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Relationship between empathy in adolescents with different types of physical activity practiced

Relación entre la empatía en la adolescencia con los diferentes tipos de actividad física practicada

青春期同理心与不同类型体育活动的关系

Взаимосвязь между эмпатией в подростковом возрасте и различными видами физической активности

Juan de Dios Benítez-Sillero
University of Córdoba
eo1besij@uco.es
https://orcid.org/0000-0003-1861-291

José Manuel Armada-Crespo
University of Córdoba
m62arcrj@uco.es
https://orcid.org/ 0000-0003-2429-5600

Álvaro Morente-Montero
University of Córdoba
eo1momoa@uco.es
https://orcid.org /0000-0003-1288-9567

Eliana M. Moreno
University of Córdoba
ed2momoe@uco.es
https://orcid.org /0000-0003-3467-5316

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Abstract

This study analyses the relationship between empathy in adolescents and the practice of different types of physical activity.

A total of 727 subjects from two public schools, aged between 12 and 19 years, participated in the study. To assess cognitive and affective empathy, the HIFDS self-report was used and questions from the PAQ-A questionnaire were adapted to obtain data associated with the level and type of physical activity practised. Not only was a statistical analysis and comparison between groups carried out according to gender and physical activity practice, but also, among subgroups according to the physical activity practised.

Female students reported higher levels of affective and cognitive empathy than their male peers. Students who practice artistic physical activities show greater affective and cognitive empathy in comparison with other activities. Likewise, people who practice physical activities show higher values in both empathies compared to "non-practising" people.

In short, adolescents who participate in organised physical activities show greater empathy than their peers who practise free physical activities or do not practise any physical activity, with those of an artistic nature favouring the development of empathy in both dimensions. Furthermore, higher levels of affective and cognitive empathy are observed in female students than in their male peers.

Keywords: physical activity, empathy, adolescents, mental health, psychology.

Resumen

El presente estudio analiza la relación entre la empatía en adolescentes y la práctica de distintos tipos de actividad física.

Participaron 727 sujetos con edades comprendidas entre 12 y 19 años, pertenecientes a dos centros educativos públicos. Para evaluar la empatía cognitiva y afectiva se utilizó el autoinforme HIFDS y se adaptaron preguntas del cuestionario PAQ-A para conocer datos asociados al nivel y tipo de actividad física practicada. Se realizó un análisis estadístico y de comparación entre grupos según el género y la práctica de actividad física, así como entre los subgrupos según la actividad física practicada.

Las alumnas mostraron niveles superiores de empatía afectiva y cognitiva respecto de sus compañeros. El alumnado que practica actividades físicas artísticas muestra mayor empatía afectiva y cognitiva estableciendo comparaciones con otras actividades. Asimismo, las personas que practican actividad física muestran mayores valores en ambos tipos de empatía respecto a las personas "no practicantes".

En definitiva, los y las adolescentes que participan en actividades físicas organizadas muestran mayor empatía que sus compañeros y compañeras que practican actividad física libre o no practican actividad física, siendo las de las de índole artístico favorecedoras del desarrollo de la empatía en ambas dimensiones. Asimismo, se observa niveles más altos de empatía afectiva y cognitiva en las alumnas que en sus compañeros varones.

Palabras clave: actividad física, empatía, adolescentes, salud mental, psicología.

概要

本研究分析了青少年同理心与不同类型体育活动实践之间的关系。

来自两所公立学校的 727 名年龄在 12 至 19 岁之间的受试者参加了本次研究。为了评估认知和情感同理心，我们使用了HIFDS自我报告，并对 PAQ-A 问卷中的问题进行了调整，以获

得与所进行的体育活动水平和类型相关的数据。根据性别和体育活动的实践在组之间以及根据体力活动的亚组之间进行统计和比较分析。

与同龄人相比，女学生表现出更高水平的情感和认知同理心。与从事其他活动的同学比较，从事艺术体育活动的学生表现出更强的情感和认知同理心。同样，与“不锻炼”的人相比，锻炼身体的人在这两种同理心上都表现出更高的价值。

具体来说，参加有组织的体育活动的青少年比参加自由体育活动或不参加体育活动的同龄人表现出更强的同理心，而具有艺术性质的青少年则更倾向于在两个维度上发展同理心。同样，女性学生的情感和认知同理心水平高于男性同龄人。

关键词：体育活动，同理心，青少年，心理健康，心理学.

