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Knowledge of Students of the Faculty of Education about Physical Activity and Health

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Abstract

Knowing the importance of physical activity (PA) can be an indicator of health and quality of life. The objective of this study was to measure the level of knowledge on the programs of the Faculty of Educational Sciences (FES) of the students of the University of Tolima about the recommendations of the World Health Organization (WHO) on PA and health. This was an observational and descriptive cross-sectional study, with 321 Colombian university students between 16 and 35 years of age who completed the online questionnaire on PA and health for adults (CUAFYS-A) with demographic data. The CUAFYS-A consists of 13 single-response Likert-type questions, with a high, medium and low measurement scale. The results indicate that females (62.6%) showed a higher knowledge of the questionnaire than males (60.8%), placing both on a medium rating scale. In general, students with higher knowledge were found in the medium scale in Social Sciences (73.2%), Natural Sciences (68.8%), Physical Education (64.7%), Mathematics (57.8%), Spanish (55.3%), and English (53.4%). It is concluded that it can be effective to obtain reference values to know, by means of a questionnaire, how much the university students of the different programs know about the WHO recommendations, as future teachers, and thus increase the interest, relevance and knowledge that can significantly modify health habits and thus improve their health and that of their future students.

Keywords: *questionnaire, physical inactivity, students, overweight, perception.*

Introduction

PA refers to any voluntary body movement that increases energy consumption, such as walking, climbing stairs or pedaling. WHO and the United Nations emphasize the importance of improving infrastructure to open up spaces for people to walk and cycle safely, which increases the amount of energy expended daily (Medellín cómo Vamos, 2017). PA can help maintain a healthy weight and lose weight (Organización Mundial de la Salud, 2021).

Globally, about 27.5% of adults and 81% of adolescents do not meet the 2010 WHO global PA recommendations and there is no improvement in the last 10 years. Furthermore, data show that in almost all countries girls and women are less active than boys and men, and that PA levels vary between higher and lower economic groups, depending on the country and region (Guillot & Serpa, 2020). Levels of inadequate PA

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are particularly high and continue to increase in high-income countries and globally (Guthold et al., 2018).

Today, one in four adults across Europe is physically inactive, as are four out of five adolescents, and if nothing is done to get people moving and being more active in their daily lives, physical inactivity could pose a greater risk to public health in the future than smoking. Physical inactivity goes beyond physical disorders, so it is important to note that one in four Europeans suffers from mental health problems and that the indirect cost of inactivity-related mood and anxiety disorders exceeds 23 billion euros per year (The costs of inactivity in Europe, 2015).

According to data from the latest National Health Surveys, more than one third (35.3%) of people in Spain between 15 and 69 years of age do not reach the level of healthy PA recommended by the WHO. Non-compliance with these recommendations is more frequent in women (37%) than in men (33.5%). Disparities by social class are also greater in the case of women (38.9% in class VI vs. 30.1% in class I), and it is greater in the less affluent social classes (Ministry of Health, n.d.).

Physical Activity (PA) decreases cardiovascular complications of heart disease by 30%, type 2 diabetes by 27% and breast and colon cancer by 25%, among others (Ministry of Health and Social Protection, 2014, p.1). Non-communicable diseases related to lack of physical activity are the main public health problem in most countries of the world and effective public health measures are urgently needed to improve PA in all populations (Prevencionar, 2020).

