Sport talent identification among children in Malang

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Abstract

Talent Identification is essential to identify the potential of young athletes to succeed in senior elite sports. This study aimed to identify talent in sports among children in Malang. This research was an observational cross-sectional study involving 356 children (68% boys) who were purposively selected in Malang city based on age criteria (age 11 years old). Several tests and measurements were conducted for talent identification, including anthropometric tests, eye-hand coordination, leg muscle power, arm muscle power, agility, speed, and VO2max. Sports talent identification was conducted based on Norm developed by Narlan and Juniar. The results were matched into a sports talent profile table according to the age and gender of the participants. Results with the sports branch profile norms were matched, if the test results were at least the same or better than the sports study program, then the child was "talented" in that sport. The results of data analysis showed that two children (0.56%) were in the potential category, 58 children (16.29%) were in the moderately potential category, 172 children (48.31%) were in the low potential category, and 124 children (34.83 %) were included in the non-potential category. Judo, triple jump, long jump, high jump, javelin throw, table tennis, and shot put were sports identified as gifted by children in the categories of potential, moderate, and low potential. The results of the study report that children have the potential to be able to excel in Judo, triple jump, long jump, high jump, javelin throw, table tennis, and shot put.

Keywords: talent identification, early age athlete, achievement

INTRODUCTION

The Talent Identification (TID) program is designed to identify young athletes with the potential to succeed in senior elite sports (Rongen et al., 2018). The last few decades have seen a considerable increase in academic reviews that summarize issues related to identifying, selecting, and developing sports talent (Baker et al., 2018). In recent years, talent identification programs have become increasingly popular and are seen as an important avenue for maximizing athletes' potential for success (Anshel & Lidor, 2012).

The ability to maximize athlete performance and potential/talent in an elite environment has always been at the forefront of the sports science perspective (Jacob et al., 2018). The identification process has become a routine and professional activity in a sport involving a significant investment of resources (e.g., financial, personnel, time) by national associations, clubs, coaches, sports scientists, players, and athlete families (Williams et al., 2020). In high-level sports organizations,

prediction of elite players ('talent identification', or TID), is a priority, thus enabling efficient use of resources in developing these athletes for future success (Johnston et al., 2018).

Teenagers are the right age for talent identification tests. Efforts to improve achievement are more manageable if done from an early age (Rohmawati & Nurkamto, 2018) so that when talent identification is carried out, the characteristics of talent or potential can be recognized. A successful talent development environment in sport is described as a team or club that consistently produces high-level athletes based on their junior athletes and provides them with the resources to cope with future transitions (Williams et al., 2020).

Malang City is one of the cities in East Java Province which has many achievements in sports. This is inseparable from the efforts of the Indonesian National Sports Committee (KONI) of Malang City to improve performance. One of the efforts carried out by KONI Malang City is funding sports, sports technical programs, and non-technical sports programs (Prayogo, 2017). KONI Malang also enforces good sports coaching management, one of which is conducting a talent identification test for sustainable regeneration (Mursalim,2018). This sports talent identification activity is conducted because it is a major requirement in all sports. The omission of talent identification results in the interruption of the regeneration of athletes, the decline in sports achievements, and the unidentified potential of children.

Many studies on talent identification have been carried out. Arifin et al. (2017), in their research, identified sports talent in elementary school students which, of 114 children, the dominant sporting talent was football (33.33%). Bramantha (2018), in his study, identified talent with the sport search method on male elementary school students with the conclusion that six students had a good sports talent or potential from the 26 students involved. Additionally, Rohmawati & Nurkamto (2018) reported that 223 out of 473 children involved in the talent identification test were included in

the non-gifted category. These studies increase the productivity of scientific publications on the theme of talent identification.

This study seeks to determine the identification of giftedness of 11-year-old children in Malang City. This study involves 11 years old children because at this age, children are in the high category, their physiological characteristics are the supporting muscles developing, 2) being conscious of their growth, 3) Being fond of active games, 4) No gaining weight and rising height, 5) the growth of muscle is not in line with the body growth, 6) the motion develops better, 7) the interest on competitive sport branches is high, 8) gender differences is obvious, 9) looked healthy and fresh, 10) the motion coordination develops well, 11) the growth of leg is faster than other parts of the body, 12) the muscle strength in male and female looks more different (Visalim et al., 2018). This study aimed to identify talent in sports among children in Malang.

