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The impact of talent detection on increasing the number of children participating in sports

El impacto de la detección de talentos en el aumento del número de niños que participan en deportes

*Risky Syahputra, **Tomoliyus Tomoliyus, **Fx Sugiyanto Sugiyanto, *Syahrial Bakhtiar, *Yovhandra Ockta, *Lucy Pratama Putri, *Heru Afrian, *Jeprinaldi Jeprinaldi

*Universitas Negeri Padang (Indonesia), **Universitas Negeri Yogyakarta (Indonesia), ***Universitas Muhammadiyah Sumatera Barat (Indonesia)

Abstract. Sports talent detection is an attempt to find children who have the potential to become athletes but are not currently involved in sports through a series of tests. The aim of this research is to determine the characteristics of the distribution of children's sports talents in Payakumbuh City, West Sumatra Province. From this research, information was obtained on the anthropometric profile, physical abilities and movement coordination of each child. Apart from that, it was found that there were differences in the movement coordination abilities of children who had not and had participated in sports (training in clubs) after sports talent detection was carried out. This research involved 750 children (486 boys, 264 girls) aged 7-12 years in Payakumbuh City, West Sumatra, Indonesia. The talent detection instrument used in this research is the Sekora TID which was adopted from the SportKompas test battery. To see the impact of implementing talent detection, researchers conducted a survey using a Google form which was distributed to all test participants. Surveys were conducted to monitor children who had participated in sports as confirmed by teachers and parents. The results of the study provide information that there is no significant difference in the anthropometry of men and women (p>0.05), but a significant difference is seen in age (p<0.05). Significant differences were also found in motor coordination elements based on age and gender (p<0.05). Physical performance elements also show significant differences in age and gender (p<0.05). The results of this research will be used as a first step in implementing a sports talent identification system as part of LTAD.
Keywords: talent detection, sport participation, children.

Resumen. La detección de talentos deportivos es un intento de encontrar a niños que tienen el potencial de convertirse en atletas pero que actualmente no están involucrados en deportes a través de una serie de pruebas. El objetivo de esta investigación es determinar las características de la distribución de los talentos deportivos de los niños en la ciudad de Payakumbuh, provincia de Sumatra Occidental. A partir de esta investigación, se obtuvo información sobre el perfil antropométrico, las habilidades físicas y la coordinación del movimiento de cada niño. Aparte de eso, se encontró que había diferencias en las habilidades de coordinación del movimiento de los niños que no habían participado en deportes y los que habían participado en ellos (entrenamiento en clubes) después de que se llevó a cabo la detección de talentos deportivos. Esta investigación involucró a 750 niños (486 niños, 264 niñas) de 7 a 12 años en la ciudad de Payakumbuh, Sumatra Occidental, Indonesia. El instrumento de detección de talentos utilizado en esta investigación es el Sekora TID que se adoptó de la batería de pruebas SportKompas. Para ver el impacto de la implementación de la detección de talentos, los investigadores realizaron una encuesta utilizando un formulario de Google que se distribuyó a todos los participantes de la prueba. Se realizaron encuestas para monitorear a los niños que habían participado en deportes según lo confirmado por maestros y padres. Los resultados del estudio brindan información de que no hay diferencia significativa en la antropometría de hombres y mujeres (p>0,05), pero sí se observa una diferencia significativa en la edad (p<0,05). También se encontraron diferencias significativas en los elementos de coordinación motora en función de la edad y el género (p<0,05). Los elementos de rendimiento físico también muestran diferencias significativas en función de la edad y el género (p<0,05). Los resultados de esta investigación se utilizarán como un primer paso para implementar un sistema de identificación de talentos deportivos como parte de LTAD.
Palabras clave: detección de talentos, participación deportiva, niños.

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Risky Syahputra
riskysyahputra.2022@student.uny.ac.id

Introduction

Sports participation, a subcategory of leisure-time physical activity, constitutes a significant context for physical activity among most children and adolescents (Batista et al., 2019; De Baere et al., 2015; Westerbeek & Eime, 2021). Within the Dutch-Belgian Flanders plain, the majority of youth engaged in sports activities participate in club-based training programs.3 Such involvement prioritizes enjoyment, well-being, fitness, health, and social development (Boelens et al., 2022; Kim & James, 2019; Zahner et al., 2009). Comprehensive research is required to elucidate the short- and long-term impacts of physical activity participation on children, encompassing improvements in specific motor skills, enhanced physical fitness, socio-ethical development, and reduced risk of obesity and cardiovascular disease (Gao et al., 2021). Concurrently, identifying determinants of physical activity levels in children is crucial for the development of efficacious interventions .

