




Article

# Emotional Intelligence and the Practice of Organized Physical-Sport Activity in Children

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**Abstract:** Aim: Taking into account Bar-On's postulations about social-emotional intelligence, the aim of the current work is to find out the differences in the five dimensions of this intelligence between children that practice organized sport and those children that do not practice it at the elementary school level. Method: A randomly selected sample of 940 children from elementary schools, ranging in age from 6 to 12 years old, attending different schools from the Autonomous Community of Extremadura (Spain), was used. Results: The results showed that children who practiced organized sport had better abilities at the intrapersonal and interpersonal level, better adaptability and mood states, and greater emotional intelligence than those who did not. The findings regarding gender and age indicated greater values in girls of emotional intelligence, highlighting the interpersonal dimension, as well as mood state scores, whereas younger children showed greater intrapersonal intelligence and less stress management. Moreover, children who practiced for three or more hours per day had a greater ability to cope with stress than those children who practiced for fewer hours a day. Conclusions: To conclude, it is important to promote federative sport practice in elementary education in order to ensure that children learn to better regulate and manage their emotions.

**Keywords:** emotional intelligence; organized sport; children; elementary education

## 1. Introduction

This research emerged from a curiosity to find out the activities that influence the emotional intelligence developed by children during elementary education. This stage is crucial in the emotional development of children because they are full of emotional energy and they feel the necessity to communicate their feelings and emotions, but lack the skill to control and use adequate resources to communicate in situations concerning their affective needs. Children are still developing their nervous systems, as well as their physiques and personalities, so this potential should be taken advantage of to maximize their capacities and competences [1–3].

In this regard, emotional intelligence makes us aware of our emotions and help us to understand the feelings of others, tolerate pressure, and adopt an empathetic attitude that aids general personal development [4,5]. Bar-On postulates the concept of social-emotional intelligence as competencies, skills, and facilitators that give us, at an emotional and social level, an understanding of our expressions, through the understanding of them in our peers and through daily interactions [6,7]. These competencies and skills were grouped into five dimensions in order to study the social-emotional

dimensions of students [6,7]: intrapersonal (skills for understanding our emotions and communicating them to others), interpersonal (skills for understanding and appreciating others' emotions), stress management (skills for managing and controlling our emotions), adaptability (flexibility and efficacy in solving conflicts), and general mood (skills for keeping a positive attitude in life) [8].

The promotion of emotional education in children should not only be a fundamental aim of formal education, but in all contexts in which children develop, because their feelings of happiness, pride, respect, involvement, etc. are strengthened, as well as self-esteem and confidence, increasing their physical and mental health [9]. Therefore, it is important to take into account other parallel activities, such as extracurricular activities, playing with friends, playing sport, and other types of activity that promote physical and mental mobility, because satisfactory participation in such activities aids the general welfare of children [10].

Of these activities that run parallel to the educational domain, and which may promote emotional intelligence at early childhood, this work focuses on the practice of organized physical-sport activity. Firstly, this is because it has benefits from an integral perspective (physical, cognitive, and psychosocial) [11]. At a physical level, several studies have shown that it is essential in order to maintain a style of life that ensures population health and reduces the risk of a great number of chronic diseases [12–14]. At a cognitive level, it is closely related to academic performance in children and adolescents [15,16]. At a psychosocial level, physical activity is associated with emotional development [17–19]. Secondly, the practice of organized physical-sport activity represents a method for personal improvement and increasing relatedness, so both intrapersonal and interpersonal elements have a direct application [20]. The knowledge of oneself, the self-regulation of emotions, self-motivation, social skills, and empathy are tools that every athlete manages to a greater or lesser extent, and these aspects are all associated to a greater or lesser extent with emotional intelligence [21,22]. Furthermore, when talking about sport at a competitive level, where training and competitive achievement are rewarded, the elements previously indicated are intensified. The exigencies and demands on competence are greater than physical activity practice, and some aspects, such as professionalism, excellence, pressure, and personal aspirations, start to be very important. Therefore, it is necessary to learn how to positively manage emotions to reduce potential negative influences on decision-making and performance [21,23]. In accordance with this, as was indicated by [24], several researchers have studied emotional intelligence associated with sport through such concepts as eating disorder [25], precompetitive anxiety [26,27], motivational climate, motivational orientation, and psychological welfare [28]. Other studies have attempted to show the importance that control over emotions has for the practice of physical-sport activity [23,29–32], revealing in their results that emotional intelligence and the practice of sport are closely related. However, taking into account the aforementioned skills and competencies developed with organized physical-sport activity, no study so far has attempted to observe the relationships between the practice of this type of physical activity and the dimensions of emotional intelligence.

Thus, the aim of this study was to find out the differences in the five dimensions of social-emotional intelligence between children that practice organized physical-sport activity and those that do not during their elementary education, because it is important to observe whether any of these dimensions increase when children play sport or compete outside of the curricular time. With the aim of obtaining more information, we set out to analyze the effect of the age and gender of the participants. Furthermore, the work aims to test whether the numbers of hours of daily sporting practice (by those children that play competitive sport), and gender, could cause differences in any of these dimensions with the purpose of studying the reasons and incidence later.

## 2. Materials and Methods

The current research was done with a quantitative methodology and a cross-sectional design. The study was conducted between the months of May and July in 2018.