PA reduces childhood and adult obesity, not only preserves mental health, but also reduces the onset of symptoms such as anxiety and diseases such as depression (Medellín cómo Vamos, 2017). According to the results of the National Survey on the Nutritional Situation in Colombia, the following are the most important indicators of the nutritional situation in Colombia (ENSIN). In 2021, there was a 17.9% increase in overweight adolescents and according to the Family Welfare Institute ICBF, 13.4% of adolescents meet PA recommendations, while males (18.7%) and females (7.6%) do so more (Instituto Colombiano de Bienestar Familiar, 2021). In addition, 76.6% of the country's adolescents spend too much time in front of screens. One in three young people and adults is overweight (37.7%), while one in five is obese (18.7%). In this sense, 56.4% of the population is obese, representing an increase of 5.2 percentage points compared to 2010 (Gobierno presenta Encuesta Nacional de Situación Nutricional de Colombia (ENSIN) 2015, 2023). Obesity is more common in women (22.4%) than in men (14.4%), but approximately half of adults in Colombia perform 150 minutes of moderate PA per week or 75 minutes of intense or strong PA per week, as recommended by the World Health Organization (WHO). Similarly, "four out of ten women and six out of ten men attend this preventive measure" (Ministry of Health and Social Protection, 2017, p. 1). The relationship between exercise and its health benefits is known, however, the loss of PA remains a public health problem, and together with sedentary lifestyles it is harmful to the individual and costly to society as it is accompanied by a simultaneous increase in the number of cardiac pathologies (Pérez, 2008).

PA in leisure time was only practiced by 8.6% between 13 and 17 years of age, and by 5.9% between 18 and 64 years of age in Colombia (Medellín cómo Vamos, 2017). A study published in 2014 concluded that the low prevalence of adherence to PA recommendations for leisure time among women and people of lower socioeconomic status is of concern. Adults of lower socioeconomic status had the lowest prevalence in "leisure time" and the highest prevalence in "use of bicycle as a means of transportation." "Future interventions to increase PA levels should consider inequalities by sex and socioeconomic status, as well as their associated factors in Colombian adults"(González et al., 2014).

Adolescents are one of the population groups that are not given importance to their health needs, bad habits acquired from an early age become serious health problems in adulthood. For this reason, a worrying situation is that they are left aside, and it is carefully observed that they are a group that is exposed to greater risks, in their physical, social and psychological aspects (Organización Panamericana de la Salud. Organización Mundial de la Salud, 2022).

School-based government policies are one way to encourage higher levels of PA among youth. Evaluation of the effects of school-based PA policies shows that these policies can have an impact on health outcomes (Pan American Health Organization, World Health Organization, 2019). Similarly, Cale and Harris recognize that the school is the main organization responsible for promoting PA in children, especially with regard to school physical education, which has been shown to be effective and suggests teachers' efforts to promote PA through physical education programs (Cale and Harris, 2006). In the same vein, schools should include safe, inclusive, and accessible places for youth to participate in physical activities and decrease sedentary practices, which creates a learning environment for all (Pan American Health Organization, World Health Organization, 2019). Increased participation in PA is the result of PA opportunities in schools and high-quality physical education (QPE). According to the United Nations Educational, Scientific, and Cultural Organization, QPE helps students develop the physical, social, and emotional capacities that characterize healthy, resilient, and civically responsible citizens. According to Chinchilla (2002), physical education is constructed on the basis of an educational intervention on and from the body that is mediated by PA, games and sports that have values and meanings specific to each type of civilization and historical period.

The WHO published its recommendations on PA for health, in which it recommends that children and young people aged 5 to 17 years accumulate at least 60 minutes of moderate or intense PA per day. It is essential and urgent to have tools to assess and monitor the amount of information that students and educators have about the WHO recommendations on PA and health, due to the low levels of PA in adolescents recorded by the WHO. With this information, policy makers can implement programs and policies that have an impact on improving effectiveness and increasing PA rates. The importance of schools (teachers) is evident. As stated above, the purpose was to use a CUAFYS-A questionnaire (Moreno-Lavaho et al., 2021) to determine the level of knowledge that students of the Faculty of Education Sciences (FCE) of the University of Tolima (UT) have about the WHO recommendations on PA and health.