Аннотация

В данном исследовании анализируется взаимосвязь между эмпатией у подростков и практикой различных видов физической активности.

В исследовании приняли участие 727 испытуемых в возрасте от 12 до 19 лет из двух государственных школ. Для оценки когнитивной и аффективной эмпатии использовался опросник HIFDS, а вопросы из опросника PAQ-A были адаптированы для получения данных, связанных с уровнем и видом физической активности. Был проведен статистический анализ и сравнение между группами в зависимости от пола и практики физической активности, а также между подгруппами в зависимости от практикуемой физической активности.

Студенты женского пола показали более высокий уровень аффективной и когнитивной эмпатии, чем их сверстники мужского пола. Студенты, практикующие художественную физическую деятельность, демонстрируют более высокий уровень аффективной и когнитивной эмпатии по сравнению с другими видами деятельности. Аналогично, люди, практикующие физическую активность, показывают более высокие значения обоих типов эмпатии по сравнению с “непрактикующими” людьми.

Вкратце, подростки, участвующие в организованной физической деятельности, демонстрируют более высокую эмпатию, чем их сверстники, которые практикуют свободную физическую активность или не практикуют физическую активность, причем занятия художественной деятельностью благоприятствуют развитию эмпатии в обоих измерениях. Кроме того, более высокие уровни аффективной и когнитивной эмпатии наблюдаются у студенток, чем у их сверстников мужского пола.

Ключевые слова: физическая активность, эмпатия, подростки, психическое здоровье, психология, психология.

Introduction

Empathy can be defined as a construct related to a subject’s emotional response based on their ability to understand and share the emotions of another person (Marín-López et al., 2019). Marín-López et al. (2019) note that this construct is fundamentally made up of two dimensions: the cognitive dimension, which is responsible for understanding the emotions of others, and the affective dimension, which allows experiencing the emotional of people.

During adolescence, numerous personality changes occur and the development of pro-social and empathic behaviours is enhanced (Jekauc et al., 2017; Silke et al., 2018).

Adolescents with greater empathic competence show a secure attachment relationship with their parents, acceptance and affective experiences, along with a repertoire of behaviours such as help, respect, and compassion, among others (Paez & Rovella, 2019); being empathy a construct that increases with age throughout adolescence (Zabala et al., 2018). Regarding gender, several authors argue that there are differences at this stage, with girls showing greater empathy than boys (Gómez Sánchez et al., 2019; Paez & Rovella, 2019).

In recent years, some studies that address aspects of adolescents' health have begun to develop, which analyse their health in relation to psychology, their emotions, mental health or the prevention of risk behaviours from a more holistic approach. (Lima-Serrano & Lima-Rodríguez, 2014). In this line, recent research has shown positive influences of physical activity on the development of different psychosocial aspects of the adolescent population. Thus, a positive influence of physical activity has been demonstrated on various attributes such as emotional intelligence (Stenseng et al., 2015; Vaquero et al., 2020), positive affection among peers, cognitive and emotional empathy (Mónaco et al., 2017), on prosocial behaviours (Chowhan & Stewart, 2007), as well as on self-concept, social perception, group inclusion and academic outcomes (Martínez & González, 2020) or on adaptability, mood and social relationship building (Vaquero et al., 2020; Vaquero et al., 2018).

Although participation in physical activities and sports can bring psychological or emotional benefits, some authors suggest that mere participation in physical activities or sports does not guarantee the development of these behaviours. Therefore, it is essential that the reference person generates a positive environment in the teams for these behaviours to be cultivated (Gano-Overway, 2014). In physical activity, there is a wide variety of elements that can influence, in one way or another, the psychosocial aspects of the individuals who practice it, for example, the type of physical activity performed, the way it is carried out, the presence or absence of a guide, among other variables.