## 2.1. Participants

A total of 940 students in elementary education, both males (N = 508) and females (N = 432), ranging in age from 6 to 12 years old (M = 9.97; SD = 1.64), participated in the study. Individuals belonged to eight public schools of Extremadura (Spain), which promoted the practice of organized team sports of moderate intensity (e.g., basketball, football, handball, volleyball), from the first and second levels (6–8 years, N = 216), third and fourth levels (8–10 years, N = 304), and fifth and sixth levels (10–12 years, N = 420) of elementary education. The selection of the sample was conducted through multistage sampling by conglomerate and random selection in the schools with different groups in the previously indicated levels within elementary education. There were no drop-outs. Regarding the sample selection, it is important to note that the Spanish education system is structured in different stages and levels of learning. The stage of elementary education comprises six academic courses that include children ranging in age from 6 to 12 years old. The main aims of this stage are to achieve autonomy to perform in the following areas: talking, reading, writing, and mental calculations [33]. On the other hand, at the cognitive development level in the stage of 6 years old, there is the beginning of a new intellectual phase and this supposes a crucial step in cognitive development, where the unstable and subjective character of thought changes and improves so that thinking has greater stability and coherence [34]. Therefore, from an educative and a cognitive development point of view, the stage from 6 to 12 years old is very homogeneous.

## 2.2. Instruments

Emotional intelligence. “Emotional Quotient Inventory: Young Version (EQ-i: YV)” [5], validated in Spanish [8], was used to measure emotional intelligence in children in elementary education. This instrument has 60 items that compose the global factor entitled “emotional intelligence”, divided into five dimensions: intrapersonal (6 items: emotional self-awareness, assertiveness, personal respect, self-performance, independence), interpersonal (12 items: interpersonal relationships, social responsibility, empathy), coping with stress (12 items: tolerance to stress, control of the impetus), adaptability (10 items: problems resolving, evaluation of reality, flexibility), and mood state (14 items: happiness, optimism). These dimensions are formed by a defined set of 60 items, as well as six items that composed a scale of positive impressions, created by the author with the aim of assessing the degree that individuals answered randomly or distorted their responses, regarding the effect of social desirability. Responses were rated on a 4-point Likert scale, including 1 (never), 2 (sometimes), 3 (hardly ever), and 4 (always). The instrument showed adequate internal consistency for the total number items that composed the global factor of emotional intelligence, with a Cronbach Alpha of 0.84, as was previously indicated by other authors [5,35] Cronbach Alpha indexes ( $\alpha = 0.84$ ) and the compound reliability (FC = 0.80) showed the adequate final global reliability of the EQ-i: YV, with an extracted median variance (VME) of 0.50. Moreover, the dimensions of factors of the questionnaire had an acceptable reliability and VME  $\geq 0.50$  (Intrapersonal ( $\alpha = 0.67$ , FC = 0.82, VME = 0.50); Interpersonal ( $\alpha = 0.70$ , FC = 0.90, VME = 0.56); Coping with stress ( $\alpha = 0.69$ , FC = 0.87, VME = 0.56); Adaptability ( $\alpha = 0.73$ , FC = 0.88, VME = 0.54); Mood state ( $\alpha = 0.72$ , FC = 0.91, VME = 0.57).

Practice of organized physical-sport activity. The practice of organized physical-sport activity was assessed in terms of affiliated practice, due to the commitment and assiduousness it requires [36]. Federative sport is a form of competitive sport that is institutionalized, recognized, performed within the norms and rules of a federation, and is undertaken in accordance with official training and competition [37]. To measure this variable, a question was created: Do you train or compete? This was answered on a dichotomy scale (Yes/No). This was followed by a question about the quantity of daily practice hours: How many hours do you practice daily? This was divided into two levels: up to 2 h daily, or 3 or more hours daily. The division into these two levels was mainly due to the age of the children, with the aim of simplifying the range of responses to ensure the understanding of participants. Therefore, a daily frequency of practice of 2 h per day would be considered typical, when

referring to physical activity in sporting federative practice, where there is a minimum of demands, and more than 3 h daily would be considered to be very specialized practice.

### 2.3. Procedure

This study was approved by the Bioethics and Biosafety Committee of the University of Extremadura (N. 0063/2018). All participants were treated in agreement with the ethical guidelines of the American Psychological Association with respect to consent, confidentiality, and anonymity of answers. Before carrying out the research study, all potential participants were informed about the process that they were going to follow, placing emphasis on the fact that participation was voluntary and that the data would be dealt with in a confidential manner. Moreover, informed written consent was obtained from parents and the head teachers of the schools on behalf of the child participants involved in the study.

A protocol was developed with the aim of ensuring similarity in data collection. Firstly, different schools were contacted, explaining the reason for their selection, and an appointment was made with the head of the school, with the purpose of clarifying any doubts about aims, time, and levels that may be involved in the research. After acceptance of the proposal, the head of the school established an appointment with the supervisors and a date for data collection was set. Furthermore, an informed consent form was sent to all participants to be filled in by their parents or legal guardians, authorizing their participation in this research, due to the fact that the participants were children aged from 6 to 12 years old.

Before the collective administration of the questionnaire in the dates set, the main researcher briefly explained the procedure, as well as the instructions for completing the questionnaires, informing all participants in the study that the data were anonymous and confidential. The duration of the data collection was 30–40 min per class, where the main researcher was always in the class to clarify any queries that might arise during the process.

After data collection had been performed for every classroom, a brief informal interview with supervisors was conducted, to indicate aspects or strange variables to take into account for some students, as well as an interview with the head of school when the process was finished, with the aim of thanking them and explaining the process of making the data available should they desire.