Several experimental studies have reported an association between Fundamental Movement Skills (FMS) and physical activity, particularly in children with Developmental Coordination Disorder (DCD) at the lower end of the motor continuum (Bolger et al., 2021; Holfelder & Schott, 2014; Vandorpe et al., 2012). Preschoolers, children and adolescents with varying motor skill levels have been found to engage in less physical activity (including sports, organized and free play, recess) compared to their typically developing or highly skilled peers (Barnett et al., 2016; Bolger et al., 2021; O' Brien et al., 2016). This reduced physical activity may be attributed to a cycle of negative movement experiences leading to decreased perceived self-efficacy (Batey et al., 2014; Williams & French, 2011). While these cross-sectional studies confirm a relationship between movement skills and physical activity, they cannot establish causality. A longitudinal study emphasized the significance of adequate FMS in childhood, demonstrating that proficient object control skills predicted adolescent physical activity and fitness levels through mediating effects on physical activity and fitness these factors were influential in developing positive perceptions of motor competence (Barnett et al., 2024; Loprinzi et al., 2015; Simpson et al., 2021). Conversely, locomotor skills did not predict adolescent physical activity or fitness.

International trends in talent identification and development are increasingly characterized by a short-term performance orientation. Given the intense competitive landscape, investment is prioritized for athletes with demonstrated high-level potential. A predominant focus on medal acquisition has aligned talent development programs with the quadrennial Olympic (Pion, 2017). Consequently, incremental improvements within four-to-eight-year horizons dominate, fostering a competitive environment where nations adopt and adapt best practices. While short-term gains may be realized, sustained excellence necessitates a broader, long-term perspective.

A fundamental approach is the early identification and careful nurturing of individual talents. This strategy aims to mitigate talent loss and preserve options for specialization at appropriate developmental stages. However, alarming trends in motor skill development have emerged. A decline of 50% in children with exceptional motor skills and a corresponding 100% increase in those with motor difficulties over the past three decades (Vandorpe et al., 2011)have reduced the talent pool for future elite athletes. Recognizing this challenge, a growing emphasis on talent development at the grassroots level has emerged (Collins et al., 2012; Thorpe, 2016; Vaughan et al., 2019). Educational institutions are incorporating strategies to identify and cultivate young talent in physical education. A shift from a one-size-fits-all approach to a more individualized model is evident (Fletcher et al., 2020; Kyriakides et al., 2018). By accurately assessing children's current abilities and future potential, educators and coaches can implement targeted programs to optimize talent development (Coutinho et al., 2016; Till & Baker, 2020).

Identifying children with superior motor skills is crucial for optimizing their development. The Eyes for Excellence Project assesses the motor proficiency of primary school children through a battery of four simple tests: the short form of the CEC (Novak et al., 2016), the perceptual-motor test (Faber et al., 2014) and teacher-based potential estimation (Platvoet et al., 2015). Resultant data are used to categorize children into skill levels, facilitating the implementation of tailored motor programs. These programs incorporate incentives to stimulate further development in skilled children while providing appropriate challenges for those with lower motor proficiency. In recent years, the Talent Identification and Development in Sport Research Group has focused on developing a talent scan to accurately identify individual talents (Coutinho et al., 2016; Pion, 2017). Concurrently, programs designed to nurture these talents have been established (Tucker & Collins, 2012). Physical education teachers are the first link in guiding talent. Information collected in elementary school is useful for children's sport choices and can be linked to other data. For example, the benefits of such relationships were demonstrated in a recent study involving 121 elementary school children and 146 of their age-matched table tennis peers. clubs completed the same battery of perceptual-motor tests (Faber et al., 2017). The results showed that 28% of children tested in primary school had the qualities needed to play table tennis. They also showed that 2% of these children could have been better table tennis players, even without specific training.

Material & methods

Participants

This study was conducted in partnership with the SEKORA Foundation and the West Sumatra Provincial Government, Indonesia. A total of 750 participants (486 boys, 264 girls) were involved in the implementation of a sports talent identification program. The research protocol was approved by the Institutional Review Board of Padang State University. Written informed consent was obtained from both parents and children prior to their participation

