haro, E. R. G. (2024)	Physical activity and its benefits in reducing depression in adolescents between 14 and 18 years of age	<a href="https://doi.org/10.23857/dc.v10i1.3730">https://doi.org/10.23857/dc.v10i1.3730</a>	The purpose of this article was to conduct a detailed analysis of how physical activity impacts on the reduction of depression during middle adolescence, specifically between the ages of 14 and 18 years. To conduct this research, the PRISMA protocol was rigorously applied, whereby 19 studies addressing the connection between physical activity and depression in adolescents were selected and critically reviewed.	The findings of the studies reviewed clearly demonstrated that physical activity is a fundamental factor in the overall health and well-being of adolescents, having a clearly positive effect on their mental health. This evidence not only underscores the importance of promoting physical activity in young people in this age group, but also highlights its ability to reduce and prevent depression at this critical stage of human development.	Adolescents N = 19 / 14-18 years old
2	Jiménez Noriega, R. E. (2023).	Influence of anxiety and depression on stress coping strategies in adolescents from North Lima.	<a href="https://doi.org/10.18050/psiquemag.v12i1.2464">https://doi.org/10.18050/psiquemag.v12i1.2464</a>	The aim of this study was to analyze how depression and anxiety affect coping strategies in adolescents in northern Lima. The sample consisted of 273 students from an educational institution and the research was classified as basic and cross-sectional. For data analysis, binary regression was applied.	The study revealed that depression and anxiety affect coping styles differently, especially those related to avoidance, emotional discharge and inactivity. Adolescents with these disorders tend to resort to these approaches, which may limit their ability to cope with challenges and stressful situations. The importance of addressing these coping styles in interventions and support programs to improve the emotional well-being of adolescents is emphasized.	N = 273 students / 12 to 18 years old.
3	Muñoz Ospina, B., Carvajal, S., Osorio, J., Melo, L., & Rueda-Toro, J. S. (2022)	Physical activity and mood disorders in college students.	<a href="https://doi.org/10.17533/udea.rp.e343533">https://doi.org/10.17533/udea.rp.e343533</a>	This study examines the relationship between physical activity and mood disorders in university students in Colombia, where anxiety and depression have prevalences of 19.7% and 52.9%, respectively. Among 143 students who exercised, 27.26% suffered from depression and 56.62% from anxiety. The findings underscore the need to investigate the impact of exercise on the mental well-being of young people.	The results suggest that physical activity is essential to improve mental health in Colombia. A multidimensional approach that recognizes various factors is proposed, considering exercise as a valuable tool for emotional well-being, but not the only solution. It is vital to develop programs that promote physical activity and address individual social and emotional conditions.	N = 143 university students /18 and 49 years old
4	Vallejo, A., & Zuleta, K. (2019)	Depression, Anxiety and Physical Activity in School Children	<a href="https://doi.org/10.21865/ridep52.3.1">https://doi.org/10.21865/ridep52.3.1</a>	The aim of the study was to determine the prevalence of symptoms of depression and anxiety according to sex and educational level, in addition to analyzing the relationship between physical activity and these emotional disorders. A sample of 998 schoolchildren from Jaén-Capital was used, the results showed that students in 2nd year of Secondary School have higher levels of depression and anxiety trait compared to those in 6th year of Primary School, being more noticeable in girls.	The results may have important implications for the development of new strategies focused on the early detection of mental disorders such as depression and anxiety in the school population. The identification of increased symptomatology in students in 2nd grade of Secondary School, especially in girls, suggests the need to implement specific programs that address these concerns from an early age.	N 998 schoolchildren / Ages 11 and 14 years old
5	Luis-de Cos, G., Arribas-Galarraga, S., Luis-de Cos, I., & Arruza Gabilondo, J. A. (2019).	Motor competence, engagement and anxiety of girls in Physical Education.	<a href="https://doi.org/10.47197/retos.v36i3.6.64243">https://doi.org/10.47197/retos.v36i3.6.64243</a>	The study investigates motor competence in girls aged 12 to 15 years in Compulsory Secondary Education and its relationship with psychosocial aspects, using a quantitative approach. More than 70% of the participants have medium-high levels of motor competence, increasing from 27.9% at age 12 to 46.5% at age 15. A slight increase in anxiety related to the sessions was also observed.	The study indicates that motor competence can improve psychosocial aspects in adolescents, suggesting that promoting it would contribute to emotional well-being and participation in physical activities. Strengthening motor competence is an effective strategy to create a healthier and more motivating school environment.	433 young people between 12 and 15 years of age.