### 2.4. Data Analysis

Data analysis was quantitative. The IBM statistical programme SPSS 21.0 was used for data analysis. To begin with, we used the Kolmogorov–Smirnov test to verify the fit of the data to a theoretical distribution of normality, the Rachas test for randomness, and Levene's test for the homoscedasticity or equality between variances (findings:  $p > 0.05$  for all measurements). The nature of the data was verified as being parametric, so parametric tests were chosen to be applied during the data analysis. After transforming the item scores that are negatively written (6, 15, 21, 26, 28, 33, 37, 46, 49, 53, 54, 58) of the EQ-i YV questionnaire, an analysis of the descriptive statistics of the variables was conducted, showing the mean and standard deviation of all of them. To analyze the effect of practicing or not practicing organized physical-sport activities, gender, and age on emotional intelligence, a multivariate analysis of variance (MANOVA) was developed. To find out whether they train or compete outside of the curricular time, a dichotomous scale question (Yes/No) was asked. Lastly, with the aim of finding out, within the group of children that participated in physical activity, the differences between the levels of emotional intelligence regarding the hours of sporting practice (divided into two groups: up to 2 h/3 or more hours), a new MANOVA was conducted, controlling for the gender effect.

## 3. Results

Firstly, the means and standard deviations obtained in the questionnaire EQ-i: YV are shown according to gender and age (Table 1) and whether or not organized physical-sport activities are practiced (training or competition outside curricular time, Yes/No) (Table 2).

**Table 1.** Mean and standard deviation of the Emotional Quotient Inventory: Young Version (EQ-i: YV) regarding age and gender.

EQ-i: YV	Level	Total					
		Female		Male		Total	
		M	SD	M	SD	M	SD
F1 Intrapersonal	1st	17.20	3.24	16.85	2.85	17.03	3.05
	2nd	14.50	3.34	14.82	3.47	14.66	3.40
	3rd	14.69	3.34	14.22	3.36	14.41	3.36
	Total	15.26	3.50	14.96	3.44	15.10	3.47
F2 Interpersonal	1st	39.94	4.18	38.88	4.31	39.41	4.27
	2nd	39.66	4.88	38.54	5.62	39.10	5.29
	3rd	39.16	4.87	37.89	5.35	38.41	5.19
	Total	39.79	4.75	38.51	5.28	39.09	5.08
F3 Coping with stress	1st	27.40	4.94	29.16	6.22	27.40	4.94
	2nd	33.41	6.35	33.60	5.93	33.41	6.35
	3rd	32.80	5.37	32.26	6.00	32.80	5.37
	Total	31.65	6.15	32.01	6.22	31.65	6.15
F4 Adaptability	1st	29.32	4.37	30.69	4.86	30.51	4.62
	2nd	29.63	4.50	30.70	5.27	30.17	4.92
	3rd	28.18	4.66	29.09	5.02	28.72	4.89
	Total	29.49	4.69	29.91	5.12	29.72	4.93
F5 Mood State	1st	49.71	5.08	47.23	4.33	48.48	4.87
	2nd	48.62	5.82	47.92	6.19	48.27	6.01
	3rd	47.35	5.83	47.15	5.80	47.23	5.81
	Total	48.65	5.78	47.61	5.66	48.08	5.74
Total score	1st	164.58	11.79	162.81	13.48	163.70	12.70
	2nd	165.82	17.55	165.58	18.48	165.70	18.00
	3rd	162.18	16.03	160.60	17.35	161.25	16.82
	Total	164.83	15.78	163.00	17.10	163.84	16.53

1st =First and second levels (6–8 years); 2nd =Third and fourth levels (8–10 years); 3rd= Fifth and sixth levels (10–12 years).

**Table 2.** Mean and standard deviation of the EQ-i: YV regarding whether or not organized physical-sport activities are practiced.

