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Analysis of talent identification of indonesian potential athletes in athletics in the national students athletics championship

Análisis de la identificación de talentos de atletas potenciales indonesios en atletismo en el campeonato nacional de atletismo estudiantil

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Abstract. This research contributes to the development of talent identification in athletic athletes, especially those from students aged 15-18 years. We identified the potential and need for the development of athletes from students in Indonesia. The aim of this research is to conduct an analysis of talent identification of potential Indonesian athletic athletes at the national student athletic championships. The use of ex post facto descriptive methods in this research has benefits, one of which is to analyze the factors that occurred which could have caused this phenomenon. The number of participants involved was 142 athletes consisting of 16 men and 18 women in the 100-meter run, 18 men and 18 women in the 1000-meter run, 18 men and 18 women in the long jump, which are the results of selection in 6 provinces in Indonesia. There is a positive correlation between anthropometric measurements, especially in height, arm span, and leg length, on the results of the 100 and 1000-meter runs, in the long jump, the results of anthropometric measurements are also positively correlated with the final results of the competition, especially in height, arm span, and leg length. Meanwhile, in the shot put, the results of anthropometric measurements which include body weight, height, arm span and leg length are positively correlated with the shot put results, so that the ideal anthropometry average will show maximum results of the competition. Body weight does not correlate with the final results, especially in the 100-meter run, 1000-meter run and shot put competitions. Unlike the shot put, the results of anthropometry measurements influence the results of the competition. These measurement parameters are useful, but on the other hand, training and nutrition intake can also influence the results of competition performance.
Keywords: Talent Identification, Athletics, Student Athletics Championship

Resumen. Esta investigación contribuye al desarrollo de la identificación de talentos en deportistas atléticos, especialmente en estudiantes de 15 a 18 años. Identificamos el potencial y la necesidad para el desarrollo de los atletas de los estudiantes en Indonesia. El objetivo de esta investigación es realizar un análisis de la identificación de talentos de posibles atletas indonesios en los campeonatos nacionales de atletismo estudiantil. El uso de métodos descriptivos ex post facto en esta investigación tiene beneficios, uno de los cuales es analizar los factores ocurridos que podrían haber causado este fenómeno. El número de participantes involucrados fue de 142 atletas conformados por 16 hombres y 18 mujeres en la carrera de 100 metros, 18 hombres y 18 mujeres en la carrera de 1000 metros, 18 hombres y 18 mujeres en salto de longitud, que son los resultados de la selección. en 6 provincias de Indonesia. Existe una correlación positiva entre las medidas antropométricas, especialmente en altura, envergadura de brazos y longitud de piernas, con los resultados de las carreras de 100 y 1000 metros, en el salto de longitud, los resultados de las medidas antropométricas también se correlacionan positivamente con los resultados finales. de la competencia, especialmente en altura, extensión de brazos y longitud de piernas. Mientras tanto, en el lanzamiento de peso, los resultados de las mediciones antropométricas que incluyen el peso corporal, la altura, la extensión de los brazos y la longitud de las piernas se correlacionan positivamente con los resultados del lanzamiento de peso, de modo que el promedio antropométrico ideal mostrará los resultados máximos de la competencia. El peso corporal no se correlaciona con los resultados finales, especialmente en las competiciones de carrera de 100 metros, carrera de 1000 metros y lanzamiento de peso. A diferencia del lanzamiento de peso, los resultados de las mediciones antropométricas influyen en los resultados de la competición. Estos parámetros de medición son útiles, pero, por otro lado, el entrenamiento y la ingesta nutricional también pueden influir en los resultados del rendimiento competitivo.
Palabras clave: Identificación de Talento, Atletismo, Campeonato Estudiantil de Atletismo

