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Comparison of motor competence of children that practice athletics with children that practice other sports

Comparación de la competencia motriz de niños que practican atletismo con niños que practican otros deportes

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Abstract. The present study aimed to compare the Motor Competence (MC) of 10 years-old children practicing athletics with that of children who practice other sports, as determined by the KTK test. KTK is a gross motor coordination test centered on locomotor and postural components. Sixty-four children were evaluated, 30 female (15 Athletics: 10.4±0.23 years old, 2.5±1.13 years of practice; 15 Other Sports: 10.4±0.32 years old, 2.8±0.92 years of practice) and 34 male (17 Athletics: 10.3±0.22 years old, 2.1±0.88 years of practice; 17 Other Sports: 10.4±0.29 years old, 3.7±0.59 years of practice). After checking for normality of the data, One-way ANOVA was used to examine differences between groups. The results revealed that boys who practiced athletics [MQ= 113.5±13.8; raw scores (RS) = 255.1±24.1] presented better results for MC ($p<0.001$) than those who practiced other sports [MQ= 94.3±17.0; RS = 199.7±23.5]. The same happened with girls, since girls who practice Athletics (MQ =114.7±10.24; RS = 262.4±22.8) present better results of MC ($p<0.001$) than the ones that practice other sports (MQMC = 89.1±10.89; RS = 203,8±36.2). In the former case, the results are even more relevant because there were significant differences ($p<0.001$) in the years of practice favoring boys that practice other sports [3.7±0.59 vs 2.1±0.88]. It is speculated that athletics favors the development of MC, possibly due to the type of training that is performed.
Keywords: Athletics; Children; Motor Competence; KTK Test; Gross Motor Coordination

Resumen. El presente estudio tuvo como objetivo comparar la Competencia Motriz (CM) de niños de 10 años que practican atletismo con la de niños que practican otros deportes, determinada por el test KTK. El KTK es una prueba de coordinación motora gruesa centrada en los componentes locomotoras y postural. Se evaluaron 64 niños, 30 de sexo femenino (15 atletas: 10,4±0,23 años, 2,5±1,13 años de práctica; 15 Otros Deportes: 10,4±0,32 años, 2,8±0,92 años de práctica) y 34 varones (17 Atletismo: 10,3±0,22 años, 2,1±0,88 años de práctica; 17 Otros Deportes: 10,4±0,29 años, 3,7±0,59 años de práctica). Tras comprobar la normalidad de los datos, se utilizó el ANOVA de una vía para examinar las diferencias entre los grupos. Los resultados revelaron que los chicos que practicaban atletismo [MQ= 113,5±13,8; puntuaciones brutas (RS) = 255,1±24,1] presentaban mejores resultados para MC ($p<0,001$) que los que practicaban otros deportes [MQ= 94,3±17,0; RS = 199,7±23,5]. Lo mismo ocurrió con las chicas, ya que las que practican Atletismo (MQ =114,7±10,24; RS = 262,4±22,8) presentan mejores resultados de MC ($p<0,001$) que las que practican otros deportes (MQMC = 89,1±10,89; RS = 203,8±36,2). En el primer caso, los resultados son aún más relevantes porque hubo diferencias significativas ($p<0,001$) en los años de práctica favoreciendo a los chicos que practican otros deportes [3,7±0,59 vs 2,1±0,88]. Se especula que el atletismo favorece el desarrollo de MC, posiblemente debido al tipo de entrenamiento que se realiza.
Palabras clave: Atletismo; Niños; Competencia motriz; Test KTK**;** competencia motriz

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Introduction

The practice of physical activity is a protective factor against the main health-related problems, such as cardiovascular diseases, type 2 diabetes and obesity (Spessato et al., 2013), contributing in the short and long term to the improvement of bone, muscle and psychological health of children and adolescents (Piola et al., 2018) and influencing on competence related to performance in various sports (Flôres et al., 2020; Piola et al., 2018) Some studies indicate that high levels of physical activity have an influence on body mass index (BMI), which will have implications for overall motor performance (Marta et al., 2012; Sola et al., 2010), because the development of MC, due to its dynamic interaction with physical activity, so it is necessary to understand its relationship with weight status (Cumilef-Bustamante et al., 2023). Other studies have reported that children who demonstrate poor performance in motor skills often have lower levels of fitness and that levels of MC in sedentary children have also decreased in recent decades (Hardy et al., 2013; Kelly, 2005; Spessato et al., 2013; Vandorpe et al., 2011).