EQ-i: YV	Level	Train or Compete											
		Yes						No					
		Female		Male		Total		Female		Male		Total	
M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
F1 Intrapersonal	1st	18.56	2.30	16.91	2.99	17.60	2.83	16.37	3.45	16.78	2.71	16.54	3.16
	2nd	14.96	3.32	14.91	3.64	14.93	3.51	13.93	3.30	14.54	2.83	14.14	3.15
	3rd	14.75	3.25	14.22	3.43	14.41	3.37	14.60	3.49	14.23	3.21	14.42	3.34
	Total	15.52	3.43	14.88	3.55	15.13	3.52	14.96	3.55	15.14	3.16	15.04	3.39
F2 Interpersonal	1st	40.93	3.87	39.90	3.86	40.32	3.88	39.34	4.28	37.67	4.55	38.64	4.45
	2nd	40.18	5.10	38.97	5.36	39.47	5.27	39.03	4.55	37.06	6.29	38.36	5.26
	3rd	38.99	4.69	37.99	5.34	38.35	5.13	39.41	5.14	37.63	5.42	38.54	5.33
	Total	39.96	4.81	38.79	5.22	39.24	5.10	39.59	4.68	37.84	5.38	38.85	5.05
F3 Coping with stress	1st	28.44	4.90	28.88	5.77	28.70	5.40	26.76	4.89	29.49	6.76	27.91	5.88
	2nd	33.22	6.32	33.40	6.04	33.32	6.15	33.65	6.42	34.29	5.56	33.86	6.12
	3rd	32.74	5.50	32.40	5.92	32.52	5.76	32.88	5.21	31.85	6.24	32.38	5.74
	Total	32.13	5.96	32.16	6.11	32.15	6.05	31.12	6.33	31.64	6.48	31.34	6.39
F4 Adaptability	1st	31.15	3.83	31.21	4.60	31.60	4.30	29.82	4.62	29.08	5.14	29.51	4.84
	2nd	30.42	4.67	31.45	4.74	30.02	4.73	28.66	4.10	28.17	6.17	28.50	4.88
	3rd	28.11	4.87	29.43	4.86	28.96	4.90	28.29	4.36	28.12	5.37	28.21	4.86
	Total	29.70	4.86	30.39	4.86	30.12	4.87	29.25	4.48	28.78	5.53	29.05	4.95
F5 Mood State	1st	50.61	7.26	48.03	3.63	49.10	5.55	49.16	3.02	46.29	4.91	47.95	4.16
	2nd	49.31	4.87	48.53	5.76	48.85	5.41	47.78	6.74	45.86	7.17	47.13	6.92
	3rd	47.62	5.19	47.65	5.53	47.64	5.40	46.94	6.69	45.74	6.34	46.35	6.52
	Total	48.97	5.68	48.17	5.37	48.48	5.50	48.29	5.90	46.28	6.12	47.43	6.07
Total score	1st	169.68	9.93	164.93	11.50	166.31	11.19	161.46	11.81	159.31	15.24	160.55	13.35
	2nd	168.10	16.90	167.25	17.85	167.60	17.42	163.04	18.05	159.91	19.71	161.98	18.59
	3rd	162.22	15.66	161.69	17.54	161.88	16.86	162.13	16.67	157.57	16.56	159.90	16.71
	Total	166.29	15.74	164.38	17.00	165.12	16.53	163.21	15.71	159.68	16.95	161.71	16.32

1st =First and second levels (6–8 years); 2nd = Third and fourth levels (8–10 years) 3rd= Fifth and sixth levels (10–12 years).

In order to analyze the effect of practicing or not practicing organized physical-sport activities, gender, and age on emotional intelligence, a multivariate analysis of variance (MANOVA) was developed.

The MANOVA revealed significant multivariate main effects of gender (Wilks  $\lambda = 0.96$ ,  $F(5, 918) = 7.43$ ,  $p < 0.001$ ,  $\eta = 0.04$ ), age (Wilks  $\lambda = 0.77$ ,  $F(10, 1836) = 25.99$ ,  $p < 0.001$ ,  $\eta = 0.12$ ), whether or not physical activity is practiced (Wilks  $\lambda = 0.97$ ,  $F(5, 918) = 5.59$ ,  $p < 0.001$ ,  $\eta = 0.03$ ), and the gender/age interaction (Wilks  $\lambda = 0.98$ ,  $F(10, 1584) = 1.86$ ,  $p = 0.05$ ,  $\eta = 0.01$ ).

The univariate contrasts show that those who practice physical-sport activities obtain significantly higher scores with small effect sizes in the factors: intrapersonal ( $F(1, 922) = 7.41$ ,  $p = 0.01$ ,  $\eta = 0.01$ ), interpersonal ( $F(1, 922) = 10.05$ ,  $p = 0.002$ ,  $\eta = 0.01$ ), adaptability ( $F(1, 922) = 17.44$ ,  $p < 0.001$ ,  $\eta = 0.19$ ), mood state ( $F(1, 922) = 17.04$ ,  $p < 0.001$ ,  $\eta = 0.18$ ), and in the total score ( $F(1, 922) = 17.61$ ,  $p < 0.001$ ,  $\eta = 0.19$ ), but there was not a significant main effect in stress management ( $F(1, 922) = 0.004$ ,  $p = 0.95$ ,  $\eta < 0.001$ ).

In relation to gender, univariate contrasts indicate that girls obtain significantly higher scores with small effect sizes in the factors: interpersonal ( $F(1, 922) = 16.25$ ,  $p < 0.001$ ,  $\eta = 0.02$ ), mood state ( $F(1, 922) = 14.88$ ,  $p < 0.001$ ,  $\eta = 0.16$ ), and in the total score ( $F(1, 922) = 17.61$ ,  $p = 0.02$ ,  $\eta = 0.01$ ).

Age univariate contrasts show a significant main effect of age with large effect sizes on the factors: intrapersonal ( $F(2, 922) = 50.30$ ,  $p < 0.001$ ,  $\eta = 0.10$ ) and stress management ( $F(1, 922) = 49.80$ ,  $p < 0.001$ ,  $\eta = 0.10$ ). Bonferroni's pairwise comparisons reveal that younger people achieve higher scores ( $p \leq 0.05$ ) in the intrapersonal factor and lower scores in stress management than the rest.

Regarding gender/age interaction, the univariate contrast did not indicate significant effects ( $p \leq 0.05$ ).

In order to analyze the effect of the number of hours of sports practice on the scores in the EQ-i: YV (Table 3), a MANOVA was carried out, controlling for the effect of gender.