METHOD

Research Design

This research was an observational cross-sectional study, which means a research approach model with one-time data collection (Arikunto, 2013). This research was conducted at the Faculty of Sports Science (FIK) State University of Malang to cooperate between KONI Malang City and FIK State University of Malang to improve athletes' achievements in Malang City. This research was conducted in December 2020.

Participants

The subjects involved are 11-year-old students who live in Malang City. In this study, the researcher did not involve students aged 9, 10, and 12 years old because data on potential or talent for students aged 9, 10, and 12 years old had been published. The subjects involved are 11-year-old students who live in Malang City. The sampling technique used is purposive sampling with the criteria of research subjects: students and students aged 11 years, domiciled in Malang City, and willing to take the

whole series of tests. Based on the sampling technique, the research subjects were 356 children consisting of 241 male and 115 females.

Research Instruments

The instruments in this study were in the form of tests and measurements to determine talent identification which included: 1) height, 2) sitting height, 3) weight, 4) arm span, 5) throwing and catching tennis balls, 6) throwing basketballs, 7) straight jump, 8) agility run, 9) 40-meter sprint, and 10) multistage run (Narlan & Juniar, 2020).

1) Height

   This test aims to determine the height and the vertical distance from the floor to the top of the head. This test is performed with the subject standing and measured with accuracy with a stadiometer—recording height up to 0.1 cm.

2) Sitting Height

   This test aims to measure the upper body, including the length of the trunk, neck, and head. Sitting height is the vertical distance between the seat and the top of the head. The subject sat on a chair with a height of 40 cm and was measured using a stadiometer. Sitting height is the height at the time of sitting minus the seat height (40 cm). The measurement results are recorded with an accuracy of 0.1 cm.

3) Weight

   This test aims to measure body weight. Measurements are made with a scale. Measurement of body weight at the level of accuracy of 0.1 kg.

4) Arm Span

   This test aims to measure the width of the span of both arms. The subject stands upright. The heels, buttocks, back, and back of the head are firmly against the wall. Measurements were made with a long measuring tape at a distance between the tips of the middle fingers of both arms.

5) Throwing and catching tennis balls

This test aims to measure eye-hand coordination. The subject threw a tennis ball on the wall (target) with a distance of 2.5 from where the subject was standing. The subject throws 10 throws with the selected hand towards the target and tries to catch it with the same hand. The catch is successful if the ball hits the target, and the student can catch the ball bouncing straight from the target. One throw that hits the target and can be caught correctly gets a score of 1.

6) Throwing basketballs

   This test aims to measure the strength of the upper body. The subject sat on his back on the floor with his legs straight in front of him. The ball is held at chest level and thrown as far as possible without starting. The farthest throw is the score recorded with an accuracy of 5 cm.

7) Vertical jump

   This test aims to measure the explosive power of the leg muscles. The subject jumps as high as possible and then touches his hand on a measuring instrument that has been attached to the wall. The jump height is the score obtained.

8) Agility run test

   This test aims to measure the ability to change direction quickly while performing a movement. The subject runs forward to another line with a distance of 5 meters and returns to the starting line. This was repeated five times. The score obtained is a record of the time taken.

9) 40-meter sprint

   This test aims to measure running speed. The subject stands at the starting line and then runs as fast as possible to the finish line. The score obtained is a record run from the start line to the finish line.

10) Multistage Fitness Test

    This test aims to measure aerobic capacity. Subjects ran back and forth with a distance of 20 meters, following the cues from the tape

recorder. The subject's ability is measured by the acquisition of the number of "levels" and "series" that have been successfully carried out.

Research Procedure

This study has several procedures. First, the subjects involved were divided into several groups led by a "leader". One group consists of 20-25 members. All groups took the entire series of tests carried out for three days. All groups take turns taking tests at each post. Second, after all, groups carried out 10 test items, the test data was assessed according to age and gender. Then it is matched between the test results with the norm of the sport's profile. Third, the conclusion is based on the test results. If the test results are equal to or more than the sport's profile of interest, then the child is "talented" in that sport.