Method

Participants

Students were selected from the FCE of the UT of the city of Ibagué, Colombia. A faculty is a subdivision of a university where higher studies specialized in a branch of knowledge are taught. The Faculty of Educational Sciences is made up of 6 undergraduate programs (Bachelor's Degree in Natural Sciences and Environmental Education, in Literature and Spanish Language, in Mathematics, in Physical Education, Recreation and Sports, in Social Sciences and in Foreign Languages with Emphasis in English), with a population of 1934 enrolled students, through a simple random sampling of 321 students between 16 and 35 years old, with a margin of error of 0.05, confidence level of 95 % (CI 95 %). The following inclusion criteria were used: active student of the FCE of the UT, informed consent and completion of the CUAFYS-A questionnaire. Participants were informed of the objectives of the study, their rights, and how to contact the investigator if they had any questions before starting the study. They then answered the questionnaire, which took about 10 minutes. The questionnaire was divided into sections on demographic information, assessments of the participants' perceptions of their PA level, and questions

on PA recommendations and health advice for adolescents. descriptive statistics were performed on the sample.

Methods and instruments

For Hernández et al. (2010), this study is quantitative, non-experimental, descriptive and cross-sectional (Cárdenas de la Mata and Solís, 2019). The CUAFYS-A questionnaire (Moreno-Lavaho et al., 2021) was used for this purpose, consisting of 13 single-response Likert-type questions and has a Cronbach's alpha reliability of 0.74. It also includes demographic questions on age, sex, height, weight, and FCE program and each question contains three possible responses on a Likert scale of 1 to 3, and direct scores range from 13 to 39 on a scale of high, medium and low measure .

Ethic considerations

The research is of minimal risk, according to the categories stipulated by Resolution 8430 of 1993 of the Colombian Ministry of Health (Del Castillo, 2012). It also took into account the 2008 Declaration of Helsinki of the World Medical Association (Mundial, 2001), which promotes the dignity of persons involved in health research and the protection of their welfare. In addition, the study was approved by the Bioethics Committee of the University of Extremadura (66/2020), the respondents read and signed the informed consent form before answering the CUAFYS-A questionnaire.

Statistical analysis

The information was compiled in an Excel spreadsheet and later decoded for statistical analysis with the spss version 26 software, personal data were kept anonymous and in the descriptive data process tables and graphs were generated to present the most significant data. To characterize the total sample, descriptive statistics were calculated for the variables (gender, age, height, physically active and body mass index (BMI). Subsequently, the Kolmogorov-Smirnov test was performed to check the normality of the sample and significant differences between the gender and age groups were analyzed using the nonparametric Mann Whitney U test and the Kruskal Wallis test, respectively. Significance was considered as ($p < 0,05$).

Results

The sample consisted of 321 FCE undergraduate students aged 16 to 35 years; 51.4% of them were male and 48.6% were female. The median age of the sample was 21 years, with a standard deviation of 3.39. Males are superior to females in terms of weight, height and are considered physically more active, and their BMI is lower than that of males, as shown in the sociodemographic characteristics and factor scores in Table 1.

Table 1. Characterization of the Study Sample

		Men N=165 (51,4%)	**Women** N=156 (48,6%)	**Total** N=321	
Age (years)	Media (SD)	21 (3,3)	20 (3,2)	21 (3,3)	<.001*
Weight (kg)	Media (SD)	71.4 (11,4)	59.5 (9,7)	65.6 (12,2)	<.001*
Height cm)	Media (SD)	1.73 (5,7)	1.61 (5,2)	1,68 (12,2)	0.084
Do you consider yourself physically active?	Yes(n/%)	125 (75,8)	74 (47,4)	199 (62)	<.001*
	No (n/%)	40 (24,2)	82 (52,6)	122 (38)	
IMC kg/m2	Media (SD)	23.6 (3,5)	22.9 (3,4)	23.2 (0,1)	

Note: N sample number; SD standard deviation .

According to the Mann-Whitney U test (p*) and Kruskal-Wallis test (p), gender differences were studied in relation to age, weight, height, physical consideration and BMI.