6	Murillo-Jiménez, A.-N., Ovalle-Monroy, J.-M., & Riveros Munévar, F. (2021)	Psychological conditions of athletes in Latin America: a systematic review.	<a href="https://doi.org/10.18270/chps.v21i1.3535">https://doi.org/10.18270/chps.v21i1.3535</a>	The study suggests that motor competence can improve psychosocial aspects in adolescents, indicating that its promotion could benefit emotional well-being and participation in physical activities. Strengthening motor competence is presented as an effective strategy to create a healthier and more motivating school environment.	The results of this study showed a remarkable heterogeneity in the psychological constructs studied as predictors of sport performance. This variability indicates opportunities to implement psychological interventions in the early stages of athletes' training, potentially benefiting their integral development.	N = 52 published articles and 19 graduate theses.
7	Del Conde Schneider, E., López Sánchez, C. V., & Velasco Matus, P. W. (2022)	Relationship between Physical Activity and Mental Health Indicators	<a href="https://doi.org/10.2201/fpsi.20074719e.2022.2.452">https://doi.org/10.2201/fpsi.20074719e.2022.2.452</a>	Research in sports psychology is growing, highlighting the influence of psychological constructs on athletes' performance, although there are less explored areas. To address the lack of a compendium, a systematic review of studies on Hispanic American athletes and their relationship with psychological aspects was conducted, using databases such as Proquest, Google Scholar, Redalyc, Scielo, Science Direct, Taylor & Francis and Scopus.	The findings indicate that stress and anxiety are correlated, affecting positive self-esteem and physical and emotional self-concept. Analysis of variance showed significant differences in stress, self-concept and self-esteem between groups, with sedentary youth showing the highest levels of stress and physically active youth reporting higher anxiety.	N = 273 volunteers, between the ages of 18 to 25 years old.
8	Mellado Yañez CS, (2022)	Indicators of post-traumatic stress, suicidal ideation, depression, anxiety and stress in adolescents affected by wildfires.	<a href="https://www.interciencia.net/wp-content/uploads/2022/04/05_6861_Com_Mellado_v47n3_8.pdf">https://www.interciencia.net/wp-content/uploads/2022/04/05_6861_Com_Mellado_v47n3_8.pdf</a>	The aim of this research was to describe the mental health of children and adolescents affected by forest fires in Chile. A quantitative, non-experimental, cross-sectional study was conducted, measuring post-traumatic stress, suicidal ideation, depression, anxiety and stress in 292 adolescents.	The results showed high prevalences of post-traumatic stress, suicidal ideation, anxiety, depression and stress, these disorders being more prevalent in adolescent girls. It is concluded that a significant number of adolescents who experienced the fire present mental health problems, with a greater impact on the female gender.	N= 292/ adolescents between 11 and 19 years old