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Introduction

Athletes who have trained diligently for a long time may not be able to achieve maximum results if they are not talented in sports, resulting in a waste of their time and energy (Williams et al., 2020; Ronkainen et al., 2023; Horne et al., 2022). This is where the importance of talent scouting is needed to identify someone who has potential, skills, and high motivation in sports, so that it can be predicted that they will achieve maximum results. The methods used in the search for identification of talented athletes were natural selection and scientific selection (Zamirovna, 2021; Saward et al., 2020). "Natural Selection" aims to identify potential athletes who have gone through specific sports, so it depends on the individuals participating in sports. Meanwhile, "Scientific Selection" is an active process and procedure of identifying individuals who are skilled in a particular sport. The process itself includes physical, physiological, and psychological, that can affect the athlete's performance. The advantages of using "natural selection" includes: selecting talented individuals, reducing the extensive amount of time it takes to find athletes suitable for the sport, minimizing the energy and time of the coaches in training the athletes in specific sports, increasing the competitiveness of athletes towards international achievement with other countries (Chunmei,

2021). On the other hand, the results of research on athlete development showed that biological age is more important than chronological age. Another factor is that children who enter adulthood rather early have advanced anthropometric characteristics which include taller, stronger, heavier (Toselli et al., 2021). Thus, it can be interpreted that the success or failure of a young athlete can be influenced by her/his dynamic and multifactorial maturity (Crewther et al., 2024; Junior et al., 2021; Morais et al., 2021). The ages of 12 to 14 are crucial for physical growth, biological transformation, and maturity. So, in the concept of LTAD (Long Term Athlete Development), sports coaching is referred to as Active Start which is carried out at the age of 0 to 6 years (Varghese et al., 2022). Subsequently, the age of 12 (known as early adolescence) is the timeframe of accelerated adaptation to aerobic exercise. This is also supported by the statement that "battery test" used for talent identification must have a high "quality" in order to differentiate the competence and ability of children (Saward et al., 2020).

Talent identification can be done in two steps: first, at the age of 12-16 years old, teachers at school will evaluate the physical abilities and health of adolescents, then each state will invite these individuals into the second step (Williams et al., 2020; Pino-ortega et al., 2021; Doncaster et al., 2020). Second, the selected individuals will be reassessed using advanced scientific equipment and the gifted individuals will be selected based on the results (Till & Baker, 2020; Ford et al., 2020). There are 5 indicators to determine someone's talent, which are: 1) genetic or inherited factors, 2) indicator of early stage talent progress. 3) evidence of potential talent as an indicator of achievement in sports, 4) the limited talent within certain populations, 5) talent that is specific to particular domains. With a specific kind of talent, it is obviously easier for someone to refer to a particular talent and this can affect the development in their progress of future achievement (Abdullaev, 2022; Dehghansai et al., 2021). This is supported by NFHS or National Federation of State High School Associations (2008-2009). which stated that from an economic perspective, successful identification and talent development in athletics has the benefit of the multi-billion dollar sports industry, where there are 7.536.753 students participating in athletics annually. Proper identification of athletic talent has many benefits (Khan et al., 2023).

Indonesian athletes who are capable of producing athletes who compete at international level, talent identification in the field of athletic sports needs to be implemented (Satriawan et al., 2023; Bakhtiar et al., 2023). Along with physical tests, tests that use "battery test" must also be carried out to show the accuracy of the results. Thus, seeing the importance of talent identification and opportunity to achieve sports achievements at international level, especially in Indonesia, would be necessary. In this case, PB PASI (The Executive Board of Indonesian Athletic Association) has collaborated with DBL Indonesia, in the Indonesian Students Athletic Championship (SAC) which has been attended by 31.000.000 students from 2.000 schools. Therefore, talent identification in athletic sports needs to be carried out in order to facilitate the training of young athletes through schools in Indonesia. In this way, the guidelines in talent identification through anthropometry measurements and competition record results can be used as guidelines in finding potential athletes. Therefore, the analysis of athletic sports needs to be carried out in order to identify athletics athletes in Indonesia.

The aim of this research is to conduct an analysis of talent identification of potential Indonesian athletic athletes at the national student athletic championships.

Methods

This research was conducted using the ex-post facto method in the form of tests and measurements. The ex-post facto process is a type of research that does not control variables directly.