Figure 1 lists the programs and the percentage of students who participated; as can be seen, English and Physical Education had the highest percentage of respondents (22.7% and 21.2%, respectively), while Natural Sciences presented the lowest rate (10.0%).

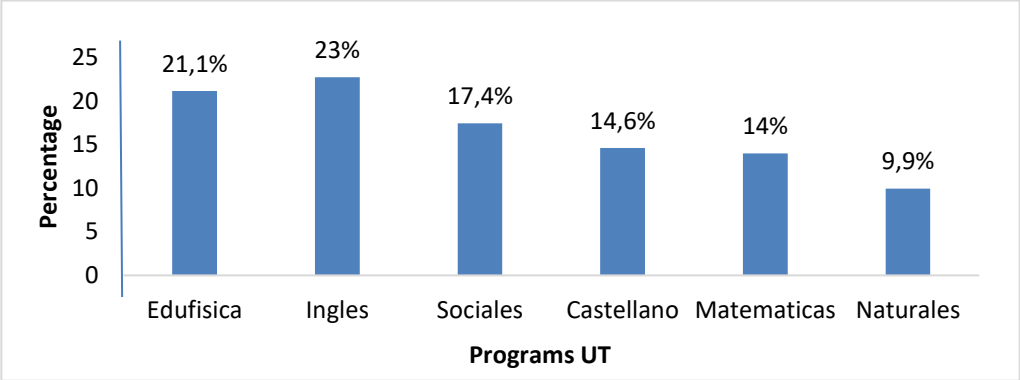

Figure 1

Note: UT Universidad del Tolima

Knowledge level score

Figure 2 shows the scale of measurement: high, medium and low of the CUAFYS-A questionnaire according to their scores, where FCE students are 20% (65) in the high level; 62% (198) medium level and 18% (58) in the low level in the knowledge of the WHO recommendations on PA and Health.

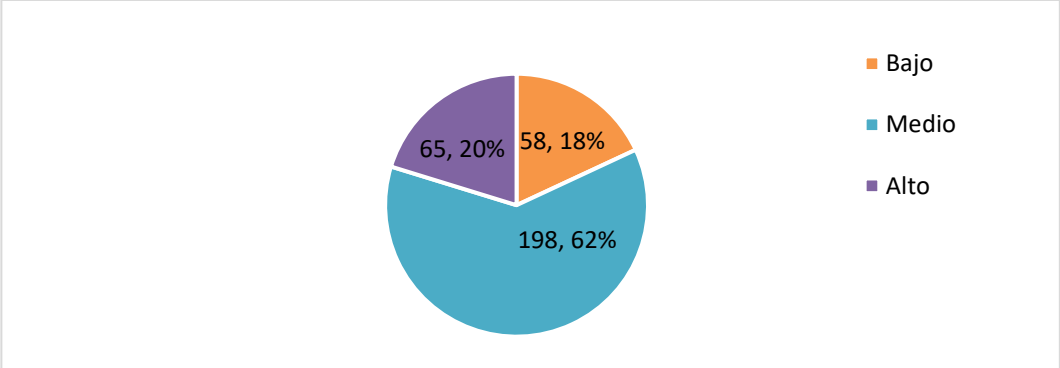

Figure 2 Level of Knowledge of PA and Health in University Students

Table 2 shows the percentage distribution by gender: 21.1% (35) of men and 19.4% (30) of women have a high score, while men and women with 60.8% (101) and 62.6% (97) have a medium score, respectively. Men with 18% present the lowest level of knowledge.

Table 2 Percentage Distribution of PA and Health Knowledge Levels by Gender

	Low	**Average**	**High**	Total
Men (n/%)	30 (18.1)	101 (60.8)	35 (21.1)	166 (100)
Women (n/%)	28 (18)	97 (62.6)	30 (19.4)	155 (100)
Total				321

Note. n/% sample number and percentage

Table 3 shows that the academic programs: social, natural sciences and physical education are the ones that present a medium level of knowledge; no program presents a high level of knowledge about the WHO recommendations on PA and health, which is understandable given that physical education students take PA classes as part of their

curriculum, although they should be the first. Spanish, English and mathematics are the programs with the worst results; the English program had the highest number of respondents, but the lowest level of knowledge.