**Table 3.** Mean and standard deviation of the EQ-i: YV regarding the number of hours of sports practice and gender.

EQ-i: YV	3 or more hours						Up to 2 h					
	Female		Male		Total		Female		Male		Total	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
F1 Intrapersonal	15.47	3.46	14.84	3.52	15.08	3.51	15.83	3.25	15.28	3.79	15.50	3.57
F2 Interpersonal	40.19	4.82	38.59	5.17	39.20	5.09	37.92	4.25	40.58	5.33	39.52	5.06
F3 Coping with stress	32.53	5.97	32.15	6.05	32.30	6.02	29.13	4.74	31.72	6.96	30.68	6.25
F4 Adaptability	29.67	4.81	30.36	4.72	30.09	4.77	29.29	5.16	30.67	5.99	30.12	5.67
F5 Mood State	49.19	5.69	48.18	5.26	48.57	5.45	46.88	5.23	48.14	6.21	47.63	5.82
Total score	167.04	15.81	164.12	16.71	165.24	16.42	159.04	13.52	166.39	19.11	163.45	17.35

The MANOVA only revealed significant multivariate main effects in the interaction number of practice hours/gender (Wilks  $\lambda = 0.98$ ,  $F(5, 576) = 2.73$ ,  $p = 0.02$ ,  $\eta = 0.97$ ), whereas there was not any main effect of the number of hours of practice (Wilks  $\lambda = 0.99$ ,  $F(5, 576) = 2.73$ ,  $p = 0.14$ ,  $\eta = 0.01$ ), nor were there differences in gender (Wilks  $\lambda = 0.99$ ,  $F(5, 576) = 1.45$ ,  $p = 0.20$ ,  $\eta = 0.01$ ).

The univariate contrasts show that those who practice physical-sports activities during 3 or more hours obtained significantly higher scores with small effect sizes in the stress management factor ( $F(1, 580) = 5.21$ ,  $p = 0.02$ ,  $\eta = 0.01$ ).

In addition, in the interaction number of practice/gender hours there is a significant main effect and small effect sizes in the interpersonal factor ( $F(1, 580) = 9.28$ ,  $p = 0.002$ ,  $\eta = 0.02$ ), and in the total score ( $F(1, 580) = 5.21$ ,  $p = 0.02$ ,  $\eta = 0.01$ ). In this regard, both in the interpersonal factor and in the total score, Bonferroni's pairwise comparisons show that, among those who practice more hours of sport, it is the girls who achieve higher scores ( $p \leq 0.05$ ), and among those who practice fewer hours, it is the boys who have higher values ( $p \leq 0.05$ ).



#### 4. Discussion

The main aim of this study was to find out the differences in the five dimensions of social-emotional intelligence between children that practice organized physical-sport activity and those that do not at the elementary education level, observing the effect of participants' age and gender. In accordance with this aim, the results showed that children who practiced organized sport had better abilities at the intrapersonal and interpersonal level, had better adaptability and mood states, and were more emotionally intelligent than those who did not. Previous studies have also shown that those individuals that practice organized physical-sport activity revealed greater levels of emotional intelligence [23,30,38,39].

Specifically regarding intrapersonal, interpersonal, and adaptability factors, physical activity and sport require children to continuously adapt to different situations and practice contexts, which aids flexibility in conflict resolution and teaches them to manage and control emotions with themselves and with others [23,30,38,39]. Children that exercise these dimensions through physical activity and sport are more emotionally intelligent, which has been associated with better personal and social adjustment [40], and important variables, such as self-esteem and welfare [41]. Hence, the management of emotions is fundamental for evaluative development, as people with greater emotional intelligence not only have a greater capacity to perceive, understand, and regulate emotions, but are also able to generalize personal welfare, and so develop their social, family, and private relationships [42].

Regarding mood state, understood as a skill for enjoying life, integrating at the same time happiness and optimism, Bar-On considers it to be the most important dimension of emotional intelligence because, apart from being an essential element of interaction with others, it is a motivational tool in problem resolution and tolerance of stress [4,5]. Regarding this issue, the practice of physical activity and sport was shown to aid the mood state of children, because they experience more motivation, interest, satisfaction, self-esteem, and improvement in different situations, both in sport and in life in general [43–45].

In this regard, the results found on the basis of gender showed that girls had greater emotional intelligence than boys, highlighting the interpersonal and mood state dimensions. These results have already been shown over the years, since it has been considered that since childhood, women are more emotionally competent due to a socialization that is more linked to feelings and emotions [46–48]; there is even evidence that certain areas of the brain, dedicated to emotional processing, may be larger in women than in men [48–51]. In addition, as they pointed out [50], at the interpersonal level, it has been suggested that girls show a greater understanding of emotions, as well as they tend to show greater ability in certain interpersonal skills: they recognize emotions better in others and are more perceptive and empathic [52–54].

With respect to age, younger participants showed greater intrapersonal intelligence and less stress management. These results are similar to those found in children of similar ages [55], in which younger children show greater self-understanding of themselves, the ability to be assertive and to visualize themselves, and a lower tolerance to stress and control of impulses.

On the other hand, and complementary to the main aim of the work, another purpose of the research was to examine whether there were differences in some dimensions of emotional intelligence in those children that played federative sport, with respect to the amount of daily sporting practice. The results showed that children who practiced for 3 or more hours per day had a greater ability to cope with stress than those children who practiced for fewer hours a day. These results suggest that, as the number of daily hours of federative practice increases, the ability to cope with stress increases too. These outcomes might be caused by the fact that being exposed to federative sporting practice with a higher frequency, characterized by the exigencies of professionalism, excellence, pressure, and continuous improvement, causes greater stress or anxiety [56–58], and people who are exposed in a greater number of situations to these stimuli and are forced to overcome them and face anxiety could develop greater abilities to cope with stress, as is postulated in the existing theories about anxiety.

