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INVESTIGATION OF BASKETBALL ABILITY LEVELS AND SOME PERFORMANCE CHARACTERISTICS OF MALE AND FEMALE STUDENTS

Dr. Öğr. Üyesi Gökmen KILINÇARSLAN

Bingöl Üniversitesi, Beden Eğitimi ve Spor Yüksekokulu
gkilincarslan@bingol.edu.tr
ORCID ID: 0000-0001-5176-6477

Dr. Öğr. Üyesi Harun GENÇ

Bingöl Üniversitesi, Beden Eğitimi ve Spor Yüksekokulu
hgenç@bingol.edu.tr
ORCID ID: 0000-0003-1371-7468

Arş. Gör. Dr. Akan BAYRAKDAR

Bingöl Üniversitesi, Beden Eğitimi ve Spor Yüksekokulu
akanbayrakdar@gmail.com
ORCID ID: 0000-0002-3217-0253

Öğr. Gör. İdris KAYANTAŞ

Bingöl Üniversitesi, Beden Eğitimi ve Spor Yüksekokulu
ikayantas@bingol.edu.tr
ORCID ID: 0000-0001-9644-9387

Abstract

In this study, it was aimed to determine the performance characteristics and skill levels specific to the sports branches of students and to direct the correct branch by making skill determinations. The sample group of the study consisted of 110 volunteer middle school students, 55 girls 10,95 years and 55 boys 10,96 years aged, who had never been trained in any sport branch in Ankara. In the study, performance features include vertical jump test, long jump test, 20 m speed jump test, health ball throw test, and ball drop shot for basketball talent detection, triple shot, ball throw, ball throw, ball throw on the wall, test was applied. Statistical analyzes of the measurements were made in the SPSS 22 program. When the total scores of the 55 male and 55 female students who applied the basketball ability test battery were examined, it is determined that there are 16 female and 22 male students with good and very good level. In addition it was determined that 10 girls and 14 boys from these students had better motoric test results than the others. As a result; 24 students may be more successful than the other students in the basketball field and it is considered appropriate to direct these students to the basketball field.

Keywords: Basketball, Performance Features, Talent Selection

KIZ VE ERKEK ÖĞRENCİLERİN BASKETBOL YETENEK DÜZEYLERİ VE BAZI PERFORMANS ÖZELLİKLERİNİN İNCELENMESİ

Öz

Bu çalışmada, öğrencilerin spor branşlarına özgü performans özelliklerini ve beceri seviyelerini ortaya çıkartarak, yetenek tespitlerinin yapılarak doğru branşa yönlendirilmesi amaçlanmıştır.

Çalışmanın örneklem grubunu Ankara ilinde öğrenim gören daha önce herhangi bir spor branşında eğitim almayan yaşları 10,95 yıl olan 55 kız ve 10,96 yıl olan 55 erkek olmak üzere toplam 124 gönüllü ortaokul öğrencisi oluşturmaktadır. Çalışmada performans özelliklerinden dikey sıçrama testi, durarak uzun atlama testi, 20 m sürat koşusu testi, oturarak sağlık topu fırlatma testi ayrıca basketbol yetenek tespiti için çembere havadan atış, çembere sektirme atış, top sürme, labut devirme, duvardaki hedefe top atma, duvarda hızlı pas testi uygulanmıştır. Ölçümlerin istatistiksel analizleri SPSS 22 programında yapılmıştır. Basketbol yetenek testi bataryasını uygulanan 55 erkek ve 55 kız öğrencinin toplam puanları incelendiğinde, iyi ve çok iyi düzeyde 16 kadın ve 22 erkek öğrencinin olduğu belirlenmiştir. Ayrıca bu öğrencilerden 10 kız ve 14erkek öğrencinin motorik test sonuçları da diğerlerine göre daha iyi seviyede olduğu tespit edilmiştir. Sonuç olarak;24 öğrencinin basketbol branşında diğer öğrencilere göre daha başarılı olabileceği dolayısıyla bu öğrencilerin basketbol branşına yönlendirilmesinin uygun olacağı düşünülmektedir.