Table 3 Percentage Distribution of PA and Health Knowledge Level by Program

		Low	Average	High	Total
Physical education	(n/%)	7 (10.3)	44 (64.7)	17 (25)	68 (100)
English	(n/%	20 (27.4)	39 (53.4)	14(19.2)	73 (100)
Social	(n/%)	10 (17.9)	41 (73.2)	5 (8.9)	56 (100)
Spanish	(n/%)	11 (23.4)	26 (55.3)	10 (21.3)	47 (100)
Mathematics	(n/%)	5 (11.1)	26 (57.8)	14(31.1)	45 (100)
Natural Sciences	(n/%)	5 (15.6)	22 (68.8)	5 (15.6)	32 (100)
Total	(n/%)	58 (18.1)	198 (61.7)	65 (20.2)	321 (100)

Note: n/% sample number and percentage

According to Table 4, the age of the level of knowledge is the same in the ranges from 16 to 21 with 61.9% of the respondents, as well as from 22 to 27 years old with 61.8% with an average level of knowledge.

Table 4

Distribution of PA and Health Knowledge Levels by Age		**Bajo**	**Medio**	**Alto**	**Total**
16 - 21 years	(n/%)	39 (19.8)	122 (61.9)	36 (18.3)	197 (100)
22 - 27 years	(n/%)	16 (15.7)	63(61.8)	23(22.5)	102 (100)
28 - 33 years	(n/%)	3 (17.6)	9(52.9)	5(29.4)	17 (100)
34 - 39 years	(n/%)	0 (0.0)	5(100)	0 (0)	5 (100)
Total	(n/%)	58 (18.2)	199 (61.6)	64 (20.1)	321 (100)

Note: n/% sample number and percentage

Students who consider themselves physically active have a high level of knowledge (72.3%), while those who do not consider themselves physically active have a low level of knowledge (60.3%), which means that the level of knowledge is related to the perception of feeling physically active.

Discussion

The objective of the study was to measure the level of knowledge of UT FCE students about the PA and health recommendations of the WHO .

The results of the present study provide significant evidence that the university students who took the CUAFYS-A questionnaire were aware of the WHO recommendations on PA and health. There are no published studies of which we are aware that examine similar traits in this university group and in Colombians.

The general level of knowledge and understanding among respondents of the WHO guidelines on PA and health is near average. Téllez (1998) found that students generally have a rudimentary understanding of the topic, and this study supports that finding. It also supports the low educational potential generated by physical education (Pérez-López y Delgado-Fernández, 2007). In India, emphasis was placed on the low level of PA and health education of students and their ignorance about the spread of communicable diseases (Mahajan and Chunawala, 2009). The main culprit was identified as the way classes were taught, which subtly implicated teachers while highlighting their key role in addressing the problem.

Kahn et al. (2002) mention intervention studies where results similar to those presented above are obtained, with improvements in the level of knowledge of students at the end of the intervention on health and PA (Planas, 1994). Fardy's (1996) stands out among the others because it uses a 50-question multiple-choice questionnaire to assess knowledge. Boys made more progress than girls after 11 weeks of intervention in secondary school based on daily physical education (PE) classes. In this study, males performed better than females on average, with a score of 60.8% vs. 62.6%.

It is worth mentioning that other studies, such as that of Robinson & Godbey, (1993), have found disparities in PA levels between boys and girls. Students' gender will affect how they perceive PA and physical education, as well as their involvement and motor skills, according to Pavón, who found that females are more interested in the healthy aspects of sport while males show greater concern for performance sports (Lores, 2008). This is consistent with the finding of this study that men are more active than women and that men and women had different levels of knowledge and preferences for feeling active. It is clear from our study that women and groups with lower levels of education lag considerably behind in the adoption of this beneficial practice. Their health is almost certainly at risk if their PA is below the threshold (Aragonés et al., 2016).