Data Analysis

In this study, data analysis was carried out in 2 stages. First, the measurement results of 10 test items were consulted with the norm to obtain a score per test item. The norm refers to the talent scouting test by Hidayatullah & Purnama (2008). Second, the scores obtained are then summed and consulted with the athlete's talent norm. The norms for assessing the modification of talent identification and athletes' giftedness norms can be seen in Table 1 and Table 2.

Table 1. Modified Norms of Sports Talent Identification for Male and Female aged 11 years

Category	TCTB		TB		VJ		A		40M		MFT	
	M	F	M	F	M	F	M	F	M	F	M	F
A (5)	>15	>15	>5,25	>5,25	>35	>35	<19,75	<19,75	<6,81	<6,81	>7,2	>7,2
B (4)	10 – 14	10 – 14	4,4 – 5,2	4,4 – 5,2	29 – 34	29 – 34	19,8 – 22,2	19,8 – 22,2	6,8 – 7,7	6,8 – 7,7	5,2 – 7,1	5,2 – 7,1
C (3)	6 – 9	6 – 9	3,5 – 4,4	3,5 – 4,4	23 – 28	23 – 28	22,2 – 24,7	22,2 – 24,7	7,7 – 8,7	7,7 – 8,7	3,3 – 5,1	3,3 – 5,1
D (2)	3 – 5	3 – 5	2,7 – 3,5	2,7 – 3,5	17 – 22	17 – 22	24,7 – 27,2	24,7 – 27,2	8,7 – 9,6	8,7 – 9,6	2,3 – 3,2	2,3 – 3,2
E (1)	<2	<2	<2,65	<2,65	<16	<16	>27,23	>27,23	>9,67	>9,67	<2,3	<2,3

Source: Hidayatullah & Purnama (2008)

Information:

M : Male

F : Female
TCTB : Throw Catch Tennis Ball
TB : Throw Basketball
VJ : Vertical Jump
A : Agility
40M : 40 Meter Run
MFT : Multistage Fitnest Test

Table 2. Athlete's Giftedness Norms

No	Total Value of 10 Test Items	Category
1	27 – 30	High Potential
2	23 – 26	Potential
3	19 – 22	Moderately Potential
4	15 – 18	Low Potential
5	<15	No Potential

Source: Hidayatullah & Purnama (2008)

RESULT

Research subjects totalling 356 children consisting of 241 males and 115 females had taken a series of tests, namely: 1) height, 2) sitting height, 3) body weight, 4) arm span, 5) throwing and catching a tennis ball, 6) throw a basketball, 7) jump straight, 8) agility run, 9) sprint 40 meters, and 10) multistage run. The test result data can be seen in Table 3.

Table 3. Sport Search Test Results

No	Test Items	Mean	Standard Deviation	Maximum	Minimum
1	Sitting Height	69,73	3,74	92	60
2	Height	131,69	6,67	153	112,6
3	Weight	28,80	6,68	72	18
4	Arm Range	131,99	7,52	160	104
5	Throw Catch Tennis Ball	5,19	4,91	18	0
6	Throw a Basketball	5,17	14,52	223	0,65
7	Vertical Jump	29,54	5,92	45	7
8	40 Meter Run	8,63	5,84	112,3	6
9	Agility	20,90	1,8	30,63	14,45
10	Multistage Fitnest Test (MFT)	4,33	2,32	10	1

The test results of 10 test items were then consulted with the test norm table for 11-year-olds to get a score. From the sum of these scores, the talent level was consulted, consisting of very potential, potential, quite potential, less potential, and not potential. The results of the giftedness level can be shown in Table 4.

