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Original article

Determination by priority weight of motoric function in children by age groups

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Abstract. This study is to investigate the relationship between certain physical and motoric skills, and results of physical and motoric tests of male and female athletes from sports schools in Ankara province, and priority weights of the applied tests with respect to age groups. Research group at the Ankara sports schools serves as the basketball and volleyball training variable between the ages of aged 6-15 82 boys and girls to 103 total 185 created the voluntary athlete. Research, motorik features children according to age groups include the determination of the the weight of importance. To identify physical and motoric skills of athletes, height, weight, sit and reach test, flamingo test, right hand grip strength test, left hand grip strength test, pro-agility test, 30 meter sprint test, 30-s continuous jump test, vertical jump test, was used.Priority weights of physical and motoric tests are obtained by using computational model.Mean and standard deviation values of height, weight, sit and reach test, flamingo test, grip tests, agility test, sprint test, 30-s continuous jump test and vertical jump are computed by using IBM SPSS 20 for windows. Priority weights of the physical and motoric tests are computed by using Microsoft Office Excel 2007. In conclusion, for children in the age group over 10 who participated to research, priority weights of agility, speed, flexibility, and take-off parameters observed to stagnate and strength competence is observed to decreasing continuously.Therefore, a conclusion of, performance of the motoric skills are preserved after the age 10 in the development cycle of the children, is made.

Key words: Physical Skill, Motoric Skill, Age, Ability Test.

Introduction

Sport plays a great role of growing the children, get mature, cognative improvement and their socializition. Because of that today the children's sport leading has been primary goal of every country sports policy. Based on this they whip up their studies by doing compete in international platforms, let them do sports in youngs ages which made them think about which branch should they do. With this context, practice of system and coordinately work furthermore; it requires to find proper individual for sports [9; 22; 27].Growth and development in childhood is known to be intensive. During this period, children's reactions to physical loads differ from those of adults.[15].

Today, the majority of the subjects that sports scientists stand on and the intensity of the subjects they continue to work on are the basic conditions for achieving success at the highest level of the sports. At the beginning of the basic conditions, the children who determine their abilities and suitability at the earliest start of the spore come to be channeled into sport

[1] Keles, A. (2016). "Determınatıon By Priorıty Weight Of Motoric Function In Children By Age Groups" This is a summary of the master thesis, published in 2016.

branches by scientific methods [31]. Based on these concepts stated in our study, it is presented that the weight of importance according to physical and motor age. However, its effects on the success of athletes have not been determined. In addition, the opportunity to compare the results obtained with similar studies makes the subject more important.

Material and method

Research group

The research group consisted of 82 boys and 103 girls between the ages of 6-15 who are studying basketball and volleyball in sports schools in Ankara.

Collection of data and tools

For an overview of the literature on the subject first archive. Sports school management and coaches can be made to work with the appropriate time determined by law, the practiceis programmed by not to failure.

Before the execution, general information about the tests to be applied was given to the participants. The parents of the athletes were informed and permission was obtained from the sports school management. Athletes with health problems were not measured. Enforcement work, floor parquet which was carried out at the closed gym. Lighting, heating and noise levels have been adjusted in accordance with the standards. Warm-ups should be required before the tests took place, accompanied by a trainer. The test was conducted to inform the test to be applied in the station.

To identify physical and motoric skills of athletes, height, weight, sit and reach test, flamingo test, right hand grip strength test, left hand grip strength test, pro-agility test, 30 meter sprint test, 30-s continuous jump test, vertical jump test, was used.

The test involved in implementing elements of the tests Kirikkale University Faculty of Sport Coaching Education Department is comprised of the graduate. Necessary information was given about the test protocols to be applied to the test staff.

Age

The study used athletes ages according to information received by the management of sports school day-month-year, respectively, then hold talks with athletes in the different birth date has been determined to ascertain the ages [24].

Height measurement

According to Akın and his friends [1], made with the help of millimeter tape measure height measurements. During measurements, it can be transferred to

Table1. Length, Body Weight and Body Mass Indices of Research Group According to Age Groups.

Age variable	Height cm	Body weight kg	BMI Kg /m^2
6 years (N = 5 boys - 3 girls)	115,13±6,38 cm	22,24±2,69 kg	16,75±1,07 kg/m^2
7 years (N = 9 boys - 2 girls)	125,73±5,80 cm	28,55±8,19 kg	17,82±3,83 kg/m^2
8 years (N = 10 boys - 4 girls)	131,43±5,43 cm	33,32±7,88 kg	19,13±3,64 kg/m^2
9 years (N = 10 boys - 5 girls)	136,87±7,00 cm	36,95±7,42 kg	19,60±2,99 kg/m^2
10 years (N = 4 boys - 15 girls)	141,47±7,10 cm	37,97±9,05 kg	18,80±3,27 kg/m^2
11 years (N = 11 boys - 14 girls)	148,96±7,70 cm	42,50±10,03 kg	18,97±3,53 kg/m^2
12 years (N = 9 boys - 10 girls)	154,26±9,02 cm	48,32±10,83 kg	20,17±3,58 kg/m^2
13 years (N = 10 boys - 16 girls)	156,88±21,52 cm	50,47±8,79 kg	23,57±20,45 kg/m^2
14 years (N = 2 boys - 11 girls)	164,08±10,14 cm	59,73±21,72 kg	21,71±5,10 kg/m^2
15 years (N = 8 boys - 27 girls)	165,40±10,39 cm	57,92±9,77 kg	21,18±2,95 kg/m^2
Total (n=185)	148,87±17,94 cm	45,03±14,72 kg	20,23±8,36 kg/m^2