It could be argued that women have more knowledge about PA and health given the definition of PA, which includes exercise and sport to maintain "physical fitness" and may change according to age (Caspersen et al., 1985). In contrast, men in this study reported higher sport participation and better knowledge, which does not mean that women are more inactive than men. Because of their numerous daily responsibilities and lack of sports participation, women are likely to be more sedentary than men when BMI and perception of one's own activity level are combined.

The WHO reports that men follow PA recommendations more frequently than women. However, given that men show higher levels of knowledge than women, it can be concluded that knowing something does not exempt them from doing it (Medellín, Cómo Vamos, 2017). Most of the students with an average level of knowledge were between 16 and 21 years of age. Females were found to have a higher level of knowledge than males, but males overwhelmingly stated that they were more physically active than females when the relationship between level of knowledge and whether they considered themselves active was examined; similar results were found by González et al. (2014).

This study takes into account and recognizes that schools play a role in promoting physical activity (PA) among adolescents, and that teachers' knowledge needs to be strengthened to more effectively carry out this PA and health promotion (Cale and Harris, 2006).

This is more evident in those with related careers and in different programs, who tend to have less knowledge and dedicate fewer hours per week to PA. Finally, and given that no research dedicated to this topic has been found, our data show that, in the university population, the interaction of factors such as sex, age, perception of PA and the WHO recommendation on PA would give rise to a series of situations that could determine whether students adopt a sedentary or active lifestyle. Given this information, it is the responsibility of institutions to support interventions and programs based on the WHO recommendations on PA and health to implement active lifestyles in this type of population.

Although essential, knowledge alone does not guarantee that a person will act in a way that improves their quality of life. The findings of the study will serve as a sample to size up possible problems in our youth and the effects they could have on our population's transition to adulthood. The current study could be extended to different populations as a follow-up.

Conclusion

The research findings show that UT FCE students have a medium understanding of WHO recommendations on adolescent health and PA. The highest percentage was found at the middle level with 62%. This shows that it is crucial for students to receive training on the subject to improve their knowledge and thus their PA level. Finally, there is very little previous research examining university students' knowledge of health and physical activity.

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Conflict of interest

The authors declare that they have no conflict of interest .

References

Aragonés, M. T., Fernández, P., y Ley Vega de Seoane, V. (2016). Actividad física y prevalencia de patologías en la población española. Ministerio de Educación. https://books.google.com.co/books?hl=es&lr=&id=Il2iDAAAQBAJ&oi=fnd&pg=PP1&dq=Actividad+f%C3%ADsica+y+prevalencia+de+patolog%C3%ADas+en+la+poblaci%C3%B3n+espa%C3%B1ola&ots=c-rTOCbknC&sig=XhAZKYvFZQXSgsdlprX6Pid0PF0&redir_esc=y#v=onepage&q=Actividad%20f%C3%ADsica%20y%20prevalencia%20de%20patolog%C3%ADas%20en%20la%20poblaci%C3%B3n%20espa%C3%B1ola&f=false

Cale, L., y Harris, J. (2006). School-based physical activity interventions: effectiveness, trends, issues, implications and recommendations for practice. Sport, Education and society, 11(4), 401-420. https://www.tandfonline.com/doi/abs/10.1080/13573320600924890

Cárdenas de la Mata, R. M., y Solis, R. M. (2022). Efecto de la ingesta de una bebida de arándano en la dislipidemia de trabajadores del Mercado Central N° 2 Tablada de Lurín, 2022. https://repositorio.ucv.edu.pe/bitstream/handle/20.500.12692/101675/Cardenas_DLMRM-Solis_HRM-SD.pdf?sequence=4&isAllowed=y

Caspersen, C. J., Powell, K. E., y Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. Public health reports, 100(2), 126. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1424733/