This research was carried out in several provinces in Indonesia that have been designated as organizers of the Student Athletic Championship (SAC) competition, including: Sumatra, West Java, Bali-Nusa Tenggara, Jakarta-Banten, Central Java, East Java. This research was carried out for 7 months in March-October 2024, using a sample of students aged 15-18 years

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Participants

The participants of this research were children between the ages of 15-18 years old from various provinces in Indonesia that have been designated as hosts of Student Athletic Championships (SAC) competition. This research was carried out in several provinces in Indonesia that have been designated as organizers of the Student Athletic Championship (SAC) competition, including: Sumatra, West Java, Bali-Nusa Tenggara, Jakarta-Banten, Central Java, East Java. This research was carried out for 7 months in March-October 2024. This study uses an ex-post facto method in the form of tests and measurements. The ex-post facto process is a type of research that does not control variables directly.

The reason for choosing these research locations was due to the fact that these locations were the places which held the athletic competition between students throughout Indonesia. Besides, these provinces were chosen because many athletes who contributed to national athletics came from those places. The prediction test was divided into two sections, consisting anthropometric tests and achievement records in each branch of competitions which consist of 100-meter sprint, 1000-meter middle-distance run, long jump and shot put. As for the anthropometric test, it was conducted in the form of body height test, body weight test, arm span measurement, and leg length measurement. The data were then processed through the entry, coding,

processing and analysis processes. Entry is the process of entering the age data, as well as measurements of height and weight into a table that has been made. Afterwards, the results of height and weight measurements were calculated using this formula: BMI = Body Weight (kg) / Height (m)2, with the following categories:

Table 1.
Body Mass Index (BMI)

	Category	Body Mass Index
Underweight	Severe underweight	< 17,0
	Slight degree of underweight	17,0 - 18,4
Ideal	Ideal	18,5 - 24,9
Overweight	Overweight	25,0-29,9
	Grade 1 overweight	30,0-34,9
	Grade 2 overweight	> 35

The following table shows the name of the test, the tools and units used, as well as the number of assistants:

Table 2.
The Name of The Test, Tool, and Unit

No	Test Name	Location	Tool	Unit	Assistant
1.	Height	Room	Microtoise	Cm	1
2.	Weight	Room	Weight Scales	Kg	1
3.	Arm span	Room	Roll Meter	Cm	1
4.	Leg length	Room	Roll Meter	Cm	1

Site and Time of Research

This research will be conducted in 6 provinces in Indonesia and will be carried out over a period of 8 months, from March to October 2024.

Data Collection

The data were collected using a talent prediction test instrument prepared by researchers who had been tested beforehand. The research instrument for predicting children's talent consisted of 4 anthropometric test items and 1 data of each student's competition achievement according to the number of competitions followed by them.

Data Analysis

Statistical analysis was performed using SPSS version 24. All data are presented as mean ± standard deviation. Pearson's product moment test was used to determine the correlation between variables and finish time. The significance level for all statistical tests was set at $p < 0.05$.

Results

Anthropometric Profile

The Characteristics of Body Mass Index (BMI)

The following are the results of BMI percentage measurement in the 100-meter run, 100-meter middle-distance run, long jump and shot put with a total of 142 talented young athletes taken from 6 provinces in Indonesia. The average percentage rate of all athletes' body weight is 17% in the underweight category, 65% in the ideal category, 9% in the overweight category, 4% in the grade 1 overweight category, and 3% in the grade 2 overweight category (see Table 3). Then, the distribution of height and weight (see Table 4) revealed that the average weight and height in the men's 100-meter run is 168,9±4,854 cm, 56.63±6.010 kg, and for women is 159,61±6,427 cm, 50.71±7.189 kg. Meanwhile, in the men's 1000-meter run, the average is 168.50±6.793 cm, 56.60±1.646 kg, and for women it is 157.06±6.847 cm, 47.66±4.423 kg. Then, in the men's long jump, the average is 162.53±5.235 cm, 61.11±5.838 kg and for women it is 162.53±5.235 cm, 50.51±4.853 kg. Followed by men's shot put, in which the average is 174.67±6.278 cm, 86.94±19.541 kg, and for women it is 164.28±5.592 cm and 71.19±11.117 kg.