9	Lema, E. (2024)	Effects of physical activity in adolescents with anxiety disorders: systematic review.	<a href="https://doi.org/10.5281/ZENODO.10525298">https://doi.org/10.5281/ZENODO.10525298</a>	The main purpose of the study was to analyze the influence of physical activity in adolescents with anxiety disorders. A systematic review was carried out following the PRISMA method, using databases such as Google Scholar, Dialnet and Redalyc. From 380 initial documents, 18 articles were selected for analysis after applying inclusion and exclusion criteria.	The study revealed that physical activity not only benefits adolescents, but also people of all ages, by contributing significantly to the reduction of anxiety symptoms and overall improvement of mental health.	N= 380 documents
10	Guerrero-Barona, E., Sánchez-Herrera, S., Sosa-Baltasar, D., & Durán-Vinagre, Y. (2019)	Self-Concept and its Relationship to Emotional Intelligence and Anxiety	<a href="https://www.behavioralpsycho.com/wp-content/uploads/2019/12/06">https://www.behavioralpsycho.com/wp-content/uploads/2019/12/06</a>	This study examines the dimensions of self-concept, emotional intelligence and anxiety in relation to sociodemographic and academic variables in 402 adolescents aged 12 to 19 years. Three instruments were used for data collection: TMMS-24, AF5 and the STAI/STAIC inventory.	The results indicate negative correlations between the dimensions of self-concept and anxiety, suggesting that the higher the self-concept, the lower the anxiety in adolescents. It is recommended to implement intervention programs that improve self-concept through training in emotional and social competencies.	N= 402 adolescents aged 12 to 19 years.
11	Gutiérrez Pastor, I., Quesada Rico, JA, Gutiérrez Pastor, A., Nouni García, R., & Carratalá Munuera, MC (2021)	Depression, anxiety and self-perceived health in medical students: a cross-sectional study.	<a href="https://doi.org/10.6018/edumed.470371">https://doi.org/10.6018/edumed.470371</a>	The study analyzes the mental health of medical students at the Miguel Hernández University, focusing on the prevalence of anxiety and depression during the 2019-20 academic year. Using validated questionnaires, the relationship between these problems and sociodemographic and lifestyle variables is examined.	The results of this study were self-assessed as fair or poor health. Significant associations were identified between mental health and variables such as sex, age, academic year, type of diet, physical activity and consumption of toxic substances. In conclusion, students present a high prevalence of anxiety and depression, with variations according to different factors.	N= 474 students
12	Andreu, J. (2020)	Motivation, social anxiety, physical exercise and academic performance.	<a href="https://recyt.fecyt.es/index.php/JSHR/article/view/80801">https://recyt.fecyt.es/index.php/JSHR/article/view/80801</a>	This study seeks to analyze the relationship between competitiveness, social anxiety, training hours and school performance in male soccer players aged 9 to 15 years, using a questionnaire and specific scales.	The findings indicated that players with better grades present less anxiety and social avoidance. In addition, greater dedication to soccer is related to lower motivation to avoid failure and greater competitiveness.	N= 62 grassroots soccer players (21 juveniles, 19 infantile and 22 cadets)