Chinchilla, V. J. (2002). Educación física en el proceso de modernización. Lúdica Pedagógica; Vol. 1 No. 7. https://revistas.pedagogica.edu.co/index.php/LP/article/view/1240/2701

Del Castillo, S. E. (2012). La situación nutricional de la niñez en Latinoamérica: entre la deficiencia y el exceso, de brecha nutricional a deuda social. Biomédica, 32(4). https://www.redalyc.org/pdf/843/84324951001.pdf

Gobierno presenta Encuesta Nacional de Situación Nutricional de Colombia (ENSIN) 2015. (2023). https://www.minsalud.gov.co/. https://www.minsalud.gov.co/Paginas/Gobierno-presenta-Encuesta-Nacional-de-Situaci%C3%B3n-Nutricional-de-Colombia-ENSIN-2015.aspx

González, S., Lozano, Ó., y Ramírez, A. (2014). Niveles de actividad física de la población colombiana: desigualdades por sexo y condición socioeconómica. Biomédica, 34(3), 447-459. http://www.scielo.org.co/pdf/bio/v34n3/v34n3a14.pdf

Guillot, C. C., & Serpa, G. R. (2020). Principales pandemias en la historia de la humanidad. Revista Cubana de Pediatría, 92(0), Article 0. https://revpediatria.sld.cu/index.php/ped/article/view/1183

Guthold, R., Stevens, G. A., Riley, L. M., y Bull, F. C. (2018). Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1· 9 million participants. The lancet global health, 6(10), e1077-e1086. https://www.sciencedirect.com/science/article/pii/S2214109X18303577

Hernández, R., Fernández, C., y Baptista. M. (2010). Metodología de la investigación. 5th ed. México: McGraw-Hill.

Instituto Colombiano de Bienestar Familiar. (2021). ENSIN: Encuesta Nacional de Situación Nutricional. https://www.icbf.gov.co/bienestar/nutricion/encuesta-nacional-situacion-nutricional

Lores, A. P., y Murcia, J. A. M. (2008). Actitud de los universitarios ante la práctica físico-deportiva: diferencias por géneros. Revista de psicología del deporte, 17(1), 7-23. https://www.redalyc.org/pdf/2351/235119246001.pdf

Macmillan, A., y Woodcock, J. (2017). Understanding bicycling in cities using system dynamics modelling. Journal of transport & health, 7, 269-279. https://www.sciencedirect.com/sdfe/reader/pii/S2214140516304662/pdf

Mahajan, B. S., y Chunawala, S. (1999). Indian secondary students' understanding of different aspects of health. International Journal of Science Education, 21(11), 1155-1168. https://doi.org/10.1080/095006999290129

McLennan, N., y Thompson, J. (2015). Quality physical education (QPE): Guidelines for policy makers. Unesco Publishing.

Medellín cómo Vamos. (2017, 28 de noviembre). El Ministerio de Salud presentó los resultados de la Encuesta Nacional de Salud y Nutrición 2015. Recuperado: 5/01/2023 de https://www.medellincomovamos.org/el-ministerio-de-salud-presento-los-resultados-de-la-encuesta-nacional-de-salud-y-nutricion-2015

Ministerio de Salud y Protección Social.(2014, 2 de abril). Menos de la Mitad de los Adultos Colombianos Hace Actividad Física. Boletín de Prensa No 101 de 2014. Recuperado: 10/01/2023 de https://www.minsalud.gov.co/Paginas/Menos-de-la-mitad-de-los-adultos-colombianos-hace-actividad-f%C3%ADsica-.aspx

Ministerio de Salud y Protección Social. (2017, 21 de noviembre). Gobierno presenta Encuesta Nacional de Situación Nutricional de Colombia (ENSIN) 2015. Recuperado: 5/01/2023 de https://www.minsalud.gov.co/Paginas/Gobierno-presenta-Encuesta-Nacional-de-Situaci%C3%B3n-Nutricional-de-Colombia-ENSIN-2015.aspx