Athletics is a sport for everyone and life, considering that it is possible to walk, run, jump, and throw everywhere (Federação Portuguesa de Atletismo, 2014). It consists of numerous disciplines ranging from speed to endurance races, jumps, and throws. At the youth level (6 to 15-16 years old), a multidisciplinary approach is conducted to provide young athletes with the greatest possible number of experiences, training in several disciplines, and situations that will help them, later, in their specialization. In the first years of practice, especially between 6 and 11 years of age, it is sought that the approach of the sport is based on games, without forgetting the more technical aspects, or, rather, on the fundamental skills of running, jumping, and throwing. According to Stodden et al. (2008), if children cannot proficiently run, jump, catch, and throw (Barnett et al., 2010; Goodway et al., 2010; Hardy et al., 2010), they will have limited opportunities to engage in physical activities later in their lives because they will not have the prerequisite skills to be active.

Based on this approach, the Athletics Portuguese

Federation has encouraged clubs and athletics associations to promote the Kids' Athletics program, launched in 2002 by the International Amateur of Athletic Federation (IAAF), currently World Athletics (WA), which aims to address the fundamental skills with game progressions, respecting children's developmental stages and needs. In early childhood, children begin to learn a group of motor skills known as fundamental motor skills (FMS), which can help overcome a potential proficiency barrier to promote advanced learning of more complex transitional skills and sports skills (Brauner & Valentini, 2009; Costa et al., 2021). The FMS is composed of locomotor, stability, and object control skills (Clark, 2005; Stodden et al., 2008). Locomotor skills are used to propel a human body through space (e.g., running, jumping, hopping), and object control skills include manipulating an object in action situations (e.g., throwing, catching, kicking) (Costa et al., 2021; Foweather et al., 2008; Holfelder & Schott, 2014; Lubans et al., 2010). MC of object control skills in childhood may be key during the transition into adolescence to promote successful learning experiences of more complex motor skills required for sports and leisure activities (Barnett et al., 2009a), which inherently include variations in object control skills (Gallahue & Ozmun, 2006).

Thus, it is extremely important to consider foundational FMS when structuring practice for learning transitional skills and specific sports skills (Costa et al., 2021), because MC in FMS may help to learn additional sports skills independent of the practice schedule (Brian et al., 2020; Costa et al., 2021). In this sense, to better understand the concept of MC of children and youth and its connection with Physical Activity, several authors (PA) (Brian et al., 2019; D'Hondt et al., 2011; Lopes et al., 2020; Queiroz et al., 2014; Utesch et al., 2019; Zancanaro et al., 2021) have focused on the study of this subject MC is a globally understood term that describes the level at which children can execute FMS, which are basic gross movements used throughout the lifespan for activities of daily living and physically demanding pursuits (Haywood & Getchell, 2009; True et al., 2017), and has been seen as an underlying mechanism potentially driving PA and health-related fitness (Brian et al., 2019) or the proficiency of an individual's execution of motor skills, as well as the underlying mechanisms, including quality of movement and motor coordination (Utesch et al., 2019).This philosophy has revolutionized the entire athletics universe and has been a challenge for all experts and coaches, because a model underpinned by this foundation can provide all the necessary components for the more harmonious development that is expected.

There is a growing awareness that MC should improve over time because of consistent developmentally appropriate experiences that consider the child, the task, and the environment (Brian et al., 2019). The application of tests to determine the MC of children and youth in athletics can play a very important role, as it can help in the work developed in the training of young athletes.

Reliable and validated tools are required to assess the impact of these types of interventions. Thus, several test batteries have been built, such as the Movement Assessment Battery for Children (MABC) (Henderson et al., 2007) and Körperkoordinationstest Für Kinder (KTK) (Kiphard & Schilling, 1974) and Motor Competence Assessment (MCA) (Luz et al., 2016), and the Test of Gross Motor Development (TGMD) (Ulrich, 1985), among others, aimed primarily to evaluate gross motor competence (GMC), an important element for evaluating and monitoring the development of children and youth.

As one of the commonly batteries to assess MC, in the present study, we will use the KTK to evaluate the MC of children.