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13	García-Escalera, J., Valiente, RM, Sandín, B., Ehrenreich-May, J., & Chorot, P. (2020)	The effects of an anxiety and depression prevention program for adolescents on educational and well-being variables.	<a href="https://doi.org/10.1016/j.psycod.2020.05.001">https://doi.org/10.1016/j.psycod.2020.05.001</a>	The intervention carried out in this program consisted of nine weekly sessions led by two psychologists. The results indicated a reduction of academic expectations in the control group, while they were maintained in the experimental group. The implications of these findings are discussed in relation to previous studies and the limitations of the work.	The results indicated a reduction in academic expectations in the control group, while they were maintained in the experimental group. The implications of these findings are discussed in relation to previous studies and the limitations of the work.	N=151 adolescents
14	Chávez, MVM y Rosado, ISM (2023)	Self-perception in mood disorders during adolescence in first-year baccalaureate students.	<a href="https://doi.org/10.23857/dc.v9i3.3451">https://doi.org/10.23857/dc.v9i3.3451</a>	This study investigates how self-perception influences mood disorders in adolescents, considering its relationship with self-esteem. A qualitative approach was used, combining a literature review and anonymous surveys in a controlled sample to collect data.	The results confirmed the relationship between self-perception and mood states, revealing that 60% of the sample experienced symptoms of anxiety, sadness or dissatisfaction related to their physical image.	N= 20 respondents, 12 were female and 8 were male, all 20 respondents were between 15 and 25 years of age. between 15 and 25 years old
15	Patiño Villada, F. A., Arboleda-Serna, V. H., Arango-Vélez, E. F., Botero-Restrepo, S., & Arango-Paternina, C. (2019)	Depression, anxiety, and health-related quality of life in undergraduate physical education and sports students. Physical Education and Sport	<a href="https://doi.org/10.17533/udea.efyd.v38n2a02">https://doi.org/10.17533/udea.efyd.v38n2a02</a>	College education can impact the mental health of students. This study aims to identify levels of depression, anxiety and health-related quality of life in physical education and sports students. A cross-sectional study was conducted with 100 students, assessing depression, anxiety, quality of life, VO2max, waist circumference and sociodemographic variables.	Symptoms of depression and anxiety were detected, although health-related quality of life scores were adequate. In the sample of university students, a prevalence of depression of 22% and anxiety of 10% was found. Health-related quality of life scores ranged from 70 to 100 in different domains.	N= 100 university students.
16	González, J. R., Velázquez Ugalde, L., Velázquez Ugalde, J. M. F., & Peza Cruz, G. (2024)	Influence of physical activity in adolescents with generalized anxiety in the municipality of Querétaro.	<a href="https://revistavitalia.org/index.php/vitalia/article/view/158">https://revistavitalia.org/index.php/vitalia/article/view/158</a>	This study evaluated the impact of physical activity on young people with generalized anxiety in Querétaro, using a quasi-experimental design with eight patients from a psychological clinic.	The results showed that the experimental group reduced their anxiety by 67.86%, while the control group by only 7.14%. The most common symptoms in the experimental group included digestive problems (30%) and tingling sensations and tachycardia (25% each), while the control group reported higher rates of these symptoms.	N= young people from 18 to 21 years old
17	González-Hernández, J., Ato-Gil, N. (2019)	Relationship of personality traits and physical activity with depression in adolescents.	<a href="https://doi.org/10.21134/rpcna.2019.06.14">https://doi.org/10.21134/rpcna.2019.06.14</a>	This study addresses stress and depression in adolescents, highlighting the lack of coping skills. It investigates how physical activity and personality influence depressive symptomatology in 182 Spanish adolescents aged 13 to 18 years. Questionnaires such as the IMUDER and the TCI-R-67 were used, together with sociodemographic and physical activity data.	According to the findings, adolescents with sensation-seeking and curiosity-oriented personality traits, together with a physical activity practice, experience higher levels of eustress. In contrast, those who are cautious and with unclear goals tend to suffer more distress.	N= 182 Spanish adolescents between 13 and 18 years of age.
18	Martínez, J. A., Romero, J., Martínez, W., & Martínez D, J. (2024).	Level of physical activity and self-esteem in tenth grade adolescent students of the institution technical industrial and commercial institution of soledad		This study investigates the relationship between the level of physical activity and self-esteem in tenth grade adolescents in an institution in Soledad. Given the growing interest in healthy lifestyles, young people aged 14 to 17 years were selected, using the International Physical Activity Questionnaire (IPAQ) and the Martinez Reales scale. Physical activity stands out for its benefits on self-esteem.	The study revealed that 85% of adolescent girls and 78% of males in tenth grade in Soledad do not reach the minimum recommended level of physical activity of one hour per day. In addition, it is highlighted that about one-third of females and one-fourth of males overall do not get enough physical activity. Limitations of the study are discussed and areas for future research are suggested.	N= e selected adolescents between 14 and 17 years of age
19	Del Conde Schneider, E., López Sánchez, CV, & Velasco Matus, PW (2022)	Relationship between Physical Activity and Mental Health Indicators	<a href="https://doi.org/10.22201/epsa.20074719e.2022.2.452">https://doi.org/10.22201/epsa.20074719e.2022.2.452</a>	Scientific and technological advances have encouraged inactive lifestyles, exacerbating physical and mental problems, especially during the COVID-19 pandemic. This study investigates the relationship between physical activity and mental health (stress, anxiety, self-concept and self-esteem) in young Mexican adults.	These results suggest that physical activity has a positive impact on mental health, especially on self-esteem and self-concept, but may also increase anxiety in some cases.	N =273 Participants - between 15 and 25 years old.