Anthropometric's Characteristics

The age distribution and competition time result of athletes are presented below (see Table 4). In the men's 100-meter run, the average is 18.13±.957 years old and the average competition results is 11.63±0.22.0 seconds, for women, the age average is 17.56±1.042 years old and 13.44±.369 seconds. Followed by men's 1000-meter run, the average age for them is 19.5±1.294, and the average time result is 120.53±.0132 seconds, meanwhile the average age for women is 17.93±.961 years old and the competition result is 180.35±.1746 seconds. Then, the results of the men's long jump competition, the average age is 17.89±.900 years old and the result of the competition is as far as 5.64±.551 meter. Meanwhile, for the women, the average age is 17.93±.961 years old and the average race results were as far as 4.073±1.124 meter. Followed by the competition results in the shot put, the average age is 17.89±.758 years old and the race results is as far as 11.640± 1.497 m^2, while for women, the average age is 17.83±.857 years old and the result is 7.428±2.286 m^2.

The Average Arm Span and Leg Length

The average of arm span and leg length in the men's 100-meter run is 170.06±6.148/cm, 84.13±6.054/cm, as for women it is 162.56±8.276/cm, 80.44±6.653/cm. Meanwhile, in the 1000-meter run it is 166.11±22.313/cm, 85.50±5.491/cm. Then, the men's long jump is 174.11±6.902/cm, 86.72±6.755/cm, whereas the women's is 158.50±6.419/cm, 79.67±6.774/cm. Next, in the shot put, the men is 179.22±8.300/cm, 87.67±54.706/cm, meanwhile the women is 162.22±16.075/cm, 83.28±53.271/cm (see Table 4).

Table 3.
The Percentage Results of BMI Anthropometric Measurements

No	Category	Branches of Athletics								
		100 M M	100M W	1000 M M	1000 M W	LJ M	LJ W	TP M	TP W	Percentage
1	Underweight	3	7	4	4	1	4	0	0	17%
2	Ideal	15	10	13	14	16	8	8	6	65%
3	Overweight	0	1	1	0	1	0	4	6	9%
4	Obesity 1	0	0	0	0	0	0	3	3	4%
5	Obesity 2	0	0	0	0	0	0	3	1	3%

The results are declared based on the percentage rate of all athletes selected for all sports. The following are the average results of anthropometric measurements consisting of height, weight, arm span, and leg length of potential talented athletes competing in athletics at SAC which are deemed as ideal and suitable.

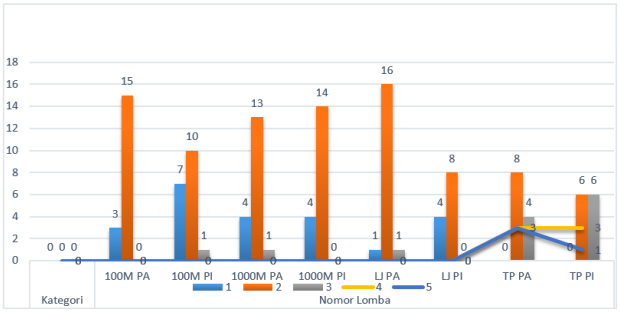

Figure 1. Bar Chart of the Results of Anthropometric Measurement

Table 4.
Average Athletes' Anthropometric Test Results and Race Results

Variables	Results (100-meter run)	
Gender	Men (n=16)	Women (n=18)
Age	18.13±.957	17.56±1.042
Height/cm	168,9±4,854	159,61±6,427
Weight/kg	56.63±6.010	50.71±7.189
Arm span/cm	170.06±6.148	162.56±8.276
Leg length/cm	84.13±6.054	80.44±6.653
Competition results/meter	11.63± .220	13.44±.369
Variables	Results (1000-meter run)	
Gender	Men (n=18)	Women (n=18)
Age	19,5±1.294	17.28±1.227
Height/cm	168.50±6.793	157.06±6.847
Weight/kg	56.60±1.646	47.66±4.423
Arm span/cm	166.11±22.313	158.50±6.419
Leg length/cm	85.50±5.491	79.67±6.774
Competition results/meter	120.53±.0132	180.35±.1746
Variables	Results (Long Jump)	
Gender	Men (n=18)	Women (n=14)
Age	17.89±.900	17.93±.961
Height/cm	162.53±5.235	162.53±5.235
Weight/kg	61.11±5.838	50.51±4.853
Arm span/cm	174.11±6.902	162.13±6.728
Leg length/cm	86.72±6.755	82.27±6.408
Competition results/meter	5,64±.551	4.073±1.124
Variables	Results (Shot Put)	
Gender	Men (n=18)	Women (n=18)
Age	17.89±.758	17.83±.857
Height/cm	174.67±6.278	164.28±5.592
Weight/kg	86.94±19.541	71.19±11.117
Arm span/cm	179.22±8.300	162.22±16.075
Leg length/cm	87.67±54.706	83.28±53.271
Competition results/meter	11.640± 1.497	7.428±2.286

