

Investigation of some performance characteristics and handball talent levels of male and female students

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Abstract

In this study, it was aimed to determine the performance characteristics and skill levels specific to the sport branch and to determine the talent and to direct the correct branch while the children with very high potential in our country are directed to the spore. The sample group of this study consisted of 124 volunteer middle school students, 62 girls 11,13 years and 62 boys 11,06 years, aged, who had never been trained in any sport branch in Ankara. The performance features include a vertical jump test, a long jump test, a 20 m speed run test, a health ball throw test, and a hand throw test for handball talent detection, triple jump shooting, throwing ball, throwing ball to the target on the wall, test was applied. Statistical analyzes of the measurements were made in the SPSS 22 program. When the total scores of the male and female students who applied the handball ability test battery were examined, it is determined that there are 17 female and 22 male students with good and very good level. As a result; It is thought that 15 male and 11 female learners may be more successful in the handball field than other students and therefore it is appropriate to direct these students to the handball branch.

Key words: Handball, Performance Features, Talent Selection.

INTRODUCTION

The skilled person is defined as a person who is above normal in a certain area but has not yet fully developed characteristics (1). Talent selection is to find people who are more likely to move forward in high-performance and performance-oriented training. This process lasts a long time. It should be decided by repeating the tests at various times by taking into account the training objectives and contents (2). Talent selection is the grouping of children to be directed to the sports branch that they can be successful at the possible earliest age (3). Purpose of talent selection is to identify and select sportsmen who have the best skills in a sport branch by extracting the unsuitable ones (4).

Sportive success is made possible by choosing a branch that is appropriate for young children and by directing and educating the determined children as a result of the selection of skills with test criteria depending on the specific body ability of this branch (5). In sports branches, the expectation of sportsmen from training is to maximize their performance.

Physical fitness values including physical, physiological and anthropometric characteristics of

athletes are important in talent selection. Sportive success is made possible by choosing a branch that is appropriate for young children and by directing and educating the determined children as a result of the selection of skills by test criteria depending on the specific ability of the branches (5). In sports branches, the expectation of sportsmen from training is to maximize their performance. Physical fitness values including physical, physiological and anthropometric characteristics of athletes are important in talent selection (6).

As in any sport branch, there must be a system integrity to select the most talented sportsmen in handball (7). In order to achieve high-level handball players, it is necessary to emphasize the importance of skill in addition to ability, because it is not always possible for individuals to be born capable of sports. Only overall skill is not enough for handball sports. For these reasons, the selection of sportsmen in

handball should be made by taking into account both the skill level and talent level (8).

The aim of this study was to determine some performance characteristics of middle school girls and boys and their abilities specific to the handball branch.

MATERIALS & METHOD

The sample group of this study consists of 124 volunteer secondary school students living in Ankara province, 62 girls and 62 boys aged 10±1 who have not been educated in any sport branch before.

Data Collection Tools

In the study, to determine some performance characteristics of the students; the vertical jump test, standing long jump test, 20 m sprint test, and seated medicine ball throw test was applied.

The students' handball talent were determined by Handball Talent Test Battery whose the validity and reliability study was conducted by Mülazımoğlu et al. (2009). Cronbach α values of the handball talent test battery were 0.71 in girls and 0.73 in boys. The reliability coefficient for each

section in the test battery were as follows: $r(\text{girls}) = 0,68; 0,72; 0,97; 0,68; 0,77$ and $0,98$, respectively, and $r(\text{boys}) = 0,68; 0,73; 0,96; 0,64; 0,79$ and $0,98$, respectively. The handball test battery used in the study is composed of six sub-sections: the test of throwing a ball into a hoop from the air (shooting), the test of throwing a bouncing ball into a hoop (bounce shooting), the test of dribbling, the test of bringing down pins (bowling), the test of throwing a ball to a target on a wall (passing to the target), and the test of fast passing on a wall (speed pass) (9).

Statistical analysis of the data of the study was made using SPSS 22 software. The mean and standard deviation of the measured and tested values were calculated. Statistical significance level was accepted as $p < 0.05$.

FINDINGS

The sample group of this study consists of 124 volunteer secondary school students living in Ankara province, 62 girls and 62 boys aged 10±1 who have not been educated in any sport branch before, and some performance characteristics and skill levels specific to handball branch were measured, and the data obtained were compared.