Table 4. Recapitulation of Giftedness of 11-Year-Old Children in Malang City

Score	Category	Total	Persentation (%)

27 – 30	High Potential	0	0
23 – 26	Potential	2	0,56
19 – 22	Moderately Potential	58	16,29
15 – 18	Low Potential	172	48,31
<15	No Potential	124	34,83
Total		**356**	**100**

Referring to Table 4, the findings of this study showed that 356 children had high potential (0.56%), moderate potential (16.29%), low potential (48.31%), and no potential (34.83%). It can be concluded that most of the children involved are less potential the low potential category is the most common category, with a total of 172 children (48.18%). Sports talent identification was conducted through consultation based on the talent profile of the referral sport from Hidayatullah & Purnama (2008). After carrying out ten test items, they are then matched into a sports talent profile table, and an assessment is carried out according to the age and gender of the participants. The test results with the sports branch profile norms are matched, if the test results are at least the same or better than the sports study program, then the child is "talented" in that sport. The table of sporting talent profiles can be seen in table 5. Furthermore, from the data in Table 4, sports talent identification is classified as potential, moderately potential, and low potential. More details can be seen in Table 5.

Table 5. Results of Identification of Sports Talent

No	Type of Sports	Category	Total	Persentation (%)
1	Judo	Potential	1	0,28
		Moderately Potential	20	5,62
		Less Potential	19	5,34
2	Sprint	Potential	1	0,28
		Moderately Potential	0	0
		Less Potential	0	0
3	Marathon	Potential	2	0,56
		Moderately Potential	0	0
		Less Potential	1	0,28
4	Triple Jump	Potential	2	0,56
		Moderately Potential	0	0
		Less Potential	27	7,58
5	Long Jump	Potential	2	0,56
		Moderately Potential	2	0,56
		Less Potential	27	7,58
6	High Jump	Potential	2	0,56
		Moderately Potential	0	0
		Less Potential	27	7,58
7	Javelin Throw	Potential	1	0,28
		Moderately Potential	0	0

		Less Potential	17	4,78
8	Archery	Potential	1	0,28
		Moderately Potential	5	1,40
		Less Potential	6	1,69
9	Football	Potential	0	0
		Moderately Potential	3	0,84
		Less Potential	0	0
10	Table Tennis	Potential	1	0,28
		Moderately Potential	22	6,18
		Less Potential	0	0
11	Shot Put	Potential	1	0,28
		Moderately Potential	29	8,15
		Less Potential	17	4,78

Sports talent identification was conducted through consultation based on the talent profile of the referral sport from Hidayatullah & Purnama (2008). After carrying out ten test items, they are then matched into a sports talent profile table, and an assessment is carried out according to the age and gender of the participants. The test results with the sports branch profile norms are matched, if the test results are at least the same or better than the sports study program, then the child is "talented" in that sport. Table 6 shows the giftedness of children in several sports. Referring to Table 5, there are very few children who fall into the potential and quite potential categories compared to the less potential and not potential categories, so the analysis of sports talent is also getting narrower.

Table 6. Sporting Talent Profiles

No	Sports	TCTB	TB	VJ	A	40M	MFT
1	Judo	3	4	5	3	2	3
2	Sprint	1	5	3	4	5	2
3	Marathon	1	3	1	3	4	5
4	Triple Jump	2	5	2	3	5	2
5	Long Jump	2	5	2	3	4	2
6	Javelin Throw	3	4	5	3	4	2
7	Archery	5	2	5	1	1	3
8	Football	4	4	3	4	4	4
9	Table Tennis	5	3	3	3	3	3
10	Shot Put	3	4	5	2	2	1

Source: Hidayatullah & Purnama (2008)

Table 6 shows the distribution of the talent in the potential, moderately potential and low potential among children in several sports. Referring to Figure 1, very few children fall into the potential and moderately potential categories compared to the less potential and not potential categories, so the analysis of sports talent is also getting narrower.

Children categorized as quite potential have talents in judo, long jump, archery, table tennis, and shot put. Children categorized as less potential have talents in judo, marathon, triple jump, high jump, javelin throw, archery, and shot put. More details can be seen in Figure 1 below.