Free-type physical activity implies that the subject, although he/she may interact with other people, does not follow a routine, neither structured nor scheduled, whereas in organised activities, there is contact with a group and the management of a teacher, monitor or trainer (Benítez-Sillero et al., 2021). Traditionally, the variable participation in physical activity has been studied by referring to that which the person performs in all their free time (Fraguela-Vale et al., 2020), and taking into account physiological variables such as energy consumption, time or intensity of practice. However, other variables such as organisational ones, which may have a more significant impact on certain psychosocial aspects, have not been sufficiently considered (Benítez-Sillero et al., 2021). For instance, depending on gender, it has been observed that boys prefer more competitive physical activities and girls prefer those that are performed more freely and individually, presenting a lower motivation for them (Isorna et al., 2014; Pérez-Soto et al., 2017, Fraguela-Vale et al., 2020). In this sense, adolescents who practice sports activities within the framework of extracurricular activities show higher levels of self-efficacy, prosocial behaviours or social responsibility than those who do other types of activities or do not do extracurricular activities (Carreres-Ponsoda et al., 2012). They also show a higher interpersonal factor of emotional intelligence, including empathy (Amado-Alonso et al., 2019). Despite this, there are still few studies that analyse the relationships among the different types of physical activity according to their characteristics (Castro-Sánchez et al., 2018), highlighting those that make a classification according to their psychomotor and socio-motor characteristics by Parle-

bas (2001). Within the latter, it has been found that athletes who play non-contact sports have a greater ability to identify and value emotions than athletes who play contact sports (Gallardo-Peña et al., 2019). Different studies affirm that adolescents who practice non-contact collective sports are the ones who have the highest levels of self-concept and those who practice individual sports with contact the lowest (Chacón-Cuberos et al., 2020), while athletes in the collective modality with contact are the ones who best manage their emotions (Castro-Sánchez et al., 2018).

Concerning empathy, it has been observed that participation in school and federated sport is related to greater affective empathy (Holt et al., 2012). Empathic responses may even be reduced in competitive out-groups (Richins et al., 2018). In relation to the Physical Education subject, students with greater empathy, especially cognitive empathy, show a more positive attitude towards the subject (Gómez Sánchez et al., 2019).

Taking into account the scarce information in the literature regarding the relationship between participation in different types of physical activities and sports and how these affect the development of empathy in adolescents, the present study hypothesises that subjects involved in physical activities will show greater empathy than those who do not participate in physical activities.

Therefore, the study has the following objectives:

- To analyse the relationship between participation in physical activities and empathy in adolescents.
- To compare empathy according to the degree of organisation and modality of the physical activity practised.

Methods

Design

This is an explanatory, cross-sectional study, where the sample was selected by convenience.

Participants

A total of 727 students participated in the study with an age range of 12 to 19 years with an average age of 14.81 years and a standard deviation of 1.71 years. Of this sample (n=363; 49.9% were girls and n=364; 50.1% were boys. They attended two public schools in Cordoba, Andalusia (Spain), in a medium socio-economic context.

Instruments

Empathy

Empathy was assessed using the *How I Feel in Different Situations Questionnaire* HIFDS (Bonino et al., 1998; Feshbach et al., 1991; Caravita et al., 2009), which uses two different dimensions of empathy: cognitive and affective. The affective one was measured by seven questions about sharing the feelings of others (e.g., when someone tells me

a nice story, I feel as if the story is happening to me), and cognitive empathy was measured by five items describing the understanding of others' feelings (e.g., I can recognise, earlier than many other children, that others' feelings have changed) (Feshbach et al., 1991). Participants were asked to rate the degree of truthfulness of each item using a four-point scale (from 1 = never true to 4 = always true). The internal consistency values of the test were for affective empathy α = .82 and for cognitive empathy α = .87.

Physical Activity

To determine the level of physical activity, two questions were asked. The first of them was based on the first question of the PAQ-A questionnaire (Martínez-Gómez et al., 2009) although it was modified to some extent.

Question 1. Physical activity in your free time: Have you done any activity in the last 7 days (last week)? If yes, how many days have you done them?

Students answer a number from 0 to 7.

Question 2. Do you regularly attend any kind of physical activity classes, sport...? Indicate the type of activity and days of the week.

Students answer with a number from 0 to 7 according to the days of the week they do the activity.