Several studies (Barnett et al., 2009b; Coppens et al., 2021; Drenowatz, 2021; Fransen et al., 2014; Henrique et al., 2016; Robinson et al., 2015; Salin et al., 2021; Vandorpe et al., 2012) have found a positive association between sports participation and MC. Henrique et al. (2016) and Coppens et al. (2021) raised the question of whether it would make any difference in the type of sports children play in their MC. It is often assumed (Barnett et al., 2011; Stodden et al., 2014) that sports that rely mostly on object control, such as football or basketball, provide more affordances for both object control and locomotor skill enhancement, in contrast with sports that are mainly locomotor-oriented, such as running or swimming.

Concerning gender, girls tend to show lower levels of global MC, object control, and manipulation skills than boys (Golding et al., 2014; Goodway et al., 2014; Herrmann et al., 2015; Navarro-Patón et al., 2021). In contrast, girls perform better than boys in balance (Mathisen, 2016; Navarro-Patón et al., 2021). These findings are consistent with the assumption that sex appears to relate differently to various aspects of GMC and can be explained by biological influences on motor development (Barnett et al., 2016). In addition, boys tend to have better MC results than girls (Hyde, 2005; McGrane et al., 2018; Ré et al., 2018). Given the lack of studies that have specifically studied MC in athletes of athletics, the purpose of this study was to compare the MC of 10 years-old children practicing athletics with that of children who practice other sports. Given that, as Athletics deals with the different categories of FMS, probably more than other sports, we may hypothesize, according to previous study (Lopes et al., 2023; Lopes et al., 2023; Matos et al., 2021) that children who practice athletics will have better MC than children who practice other sports, and boys will have better MC than girls.

The choice of athletic sports is part of a broader research framework aimed at determining the potential of this sport for promoting CM in children.

Materials and Methods

Participants

The sample was constituted by convenience sampling from one of the investigators' places of work. Sixty-four

children (30 girls and 34 boys) were evaluated (Table 1) and divided into four groups (girls practicing athletics, boys practicing athletics, girls practicing other sports, and boys practicing other sports). Concerning the children who practice other sports, 16 practice Team Sports (9 football and 7 handball) and 16 practice Individual Sports (1 dance, 13 swimming and 2 gymnastic). This study was conducted in accordance with the Declaration of Helsinki (World Medical Association, 2013) for research involving human participants. Before data collection, ethical approval for the study was obtained from the ethical commission of the first author's institution. Parents or legal tutors were contacted after receiving favorable responses from the ethical commission to conduct the investigation. The nature, ethics, and data-collection protocols of the project were presented during this meeting. Following this phase, parents or legal tutors signed informed consent forms for their children and adolescents to participate voluntarily in this research. Ethical approval was obtained by the Ethical Committee of Life Quality Research Centre (LQRCCIEQV) before data collection (reference number: EA 06. 2022.CIEQV).

Table 1.
Number of participants, mean and standard deviation of Age and Years of Practice, Height, Weight and BMI by group.

Groups	Participants	Age	Practice	Height	Weight	BMI
	(n)	(years)	(years)	(m)	(kg)	
Athletics						
Boys	17	10.3±0.22	2.1±0.88	138.1±0.58	25.0±4.96	48.2±26.8
Girls	15	10.4±0.23	2.5±1.13	140.2±0.10	28.7±7.19	53.2±15.4
Other Sports						
Boys	17	10.4±0.29	3.7±0.59	143.0±0.63	39.2±6.15	76.6±21.6
Girls	15	10.4±0.32	2.8±0.92	137.1±0.60	37.4±6.54	72.4±20.3

Instruments and procedures

Data collection

As this was a convenience sample, data were collected at the researcher's place of work. All the children were pupils at a primary school in Leiria. The athletes underwent the assessment at Leiria's main stadium, Dr. Magalhães Pessoa. For this purpose, we used a gymnasium setup for gymnastics training. It was a large, well-equipped space that provided an atmosphere of concentration and comfort during the test. The test was conducted during the training period, at the end of the day, between 18.30 and 20.00. Given the spatial, human, and material conditions, it was possible for several children to take the tests simultaneously, thereby facilitating the process. Before the tests were carried out, the research group gave the children as much information as possible to avoid any doubts and to answer all questions clearly.

Concerning those who practice other sports, the data were collected in the school where they attended classes, during Curriculum Enrichment activity hours. The space is also large and well equipped, providing an atmosphere of concentration and comfort during the test. As the students had only one hour to carry out the activities, the assessments were conducted in two sessions. Before the tests were carried out, the research group gave the children as much information as possible to avoid any doubts and to answer all questions clearly.