Notes: The results are presented based on the mean ± standard deviation

The Correlation between Finish Time and Runners' Anthropometric Variables

In the men's and women's 100-meter run, there is a significant positive correlation between height, arm span, and leg length with running time results ($p<0.05$). However, body weight is prone to negative correlation with running time results ($p>0.05$). In the men's and women's 1000-meter run, there is a significant positive correlation between height, arm span, and leg length with running time ($p<0.05$), but age and weight are negatively correlated with running time ($p>0.05$). In the men's and women's long jumps, there is a significant positive correlation between height, arm span, and leg length with jumping results ($p<0.05$), but age and weight are negatively correlated with jumping results ($p>0.05$). In the men's and women's shot put, there is a significant positive correlation between body weight, height, arm span and leg length with the result of the shot ($p<0.05$) (see Table 5).

Table 5.
The Correlation between the Results and the Anthropometric Measurements

Variables	Results			
	Women		Men	
	r	p-value	r	p-value
100-meter run				
Age	-.292	.325	.127	.449
Height, cm	-.378	.319	.017	.135
Weight, kg	.383	.301	-.143	.193
Arm span, cm	-.217	.307	.177	.007
Leg length, cm	.001	.822	1.000	.288
1000-meter run				
Age	.438	.687	1.000	.725
Height, cm	-.736	.531	-.422	.224
Weight, kg	.301	.371	.062	.381
Arm span, cm	.423	.470	-.004	.011
Leg length, cm	1.000	.739	.119	.382
Long Jump				
Age	-.004	.826	-.074	-.651
Height, cm	-.311	.956	-.418	1.332
Weight, kg	-.306	.363	1.000	-.358
Arm span, cm	-.005	.828	-.051	-.436
Leg length, cm	.002	.610	1.000	-2.127
Shot Put				
Age	-.128	.985	.034	.387
Height, cm	-.331	.011	-.404	.181
Weight, kg	.369	.152	.175	.317
Arm span, cm	-.032	.050	.150	.099
Leg length, cm	1.000	.163	1.000	.559

Note: $p<0.05$ was considered significant (*); r = correlation coefficient

Regression Analysis of Predictor Variables on the Finish Time

Multicollinearity tests were conducted between each predictor variable for the presence of their correlation using the Variance Inflation Factor (VIF). The correlation between anthropometric variables and athlete finish time was

clarified using multiple regression analysis. In the process, variables such as age, height, weight, arm span and leg length were taken as predictor variables in the regression model. However, anthropometry of men and women athletes in the 100-meter and 1000-meter run appeared to have a significant positive predictive influence on finishing time (negative on performance ($p>0.05$). The scatter diagram with regression lines and prediction intervals is shown in Figure 1, indicating that there is a positive correlation between leg length and height of men and women runners that affects the duration of race results.

The scatter diagram with regression lines and prediction intervals in Figure 1 shows that increasing arm circumference is positively associated with the running time of each women athlete.