According to the answers to questions 1 and 2, the corresponding values were determined for 2 categories: the first being *leisure-time physical activity*, according to the answer to question 1, and the second one participation in *organised physical activity*, according to the answer to question 2. We can define leisure-time physical activity as that which includes activities practised both freely and organised, while organised physical activity is only that which is repetitive over time, dependent on some club or entity and directed by some person. In both cases, the compulsory school hours of Physical Education of students are not counted.

From the second question, answers were obtained to categorise a new variable, called *type of organised physical activity*, according to the students' ' answers. This third physical activity variable is grouped into the categories presented in table 1 (Benítez-Sillero et al., 2021). This classification does not refer exclusively to regulated or federated competition. It was decided to establish a differential category for "volleyball" and "football" from the rest of the team sports. In the first case because it is a sport without contact with the opponent, and in the second because of the large number of students playing it.

In order to group the *sports modalities* according to their characteristics, the criteria of Parlebas' motor praxiology (2001) were followed according to the communicative logic of the game modalities and the interactions among participants, recently presented by Benítez-Sillero et al. (2021), which are shown in table 1.

Table 1

Definition of the type of organised physical activity practised and their groupings.

Type of actvitiy practised	Definition
0. Not practising	Subjects who do not practice any activity.

Type of actvitiy practised	Definition
1. Individual	Individual activities such as athletics, cycling and swimming.
2. ACO	Activities to improve physical fitness like pilates, Crossfit.
3. Dance	Dance activities.
4.Rhythmic gymnastics	Rhythmic gymnastics sport in individual and group mode
5. Tennis, Badminton	Individual racket sports such as tennis and badminton.
6. Paddel tennis	Racket sports in pairs.
7. Wrestling	Wrestling activities such as karate, judo, kickboxing y boxing.
8. Volleyball	Volleyball team sport
9. Team	Other team sports without including basketball and handball.
10. Football	Football team sport.
Sport modalities groups	Definition and activities considered
Competitiveness	In the activities, there is a confrontation between the participants to overcome each other. The activities considered non-competitive were "Physical conditioning" (ACO) and "dance".
Individual or collective component	It is determined if there is cooperation and motor communication with at least one other subject to achieve the common objective of the essence of the activity. The activities considered as individual were: the individual category (athletics, cycling and swimming), physical fitness, dance, rhythmic gymnastics, tennis, and badminton.
Contact	It is estimated if there is direct body-to-body interaction between the subjects who face each other to achieve different objectives in the activity. The activities with contact were: wrestling, team sports and football.
Opposition	It is determined whether there is a duel situation in which at least two components of the activity have antagonistic goals and interact with each other by establishing a counter-communication. The activities in which there was no opposition were: "individuals", "ACO", "dance" and "rhythmic gymnastics".

Procedure

The present study was conducted after obtaining the respective permissions from the participants' schools, as well as informed consent forms signed by their families. All national and international ethical standards, such as the Helsinki declaration and personal data protection laws, were followed. The project was also approved by the Human Research Ethics Committee of the University of Cordoba (11/12/2019). The participating students were informed of the objective of the study and the anonymous, confidential and voluntary nature of their participation in the study was emphasised.

Data analysis

After an analysis of the normality of the sample with the Kolgomorov-Smirnov test, a non-parametric sample analysis was performed. The Mann-Whitney U test was used to analyse the differences according to sex, free and organised physical activity and according to sex by type of organised physical activity practised. The Kruskal Wallis test was also performed for comparisons according to the type of physical activity practised and an Ad-Hoc analysis using the Mann-Whitney U-test of the subgroups according to sex. The coding and analysis of the data were done with SPSS, version 25. In the Kruskal Wallis comparisons by gender, the paddle tennis category was removed for girls, as there was only one subject and comparison was not possible.

Findings

Firstly, a descriptive analysis of the sample was performed according to gender, with the girls' values being significantly higher (p=.000) in affective empathy (M=2.80: SD=.578) than the boys' (M=2.35: SD=.633) and in cognitive empathy (p=.000), with girls (M=3.12: SD=.609) and boys (M=2.76: SD=.801).