Table 1. Physical measurements of boys and girls

Variables	Boys		Girls		Statistical sign. (p)
	n	Mean \pm S.D.	n	Mean \pm S.D.	
Age (year)	62	11.06 \pm 67	62	11.13 \pm 0.58	.571
Height (m)	62	1.48 \pm 0.09	62	1.46 \pm 0.09	.211
Weight (kg)	62	40.30 \pm 8.03	62	39.01 \pm 8.75	.394
BMI (kg/m ²)	62	18.17 \pm 2.44	62	18.11 \pm 2.92	.896

$P < 0.05$

In our study, the mean age was 11,13 \pm 0,58 years in girls and 11,06 \pm 67 years in boys; the mean height was 1,46 \pm 0,09 m in girls and 1,48 \pm 0,09 m in boys; the mean body weight was 39,01 \pm 8,75 kg in girls and 40.30 \pm 8.003 kg in boys. The mean BMI was 18,11 \pm 2,92 kg/m² for girls and 18,17 \pm 2,44 kg/m² for boys. There was no significant difference between the demographic characteristics of the male and female participants ($p > 0.05$). According to the table

2, the average score of the test of throwing a ball into a hoop from the air (shooting) was 4,05 \pm 1,20 for the boys and 3,98 \pm 1,20 for the girls. The average score of the test of throwing a bouncing ball into a hoop (bounce shooting) was 2,37 \pm 1,28 for the girls and 3,10 \pm 1,28 for the boys. The average score of the test of dribbling was 1,74 \pm 1,13 for the girls and 2,06 \pm 1,25 for the boys.

Table 2. Comparison of Handball Talent Test Battery Scores of the Students by Gender

Tests	Gender	n	Mean	Statistical sign. (p)
The test of throwing a ball into a hoop from the air (shooting)	Girls	62	3.98±1.20	.767
	Boys	62	4.05±1.20	
The test of throwing a bouncing ball into a hoop (bounce shooting)	Girls	62	3.10±1.28	.002*
	Boys	62	2.37±1.28	
The test of dribbling	Girls	62	2.06±1.25	.135
	Boys	62	1.74±1.13	
The test of bringing down pins (bowling)	Girls	62	2.77±1.01	.002*
	Boys	62	2.21±0.94	
The test of throwing a ball to a target on a wall (passing to the target)	Girls	62	4.00±1.00	.033*
	Boys	62	3.60±1.07	
The test of fast passing on a wall (speed pass)	Girls	62	3.37±0.85	.000*
	Boys	62	2.77±0.96	
Handball ability test total score	Girls	62	2.97±1.40	.165
	Boys	62	2.63±1.29	

P<0.05

Table 3. The frequency and percentage distributions of students' Handball Test Battery measurements by gender

TESTS	GENDER	TOO BAD		BAD		MODE RATE		GOOD		VERY GOOD		TOTAL	
		FRE QUE NCY	%	FRE QUE NCY	%	FRE QUE NCY	%	FRE QUE NCY	%	FRE QUE NCY	%	FRE QUE NCY	%
the test of throwing a ball into a hoop from the air (shooting)	BOYS	0	0	13	21	5	8.1	15	24.2	29	46.7	62	100
	GIRLS	3	4.8	6	9.7	7	11.3	15	24.2	31	50	62	100
the test of throwing a bouncing ball into a hoop (bounce shooting)	BOYS	8	12.9	15	24.2	11	17.7	19	30.6	9	14.5	62	100
	GIRLS	20	32.3	19	30.6	6	9.7	14	22.6	3	4.8	62	100
the test of dribbling	BOYS	30	48.4	13	21.0	5	8.1	13	21.0	1	1.6	62	100
	GIRLS	38	61.3	10	16.1	8	12.9	5	8.1	1	1.6	62	100
the test of bringing down pins (bowling)	BOYS	6	9.7	19	30.6	23	37.1	11	17.7	3	4.8	62	100
	GIRLS	16	25.8	22	35.5	20	32.3	3	4.8	1	1.6	62	100
the test of throwing a ball to a target on a wall (passing to the target)	BOYS	1	1.6	4	6.5	13	21.0	20	32.3	24	38.7	62	100
	GIRLS	3	4.8	6	9.7	16	25.8	26	41.9	11	17.8	62	100
the test of fast passing on a wall (speed pass)	BOYS	2	3.2	7	11.3	21	33.9	30	48.4	2	3.2	62	100
	GIRLS	6	9.7	17	27.4	26	41.9	11	17.8	2	3.2	62	100
Handball ability test total score	BOYS	13	21.0	10	16.1	17	27.4	10	16.1	12	19.4	62	100
	GIRLS	15	24.2	16	25.8	14	22.5	11	17.8	6	9.7	62	100