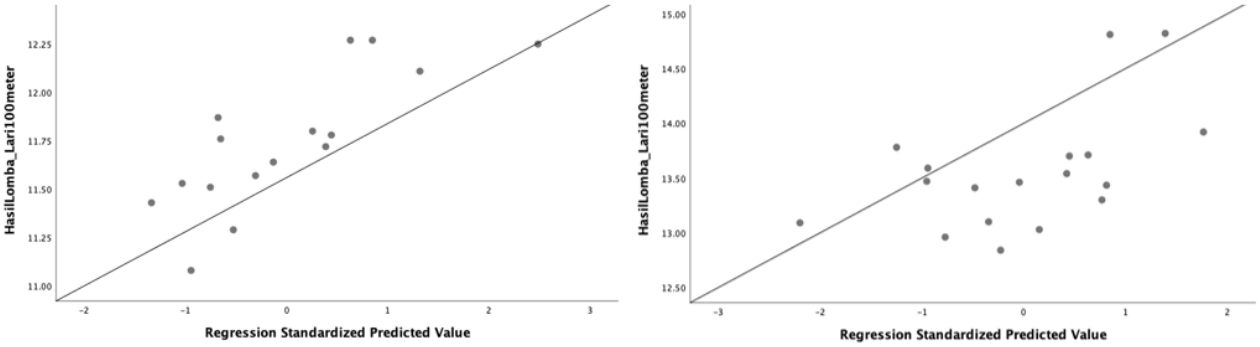

Figure 2. A scatter diagram of the finish time and anthropometry of men and women 100-meter runners shows a linear regression line and prediction interval

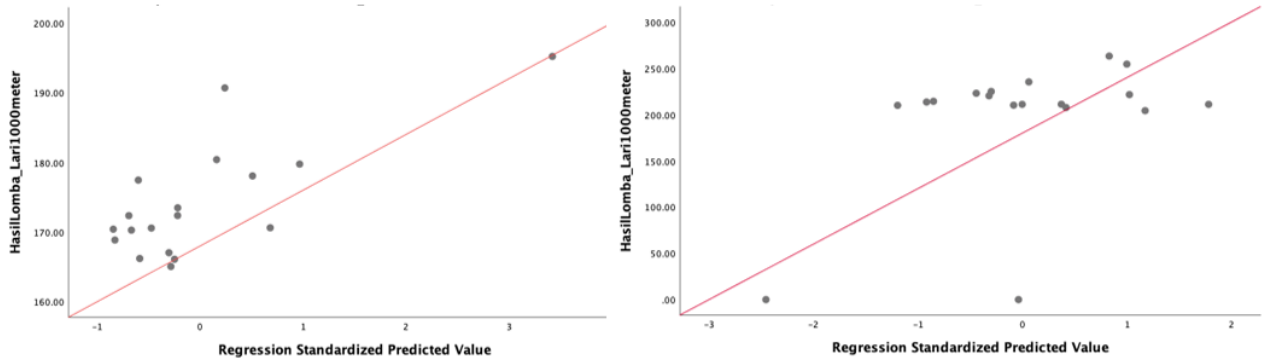

Figure 3. A scatter diagram of the finishing time and anthropometry of men and women 1000-meter runners shows a linear regression line and prediction interval.

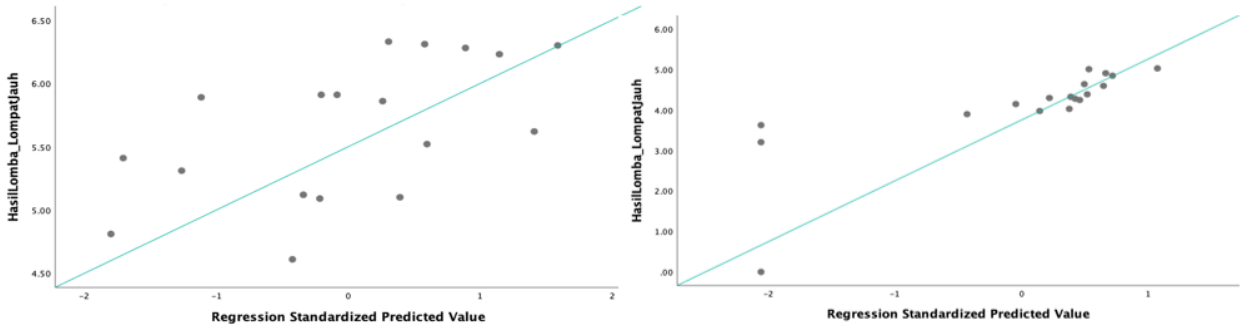

Figure 4. A scatter diagram of finish time and anthropometry of men runners and women long jump shows a linear regression line and prediction interval.