Table 2 shows the results according to the practice of organised activity, with no significant differences overall, but there were significant differences in the differentiation by sex, with affective empathy being higher in boys and cognitive empathy higher in girls. When considering the physical activity carried out in leisure time, this was not sensitive to any significant difference.

Table 2

Results of the empathy dimensions as a function of organised or free physical activity practice

Organised physical activity									
	Total sample			Boys			Girls		
	Not practising n=333	They practice n=394	p	Not practising n=333	They Practicec n=394	p	Not practising n=333	They practice n=394	p
Affective	2.55 (.672)	2.60 (.623)	.239	2.25 (.677)	2.42 (.594)	.014	2.77 (.575)	2.80 (.580)	.302
Cognitive	2.90 (.740)	2.98 (.721)	.148	2.70 (.828)	2.76 (.776)	.476	3.04 (.628)	3.19 (.579)	.019
Fres physical activity									
	Total sample			Boys			Girls		
	Not practising n=203	They practice n=517	p	Not practising N=88	They practice n=271	p	Not practising n=115	They practice n=246	p
Affective	2.57 (.654)	2.58 (.644)	.941	2.32 (.675)	2.36 (.620)	.644	2.77 (.567)	2.82 (.581)	.408
Cognitive	2.90 (.727)	2.96 (.735)	.406	2.71 (.805)	2.78 (.802)	.500	3.05 (.625)	3.15 (.598)	.170

Note. p < .05; Mean (Standard Deviation)

Subsequently, in the analysis according to the *type of organised physical activity* practised with regard to affective empathy (Table 3), the highest levels were found in subjects who practised "rhythmic gymnastics" and "dance", compared to those who did not practise any physical activity, those who practised "individual" sports and those who played "football". Likewise, those who practised "wrestling" sports had lower levels than the ones who practised "dance", "rhythmic gymnastics" or "individual" sports. In the comparisons in each sex between the different subgroups, in the boys, the "wrestling" activity stood out for its lower levels and the differences between those who played "football", with higher levels than the ones who did not practise it. Among the girls, the higher levels of "rhythmic gymnastics" were more prominent than "tennis or badminton", "wrestling" and "football". In the comparisons between each activity group according to gender, girls who "did not practice", those who did "individual", "ACO", "wrestling" and "team" activities showed significantly higher levels than boys in the same type of physical activity.

In relation to cognitive empathy (Table 3), the subjects practising "dance" activities showed higher levels than those who "did not practise", "wrestled " and played "football", whereas those practising "rhythmic gymnastics" had higher levels than those practising "wrestling" sports. In the gender comparisons between the different subgroups, no differences were found between boys and girls, with "rhythmic gymnastics" and "dance" having higher levels than "non-players", "individual" sports and "football" players. However, "individual" sports players show higher values than "football" players. In the comparisons between each activity group according to gender, girls had higher levels in "non-players", "ACO", "volleyball" and "team" sports.

The results are shown below, grouping the sports activities according to their characteristics based on the logic of the game and the interactions of the participants.

When it comes to affective empathy, some differences can be seen according to whether the activity practised involves "contact" or "non-contact" (Table 4). Higher values of affective empathy stand out in subjects who practice non-contact physical activities. Also noteworthy are the differences between the subgroups with "contact" and with "opposition" over the "non-practitioners", the latter showing higher values than the practitioners of modalities with these characteristics, with special relevance in boys. Likewise, in boys, according to the concept of "cooperation" in the activity, the highest values were found in disciplines where "cooperation" and participation were "collective", as is the case with practitioners of "competitive" modalities.

As far as cognitive empathy is concerned, (Table 5) it was also significant, on the whole, in the concepts of "opposition", "contact" and "non-competitiveness" involved in the activities. Differences among practitioners in "non-contact", "non-oppositional" and "non-competitive" disciplines are highlighted over practitioners with "contact" and "oppositional" and over "non-practitioners". In terms of gender, differences were found that were very similiar to those found globally, with no differences found in their peers.