The average score of the test of bringing down pins (bowling) was $2,21\pm 0,94$ for the girls and $2,77\pm 1,01$ for the boys. The average score of the test of throwing a ball to a target on a wall (passing to the target) was $3,60\pm 1,07$ for the girls and $4,00\pm 1,00$ for the boys. The average score of the test of fast passing on a wall (speed pass) was $2,77\pm 0,96$ for the girls and $3,37\pm 0,85$ for the boys. Finally, the total score of the handball test battery was $2,63\pm 1,29$ for the girls and $2,97\pm 1,40$ for the boys. There was a statistically significant difference between the scores of boys and girls for the test of throwing a bouncing ball into a hoop (bounce shooting), the test of

bringing down pins (bowling), the test of throwing a ball to a target on a wall (passing to the target) and the test of fast passing on a wall (speed pass) ($p < 0.05$). There was no statistically significant difference between the scores of boys and girls for the test of throwing a ball into a hoop from the air (shooting), the test of dribbling, and handball ability test total score ($p > 0.05$).

According to the table 4, there was a statistically significant difference between vertical jump test, standing long jump test, 20 m sprint test, seated medicine ball throw test results of the girls and boys participating in the study ($p < 0.05$).

Table 5. The comparison of performance test scores of boys with good and very good results and the scores of boys with bad results for handball test battery

Variables	The boys with good and very good results in handball test battery		The boys with bad results in handball test battery		Statistical sign. (p)
	n	Mean \pm S.D.	n	Mean \pm S.D.	
Vertical jump test (cm)	15	28.60 \pm 3.81	40	23.52 \pm 5.08	0.001*
Standing long jump test (cm)	15	1413.63 \pm 11.45	40	122.58 \pm 19.23	0.000*
20 m sprint test (s)	15	3.78 \pm 0.35	40	4.55 \pm 0.50	0.000*
Seated Medicine Ball Throw (cm)	15	476.60 \pm 90.78	40	411.50 \pm 73.89	0.009*

$P < 0.05$

According to the total handball test scores, the number of boys with a mean age of $11,06\pm 67$ years ($n=62$) were found to be 10 (21.0%) at a very bad level; 10 (16.1%) at bad level; 17 (27.4%) at medium level; 10 (16.1%) at good level; and 12

(19.4%) at very good level. According to this data, the performance test results of the 15 of 22 boys who had good and very good score were found to be significantly better than those of other students.

Table 6. The comparison of performance test scores of girls with good and very good results and girls with bad results for handball test battery

Variables	The girls with good and very good results in handball test battery		The girls with bad results in handball test battery		Statistical sign. (p)
	n	Mean \pm S.D.	n	Mean \pm S.D.	
Vertical jump test (cm)	11	24.12 \pm 2.77	45	20.24 \pm 5.05	0.018*
Standing long jump test (cm)	11	127.61 \pm 20.40	45	107.01 \pm 19.25	0.003*
20 m sprint test (s)	11	3.71 \pm 0.26	45	3.99 \pm 0.54	0.016*
Seated Medicine Ball Throw (cm)	11	432.55 \pm 48.25	45	381.91 \pm 46.90	0.002*

$P < 0.05$

In the study, there were 15 girls (24,2%) at the very bad level, 16 (25,8%) at the bad level, 14 (22,5%) at the moderate level, 11 (17,8%) at the good level and 6 (9,7%) at very good level (a total of 62). According to these data, there are 17 girls who get

DISCUSSION & CONCLUSION

In the present study, the mean age was $11,13\pm 0,58$ years for girls and $11,06\pm 67$ years for boys; height average was $1,46\pm 0,09$ m for girls and $1,48\pm 0,09$ m for boys; body weight average was

very good and good scores. In addition, the performance test results of 11 girls were also found to be better than other students at 0.05 significance level.

$39,01\pm 8,75$ kg for girls and $40,30\pm 8,03$ kg for boys. The mean BMI was $18,11\pm 2,92$ kg/m² for girls and $18,17\pm 2,44$ kg/m² for boys. There was no significant difference between the demographic characteristics of the boys and girls ($p > 0.05$). Bozdoğan et al. (10)

conducted a study on the badminton players. For both boys and girls, the mean age was $12,05 \pm 0,05$ and $12,05 \pm 0,05$ years, the mean height was $1,43 \pm 0,45$ m and the mean body weight was $43,5 \pm 1,2$ kg. In a study performed on tennis players, the mean age was $11,21 \pm 1,08$, the mean height was $1,52 \pm 0,11$ m, the mean body weight was $44,76 \pm 7,87$ kg for male students. These numbers were $11,05 \pm 1,51$ years, $1,48 \pm 0,08$ m, and $35,84 \pm 5,75$ kg, respectively (11). In a study conducted in Slovenia, the height average was $145,4 \pm 6,8$ cm, and body weight averages were $38,0 \pm 8,1$ kg in girls; and the body height averages was $145,5 \pm 6,2$ cm and body weight averages were $38,9 \pm 8,2$ kg in boys (12). In a similar study conducted by Örjan et al., (13) the average body mass index was $18,3 \pm 3,0$ kg/m² and $18,1 \pm 2,9$ kg/m² for girls and boys who do not play sports, respectively.