Anahtar Kelimeler: Basketbol, Performans Özellikleri, Yetenek Seçimi

1. INTRODUCTION

Ability selection is the grouping of children in the earliest possible age to be directed to the branch that they can be successful (Acar, 2000). With the selection of ability, those who are unsuitable are eliminated, sportsmen with the best skills are determined for different branches and selected (Bompa, 1985). The goal of ability selection is to find people who are suitable for more advanced training for high efficiency and performance. This process lasts a long time. It is a decision that needs to be taken by taking into account the training goals and contents and repeating the tests at various times (Karl, 2001).

Physical skill and basic technical tests help coaches and trainers determine the physical skill and ability levels of young sportsmen in both team and individual sports. The information obtained from these tests is very effective in determining the physical status of young people who are thought to be capable, as well as in the arrangement and development of technical training programs. These tests provide coaches with continuous important feedback (Branao, et al., 2003).

Basketball has become one of the sports branches where it is compulsory to determine skill at an early age. Although the age of onset of basketball is accepted as 10-12, it is now seen that if children aged 7-8 are directed to basketball, they can learn the basic movements better and become successful sportsmen. Therefore, to achieve high-level sports power and success, skilled sportsmen must be selected in a timely and accurate manner to enter into a long-term and systematic training (Sevim, 1997).

The aim of this study was to determine some performance characteristics of girls and boys in middle school age and their ability levels specific to basketball branch.

2. MATERIAL AND METHOD

The sample of this study consists of 110 volunteer secondary school students, 55 girls and 55 boys, aged 10.45+0.67 years who have not been educated in any sports branch, living in Bingöl province.

2.1. Data Collection Tools

To determine some performance characteristics of the students, vertical jump test, standing long jump test, 20 m sprint test, Seated Medicine Ball Throw test was applied. For determining the basketball skills of the students, a “basketball test battery” whose validity and reliability were developed by Mülazımoğlu et al. (2009) was used. The Cronbach α value for the basketball test battery was 0.76, and the reliability coefficient for each test in the test battery was 0,70; 0,67; 0,95; 0,74; 0,80 and 0.89, respectively. The basketball 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). Statistical analysis of the data was made using SPSS 22 package software. The mean and standard deviation values were calculated. The statistical significance level was accepted as $p < 0.05$.

2.2. Findings

Some performance characteristics and the basketball branch-specific skill levels of a total of 110 voluntary secondary school students, 55 females and 55 males who were educated in the province of Ankara, not previously trained in any sports branch, aged $10,95 \pm 0,67$ years were measured, and the obtained data 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)	55	10,96 \pm 0,69	55	10,95 \pm 0,65	0,887
Height (m)	55	1,46 \pm 0,09	55	1,43 \pm 0,09	0,154
Weight (kg)	55	38,49 \pm 8,05	55	37,12 \pm 8,85	0,400
BMI (kg/m ²)	55	17,80 \pm 2,54	55	17,76 \pm 2,89	0,933

$p < 0,05$

In the present study, the mean age was 10.95 ± 0.65 years in girls and $10.,95 \pm 0,65$ years in boys; The mean height were 1.43 ± 0.09 m in girls and 1.46 ± 0.09 m in boys; The mean body weight was $37,12 \pm 8,85$ kg in girls and $38,49 \pm 8,05$ kg in boys. The mean BMI was $17,76 \pm 2,89 \text{ kg/m}^2$ in girls and $17,80 \pm 2,54 \text{ kg/m}^2$ in boys. Accordingly, no significant difference was found between the demographic characteristics of the male and girls ($p > 0.05$).