Procedure/Test protocol/Skill test trial/Measure/Instruments

This study employed the web-platform-based Sekora-SportKompas talent detection test instrument, comprising 14 items across anthropometry (height, stature), physical performance (knee push-up, curl-up, sit-and-reach, shoulder flexibility, shuttle run, endurance shuttle run, standing broad jump), and motor coordination (balance beam, lateral jump, lateral movement, shuttle throw, eye-hand coordination) (Bakhtiar et al., 2023) to assess children's talent profiles. In addition to obtaining anthropometric, motor coordination, and physical performance data, this talent identification test generates a list of seven sports optimally suited to each child's physical profile. Cardiovascular endurance was evaluated using the 20-meter shuttle run (SR) test (0.5 min) from the EUROFIT battery (Opstoel et al., 2015). Participants alternated running between two 20-meter markers, adjusting pace to auditory signals. Test intensity progressively increased, demanding acceleration. A single failure to reach the opposite line before the auditory cue was allowed. The SR test has shown acceptable validity (r = .68-.76) and reliability (r = .68-.84) in children aged 4-18 years (Pion, Segers, et al., 2015). Children's speed and agility were evaluated using the 10x5 shuttle run (10x5 SR) test from the EUROFIT battery (Pion, Lenoir, et al., 2015). Participants performed ten consecutive shuttle runs between two 5-meter markers, with time recorded for each run. Previous research has established the 10x5 SR as a valid (r = .62-.85) and reliable (r = .62-.96) measure of speed

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and agility in children aged 4 to 18 years (Opstoel et al., 2015).

Hamstring and lower back flexibility were assessed via the sit-and-reach (SAR) test (EUROFIT) (Fransen et al., 2014). The SAR test has demonstrated good test-retest reliability (.70-.98) and acceptable validity (.60-.73) in children aged 4 to 18 years (Opstoel et al., 2015). Shoulder flexibility (SF) was measured using the shoulder rotation test (Matthys et al., 2013; Pion, Segers, et al., 2015; Salse-Batán et al., 2022) where lower scores represent greater flexibility. This test has shown reliable results, with a test-retest reliability coefficient ranging from .73 to .96 (Opstoel et al., 2015). Explosive leg power was assessed using the standing broad jump (SBJ), measured to the nearest 1.0 cm, with a precision of 0.1 cm (Bakhtiar et al., 2023; Castro-Pin˜ero et al., 2010; Huang et al., 2023). The SBJ demonstrated adequate validity (r = .52-.78) and reliability (r = .66-.97).

Functional arm strength was assessed via a one-repetition maximum knee push-up test, administered according to BOT-2 protocols. Additionally, participants performed a 30-second maximum knee push-up test (De Meester et al., 2020; Fransen et al., 2012). Participants lie supine with knees flexed and hands placed laterally. They performed controlled curl-ups, touching their fingers to a 4.5-inch marker with each repetition. Complete back and head contact with the mat was required for each curl-up. The test was terminated after two consecutive errors (Chang et al., 2020; CY et al., 2017; Sinđić et al., 2021).

Motor coordination was assessed using three subtests from the KörperkoordinationsTest für Kinder (KTK) (Mardiansyah et al., 2023; Platvoet et al., 2018). The backward balance task required participants to walk backwards along balance beams of decreasing width (6, 4.5, and 3 cm)(Bakhtiar et al., 2023; Pion, 2015). Lateral coordination was measured through sideways jumping over a wooden slat for 15 seconds and sideways movement on two 20x20 cm wooden platforms for 20 seconds (Opstoel et al., 2015). The KTK demonstrates robust test-retest reliability (0.80 ≤ r ≤ 0.95) (Pion, Fransen, et al., 2015). Eye-hand coordination (EHC) was evaluated by counting the number of successfully caught balls during two 30-second trials . Overarm throwing ability was assessed using the overhead-throwing test from the Flemish Sport Compass (FSC), which measured the total distance achieved across five throws of a badminton shuttle. Participants held the shuttle between thumb and index finger and aimed for maximum distance and accuracy. This test primarily evaluates throwing coordination rather than strength. The test-retest reliability of the throwing distance was excellent (ICC = 0.82)(Pion, Fransen, et al., 2015).

Following talent identification through the administration of test items to all children, researchers conducted a three-month follow-up study to determine sports participation rates. Data were collected via Google Forms completed by the children's respective sports coaches. Subsequently, motor coordination abilities were compared between children who engaged in sports and those who did not.

Data collection and analysis / Statistical analysis

Descriptive statistics (mean and standard deviation) for all variables were computed using a computer. Multivariate analysis of variance (MANOVA) was employed to examine differences in anthropometric, motor coordination, and physical performance abilities between boys and girls aged 7-12 years. Additionally, MANOVA was used to compare motor coordination abilities between children who had and had not participated in sports following talent detection testing. Significant interactions and main effects were further explored using Bonferroni post hoc tests or pairwise comparisons. Statistical significance was set at $\alpha = .05$. Partial eta squared (ηp^2) was computed to estimate effect sizes, with values of .01, .06, and .14 representing small, medium, and large effects, respectively. All statistical analyses were conducted using SPSS version 26.0 for Windows.

Results

Table 1 presents descriptive statistics of children's performance across three physical domains: anthropometry, motor coordination, and physical performance. Table 2 displays the gender-based differences in these same domains among 7-12-year-old children, as indicated by MANOVA F-values. Table 3 compares motor coordination between children with and without sports participation.