Anthropometrics Assessment

Height was measured using a stadiometer with a scale of 0.0 to 210 cm, while the children were barefoot and wearing only essential clothing (shorts and t-shirts). Body weight was measured using bioimpedance on a Tanita MC-780MAS Segmental digital scale.

Body weight and height data were used to calculate the Body Mass Index using the formula: BMI = Weight / (height)^2.

Motor Competence Assessment

The Body Coordination Test for Children (Körperkoordinationstest Für Kinder, KTK) was used to evaluate motor coordination in young people (L. G. O. Luz et al., 2015). The development of this protocol took place in Germany during the five years of study, culminating in its final design published in 1974 (Kiphard & Schilling, 1974). The KTK form test consists of four tasks: (1) walking backwards (WB) along a balance beam with a decreasing width, from 6.0 cm to 4.5 cm, to 3.0 cm; (2) two-legged jumping from side to side for 15 s. (JS); (3) moving sideways (MS) on wooden boards for 20 s; and (4) hopping for height (HH), with one leg over a foam obstacle with increasing height in consecutive steps of 5 cm (Paulo Rodrigues et al., 2019): walking backward (WB), moving sideways (MS), and jumping sideways (JS). WB: The children were instructed to walk backward three times on three balance beams (three trials × three beams) with the same length (3m) but different widths (6, 4.5, and 3 cm). The number of successful steps was scored as the final raw outcome, with a maximum of eight steps per trial, comprising a maximum of 72 steps (8 steps × 3 trials × 3 beams) (Platvoet et al., 2018). MS: The children started standing on the first box and holding the second box in their hands. After the start signal, the children needed to place the second box alongside the first box and step on it. Then, the child needed to pick up the first box and place it again alongside the second one to step on it as quickly as possible. Each child performed two 20 s trials. The total number of correct relocations in both the trials was scored as the final raw outcome (Platvoet et al., 2018). JS: In this task, the children were required to jump sideways over a wooden lath (60 cm × 4 cm × 2 cm) as many times as possible within 15 s. The number of correct jumps in the two trials was summed and used as the final raw outcome (Platvoet et al., 2018). HH: jumping from one leg over an increasing pile of pillows (60 × 20 × 5 cm each) after a short run-up. Three-, two-, or one-point (s) were awarded for successful performance in the first, second, or third trial, respectively. A maximum of 39 points (ground level to 12 pillows) could be scored for each leg, yielding a possible maximum score of 78 (B Vandorpe et al., 2011) After application of the tests, the raw values obtained and calculated the motor quotient (MQ) also presented in raw values, for each

task performed and the following was calculated the gross performance score.

Statistical analysis

First, we searched for extreme values and missing data on the data basis which we did not find. To begin the analysis, we employed the Shapiro–Wilk test (for sample sizes less than 50) to assess the distribution of the data. After checking for normality of the data, One-way ANOVA was used to examine differences between groups. Subsequently, we examined the means and standard deviations of all the variables under investigation. To explore eventual differences between the four groups (created according to sex and type of practice), using also one-way ANOVA. Additionally, to account for the homogeneity of variances (as determined by Levene's test with a result exceeding 0.05), we supplemented the ANOVA with the Tukey post-hoc test. In accordance with Ho's (2014) recommendation, we considered a p-value less than or equal to 0.05 as grounds for rejecting the null hypothesis. In cases of significant results, we also calculated the effect size using the partial eta square, as proposed by Denis (2019). Following Cohen's (1988) guidelines, we categorized the effect sizes as follows: trivial (0–0.19), small (0.20–0.49), medium (0.50–0.79), and large (0.80 and). Statistical analysis was conducted using SPSS version 28.

Descriptive statistics (mean ± standard deviation) were calculated for the KTK results, including the gross performance score of each test as well as the Motor Quotient (MQ).

Results

Table 2 presents the classification of the MQ of the full sample and descriptive analysis of the MQ classification of boys and girls. As we can see, 19 athletics subjects were classified as having good (9 subjects) or High Gross (10 subjects) MC Proficiency, representing 59.4% of the sample. Concerning the group that practiced other sports, only two (6.3%) obtained the classification of Good Gross MC Proficiency (and none of the high gross MC proficiency groups).

Concerning the boys, seven (41.2%) practicing athletics obtained the classification of good (six subjects) or High Gross MC Proficiency (one subject), while only two (11.8%) practicing other sports reached the level of Good Gross MC proficiency.