In our study, vertical jump test mean was 22,92 cm for boys and 20,58 cm for girls; the mean standing long jump test was 126,27 cm for boys and 105,61 cm for girls; 20-meter sprint test mean was 4,05 s for boys and 4,66 s for girls. The seated medicine ball throw averages were 418,76 cm in boys and 384,76 cm in girls. Yıkılmaz (14) reported that the vertical jump averages of boys with a mean age of 10,84 years were 25,70 cm and vertical jump averages of girls with a mean age of 10,67 years were 23,48 cm. In another study, vertical jump averages of 11-year-old girls were $31,40 \pm 5,75$ cm (15). Kurban (16) investigated the effect of football training on technical development of children, the mean pre-test values of vertical jump test for boys whose ages were $11,67 \pm 14,30$ years were $23,00 \pm 6,99$ cm and the final test values were $25,80 \pm 6,23$ cm. In the study on the relationship between match performance and field tests in tennis players aged 8-10, it was found that the mean standing long jump test of male tennis players aged 10 years was $1,54 \pm 0,13$ m (17). Piliandis et al. (18) reported that the mean standing long jump in 8-11 age group was $140 \pm 0,23$ cm. In a study that some anthropometric and motoric characteristics of 10-12 years-old boys who did and did not perform athletic sport education were compared, the mean standing long jump average was $140,96 \pm 17,97$ (19). In another study, the average of 20m sprint test scores of girls aged 11 years in primary education in Antalya was $4,22 \pm 0,38$ s (15). Yazarer et al. (20) found the average of 20m sprint test values of males aged 11 years as $4,18 \pm 0,30$ s. Finally, Pekel (21) reported that the average of seated medicine ball throwing test was 481,9 cm in 11-year-old girls and 531,6 cm in 11-

year-old boys. The values in our study and the values in other studies are generally parallel. In addition, there are some differences; The reasons for these differences are thought to be caused by genetic, environmental factors, cultural and socio-economic differences. In addition, in the present study, there was no statistically significant difference in height, weight, BMI values of boys and girls. This may be due to the fact that children of this age are not yet in adolescence.

In our study, the percentage of handball ability test battery score was found for girls to be 24,2% for very bad level, 25,8% for bad level, 22,5% for medium level, 17,8% for good level and 9,7% for the very good level. For the boys, it was found to be 21,0% for very bad level, 16,1% for bad level, 27,4% for moderate level, 16,1% for good level and 19,4% for the very good level. Mülazımoğlu (22) conducted a study on female and boys with an average age of 9 ± 1 , handball test battery percentage of girls ($n = 472$) was 6,99% for very bad level, 20,34% for bad level, 32,84% for medium level, 28,81% for good level and 11,02% for very good level. For boys ($n=418$), the percentages were found to be 5,02% for very bad level, 17,7% for a bad level, 37,06% for medium level, 30,62% for good level and 9,57% for the very good level. Yavaş (23) reported that handball test battery score was found for girls ($n=182$) to be 20,3% for very bad level, 28,6% for bad level, 22,0% for medium level, 20,3% for good level and 8,8% for very good level. For the boys ($n=184$), it was found to be 10,9% for very bad level, 23,9% for bad level, 29,9% for medium level, 25,5% for good level and 9,8% for very good level. Due to the differences between the total number of subjects in our study and the studies conducted by Mülazımoğlu (22) and Yavaş (23), there were differences between the distribution of percentages, but, in general, it is observed that the students are gathered in the moderate level and male students are more successful than female students, so there is parallelism between the studies. Since the physical and physiological differences of puberty between boys and girls in this age do not start yet and since boys in school-age participate more in sporting activities than girls in our country, the male students achieved better performance results than female students in the present study.

As a result, it is seen that determining the children with suitable body structure for sports branches and selecting the appropriate branch and directing them by taking into consideration the age

of starting the sport are important in the talent selection. In addition, it is important to apply special test batteries to children to be selected and to determine sports skills peculiar to the branches.

A total of 124 girls and boys participated in our study. The results of the handball talent test of 17 (% 27.5) girls and 22 (35.5%) boys were identified as

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