Table 1.
Descriptive statistics of age and gender of children with mean and standard deviation of anthropometry, motor coordination and physical performance

Physical Performance Characteristic	Total (n=750)	Boys (n=486)	Girls (n=264)
Anthropometry			
Stature	1.35±0.10	1.34±0.10	1.35±0.11
Body weight	31.58±9.16	31.32±8.99	32.07±9.47
Motor coordination			
Balance beam	59.64±10.83	60.57±10.6	57.92±11.07
Jumping sideway	52.04±18.64	53.16±19.13	49.98±17.56
Moving sidway	44.01±10.31	45.14±10.23	41.94±10.16
Eye-hand coordiantion	17.55±7.19	19.41±6.76	14.12±6.7
Shuttle Throw (cm)	2734±540	2901±513	2426±446
Physical perforamnce			
Knee Push-Ups (times)	20.98±6.64	22.16±6.8	18.82±5.65
Shuttle Run (sec)	22.29±2.66	21.47±2.42	23.30±2.79
Curl-Ups (times)	23.92±7.11	23.88±7.29	24.00±6.76
Endurance Shuttle Run (minute)	3.36±2.23	3.64±2.31	2.87±1.96
Sit and Reach (cm)	20.79±4.71	20.66±21.03	21.03+4.79
Standing Broad jump (cm)	137.2±22.25	143.35±19.93	125.95±21.93
Shoulder Flexibility (cm)	67.5±18.66	69.76±17.99	63.32±19.2

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Table 2.
Antopometry, motor coordination and physical performance in boys and girls stratified by age

Variables	Sex			Age			Sex X Age		
	F	P	ηp²	F	P	ηp²	F	P	ηp²
Anthropometry									
Stature	1.15	0.283	0.002	72.76	0.000	0.163	6.22	0.002	0.017
Body Weight	0.193	0.660	0.000	126.4	0.000	0.253	6.62	0.001	0.018
Motor Coordination									
Balance beam (times)	10.41	0.001	0.014	15.65	0.000	0.040	0.054	0.947	0.000
Jumping sideway (times)	5.27	0.025	0.007	10.82	0.000	0.028	0.034	0.966	0.069
Moving sideway (times)	16.74	0.000	0.022	38.62	0.000	0.094	1.15	0.316	0.003
Shuttle throw (cm)	159.97	0.000	0.176	57.47	0.000	0.133	0.577	0.562	0.002
Eye-hand coordination (times)	105.24	0.000	0.123	83.96	0.000	0.184	0.848	0.429	0.002
Physical Performance									
Knee Push-Ups (times)	45.88	0.000	0.058	1.56	0.210	0.004	0.972	0.379	0.003
Shuttle Run (sec)	62.99	0.000	0.078	17.73	0.000	0.045	0.162	0.197	0.004
Curl-Ups (times)	0.46	0.830	0.000	16.12	0.000	0.410	2.22	0.109	0.006
Endurance Shuttle Run (minute)	20.84	0.000	0.027	15.87	0.000	0.410	1.63	0.195	0.004
Sit and Reach (cm)	1.02	0.312	0.001	6.09	0.002	0.016	0.234	0.791	0.468
Standing Broad jump (cm)	121.33	0.000	0.140	73.16	0.000	0.164	0.147	0.863	0.295
Shoulder Flexibility (cm)	20.94	0.000	0.027	5.13	0.006	0.014	0.408	0.665	0.001

Anthropometry

No significant sex differences were observed in body weight (F=1.15, p=0.283, η^2p=0.002). However, significant differences were found in body weight based on age (F=72.76, p=0.001, η^2p=0.163), with an interaction between age and sex (F=6.22, p=0.002, η^2p=0.017). Stature height did not differ significantly between boys and girls (F=0.193, p=0.660, η^2p=0.000). Nevertheless, significant differences in stature height were observed across age groups (F=126.4, p=0.001, η^2p=0.253), with older children exhibiting greater stature. An interaction between age and sex was also found for stature height (F=6.62, p=0.001, η^2p=0.018)