Table 3

ANOVA of total and group comparisons of affective and cognitive empathy. Types of organised physical activity practised

	Affective Empathy										Cognitive Empathy									
	All p =.000			Boys p =.036			Girls p =.441			Boys Vs. Girls	All p =.004			Boys p =.337			Girls p =.040			Boys Vs. Girls
	n	M (DE)	Post-hoc (p)	n	M (DE)	Post-hoc (p)	n	M (DE)	Post-hoc (p)	p	n	M (DE)	Post-hoc (p)	n	M (DE)	Post-hoc (p)	n	M (DE)	Post-hoc (p)	p
Not practising	333	2.55 (.672)	3*	144	2.25 (.677)	10*	189	2.77 (.575)		***	333	2.90 (.740)	3*	144	2.70 (.829)		189	3.04 (.629)	4*, 3**	***
Individual	48	2.74 (.674)	7*	19	2.49 (.717)	7*	29	2.90 (.600)		*	48	3.00 (.601)		19	2.95 (.733)		29	3.03 (.507)	4*, 3*	
ACO	38	2.55 (.601)		21	2.37 (.506)		17	2.76 (.559)		*	38	2.91 (.765)		21	2.61 (.700)		17	3.27 (.696)		**
Dance	47	2.92 (.582)	0*, 7***, 10**	0			47	2.91 (.581)			47	3.31 (.531)	0*, 7*, 10*	0			47	3.31 (.530)	0**, 1* ,10**	
Rhythmic Gimnastics	13	3.04 (.513)	7**	0			13	3.04 (.513)	5*, 7*, 10*		13	3.39 (.436)	7**	0			14	3.39 (.436)	0*, 1*, 10*	
Tennis, badminton,	15	2.42 (.547)		9	2.37 (.594)		6	2.50 (.509)	4*		15	2.89 (.851)		9	2.69 (.917)		6	3.20 (.704)		
Paddel tennis	5	2.71 (.226)		4	2.75 (.244)		1	2.57			5	3.36 (.385)		4	3.25 (.341)		1	3.8		
Wrestling	38	2.24 (.584)	1*, 3*** ,4**	27	2.01 (.535)	1*, 10**,9*	11	2.62 (.543)	4*	**	38	2.72 (.825)	3*, 4**	27	2.615 (.852)		11	2.98 (.543)		
Volleyball	29	2.71 (.570)		2	2.07 (.303)		27	2.76 (.559)			29	3.11 (.571)		2	2.4 (.282)		27	3.16 (.493)	10*	*
Team	39	2.68 (.670)		23	2.50 (.680)	7*	16	2.95 (.578)		*	39	2.94 (.853)		23	2.71 (.902)		16	3.28 (.672)	10*	*
Football	122	2.48 (.578)	3**	114	2.48 (.578)	0*, 4**	8	2.54 (.605)	4*		122	2.85 (.756)	3*	114	2.86 (.766)		8	2.75 (.630)	3** ,8*,4*,9*	

Note. M= Mean; (SD)= Standard Deviation; *p < .05; ***p < .01; ****p < .001

Table 4

Analysis of affective empathy as a function of the characteristics of the physical activity based on the logic of the game and the interactions of the participants.

Affective	Total sample				Boys				Girls			
Subgroup		Inter Group (p)	M (DE)	Intra Groupss (p)	n	Inter Group (p)	M (DE)	Intra Groups (p)	n	Inter Group (p)	M (DE)	Intra Groups (p)
Competition												
0.No practice	333	.056	2.55 (.672)	1*	144	.086	2.25 (.677)	2*	189	.554	2.77 (.575)	
1.Non-competitive	85		2.75 (.615)	0*,2*	21		2.37 (.506)		64		2.88 (.598)	
2.Competitive	309		2.56 (.621)	1*	198		2.42 (.604)	0*	111		2.81 (.573)	
Individual-Collective Cooperation												
0.No practice	333	.773	2.55 (.672)		144	.011	2.25 (.677)	2**	189	.747	2.77 (.575)	
1.Individual	186		2.61 (.649)		76		2.30 (.596)	2*	110		2.84 (.592)	
2.Collective	208		2.59 (.602)		143		2.48 (.586)	1*,0**	65		2.83 (.566)	
Contact												
0.No practice	333	<.001	2.55 (.672)	1**	144	.087	2.25 (.677)	2*	189	.453	2.77 (.575)	
1.No contact	195		2.74 (.611)	0**,2***	55		2.43 (.583)		140		2.86 (.580)	
2.With contact	199		2.47 (.610)	1***	164		2.41 (.633)	0*	35		2.75 (.586)	
Opposition												
0.No practice	333	<.001	2.55 (.672)	1**	144	.086	2.25 (.677)		189	.098	2.77 (.575)	
1.No opposition	146		2.77 (.629)	0**,2***	40		2.43 (.610)	2*	106		2.91 (.586)	
2.Opposition	248		2.50 (.647)	1***	179		2.42 (.593)	1*	69		2.73 (.562)	