After performing the study, certain limitations that have arisen must be taken into account. The main limitation of the study was the refusal of several schools to participate in the study, and therefore, with their participation we could have covered a greater number of schools and participants. Another problem emerged in the data collection; significant help was needed by researchers and teachers to guide, orientate, and involve participants in responding. The issue is that most of the schools belonged to rural places and included a great number of foreign children who have emigrated with their family from other countries. This was associated with a low academic level respecting the reading and comprehension of the questionnaires written in Spanish, leading to some missing data.

With the aim to mitigate these limitations, in the future we will rely on the commitment that responsible teachers of each classroom have to work with those foreign children that require a translation or interpretation of the questionnaires. Hence, data collection would take a longer time but we could guarantee that the study will include all children that constitute the current reality of elementary education. Furthermore, another interesting prospect for a future study would be to add another variable to this work and extend the sample, studying the relationship between physical activity, sport practice, and cognitive intelligence at the different levels of elementary education. Thus, we could assess whether physical activity and sport practice positively promote academic performance in children, and later we would extend these results to the entire sample with the aim of showing that sport practice is not incompatible with the academic context, but, on the contrary, is compatible and beneficial.

As a strength of this study, it should be noted that there have been many studies that have found relationships between emotional intelligence and sports, but there is a lack of scientific literature in relation to the characteristics and frequency of such sports practice. Therefore, this paper has investigated the characteristics of organized sport practice: personal knowledge, improvement, and aspirations; exigencies and demands on competence; professionalism; excellence; and pressure, and how this type of practice causes children to develop greater knowledge of self, self-regulation of emotions, self-motivation, social skills, and empathy, skills that are linked to emotional intelligence. In addition, we would like to emphasize that we used validated instruments for this study, which makes it possible to replicate this research with other groups.

## 5. Conclusions

The main conclusion of the current research is that emotional intelligence is related to the practice of federative physical activity and sport outside of the curricular time in elementary education. Specifically, children who practiced sport showed better emotional intelligence at the intrapersonal and interpersonal level, greater adaptability, and a better mood state than those individuals that did not practice organized sport. Moreover, another conclusion to emphasize is that a high number of daily hours of physical activity and sport (3 or more hours a day), when it refers to training and competition, is associated with a higher ability to cope with stress compared to those participants that practiced less hours.

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## References

1. Agnoli, S.; Mancini, G.; Pozzoli, T.; Baldaro, B.; Russo, P.M.; Surcinelli, P. The interaction between emotional intelligence and cognitive ability in predicting scholastic performance in school-aged children. *Pers. Individ. Differ.* **2012**, *53*, 660–665. [[CrossRef](#)]



2. Hansenne, M.; Legrand, J. Creativity, emotional intelligence, and school performance in children. *Int. J. Educ. Res.* **2012**, *53*, 264–268. [[CrossRef](#)]
3. Torrente, C.; Rivers, S.E.; Brackett, M.A. Teaching Emotional Intelligence in Schools: An Evidence-Based Approach. In *Psychosocial Skills and School Systems in the 21st Century*; Springer International Publishing: Cham, Switzerland, 2016; pp. 325–346.
4. Bar-On, R. *The Bar-On Emotional Quotient Inventory (EQ-i): A Test of Emotional Intelligence*; Multi-Health Systems: Toronto, ON, Canada, 1997.
5. Bar-On, R.; Parker, J.D. *Bar-On Emotional Quotient Inventory: Youth Version*; Technical Manual; Multi-Health Systems: New York, NY, USA, 2000.
6. Bar-On, R. Emotional and social intelligence: Insights from the Emotional Quotient Inventory (EQi). In *Handbook of Emotional Intelligence: Theory, Development, Assessment and Application at Home, School and in the Workplace*; Bar-On, R., Parker, J.D., Eds.; Jossey-Bass: San Francisco, CA, USA, 2000; pp. 363–388.
7. Bar-On, R. The Bar-On model of emotional-social intelligence (ESI). *Psicothema* **2006**, *18*, 13–25.
8. Ferrándiz, C.; Hernández, D.; Berjemo, R.; Ferrando, M.; Sáinz, M. Social and emotional intelligence in childhood and adolescence: Spanish validation of a measurement instrument. *J. Psychodidactics* **2012**, *17*, 309–338. [[CrossRef](#)]
9. Lyubomirsky, S. *The How of Happiness: A Scientific Approach to Getting the Life you Want*; Penguin Press: New York, NY, USA, 2008.
10. Bhullar, N.; Schutte, N.S.; Malouff, J.M. The nature of well-being: The roles of hedonic and eudaimonic processes and trait emotional intelligence. *J. Psychol.* **2013**, *147*, 1–16. [[CrossRef](#)] [[PubMed](#)]
11. Amado, D.; Mendo, S.; León, B.; Mirabel, M.; Iglesias, D. Multidimensional self-concept in elementary education: Sport practice and gender. *Sustainability* **2018**, *10*, 2805. [[CrossRef](#)]
12. Katzmarzyk, P.T.; Barreira, T.V.; Broyles, S.T.; Champagne, C.M.; Chaput, J.P.; Fogelholm, M.; Lambert, E.V. Physical activity, sedentary time, and obesity in an international sample of children. *Med. Sci. Sports Exerc.* **2015**, *47*, 2062–2069. [[CrossRef](#)]
13. Lin, Y.Y.; Rau, K.M.; Lin, C.C. Longitudinal study on the impact of physical activity on the symptoms of lung cancer survivors. *Support Care Cancer* **2015**, *23*, 3545–3553. [[CrossRef](#)]
14. Ten Hoor, G.A.; Plasqui, G.; Rutter, R.A.; Kremers, S.P.; Rutten, G.M.; Schols, A.M.; Kok, G. A new direction in Psychology and Health: Resistance exercise training for obese children and adolescents. *Psychol. Health* **2016**, *31*, 1–8. [[CrossRef](#)]
15. Gligoroska, J.P.; Manchevska, S. The effect of physical activity on cognition-physiological mechanisms. *Mater. Sociomed.* **2012**, *24*, 198–202. [[CrossRef](#)]
16. Singh, A.; Uijtdewilligen, L.; Twisk, J.W.; Van Mechelen, W.; Chinapaw, M.J. Physical activity and performance at school: A systematic review of the literature including a methodological quality assessment. *Arch. Pediatr. Adolesc. Med.* **2012**, *166*, 49–55. [[CrossRef](#)]
17. Hogan, C.L.; Catalino, L.I.; Mata, J.; Fredrickson, B.L. Beyond emotional benefits: Physical activity and sedentary behaviour affect psychosocial resources through emotions. *Psychol. Health* **2015**, *30*, 354–369. [[CrossRef](#)]
18. Stenseng, F.; Forest, J.; Curran, T. Positive emotions in recreational sport activities: The role of passion and belongingness. *J. Happiness Stud.* **2015**, *16*, 1117–1129. [[CrossRef](#)]
19. Wichers, M.; Peeters, F.; Rutten, B.P.; Jacobs, N.; Derom, C.; Thiery, E.; van Os, J. A time-lagged momentary assessment study on daily life physical activity and affect. *Health Psychol.* **2012**, *31*, 135. [[CrossRef](#)]
20. Mendo, S.; Polo, M.I.; Amado, D.; Iglesias, D.; León, B. Self-concept in childhood: The role of body image and sport practice. *Front. Psychol.* **2017**, *8*, 853. [[CrossRef](#)]
21. Ros, A.; Moya-Faz, F.J.; Garcés de los Fayos, E.J. Emotional intelligence and sport: Current state of research. *Cuad. Psicol. Dep.* **2013**, *13*, 105–112.
22. Sevdalis, V.; Raab, M. Empathy in sports, exercise, and the performing arts. *Psychol. Sport Exerc.* **2014**, *15*, 173–179. [[CrossRef](#)]
23. Laborde, S.; Lautenbach, F.; Allen, M.S.; Herbert, C.; Achtzehn, S. The role of trait emotional intelligence in emotion regulation and performance under pressure. *Pers. Individ. Differ.* **2014**, *57*, 43–47. [[CrossRef](#)]
24. Arruza, J.A.; González, O.; Palacios, M.; Arribas, S.; Telletxea, S. Model aimed at measuring perceived emotional intelligence in sporting contexts. *Rev. Psicol. Dep.* **2013**, *22*, 405–413.