20	López, L. M. L., Pantoja, V. M. Á., & Miranda, M. A. V. (2020)	Correlation between physical activity and self-esteem in adolescent schoolchildren: a cross-sectional analysis.	<a href="https://revistavirtu.al.unc.edu.co/index.php/RevistaUCN/article/view/1164">https://revistavirtu.al.unc.edu.co/index.php/RevistaUCN/article/view/1164</a>	This study investigated the relationship between physical activity and autonomy in 90 Colombian adolescents (14-17 years old), finding that physical activity generates physical and psychological benefits, while a sedentary lifestyle causes harm to health.	According to the findings obtained, it is necessary to promote physical activity in schools and homes to improve the self-esteem of schoolchildren.  There is a positive and moderate correlation between PA and self-esteem in social, general, home and school dimensions. 50% of the schoolchildren presented low self-esteem due to low PA.	N= 90 schoolchildren, aged between 14 and 17 years old
21	Gómez, N., Daher, S., Vacirca, F., & Ciairano, S. (2012)	Relationship of Sports Activity, Stress, Depression, Health Importance and Depression, Health Importance and Alcohol Use in Bolivian Adolescents	<a href="http://www.scielo.org.bo/scielo.php?script=sci_arttext&amp;pid=S2223-30322012000100006">http://www.scielo.org.bo/scielo.php?script=sci_arttext&amp;pid=S2223-30322012000100006</a>	This study investigated the relationship between physical activity and alcohol consumption, as well as health risk factors such as stress, depression, and general health, in 496 high school students in La Paz, Bolivia, using the Healthy Behavior questionnaire to analyze the association between active and healthy lifestyles in Bolivian youth.	The results indicate that there are gender differences among adolescents in La Paz, highlighting that physical activity acts as a protective factor against risk behaviors, especially in young women.	N = 496 La Paz high school students
22	Montalt García, S., García-Massó, X., & Monfort Torres, G. (2023).	Relationship between physical activity, physical self-perception, healthy lifestyle habits and socioeconomic level in adolescent students.	<a href="https://doi.org/10.47197/retos.v49.97045">https://doi.org/10.47197/retos.v49.97045</a>	This study investigates the relationship between physical self-perception and the practice of physical activity in adolescents, considering other influential factors such as healthy habits and socioeconomic level. Data from 112 adolescents were analyzed, finding relationships between variables, gender differences and profiles of students who practice physical activity, using the Self-Organised Maps (SOM) technique).	The results indicate that there are gender differences among adolescents in La Paz, highlighting that physical activity acts as a protective factor against risk behaviors, especially in young women.	N = 112 adolescents (58 boys and 54 girls)
23	Mamani-Ramos, A. A., Damian-Núñez, E. F., Torres-Cruz, F., Fiestas-Flores, R. C., Quisocala-Ramos, J. A., Galvez, J., & Escarza-Maica, H. A. (2023)	Attitudes and physical self-concept as determinants of physical activity practice.	<a href="https://doi.org/10.6018/cpd.524721">https://doi.org/10.6018/cpd.524721</a>	This study examines the relationship between attitudes, physical self-concept and physical activity practice in 1264 Peruvian adolescents (14-17 years old) from Lima and Callao. The objective is to identify variables that condition physical behavior in adolescence in order to promote a healthier society, analyzing the correlation between attitudes and physical self-concept with the regular practice of physical activity.	The results show a strong correlation between attitudes and physical activity practice (.511) and that 25.1% of the variability in practice is due to changes in attitudes and physical self-concept. In addition, it was found that for each point increase in attitudes or physical self-concept, physical activity practice increases significantly (.894 and .94, respectively). This shows that attitudes and physical self-concept condition the practice of physical activity in adolescents.	N = 1264 schoolchildren between 14 and 17 years of age
24	Maganto Mateo, C., Peris Hernández, M., & Sánchez Cabrero, R. (2019)	Psychological well-being in adolescence: associated and predictor psychological variables.	<a href="https://doi.org/10.30552/ejep.v12i2.279">https://doi.org/10.30552/ejep.v12i2.279</a>	This study analyzes the relationship between psychological well-being and healthy lifestyle habits in 1,075 adolescents (13-18 years). The objectives are: to describe gender and age differences, to analyze correlations between psychological and clinical variables, and to identify predictive variables of psychological well-being. Psychological well-being, life habits, self-esteem, body self-esteem and psychopathological symptoms were assessed by means of scales.	The results reveal that boys and younger adolescents have better life habits and positive personality variables. In addition, it was found that good academic performance, physical exercise, healthy eating, adequate sleep and low substance use are related to greater subjective and psychological well-being.	We worked with 1,075 male and female participants between the ages of 13 and 18.