Table 2. Comparison of The Scores of The Students' Basketball Test Battery by Gender

Tests	Gender	n	Mean	Statistical sign. (p)
The test of throwing a ball into a hoop from the air (shooting)	Girls	55	3,91±0,90	0,011*
	Boys	55	3,40±1,13	
The test of throwing a bouncing ball into a hoop (bounce shooting)	Girls	55	3,04±1,18	0,187
	Boys	55	2,75±1,10	
The test of dribbling	Girls	55	2,05±1,31	0,387
	Boys	55	1,85±1,09	
The test of bringing down pins (bowling)	Girls	55	3,09±1,07	0,003*
	Boys	55	2,53±0,83	
The test of throwing a ball to a target on a wall (passing to the target)	Girls	55	4,05±1,06	0,188
	Boys	55	3,80±0,95	
The test of fast passing on a wall (speed pass)	Girls	55	3,20±0,86	0,005*
	Boys	55	2,75±0,77	
Basketball ability test total score	Girls	55	2,85±1,33	0,362
	Boys	55	2,62±1,36	

*p<0,05

According to table 2, the average score of the test of throwing a ball into a hoop from the air (shooting) was 3.91+0.90 for the boys and 3.40+1.13 for the girls. The average score of the test of throwing a bouncing ball into a hoop (bounce shooting) was 2.75+1.10 for the girls and 3.04 + 1.18 for the boys. The average score of the test of dribbling was 1.85+1.09 for the girls and 2.05+1.31 for the boys. The average score of the test of bringing down pins (bowling) was 2.53+0.83 for the girls and 3.09+1.07 for the boys. The average score of the test of throwing a ball to a target on a wall (passing to the target) was 3.80+0.95 for the girls and 4.05+1.06 for the boys. The average score of the test of fast passing on a wall (speed pass) was 2.75+0.77 for the girls and 3.20+0.86 for the boys. Finally, the total score of the basketball test battery was 2.62+1.36 for the girls and 2.85+1.33 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 basketball ability test total score (p>0.05).

Table 3. The Frequency and Percentage Distributions of Students' Basketball Ability Test Battery Measurements by Gender

TESTS	GENDER	TOO BAD		BAD		MODERATE		GOOD		VERY GOOD		TOTAL	
		FREQUENCY	%	FREQUENCY	%	FREQUENCY	%	FREQUENCY	%	FREQUENCY	%	FREQUENCY	%
the test of throwing a ball into a hoop from the air (shooting)	BOYS	0	0	4	7,3	13	23,6	22	40	16	29,1	55	100
	GIRLS	2	3,6	11	20	16	29,1	15	27,3	11	20	55	100
the test of throwing a bouncing ball into a hoop (bounce shooting)	BOYS	7	12,7	10	18,2	18	32,7	14	25,5	6	10,9	55	100
	GIRLS	5	9,1	23	41,8	12	21,8	11	20	4	4,8	55	100
the test of dribbling	BOYS	29	52,7	7	12,7	9	16,4	7	12,7	3	5,5	55	100
	GIRLS	30	54,5	9	16,4	11	20	4	7,3	1	1,8	55	100
the test of bringing down pins (bowling)	BOYS	1	1,8	19	34,5	16	29,1	12	21,8	7	12,7	55	100
	GIRLS	5	9,1	22	40	23	41,8	4	7,3	1	1,8	55	100
the test of throwing a ball to a target on a wall (passing to the target)	BOYS	2	3,6	3	5,5	8	14,5	19	34,5	23	41,8	55	100
	GIRLS	1	1,8	3	5,5	16	29,1	21	38,2	14	25,5	55	100
the test of fast passing on a wall (speed pass)	BOYS	2	3,6	9	16,4	21	38,2	22	40	1	1,8	55	100
	GIRLS	2	3,6	19	34,5	25	45,5	9	16,4	0	0	55	100
Basketball ability test total score	BOYS	10	18,2	16	29,1	8	14,5	14	25,5	7	12,7	55	100
	GIRLS	16	29,1	11	20	12	21,8	10	18,2	6	10,9	55	100