25. Costarelli, V.; Stamou, D. Emotional intelligence, body image and disordered eating attitudes in combat sport athletes. *J. Exerc. Sci. Fit.* **2009**, *7*, 104–111. [[CrossRef](#)]
26. Lane, A.M.; Thelwell, R.C.; Lowther, J.; Devonport, T.J. Emotional intelligence and psychological skills use among athletes. *Soc. Behav. Pers.* **2009**, *37*, 195–201. [[CrossRef](#)]
27. Lu, F.J.; Li, G.S.F.; Hsu, E.Y.W.; Williams, L. Relationship between athletes' emotional intelligence and precompetitive anxiety. *Percept. Mot. Skills* **2010**, *110*, 323–338. [[CrossRef](#)]
28. Núñez, J.L.; León, J.; Martín-Albo, J.; González, V. Propuesta de un modelo explicativo del bienestar psicológico en el contexto deportivo. *Rev. Psicol. Dep.* **2011**, *20*, 0223–242.
29. Eaton, B. Game play: Developing emotional intelligence through sport. *Independence* **2015**, *40*, 64–66.
30. Laborde, S.; Dosseville, F.; Allen, M.S. Emotional intelligence in sport and exercise: A systematic review. *Scand. J. Med. Sci. Sports* **2015**, *26*, 862–874. [[CrossRef](#)]
31. Laborde, S.; Dosseville, F.; Guillén, F.; Chávez, E. Validity of the trait emotional intelligence questionnaire in sports and its links with performance satisfaction. *Psychol. Sport Exerc.* **2014**, *15*, 481–490. [[CrossRef](#)]
32. Lane, A.M.; Devonport, T.J.; Soos, I.; Karsai, I.; Leibinger, E.; Hamar, P. Emotional intelligence and emotions associated with optimal and dysfunctional athletic performance. *J. Sports Sci. Med.* **2010**, *9*, 388–392.
33. Ley Orgánica Española 2/2006, de 3 de mayo, de Educación. (Boletín Oficial del Estado núm. 106, de 4 de mayo de 2006). Available online: <https://www.boe.es/buscar/pdf/2006/BOE-A-2006-7899-consolidado.pdf> (accessed on 10 January 2019).
34. Piaget, J. *The Psychology of Intelligence*; International Universities Press: New York, NY, USA, 1950.
35. Parker, J.D.; Creque, R.E.; Barnhart, D.L.; Harris, J.I.; Majeski, S.A.; Wood, L.M.; Hogan, M.J. Academic achievement in high school: Does emotional intelligence matter? *Pers. Individ. Differ.* **2004**, *37*, 1321–1330. [[CrossRef](#)]
36. Isoma, M.; Rial, A.; Vaquero-Cristóbal, R. Motivaciones para la práctica deportiva en escolares federados y no federados. *Retos* **2014**, *11*, 80–84.
37. Burriel, J.C.; Camps, A.; Carretero, J.L.; Landaberea, J.A.; Montes, V. *Manual de la Organización Institucional del Deporte*; Paidotribo: Madrid, Spain, 2006.
38. Coe, D.P.; Pivarnik, J.M.; Womack, C.J.; Reeves, M.J.; Malina, R.M. Effect of physical education and activity levels on academic achievement in children. *Med. Sci. Sports Exerc.* **2006**, *38*, 1515. [[CrossRef](#)]
39. Tomporowski, P.D.; Lambourne, K.; Okumura, M.S. Physical activity interventions and children's mental function: An introduction and overview. *Prev. Med.* **2011**, *52*, S3–S9. [[CrossRef](#)] [[PubMed](#)]
40. Mayer, J.D.; Roberts, R.D.; Barsade, S.G. Human abilities: Emotional intelligence. *Annu. Rev. Psychol.* **2008**, *59*, 507–536. [[CrossRef](#)]
41. Brackett, M.A.; Mayer, J.D. Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. *Pers. Soc. Psychol. Bull.* **2003**, *29*, 1147–1158. [[CrossRef](#)] [[PubMed](#)]
42. Salguero, J.M.; Fernández-Berrocal, P.; Ruiz-Aranda, D.; Castillo, R.; Palomera, R. Inteligencia emocional y ajuste psicosocial en la adolescencia: El papel de la percepción emocional. *Eur. J. Educ. Psychol.* **2015**, *4*, 143–152. [[CrossRef](#)]
43. Babic, M.J.; Morgan, P.J.; Plotnikoff, R.C.; Lonsdale, C.; White, R.L.; Lubans, D.R. Physical activity and physical self-concept in youth: Systematic review and meta-analysis. *Sports Med.* **2014**, *44*, 1589–1601. [[CrossRef](#)] [[PubMed](#)]
44. Solanki, D.; Lane, A.M. Relationships between exercise as a mood regulation strategy and trait emotional intelligence. *Asian J. Sports Med.* **2010**, *1*, 195. [[CrossRef](#)]
45. Sebire, S.J.; Jago, R.; Fox, K.R.; Edwards, M.J.; Thompson, J.L. Testing a self-determination theory model of children's physical activity motivation: A cross-sectional study. *Int. J. Behav. Nutr. Phys. Act.* **2013**, *10*, 1. [[CrossRef](#)]
46. Feldman Barret, L.; Lane, R.D.; Sechrest, L.; Schwartz, G.E. Sex differences in Emotional Awareness. *Pers. Soc. Psychol. Bull.* **2000**, *26*, 1027–1035. [[CrossRef](#)]
47. Garaigordobil, M.; de Galdeano, P.G. Empathy in 10 to 12 Year-Old Children. *Psicothema* **2006**, *18*, 180–186. [[PubMed](#)]
48. Núñez, M.T.S.; Fernández-Berrocal, P.; Rodríguez, J.M.; Postigo, J.M.L. ¿Es la inteligencia emocional una cuestión de género? Socialización de las competencias emocionales en hombres y mujeres y sus implicaciones. *Electron. J. Res. Educ. Psychol.* **2017**, *6*, 455–474. [[CrossRef](#)]