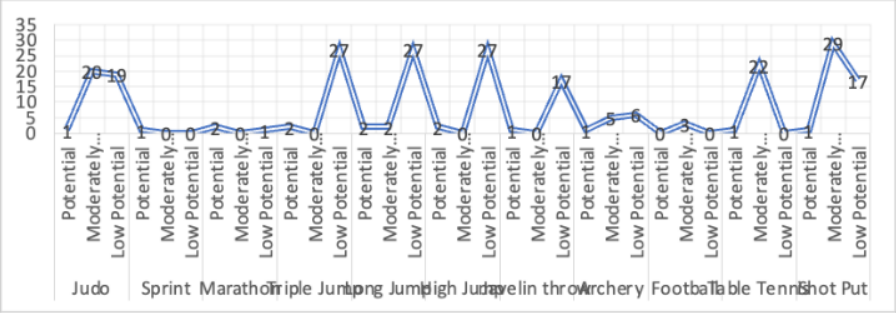

Figure 1. Talent for Sports by Category

Referring to Figure 1, children in the high potential category have many talents compared to other categories in judo, table tennis, and shot put. Meanwhile, children in the less potential category have many talents in judo, triple jump, long jump, high jump, javelin throwing, and shot put. a considerable number of children who were currently involved in judo, table tennis and shot put were categorized within high potential category.

DISCUSSION

The findings in this study showed that 356 children had high potential (0.56%), moderate potential (16.29%), low potential (48.31%), and no potential (34.83%). It can be concluded that most of the children involved are less potential.

This finding implies that if a child's potential can be identified from the start, parents will decide what sport to engage in, a coach can nurture the child according to his potential following the Long-Term Athlete Development (LTAD) principle, and the government can make one policy through regulations to be able to foster talented athletes.

World-class athletes have been identified based on the talent identification program. A child who has the potential for sports will be easier to develop and achieve than those who do not (Roberts et al.,

2019b). Talent identification will produce world-class athletes, a case in the Caribbean region (Trinidad and Tobago, Jamaican, and the Bahamas) consistently producing athletic athletes for decades (Thomas et al., 2021). Talent identification does not have to be done by analyzing physical conditions and anthropometry (Narlan & Juniar, 2020), but can also be done by observing the match (Jokuschies et al., 2017; Reeves et al., 2018; Roberts et al., 2019a). This is also relevant to the analysis conducted by Johnston et al. (2018), which mentions accurate identification by means of a performance/physical test and an assessment by a trainer.

Although a gifted child has been found, it is possible that he will not succeed in achieving achievements. Talent development is multifactorial and dynamic, with talent changing and adapting according to the environment in which it is nurtured (Thomas et al., 2021). From a holistic perspective, a talent development environment is defined as a dynamic system consisting of the athlete's environment and interrelationships at the micro-level (e.g., family, peers, coach, club); as well as the larger context in which this environment is embedded at the macro-level (e.g., sports federations, sports culture, education systems). A successful talent development environment in sport is described as a team or club that consistently produces high-level athletes based on their junior athletes and provides them with the resources to cope with future transitions (Thomas et al., 2021).

The results of this study indicate that most children aged 11 years in Malang City have less potential in sports. Consequently, the regeneration of athletes and the achievement of Malang City will be hampered. Athletes whose talents have been identified must be properly nurtured to compete in modern sports (Till & Baker, 2020).

The main purpose of talent identification is to identify and develop the great potential for success as an athlete in adulthood (Till & Baker, 2020). Consequently, this requires the element of predicting the future. Practitioners must make decisions about individuals based on their

predictions about that individual's future performance abilities in a suitable sport and how the sport will develop over time (Till & Baker, 2020). Therefore, two key questions emerge from this view; do we understand sports performance's current and future demands? These two questions are important for understanding the talent identification and development process because we need to be able to identify and develop athletes to train and compete in their future versions of the sport. However, this is certainly not an easy task. This study is only limited to talent identification, it is hoped that it can investigate interests and involve a wider range of subjects.

CONCLUSION

The study results reported that children aged 11 years in Malang City were mostly low potential. Therefore, the regeneration of athletes and the achievement of Malang City could be hampered. Athletes whose talents have been identified must be properly nurtured to compete in modern sports. The author suggests, especially to KONI, to pay more attention to the results of this study. KONI can provide a policy, so that early childhood children in Malang City have more intense physical activity, either through extracurricular programs organized by the school or out-of-class activity programs packaged in physical activities. This is intended so that children can develop motor skills through the activities they participate in. In addition, KONI also needs to carry out sustainable programs to accommodate early childhood children whose talents have been identified to be fostered further to achieve maximum performance in the future.

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