### Physical activity and its Implications for Mental Health

The practice of physical activity (PA) in humans has a significant impact, since its results contribute to the management and reduction of symptoms associated with anxiety and depression in adolescents. It can be affirmed that PA improves mood, increasing the capacity for adaptation and development in various contexts and situations of daily life that may affect the emotional state of young people. It is important to note that these

benefits do not depend on biological sex. Furthermore, the positive effects of PA are achieved through regularity in its practice (Basantes et al., 2021).

The relationship between PA and mood states related to depression was found to transform adolescents' perception of their emotional difficulties. The practice of physical activity acts on the central nervous system, functioning as an antidepressant. The physical changes and self-acceptance that occur as a result of PA lead to effective improvements in adolescents, including the reaffirmation of self-concept and the planning of goals that, at some point, were affected by depression (Brito et al., 2023).

It is essential to point out that PA also influences cognitive processes, fostering the development of critical thinking in relation to situations they face before engaging in physical activity. This generates cognitive enhancement and becomes a central axis of adolescents' mental habits, allowing for greater subjective clarity and freeing them from emotional burdens. Likewise, PA facilitates sound decision making in the face of specific circumstances (Hernández-Flórez et al., 2022). In addition, the constant practice of PA helps regulate anxiety levels, generating positive changes in biological processes.

### **The Biological, A Bet Articulated to The Physical Activity**

Physical activity contributes to the functioning of the central nervous system by regulating symptoms of anxiety and depression through various mechanisms, including circulatory system responses and cerebral oxygenation processes facilitated by respiration. Importantly, many adolescents facing these difficulties tend to avoid activities that require physical exertion, resulting in a loss of willpower. This is often due to a distortion in their perception of physical exertion, believing that any activity could trigger a crisis without resolving their problems.

From a biological point of view, the practice of physical activity generates electrical impulses that stimulate the neurons to release neurotransmitters, which neurotransmitters, allowing the formation of new neuronal connections. This process helps to improve mood by balancing the levels of serotonin, among other neurotransmitters of serotonin, among other neurotransmitters (Campbell et al., 2022).

The brain continually creates new neuronal interconnections, which organizes and compensates the transmission of information in the central nervous system. Information in the central nervous system. This, in turn, transforms various emotions emotions, behaviors and thoughts. It is important to note that alterations in some neurotransmitters alterations in some neurotransmitters, especially in the transport of serotonin and transport of serotonin and dopamine. It has been shown that physical activity activity has been shown to increase basal levels of fatty acids and tryptophan concentrations concentrations of tryptophan, which in turn can raise serotonin levels and decrease the serotonin levels and decrease the biological symptoms of depression (Hernández-Flórez et al., 2022).

### **Components Psychological Components of Physical Activity**

Physical activity (PA) has been shown, through numerous studies, to have a positive numerous studies, its positive effects on mood, facilitating a more adequate management of emotions. More adequate management of emotions. It also contributes to the regulation of sleep regulation, which translates into better sleep quality. By practicing physical activity, adolescents physical activity, adolescents develop greater security and self-confidence, which helps them feel better in different contexts. Helps them feel better in various contexts. This also improves their confidence in themselves and their environment, favoring the development of psychological well-being structures psychological well-being structures (Polanco et al., 2022).