49. Baron-Cohen, S. *The Essential Difference: Men, Women and the Extreme Male Brain*; Allen Lane: London, UK, 2003.
50. Baron-Cohen, S. The essential difference: The male and female brain. *Phi. Kappa Phi. Forum* **2005**, *85*, 22–26.
51. Gur, R.C.; Gunning-Dixon, F.; Bilker, W.B.; Gur, R.E. Sex differences in temporo-limbic and frontal brain volumes of healthy adults. *Cerebral Cortex* **2002**, *12*, 998–1003. [[CrossRef](#)]
52. Hargie, O.; Saunders, C.; Dickson, O. *Social Skills in Interpersonal Communication*; Routledge: London, UK, 1995.
53. Tapia, M.; Marsh, G.E., II. The effects of sex and grade-point average on emotional intelligence. *Psicothema* **2006**, *18*, 108–111.
54. Trobst, K.K.; Collins, R.L.; Embree, J.M. The role of emotion in social support provision: Gender, empathy and expression of distress. *J. Soc. Pers. Relat.* **1994**, *11*, 45–62. [[CrossRef](#)]
55. Ugarriza, N.; Pajares, L. La evaluación de la inteligencia emocional a través del inventario de BarOn ICE: NA, en una muestra de niños y adolescentes. *Persona* **2005**, *8*, 11–58. [[CrossRef](#)]
56. Elliott, D.; Polman, R.; Taylor, J. The effects of relaxing music for anxiety control on competitive sport anxiety. *Eur. J. Sport Sci.* **2014**, *14*, S296–S301. [[CrossRef](#)]
57. Nicholls, A.R.; Polman, R.C.; Levy, A.R. A path analysis of stress appraisals, emotions, coping, and performance satisfaction among athletes. *Psychol. Sport Exerc.* **2012**, *13*, 263–270. [[CrossRef](#)]
58. Scott-Hamilton, J.; Schutte, N.S.; Brown, R.F. Effects of a Mindfulness Intervention on Sports-Anxiety, Pessimism, and Flow in Competitive Cyclists. *Appl. Psychol. Health Well Being* **2016**, *8*, 85–103. [[CrossRef](#)]



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