Table 4. The Comparison of Performance Test Scores of Boys and Girls

Variables	Boys		Girls		Statistical sign. (p)
	n	Mean ± S.D.	n	Mean ± S.D.	
Vertical jump test (cm)	55	22,92±5,22	55	20,58±5,06	,019*
Standing long jump test (cm)	55	126,27±19,34	55	105,61±20,92	,000*
20 m sprint test (s)	55	4,05±0,29	55	4,66±0,37	,000*
Seated Medicine Ball Throw (cm)	55	418,76±88,01	55	384,76±56,65	,018*

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 Scores of Boys with Bad Results for Basketball Ability Test Battery

Variables	The boys with good and very good results in basketball ability battery		The boys with bad results in basketball ability battery		Statistical sign. (p)
	N	Mean \pm S.D.	N	Mean \pm S.D.	
Vertical jump test (cm)	14	27,21 \pm 4,34	34	22,44 \pm 4,51	,002*
Standing long jump test (cm)	14	144,59 \pm 11,17	34	121,10 \pm 17,83	,000*
20 m sprint test (s)	14	3,80 \pm 0,30	34	4,17 \pm 0,36	,000*
Seated Medicine Ball Throw (cm)	14	532,93 \pm 77,80	34	381,50 \pm 51,60	,000*

P<0,05

According to the basketball ability test total scores, the number of boys with a mean age of 10.96+0.69 years (n=55) were found to be 10 (18.2%) at a very bad level; 16 (29.1%) at bad level; 8 (14.5%) at medium level; 14 (25.5%) at good level; and 7 (12.7%) at very good level. According to this data, the performance test results of 14th of 21 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 Basketball Ability Test Battery

Variables	The girls with good and very good results in basketball ability battery		The girls with bad results in basketball ability battery		Statistical sign. (p)
	n	Mean \pm S.D.	n	Mean \pm S.D.	
Vertical jump test (cm)	10	24,35 \pm 3,10	39	19,96 \pm 4,81	0,009*
Standing long jump test (cm)	10	125,35 \pm 21,94	39	101,13 \pm 19,12	0,001*
20 m sprint test (s)	10	4,32 \pm 0,18	39	4,71 \pm 0,21	0,000*
Seated Medicine Ball Throw (cm)	10	449,70 \pm 66,33	39	367,85 \pm 30,04	0,003*

P<0,05

In the study, there were 16 girls (29.1%) at the very bad level, 11 (20%) at the bad level, 12 (21.8%) at the moderate level, 10 (18.2%) at the good level and 6 (10.9%) at very good level (a total of 55). According to these data, there are 16 (29.1%) girls who get very good and good scores. In addition, the performance test results of 10 girls were also found to be better than other students at 0.05 significance level.

3. DISCUSSION

In our study, the mean age was 10,95 \pm 0,65 years for girls and 10,95 \pm 0,65 years for boys; height average was 1,43+0,09 m for girls and 1,46+0,09 m for boys; body weight average was 37,12 \pm 8,85 kg for girls and 38,49 \pm 8,05 kg for boys. The mean BMI was 17.76 \pm 2.89 kg/m² for girls and 17.80 \pm 2.54 kg/m² for boys. There was no significant difference between the demographic characteristics of the boys and girls (p>0.05). In a study of Pekel et al.(2004), the body weight of 10-year-old girls was 29.3 \pm 3.3 kg., the mean height