Note. Intergroups differences relate the 3 groups and intragroups differences at post-hoc level 2 to 2. M= Mean; (SD)= Standard deviation. *p < .05; ***p < .01; ****p < .001.

Table 5

Analysis of cognitive empathy as a function of physical activity characteristics based on game logic and participant interactions.

Cognitive	Total sample				Boys				Girls			
Subgroup		Inter Group (p)	M (DE)	Intra Groups (p)	n	Inter Group (p)	M (DE)	Intra Groups (p)	n	Inter Group (p)	M (DE)	Intra Groups (p)
Competition												
0.No practice	333	.069	2.55 (.672)	1**	144	.265	2.70 (.829)		189	.011	3.04 (.629)	1**
1.No competition	85		2.75 (.615)	0**,2*	21		2.61 (.700)		64		3.30 (.574)	0**,2*
2.Competitive	309		2.56 (.621)	1*	198		2.81 (.790)		111		3.13 (5.76)	1*
Individual-Collective Cooperation												
0.No pracrice	333	.320	2.88 (.704)		144	.310	2.70 (.829)		189	.079	3.04 (.628)	1*
1.Individual	186		2.99 (.716)		76		2.71 (.788)		110		3.19 (.587)	0*
2.Collective	208		2.95 (.733)		143		2.84 (.633)		65		3.19 (.569)	
Contact												
0.No practice	333	.002	2.90 (.704)	1**	144	.609	2.70 (.829)		189	.034	3.04 (.629)	1**
1.No contact	195		3.10 (.635)	0**,2**	55		2.78 (.733)		140		3.23 (.544)	0**
2.With contact	199		2.85 (.788)	1**	164		2.80 (.801)		35		3.06 (.694)	
Opposition												
0.No practice	333	.010	2.90 (704)	1**	144	.595	2.70 (.829)		189	.039	3.04 (.629)	1*
1.No opposition	146		3.11 (.637)	0**,2*	40		2.77 (.727)		106		3.24 (.551)	0*
2.Opposition	248		2.89 (.764)	1*	179		2.8 (.797)		69		3.13 (.617)	

Note. The intergroup differences relate the 3 groups and the intragoups differences at post-hoc level 2 to 2. M= Mean; (SD)= Standard deviation. *p < .05; ***p < .01; ****p < .001.

Discussion

One of the aims of this study was to examine whether there is any relationship between physical activity practice and levels of empathy in adolescents, more specifically, to find out whether organised versus free physical activity practice makes a difference.

Previous literature shows that empathy levels would be moderated by the gender variable. In general, male adolescents show lower levels of prosocial and empathic behaviours than girls, which could be explained by the influence of social roles and behavioural patterns that have an effect on the learning and expression of expected behaviours for boys and girls (Van der Graaff et al., 2018). In this study, girls were found to obtain higher values than their male peers in both affective and cognitive empathy, coinciding with previous studies (Gómez Sánchez et al., 2019; Páez & Rovella, 2019). This general tendency is maintained when the organised physical activity variable is incorporated. However, it can be seen that boys who practice organised physical activity show greater affective empathy than their peers who do not practice, and girls who practice show greater cognitive empathy than the ones who do not (Gano-Overway, 2014; Mónaco et al., 2017). These differences are not observed when the analyses incorporate free physical activity (Carreres-Ponsoda et al., 2012; Amado-Alonso et al., 2019). Based on these data, it could be understood that there is a relationship between participating in organised physical activities and an improvement in the levels of intragroup empathy, regardless of gender.