Motor Coordination

Jumping sideway was significantly different between boys (53.16±19.13) and girls (49.98±17.56), with boys demonstrating superior performance (F=5.27, p=0.025, ηp^2=0.007). Age also influenced lateral jumping ability (F=10.82, p=0.001, ηp^2 = 0.028), with older children exhibiting higher scores. No interaction was found between sex and age (F=0.034, p=0.966, ηp^2=0.000). Moving sideway also differed significantly between boys (45.13±10.23) and girls (41.94+10.16), favoring boys (F=16.47, p=0.001, ηp^2=0.022). Older children demonstrated superior moving sideway ability (F=38.62, p=0.009, ηp^2=0.094). No interaction was found between sex and age (F=1.15, p=0.316, ηp^2=0.003). Boys exhibited significantly greater upper extremity power as measured by the shuttle throw test (F=159.97, p=0.001, ηp^2=0.176), compared to girls (boys= 2901±513; girls=2426±446). Older children also demonstrated superior shuttle throw performance (F=57.47, p=0.001, ηp^2=0.133). Eye-hand coordination differed significantly between boys (19.41+6.76) and girls (14.12+6.70), with boys demonstrating higher scores (F=105.24, p=0.001, ηp^2=0.123). Older children also exhibited superior eye-hand coordination (F=83.96, p=0.001, ηp^2=0.184). No interaction was found between sex and age (F=0.848, p=0.429, ηp^2=0.002).

Physical Performance

Results indicated significant sex differences in knee push-up performance (F=45.88, p=0.000, ηp^2=0.058), with boys (M = 22.16, SD = 6.84) outperforming girls (18.82+5.65). Age (F=1.56, p=0.210, ηp^2=0.004) and the interaction between age and sex (F=0.972, p=0.379, ηp^2=0.003) did not significantly influence knee push-up performance. Regarding curl-ups, no significant sex differences were observed (F=0.46, p=0.830, ηp^2=0.000). However, age was significantly associated with curl-up performance (F=16.12, p=0.000, ηp^2=0.410), indicating a positive relationship between age and curl-up ability. The interaction between age and sex on curl-up performance was not significant (F=2.22, p=0.109, ηp^2=0.006).

Shuttle run performance, indicative of speed and agility, revealed significant sex differences (F = 62.99, p=<0.001, ηp^2=0.078), with boys (21.74±2.42) outperforming girls (M = 23.30, SD = 2.79). Age was also a significant predictor of shuttle run performance (F=17.72, p=0.001, ηp^2=0.045), with older children demonstrating superior ability. However, no interaction was found between sex and age (F=0.162, p=0.197, ηp^2=0.004). Endurance shuttle run results indicated significant sex differences (F=20.84, p=0.001, ηp^2=.027), with boys (3.64±2.31) exhibiting greater endurance than girls (2.87±1.96). Age was again a significant predictor of endurance (F=15.87, p=0.001, ηp^2=0.410), with older children demonstrating superior cardiovascular endurance. Despite significant main effects for sex and age, no interaction was found (F=1.63, p=0.1965, ηp^2=.004)

No significant difference was observed in sit-and-reach performance between boys (20.66±4.67) and girls (21.03±4.79) (F=1.02, p=0.312, ηp^2=0.001), despite a slight mean difference. However, age significantly influenced sit-and-reach ability (F=6.09, p=0.002, ηp²=0.016), with older children exhibiting superior performance. No interaction was found between age and sex in relation to sit-and-reach (F=0.274, *p*=0.791, ηp²=0.468). Shoulder flexibility, as measured by the shoulder flexibility test, differed significantly between boys (69.76±17.99) and girls (63.32±19.20) (F=20.97, *p*=0.000, ηp²=0.027). Age also impacted shoulder flexibility (F=5.13, *p*=0.006, ηp²=0.014). Although sex and age were significant predictors, no interaction was found between these variables for shoulder flexibility (F=0.408, p=0.665, ηp²=0.001). Boys (143.35±19.93) exhibited significantly greater standing broad jump performance, a measure of lower limb explosive power, compared to girls (M = 125.95, SD = 21.93) (F = 121.33, *p*=0.000, ηp²=0.140). Age was also associated with differences in lower limb explosive power (F=73.16, *p*=0.000, ηp²=0.164). No interaction was found between age and sex for standing broad jump (F=0.147, *p*=0.863, ηp²=0.295).

A talent detection test administered to 750 children revealed a heterogeneous distribution of athletic aptitudes within the sample. Figure a) shows the sports potential of children in talent 1, it was found that the most common sports talent possessed by children in talent 1 was Rhythmic gymnastics emerged as the most prevalent sport, identified in 199 children (26.5%), followed by golf (21.9%), football (17.3%), volleyball (10.7%), baseball/softball (5.5%), horse riding (4.8%), dance (2.9%), distance running (1.7%), basketball (1.5%), figure skating and judo (both 1.3%), with the remaining 31 children (4.5%) exhibiting talents in other sports.

Figure b) which is the distribution of the 2nd talents in children shows that the talents most recommended for children are thymic gymnastics (14.4%), golf (13.1%), dance (12.8%), volleyball (10%), baseball/softball (8.8%), basketball (7.7%), football (6.3%), woman artistic gymnastics (4.5%), horse riding (4.5%), figure skating (2.4%), korfball (2.1%), cycling (1.3 %) and the rest on other sports talents (12%).