was 141.3 ± 3.7 cm and body weight in boys was 31.4 ± 4.6 kg, and height in boys was 142.3 ± 5.9 cm. Khayyat (2015), in his study conducted in Iran, reported that the mean height of 11-year-old boys was $146,22 \pm 5,14$ cm and mean body weight was $39,42 \pm 4,43$ kg. Jurak et al. (2006), after his study in Slovenia, reported that the average height of 10-11 years old students was 145.4 ± 6.8 cm and body weight average was 38.0 ± 8.1 cm in girls and the average height was 145.5 ± 6.2 cm and body weight average was 38.9 ± 8.2 kg in boys. Kudaş et al. (2005) conducted a study on 11-12 age group girls and boys in Ankara province, determined the average value of BMI as $17,65 \pm 2,8$ kg/m² in girls and $18,02 \pm 2,57$ kg/m² in boys. Again, Örjan et al. (2005) conducted a study on 10-year-old girls and boys in Sweden whodon't play sports, the mean BMI was 18.3 ± 3.0 kg/m² in girls and 18.1 ± 2.9 kg/m² in 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 level 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, vertical jump test mean was 22.92 cm for boys and 20.58 cm for girls; standing long jump test mean was 126,27 cm for boys and 105,61 cm for girls; 20-meter test mean was 418,76 cm for boys and 384,76 cm for girls. The Seated Medicine Ball Throw (2014) averages were 418,76 cm in boys and 384,76 cm in girls. Yıkılmaz (2014) 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. Kara (2006) conducted a study on children who do regular sports and found that the vertical jump average of boys with a mean age of 11.25 years was 29.71 cm and the vertical jump average of boys with a mean age of 10.95 years was 23.56. In a similar study, Turgut and Çetinkaya (2006) found vertical jump averages to be $31,40 \pm 5,75$ cm for 11-year-old girls. In a study of the effect of football training on the technical development of 10-13 years-old children, the pretest vertical jump test for boys aged 11,67+14,30 years was $23,00 \pm 6,99$ cm and the posttest value was $25,80 \pm 6,23$ cm. In a study on the relationship between match performance and field tests in 8-10 year-olds, male tennis players had an average of $154 \pm 0,13$ cm for standing long jump test. Pilianidis et al. (2004) reported that long jump test results were $140 \pm 0,23$ cm in children aged 8-11 years. In a study on the comparison of some anthropometric and motoric characteristics among boys who were 10-12 years of age and who did and did not take athleticism training, Gül et al. (2006) found that the standing long jump test average of boys was 140.96 ± 17.97 cm for the experiment group. In the study conducted on girls aged 6-11

(n=776) who were educated in primary schools in Antalya province, Turgut and Çetinkaya (2006) reported that the mean 20 m test score for girls aged 11 was $4,22\pm 0,38$ and Yazarer et al. (2004) reported that the average of 20 m sprint test values of boys aged 11 years was $4,18\pm 0,30$ s. Pekel (2007) reported that the average of the Seated Medicine Ball Throw test of 11-year-old children was 531,6 cm for boys and 481,9 cm for girls. The resulted values are parallel with some of the other research results and differ from some. Participation in more physical activities will provide a better physical structure for children as well as the better development of motor skills. Therefore, differences between these and other studies are thought to be due to the fact that the boys in other studies are doing regular sports. In addition, the results of our study are worse than the results of studies in foreign countries, so it indicates that the physical education and sports and physical activities courses, which provide mobility to children of primary school age, where versatile development is important, are inadequate in our country's primary and secondary schools compared to the developed countries.

In our study, the percentage of basketball ability test battery score was found for girls to be 29.1% for very bad level, 21.8% for bad level, 20% for medium level, 18.2% for good level and 10.9% for the very good level. For the boys, it was found to be 18.2% for very bad level, 29.1% for bad level, 14.5% for moderate level, 25.5% for good level and 12.7% for the very good level. Mülazımoğlu (2007) conducted a study on female and boys with an average age of 9 ± 1 , basketball ability 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. Although there were differences between the percentages in our study and the Mülazımoğlu's study due to the difference in the total number of samples, in general, students are gathered in the medium level and boys are more successful than girls. Therefore, the parallelism between the two studies draws attention. In our study, it can be thought that girls are less active than boys, so boys have better performance results than girls.

4. CONCLUSION

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 is important in the selection of ability. In addition, it is important to apply special test batteries to children's group to be selected and to determine sports skills peculiar to the branch.

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