Among the girls, 12 who practiced athletics, representing 80% of the sample, were classified as having good (3 subjects) or High MC Proficiency (9 subjects). None of the girls practiced other sports at those levels. Twelve girls (80%) practiced other sports with the classification of Normal Gross MC Proficiency.

Table 2.
Descriptive analysis of the MQ Classification (Total Sample, boys, and girls separately by group).

MQ	Athletics			Other Sports		
	Total Sample	♂ Boys	♀ Girls	Total Sample	♂ Boys	♀ Girls
Severe gross MC disorder	1 (3.1%)	1 (5.9%)	0 (0.0%)	5 (15.6%)	3 (17.6%)	2 (13.3%)
Moderate gross MC disorder	1 (3.1%)	1 (5.9%)	0 (0.0%)	1 (3.1%)	0 (0.0%)	1 (6.7%)
Normal gross MC proficiency	11 (34.4%)	8 (47.1%)	3 (20.0%)	24 (75.0%)	12 (70.6%)	12 (80.0%)
Good gross MC proficiency	9 (28.1%)	6 (35.3%)	3 (20.0%)	2 (6.3%)	2 (11.8%)	0 (0,0%)
High gross MC proficiency	10 (31.3%)	1 (5.9%)	9 (60.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
N	32 (100%)	17 (100%)	17 (100%)	32 (100%)	17 (100%)	17 (100%)

MQ – Motor Quotient; MC – Motor Competence

One-way ANOVA (Table 3) revealed significant differences in the MQ and RS (Raw Score) between the groups, with high effect sizes.

Table 3.
Comparison of MQ and RS between groups (ANOVA)

Variable	Z	*p*-value	η^2
MQ	15.091	< 0.001	0.430
RS	23.147	< 0.001	0.536

Tukey's post-hoc test (Table 4) showed that, in both variables (MQ and RS), the MC of the subjects (both boys and girls) who practiced athletics was significantly higher than those who practiced other sports. However, there were no significant differences in either variable between the two groups that practiced athletics.

Table 4.
Results of multiple comparisons (Tukey's post-hoc test) of MQ and RS between the different groups.

Variables	Groups				*p*-value
MQ	Athletics' Girls	114.7±10.2	Other sports' Girls	89.1±10.9	< 0.001
			Other sports' Boys		< 0.001
			Athletics' Boys		0.994
	Athletics' Boys	113.5±13.5	Other sports' Girls		< 0.001
			Other sports' Boys	94.3±17.0	< 0.001
	Other Sports' Girls	89.1±10.9	Athletics' Girls		< 0.001
			Athletics' Boys		< 0.001
			Other sports' Boys	94.3±17.0	0.691
	Other Sports' Boys	94.3±17.0	Athletics' Girls		< 0.001
			Athletics' Boys		< 0.001
			Other Sports' Girls	89.1±10.9	0.691
RS	Athletics' Girls	262,4±22.8	Other sports' Girls		< 0.001
			Other sports' Boys		< 0.001
			Athletics' Boys	203,8±36.	0.877
	Athletics' Boys	255.1±24.1	Other sports' Girls		< 0.001
			Other sports' Boys	199.7±36.2.5	< 0.001
	Other sports' Boys	199.7±36.2	Athletics' Girls		< 0.001
			Athletics' Boys		< 0.001
			Other sports'	203.7±23.5	0,975

		Girls		
Other sports' Girls	203.7±23.5	Athletics' Girls		< 0.001
		Athletics' Boys		< 0.001
		Other sports' Boys	199.7±36.2	0.975

In addition, the results revealed that male athletes differed (better results) from male and female subjects who practiced other sports. Additionally, subjects who practice other sports do not differ from each other (i.e., boys and girls perform similarly).

Results are even more significant when making comparisons between the boys, according to the fact that there were significant differences ($p<0.001$) in the years of practice, favoring boys that practice other sports (3.7±0.59 vs 2.1±0.88).

Discussion

The present study aimed to compare the MC of 10 years-old children practicing athletics with children who practice other sports, as assessed using the KTK test.

The results showed that children who practiced athletics had significantly better MC scores (114.09±12.1) than those who practiced other sports (91.8±14.4), overall and by gender, with high effect sizes (Z=23.147 and *p*-value <0.001) in all the tests assessed.

When comparing boys who practice athletics from boys who practice other sports, results showed that whose practice athletics were better than those practice other sports (RS 255.1±24.1 against 203.7±23.5) 199.7±36.2). The same happened in case of girls, that say, girls who practice athletics were better than girls that practice other sports (RS 262.4±22.8 against 203.7±23.5).