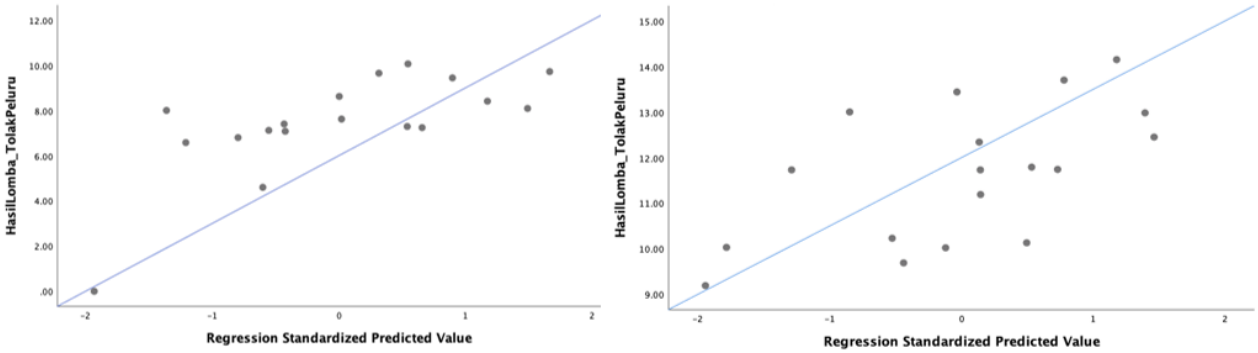

Figure 5. A scatter diagram of the finishing time and anthropometry of men and women shot puts shows linear regression lines and prediction intervals.

Table 6.
Results of Multiple Linear Regression Analysis of Predictor Variables in Men and Women

Men			Women		
Predictor Variable	Standardized Beta (β)	P-Value	Predictor Variable	Standardized Beta (β)	P-Value
100-meter run					
Age	.177	.449	Age	.294	.325
Height, cm	.452	.135	Height, cm	-.593	.319
Weight, kg	-.300	.193	Weight, kg	-.395	.301
Arm Span, cm	-.843	.007	Arm Span, cm	.592	.307
Leg Length, cm	-.223	.288	Leg Length, cm	.080	.822
Results			Results		
1000-meter run					
Age	-.071	.725	Age	-.156	.687
Height, cm	-.335	.224	Height, cm	-.519	.531
Weight, kg	.204	.381	Weight, kg	.370	.371
Arm Span, cm	-.641	.011	Arm Span, cm	.445	.470
Leg Length, cm	.211	.382	Leg Length, cm	-.181	.739
Results			Results		
Long Jump					
Age	-.173	-.651	Age	-.305	.826
Height, cm	.681	1.332	Height, cm	-.175	.956
Weight, kg	-.095	-.358	Weight, kg	1.134	.363
Arm Span, cm	-.203	-.436	Arm Span, cm	.809	.828
Leg Length, cm	-.694	-2.127	Leg Length, cm	-.709	.610
Results			Results		
Shot Put					
Age	.216	.387	Age	-.005	.985
Height, cm	-.886	.181	Height, cm	.893	.011
Weight, kg	-.250	.317	Weight, kg	-.490	.152
Arm Span, cm	1.025	.099	Arm Span, cm	-.649	.050
Leg Length, cm	.178	.559	Leg Length, cm	-.368	.163
Results			Results		

Discussion

For this study, the participants were high school students who had not experienced participating in athletic competitions, but the anthropometric and the results of the competition were predicted to be talented athletes, which a selection had been conducted previously in each region that held the Student Athletic Competition (SAC). This is in line with the previous research that has been done. First, talent identification will be beneficial in determining one of the expertise sports. The advantages of performance analysis as a preferred measure of sport-specific skills in the talent identification process (Waldron & Worsfold, 2010). Second, measurements for basic skills development assessment will most likely help the transition of beginner to professional talented players (Pearce et al., 2019). Third, the most talented young athletes can be identified according to the rank on estimated ability regardless of age (Anderson, 2014). Earlier onset and higher intensity of specific training and competition, and more extensive involvement in institutional talent promotion programs (Vaeyens et al., 2009). Therefore, it is crucial to identify talent in sports by taking anthropometric measurements beforehand.