Ministerio de Sanidad. (s.f.). Encuesta Nacional de Salud de España. Recuperado 25/04/2023 de: https://www.sanidad.gob.es/estadEstudios/estadisticas/encuestaNacional/home.htm

Moreno-Lavaho, S. M., Mendoza-Muñoz, M., Adsuar, J. C., Carlos-Vivas, J., Rojo-Ramos, J., Manzano-Redondo, F., y Pérez-Gómez, J. (2021). Validation of a physical activity and health questionnaire evaluating knowledge of who recommendations among Colombians. International Journal of Environmental Research and Public Health, 18(7), 3526. https://doi.org/10.3390/ijerph18073526

Mundial, A. M. (2001). Declaración de Helsinki de la Asociación Médica Mundial. Principios éticos para las investigaciones médicas en seres humanos. In Anales del Sistema Sanitario de Navarra 24(2),2. https://doi.org/10.23938/ASSN.0522

Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura. (s.f.). ¿Qué es EFC? Recuperado 25/04/2023 de: https://www.unesco.org/es/quality-physical-education

Organización Mundial de la Salud. (2021). Obesidad y sobrepeso. https://www.who.int/es/news-room/fact-sheets/detail/obesity-and-overweight

Organización Mundial de la Salud. (2020). Directrices de la OMS sobre actividad física y hábitos sedentarios. https://apps.who.int/iris/bitstream/handle/10665/337004/9789240014817-spa.pdf?sequence=1&isAllowed=y

Organización Panamericana de la Salud. Organización Mundial de la Salud. (2019). Plan de acción mundial sobre actividad física 2018-2030. Más personas activas para un mundo sano. https://www.paho.org/es/documentos/plan-accion-mundial-sobre-actividad-fisica-2018-2030-mas-personas-activas-para-mundo

Organización Panamericana de la Salud. Organización Mundial de la Salud. (2022). Salud del adolescente. https://www.paho.org/es/temas/salud-adolescente

Pérez, A. B. (2008). Ejercicio, piedra angular de la prevención cardiovascular. Revista española de cardiología, 61(5), 514-28. http://campusvirtual.farmacoterapia-sanidadmadrid.org/CURSOS/logic/Consejeria_sanidad/rcv/valoracion_global/pdf/Ejercicio_RCV_Boraita_RevEspCardio_2008.pdf

Pérez, I. J., y Delgado, M. (2007). Improvement of knowledge, procedures and attitudes of students in Secondary Education after being exposed to an intervention in Physical Education for Health. European Journal of Human Movement, 18, 61-77. http://eurjhm.com/index.php/eurjhm/article/view/178/328

Planas, M. G. (1994). Práctica deportiva y estereotipos de género: Un estudio en la Comunidad Autónoma de la Islas Baleares (CAIB). Revista de Psicología del Deporte, 3(1), 81. https://dialnet.unirioja.es/servlet/articulo?codigo=2940634

Prevencionar. (2020). Inactividad física: Un problema de salud pública mundial. Prevencionar. https://prevencionar.com/2020/03/24/inactividad-fisica-un-problema-de-salud-publica-mundial/

Robinson, J. P., y Godbey, G. (1993). Sport, fitness, and the gender gap. Leisure Sciences, 15(4), 291-307. https://doi.org/10.1080/01490409309513208

Sallis, J., Bull, F., Guthold, R., Heath, G.W., Inoue, S., Kelly, P., et al. (2016). Progress in physical activity over the Olympic quadrennium. Lancet 388:1325–36

Téllez, C. (1998). Preparación teórica: influencia para la mejora de la práctica y formación del alumnado sobre temas relacionados con la actividad física-salud (pp. 115-118). La enseñanza de la Educación Física y el Deporte escolar. Almería.

The Costs of Inactivity in Europe. (2015, 17 de junio). CEBR. https://cebr.com/reports/the-costs-of-inactivity-in-europe/g