The results of the intra-group comparison between boys and girls showed that there were no differences between boys and girls in athletics, while in other sports girls (203.7±23.5) outnumbered boys (199.7±36.2).

Our results are in line with previous research highlighting that physical activity (PA), including organized sports participation, has a positive impact on the development of MC in childhood (Barnett et al., 2009; Coppens et al., 2021; Robinson et al., 2015). On the other hand, high MC level should help achieve additional skill development in more complex transitional skills and sports skills because the stable movement pattern can lose stability, improve with practice, and then be used in a new context (Brian et al., 2020). Considering that Hermann et al. (2015) demonstrated that the frequency and type of physical activity outside school are correlated in a potentially predictive way with pupils' basic motor skills, we can speculate that athletic practice may have enhanced basic motor skills. According to Clark (2005), during childhood, MC forms the basis for future participation in sports and PA, which require specialized movements. If FMS are not properly acquired, a child may face a proficiency barrier that can limit his or her performance and ability to learn new movements (Seefeldt, 1979), and hence, hinder engagement in PA and sports (Stodden et al., 2008).

The comparison between the groups in terms of weight status revealed that those who practiced athletics had a better classification (90.6% normal and only 9.4% overweight or obesity against 65.6% normal and 34.4% overweight or Obesity) and therefore better results on MQ (114.09±121 against 91.8±14.4). According to Bustamante et al. (2023), weight status and MC are associated and is an important predictor of the children's MC until middle childhood (Lima et al., 2021), because MC during childhood is associated with physical activity and fitness (Lima et al., 2017). When separated by gender, both girls and boys who practiced sports scored better than those who practiced other sports.

In this sense, it seems that athletics may play an important role in the development of MC. Drenowatz (2021) added that organized sports and physical education appear to be fundamental in ensuring optimal motor development, and sports during middle childhood have a positive effect on locomotor and/or object control skills (Brauner & Valentini, 2009; Foweather et al., 2008). Some studies have shown a positive association between practicing sports and MC in children aged 5–12 years (D'Hondt et al. 2011; Vandorpe et al. 2012). Activities that stimulate motor development should consist of diverse movement experiences that affect neuromotor development and improve MC. Engaging in developmentally appropriate sports from early childhood onwards may thus have a positive impact on the process of motor learning and long-term adherence to sports practice (Queiroz et al., 2014).

Salin et al. (2021) state that the differences in physical fitness and MC test scores between boys and girls can be explained by the result of variations in the types of sports in which children participate. The present results show that there were no significant differences between girls and boys practicing athletics. This contrasts with the evidence shown in some studies (Barnett et al., 2010; Goodway et al., 2010; Queiroz et al., 2014), which found differences between girls and boys. Hardy et al. (2010) refers to gender differences as the product of family and sociocultural contexts, where boys are encouraged to practice sports and engage in physical activities to develop the that favor the acquisition of MC.

Limitations and future research

The fact that the current study was cross-sectional, with a relatively small sample size, limited the extrapolation of the findings to other groups and prevented cause-effect conclusions. In addition, as the KTK is a test that mainly assesses gross motor locomotor and stability skills, and given that athletics mainly rely on locomotor skills, it would be interesting to use batteries that incorporate other components, namely the manipulative one, as in the cases of the MCA by Rodrigues et al. (2019) and the KTK3+EHC by Platvoet et al. (2018). Longitudinal studies may reveal what happens with boys' and girls' MC throughout the practice

of athletics.

We also consider a limitation the fact that some variables as maturation and lifestyle variables were not collected and included in the study.

Conclusions

The results revealed that boys who practiced athletics presented better MC results than those who practiced other sports. The same happened with girls, since girls who practiced athletics presented better MC results than those who practiced other sports. In the former case, the results are even more significant because there were significant differences in years of practice, favoring boys who practice other sports. We speculate that athletics may favor the development of motor competence, especially in girls. We also believe that the variety of works developed may play an important role in the development of motor competence. Future work should highlight which types of stimuli, exercises, and practice really favor the development of MC.

The Study Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki for research involving human participants (World Medical Association 2013). Before data collection, ethical considerations for the study were obtained from the ethical commission of the first author's institution. The nature, ethics, and data-collection protocols of the project were presented during this meeting. Following this phase, parents or legal tutors signed informed consent forms for their children and adolescents to participate voluntarily in this research.

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