In this study, the height and leg length of men and women students had a positive correlation with the 100-meter and 1000-meter race finish time, but the weight had a negative correlation and not necessarily the 100-meter and 1000-meter race finish time. In addition, the significance of age did not warrant being a predictor as a covariant. However, no statistically significant correlation was observed between age and runner finish time in men and women athletes. Meanwhile, in the long jump, men's and women's height, arm span, and leg length had a positive correlation. Anthropometry has a positive correlation in achieving maximum race results, but age and weight are not guaranteed as predictors of winning the race. Furthermore, in the shot put in men and women, the height, weight, arm span, and leg length have a positive correlation in achieving achievement. Anthropometry has a positive correlation in achieving maximum race results, but age is not guaranteed as a predictor of winning the race.

In addition, the ideal anthropometry is one of the important things in starting specialization in certain sports. By taking anthropometric measurements from the beginning, it is expected that potential athletes with the identification of sports will be found so that athlete development in athletic sports can be developed early on. Anthropometry is needed to get maximum results and achievements from athletes, so anthropometric measurements are needed to obtain the ideal anthropometry form that suits the characteristics of the branch of sports in athletics (Anup et al., 2014). Afterward, training and nutrition are also a form of support in starting specialization in certain sports with anthropometric measurements in advance.

In this study, the correlation between anthropometry consisting of measurements of height, weight, arm span and leg length in 4 branches of sports in athletics used as one of the identification predictors for the selection of talented athletes, especially high school students whose average age

is 16-18 years old both women and men. Previously there were several similar studies that examined the identification trials of talented athletes associated with experience, training, nutrition and quality coaches.

There was a significant negative correlation between age and race times and finishes for men and women in the four athletics studied. There was no significant age-performance correlation that might indicate that the narrow age range in the athletes of this study may prevent the effect of age on the result.

Whereas height was not correlated in the 100-meter and 1000-meter runs, thus having a bivariate effect on finishing time, showing no significant correlation with finishing time when its covariant effects such as body weight, thigh length, and leg length were controlled, but a positive correlation was evident in the long jump and shot put. Consequently, it could be advantageous for relatively lighter, shorter/average and smaller runners to perform better (to finish earlier). However, despite significant weight and height effects and covariance effects, none of them showed significant performance effects when each was examined with appropriate covariance controls. This was valid for both the men and women runners. It means that any influence of weight, height and body mass index on performance is only significant in the appropriate covariance effects.

Furthermore, in this study, especially in the 100-meter and 1000-meter running numbers, arm span and leg length in men and women did not have a significant correlation with running time ($p>0.05$). This is in accordance with research from a study conducted (Dessalew et al., 2019) on the correlation between performance and endurance anthropometric variables of Caucasian men runners, finding a positive correlation between longer time leg length (total lower limbs, in context) and time performance. However, the long jump and shot put showed a positive correlation with race results.

As a result, 17-20 years of age students can be identified as talented in sports. Sports coaches and scientists should use minimum scores and individual discriminant analysis to identify some beginner athletes for tests in identification. Then physical fitness data or specific race results and anthropometric data increase the accuracy of predicting the development of the talent process in young athletes. By classifying the test results, the coach can also decide which athlete will be deployed in a particular sport. In addition, the coach must consider it with the right training so that athletes with identified talents can achieve maximum performance.

Coaches implicitly and explicitly select beginner athletes based on their character and utilize their personal values (Gäbler et al., 2023). Skill assessments are apparently to be an objective and scalable part of talent development programs (Rosevear & Cassidy, 2019). Assessing the quality of multi-dimensional performance is conducted when identifying talented team sports (Koopmann et al., 2020). Lastly, mental assessment and goal management skills can also predict future achievement outcomes (Woods et al., 2016).

Conclusion

In conclusion, in athletics, long jump and shot put, body height and leg length greatly influence the results of jumping and throwing during competition. There is no single anthropometric variable that showed a partial correlation with running time without its corresponding covariance with running time. The results of this study indicate that the morphological characteristics of beginner athletes have a significant influence on the results of the competition in the 100-meter and 1000-meter runs, long jump, and shot put to achieve better results. Anthropometric parameters may be useful for selection, prediction, and improving running performance as well as for preventing injury and health risk assessment. From the results of the previous research, anthropometry is related to the improvement of athletes' performance. With anthropometric measurements and physical performance, it is expected athlete talent can be identified in certain sports.

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