In terms of organised physical activities, there are differences between the different types of activities. Firstly, greater affective empathy is observed, with statistically significant differences in girls who practice "rhythmic gymnastics"; in relation to sports such as "tennis or badminton", "wrestling" or "football"; or in "dancing" compared to people who "did not practice" physical activity, "wrestled"" or played "football". This could be related to the artistic component (Martín et al., 2018) and to the gender of people participating in "rhythmic gymnastics" or "dance", all of whom are women, and their higher competence in affective empathy (Gómez Sánchez et al., 2019; Paez & Rovella, 2019). With regard to "wrestling", significant differences can be seen that show less affective empathy with respect to peers who participate in "individual", "dance" or "football" activities; these differences increase when gender is applied as a differentiating factor in "individual", "football" or "team" activities in boys and in "rhythmic gymnastics" in girls. On the other hand, boys who practise "football" show more affective empathy than their peers who indicate "not practising" physical activity. Comparing the physical activities organised according to the gender of the people who indicate "not practising", there is a greater affective empathy in girls than in their peers. A similar trend, although slightly less significant, is observed in "wrestling". In the same way, although with an even lower level of significance, it occurs in "individual" sports, in those who practice "ACO" or in "team" sports (Gómez Sánchez et al., 2019; Paez & Rovella, 2019).

Regarding cognitive empathy, results with similar trends were found for people who do "dance"activities. In this case, a general analysis of the participating population shows that there is greater competence in cognitive empathy in people who practice "dance" compared to people who indicate "no practice" or who "wrestle" " or play "football"; increasing when applying gender as a differential nuance in relation to "football" and incorporating "individual" activities as far as girls are concerned (Martín et al., 2018; Gómez Sánchez et al., 2019; Paez & Rovella, 2019). Concerning "rhythmic gymnastics", greater cognitive empathy is observed with respect to "wrestling" in the

general population, and somewhat in relation to "not practising", "individual" sports or "football". On the other hand, there is greater significance in terms of cognitive empathy in girls who play "volleyball" or do "team" activities compared to their peers who play "football". Girls who play "football" also show less cognitive empathy than their peers who practice "dance" or "rhythmic gymnastics", being these results in line with previous studies (Martín et al., 2018; Gómez Sánchez et al., 2019; Paez & Rovella, 2019).

Considering the groupings of physical activities according to the logic of the game and the interactions between participants (Parlebas 2011, Benítez-Sillero et al., 2021), greater affective empathy is observed in non-contact and non-oppositional activities, in line with previous studies (Gallardo-Peña et al., 2019). By the same token, people who do not practice show higher values in this dimension of empathy than their peers who practice activities "with contact" or "with opposition". On the other hand, higher scores are found for boys who engage in "competitive" or "collective" activities. Although in other contexts it has been shown that competition may not favour empathy (Rusu, 2002), in this case, there are results that indicate that competition has favoured the development of empathy. Both competition and cooperation may be related to the values developed by competitive activity, including cooperation (Gómez Sánchez et al., 2019). Empathy has also been recognised as a precursor of prosociality, with cooperation being found as a dimension of prosocial behaviour (Gómez Tabares & Narváez Marín., 2019).

Conclusions

In the light of the above, it is therefore concluded that adolescents who participate in organised physical activities show greater empathy than their peers who practise free physical activity or do not practise any physical activity. Among the organised physical activities, those of an artistic nature favour the development of empathy in both dimensions. Non-contact, collective and competitive activities promote the development of affective empathy, and non-contact, non-oppositional and non-competitive activities improve cognitive empathy, especially in girls. This analysis, however, needs to be further extended in order to consolidate the results and conclusions obtained.

The limitations of the study lie in the non-random and non-representative choice of the sample. The use of questionnaires may result in bias, although these are voluntary and anonymous. Likewise, when categorising the physical activities, other criteria could have been taken into account, such as less or more competitive and federated involvement, for example, or experience in the practice.

As future work, a longitudinal study of this study is proposed, as well as the design of processes to improve empathy among other positive values by means of intervention designs through physical activity. Future projects could also be developed with more representative samples to confirm the results of the present study.

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