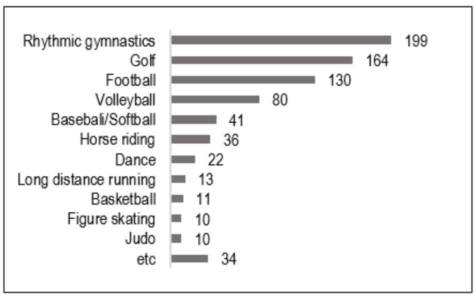
Figure c) shows the distribution of the 3 talents possessed by children and shows that the most talents are dance (16.7%), golf (12.1%), volleyball (9.5%), basketball (7.2%), gymnastics (6.1%), football (4.5%), baseball/softball (4%), figure skating (4%), tennis (3.7%), horse riding (3.2%), korfball (2.4%), judo (1.7%), handball (1.6%), trampoline (1.3%), table tennis (1.3%), acrobatic gymnastics (1.3%) the rest are several other sports (10.4%).

Figure d) is a picture of a child's potential for talent 4, the most common sports are artistic gymnastics men/women (12.4%), rhythmic gymnastics (7.1%), horse riding (6%), dance (5.6%), golf (5.6 %), volleyball (5.6%), handball (5.3%), figure skating (51.%), trampoline (4.9%), baseball/softball (4.7%), football (4.5%), table tennis (4%), basketball (3.6%), football (3.2%), tennis (2.8%) and the rest in several other sports (19.7%).

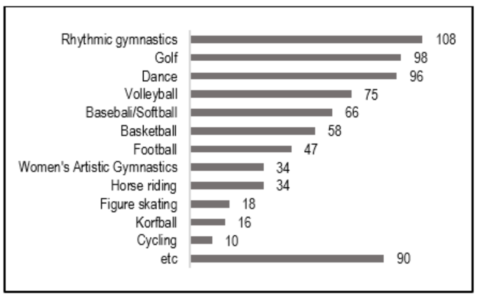
Figure e) shows the distribution of children's sports potential in the 5th talent, the most common sports are artistic gymnastics (14%), trampoline (6.3%), tennis (5.9%), baseball/softball (5.3%), tumbling (5.3%).), rhythmic gymnastics (4.9%), table tennis (4.7%), handball (4.5%), basketball (4.4%), dance (4.4%), volleyball (4.1%), horse riding (4.1%), figure skating (3.5%), football (3.2%), acrobatic gymnastics (3.1%), golf (2.8%), badminton (2.8%) and several other sports (16.7%).

Figure f) is a child's potential in talent 6, the most dominant sports are artistic gymnastics men/women (10.8%), trampoline (7.2%), tubling (6.4%), table tennis (6.3%), baseball/softball (5.3%), figure skating (4.9%), handball (4.7%), tennis (4.5%), dance (4.1%), rhythmic gymnastics (3.7%), volleyball (3.5%), korfball (3.5%), acrobatic gymnastics (3.2%), basketball (3.1%), golf (2.5%), horse riding (2.4%), cycling (2.1%) and the rest spread across several other sports.

Figure g) is the sports potential of children at talent 7. It was found that the most talents possessed by children at talent 7 were Artistic gymnastics men/women (11.2%), trampoline (8.9%), tumbling (7.3%), baseball/softball (5.2%), tennis (4.8%), table tennis (4.7%), dance (4.4%), handball (4.3%), figure skating (4%), volleyball (3.7%), golf (3.3%), rhythmic gymnastics (2.8 %), acrobatic gymnastics (2.7%), rugby (2.7%), basketball (2.7%), badminton (2.5%), korfball (2.1%) and the rest (21.9%) are spread across other sports.



a)



b)