Adolescence is one of the most complex stages of human development human development. The biological changes that occur during this stage have an impact on the psychological level, especially on impact on the psychological level, especially on self-esteem. In this sense, PA has a significant PA has a significant effect on adolescents' perception of themselves, promoting improvements in self-esteem of themselves, promoting improvements in self-esteem, self-concept and self-image. Body changes can transform the perception of body image, resulting in a greater body image, resulting in greater self-acceptance. These developments allow adolescents to acquire social skills that facilitate their adaptation to daily demands adaptation to daily demands.

In addition, PA improves problem-solving problem-solving skills and helps to cope adequately with difficulties that may arise (Hernández-Flórez, 2003; Hernández-Flórez, 2003).

The benefits of PA are fundamental for adolescents suffering from anxiety and depression. Its effects are significant, promoting homeostasis and contributing to the pursuit of a good quality of life. To the pursuit of a good quality of life. The contributions of PA to psychological psychological well-being are crucial to improve living conditions and reduce symptoms associated with depressive disorders. Symptoms associated with depressive and anxiety disorders. Mental health mental health should be approached from a holistic perspective, taking into account the holistic perception of adolescents, which mental health should be approached from a holistic perspective that considers the integral perception of adolescents, including mental, physical and social elements. This will facilitate their proper insertion into society (Lhoeste et al., 2018).

## **DISCUSSION AND CONCLUSIONS**

This research work has clarified the place of physical activity (PA) in the scientific literature, especially in relation to its influence on adolescents suffering from anxiety and depressive disorders. PA continues to be used as an effective method to reduce and eliminate mental health-related disorders in this age group, promoting interventions that improve their quality of life. The review has identified key elements of PA that generate positive results in depression and anxiety symptoms, as well as in emotional and cognitive skills (Medina-Guillen et al., 2022).

It is essential to emphasize that the practice of AF can help to reduce the symptomatology of anxiety and depression. This is achieved through the identification of risk factors that allow the development of appropriate interventions for each case. In addition, it is possible to determine at what stage of the alteration the adolescent is in, which seeks to promote protective factors that prevent deterioration of mental health. This is crucial to ensure timely and effective care for those adolescents who present a high clinical index that affects their daily activities (Hernández-Flórez et al., 2023).

Hoyos-Cifuentes and Bernal-Torres (2021) suggest that it would be promotion to develop PA programs that act as protective factors for the prevention and promotion of mental health. These programs should not only focus on physical health, but also encompass aspects related to mental health, encouraging the enjoyment of the activity and ensuring the appropriateness of activities according to age and cognitive development. Chávez and Rosado (2023) emphasize that PA is essential to promote physical and mental well-being, as it contributes to the optimal development of self-esteem, self-image and self-concept.

The findings highlight the positive impact of regular physical activity on the mental health of adolescents. This activity not only alleviates the symptoms of anxiety and depression, but also improves mood and the ability to adapt to different also improves mood and the ability to adapt to various daily situations. In addition, the benefits are evident regardless of gender, suggesting that all adolescents are more likely to be suggests that all adolescents can experience improvements in their mental health through this practice.

It is important to note that physical activity transforms adolescents' perception of their emotional difficulties. It works almost like an antidepressant, as it positively influences the central nervous system and promotes self-acceptance. In terms of cognitive development, physical activity not only improves emotional physical activity not only improves the emotional state, but also enhances cognitive processes, allowing cognitive processes, allowing adolescents to confront situations with greater clarity and more clearly and effectively, free of emotional burdens.

In this context, the constant practice of physical activity helps to regulate anxiety levels, which suggests that it may levels of anxiety, which suggests that it can generate significant changes in biological and cognitive biological and cognitive processes that impact mental health. It also It also fosters the reaffirmation of self-concept and goal planning, aspects that are often which are often affected by depression.

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