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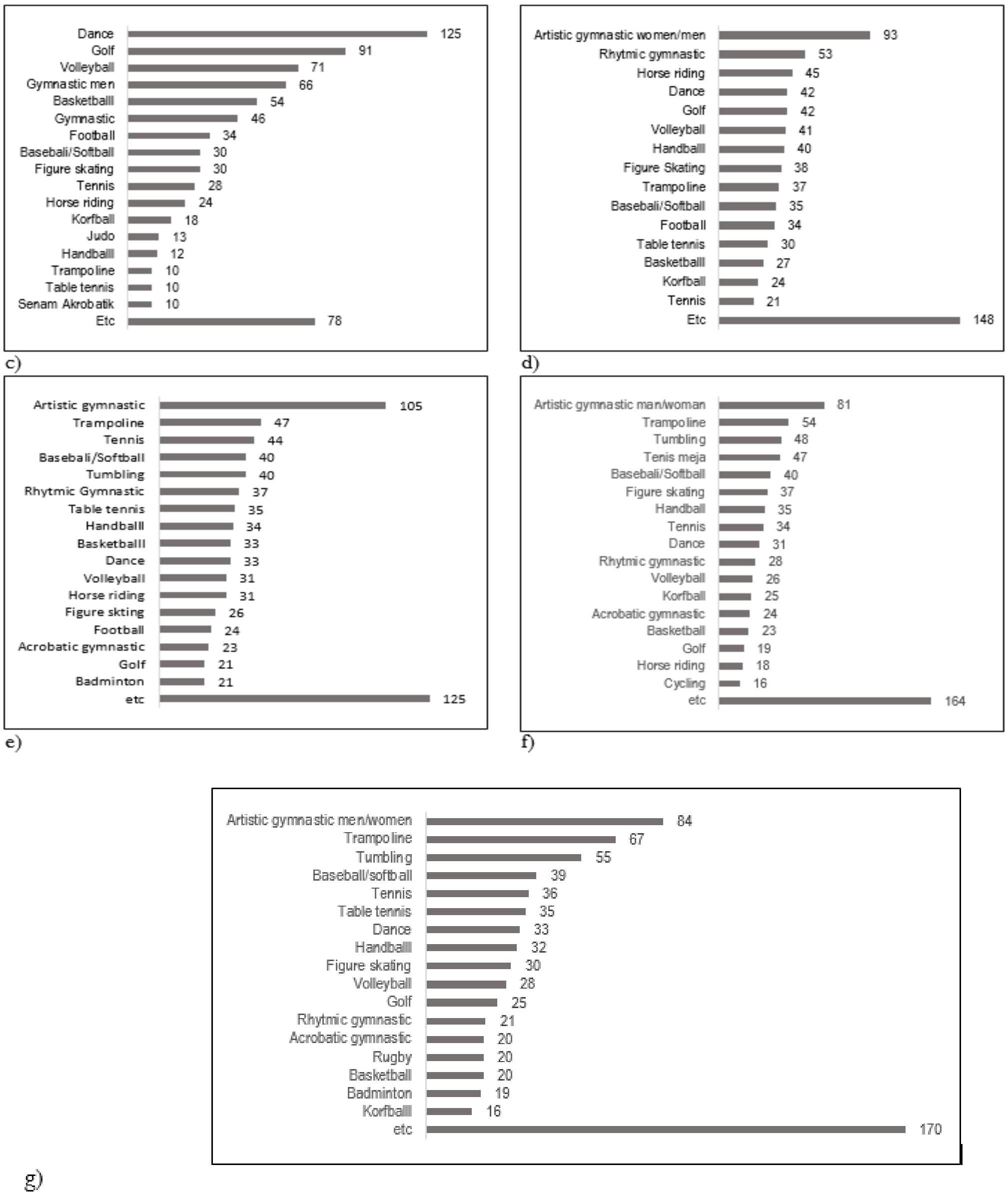

Figure 1. Distribution of talent of children aged 7-12 years

Table 3.
Motor coordination in participant and do not participation insport

Variables	Group		
	F	P	ηp²
Motor Coordination	23.44	0.000	0.149
Balance beam (times)	0.621	0.384	0.003
Jumping sideway (times)	12.37	0.009	0.084
Moving sideway (times)	19.12	0.000	0.113
Shuttle throw (cm)	85.76	0.000	0.317
Eye-hand coordination (times)	33.94	0.000	0.292

Subsequent analysis conducted by the researchers demonstrated a statistically significant disparity in motor coordination skills among children who engaged in sports and those who did not following a talent identification process (F=23.44, p=0.000, ηp²=0.149). Furthermore, when examining individual motor coordination items, significant differences were observed in all components except for the balance beam task (F=0.621, p=0.384, ηp²=0.003).

Dicussion

The present study aimed to investigate the connection between sports talent identification, motor coordination, and children's participation in organized sports. The results indicated that once children received information about the sports that aligned with their physical attributes, they exhibited a heightened motivation to join sports clubs. Among the 750 children aged 7-12 who participated in the talent identification program, 202 (26.9%) enrolled in sports clubs for further training. Statistical analysis revealed a significant disparity in motor coordination between children who joined sports clubs and those who did not after the talent detection process (F=23.44, p=0.000, ηp²=0.149). These findings support the hypothesis that children who ultimately chose to participate in sports clubs generally possessed higher levels of motor coordination. However, a majority of these children lacked knowledge regarding the specific sports that best matched their abilities and the appropriate training environments to develop these skills

Talent identification in youth sports is a multifactorial process that involves the assessment of an individual's physical, psychological, and sociocultural attributes (Fransen et al., 2012; Orosz & Mezo, 2015; Pion, Fransen, et al., 2015). By identifying specific strengths, weaknesses, and learning styles, it is possible to design tailored training programs that optimize an athlete's development and maximize their potential for long-term success (Baker et al., 2019; Lloyd et al., 2016; Read et al., 2020).

The process of identifying athletic potential in children represents a pivotal stage in the development of elite athletes (Bergeron et al., 2015; Engebretsen et al., 2015). Within the context of a Long-Term Athlete Development (LTAD) model, talent identification extends beyond merely identifying children with outstanding physical capabilities at an early age (Baker et al., 2017; Collins & MacNamara, 2012). It encompasses a comprehensive assessment of an individual's potential for growth and development over time. By adopting an LTAD approach, the risk of burnout and injuries, which are prevalent among young athletes who are prematurely subjected to high-level competition, can be mitigated (Beaudoin et al., 2015; Temm et al., 2022; Thomas et al., 2021). Through the implementation of a structured physical training program, bone and muscle growth can be stimulated, leading to increased bone density and improved postural alignment (Gibala et al., 2012). These physiological adaptations ultimately enhance an individual's capacity to achieve superior performance outcomes.

The implementation of talent identification programs can significantly enhance the likelihood of children engaging in regular sports participation. Engaging in physical activity from a young age serves as a critical foundation for cultivating future athletic excellence (Lloyd et al., 2015). Early involvement in sports fosters the development of an active lifestyle, which is a pivotal determinant in preventing obesity and chronic diseases (Booth et al., 2012). Prior research has consistently demonstrated a positive correlation between early sports initiation and improvements in aerobic capacity, muscular strength, coordination, and flexibility (Lloyd et al., 2016). Beyond physical benefits, sports participation contributes to the development of fine and gross motor skills, as well as cognitive abilities such as decision-making and problem-solving (Mavilidi et al., 2018). In essence, early sports involvement not only stimulates physical growth but also provides a robust framework for holistic individual development. Physical activity triggers the release of neurotransmitters, including dopamine and serotonin, which play a vital role in enhancing mood, motivation, and learning capacity (Doherty & Forés Miravalles, 2019). Furthermore, sports participation stimulates neuroplasticity, the formation of new neural connections, which is essential for the development of cognitive skills such as concentration, problem-solving, and rapid decision-making (Campanella et al., 2024; Chapman et al., 2016). Moreover, sports participation offers a myriad of non-physical benefits, such as increased self-confidence, the cultivation of social relationships, and the development of positive character traits.

The findings of this study have important implications for rural or resource-limited areas. In such regions, access to organized sports clubs and adequate training facilities is often limited, which can hinder children's participation in talent identification programs and reduce their opportunities for optimal development. Therefore, it is crucial to develop more inclusive models, such as mobile sports camps or partnerships with local schools, to provide greater access for children in underserved area.

Cultural attitudes toward sports can also influence children's participation and the talent identification process. In some cultures, sports may be undervalued compared to academic achievement, or gender norms may restrict the types of sports that boys and girls are encouraged to pursue. These cultural factors can affect children's interest in sports and parents' willingness to support their involvement. As such, talent identification programs need to consider these cultural aspects, adopting a more holistic approach that highlights not only physical skills but also the psychosocial benefits of sports participation.

Conclusions

The findings of this research indicated that there were notable variations in anthropometric characteristics, motor coordination abilities, and physical performance levels among children aged 7 to 12 years, with gender and age being significant factors. Additionally, out of a total of 750 children who underwent sports talent identification, 202 children (representing 26.5% of the sample) proceeded to participate in various sports. Further analysis unveiled statistically significant disparities between children who engaged in sports and those who did not. Sports participation is widely recognized as a beneficial experience for youth, fostering holistic development. Physical activity is attainable for all adolescents, though adaptations or support may be necessary for individuals with disabilities. The extent of sports involvement is influenced by a complex interplay of biological, psychological, and sociocultural factors, including physical maturation, cognitive abilities, psychosocial development, and environmental resources. A personalized approach to sports participation is essential, aligning with the unique developmental stage, interests, and capabilities of each child.

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Conflicts of interest

If the authors have any conflicts of interest to declare.

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Datos de los/as autores/as:

Risky Syahputra	riskysyahputra.2022@student.uny.ac.id	Autor/a
Tomoliyus Tomoliyus	tomoliyus@uny.ac.id	Autor/a
Fx Sugiyanto Sugiyanto	fx.sugiyanto56@gmail.com	Autor/a
Syahrial Bakhtiar	syahrial@fik.unp.ac.id	Autor/a
Yovhandra Ockta	yovhandra1999@gmail.com	Autor/a
Lucy Pratama Putri	lucy.pratamaputri@gmail.com	Autor/a
Heru Afrian	heruafrian@gmail.com	Autor/a
Jeprinaldi Jeprinaldi	Jeprinaldi@gmail.com	Autor/a