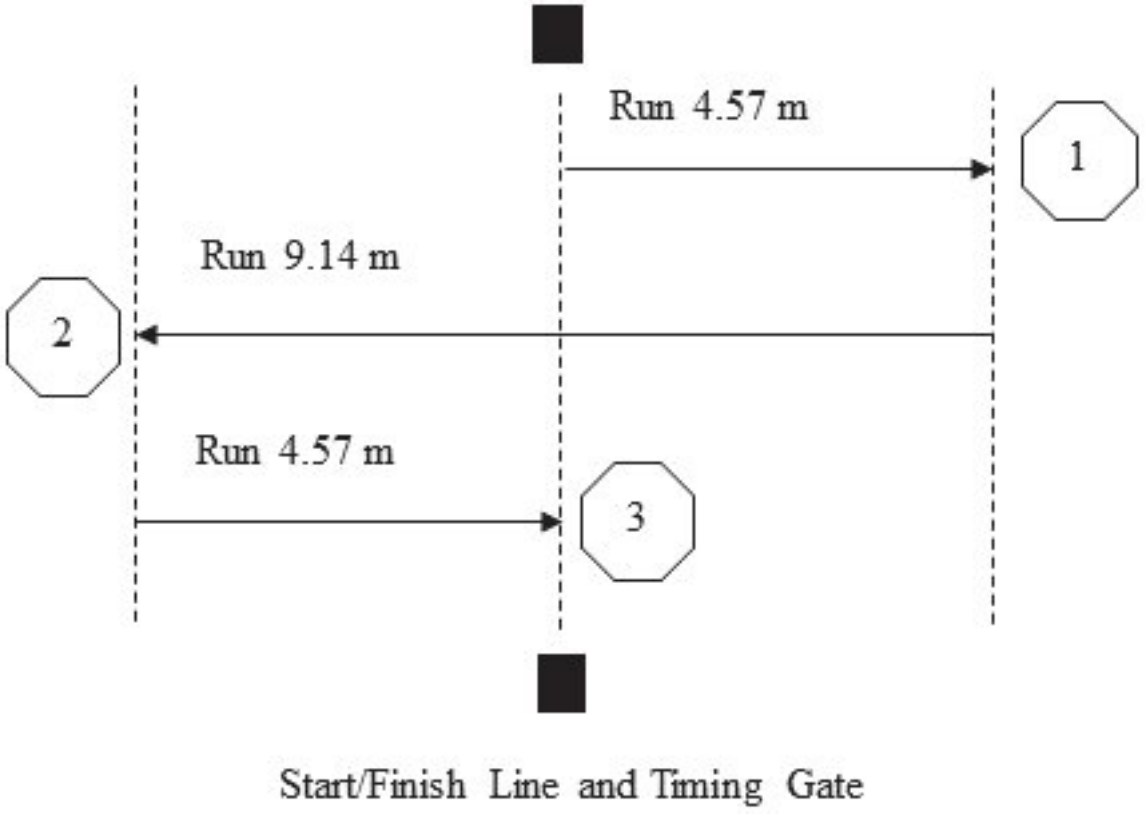

Figure1. Application of Pro Agility Test.

ideal body position during the athletes to wear heavy clothes and socks. Body weight balanced on both legs in to the mountains in the form of Heads of athletes "Frankfort Horizontal Plan" position on the side of the body and the arms, palms facing the way measurements are taken to the legs. Heels touch each other while your feet are about the inner side of the angle is set to 60 ˚. Heels, buttocks and vertical position while the ground contact to the scapula and athletes in an upright position while waiting for the height measurements were taken twice. The second measurement for sports floor a step backwards after the second measurement was carried out, provided that the body shown in position again. It was recorded by averaging two measurement (Transfers: [5].

Measurement of body weight and body mass index

Body weight measurements athletes standard sports apparel (shorts, t-shirts), bare feet body weight Sinbo brand SBS 4443 model scale was recorded with measurements[25]. Body mass is found by utilizing index = kg/m2.

Sit and reach test

Participants were asked to warm up and stretch for 15 minutes before proceeding to the flexibility measurement. In the measurement, the participant to be tested sat on the ground and put her/his bare foot flat on the test bench. From its trunk (waist and hips) without bending your knees and leaning forward with his hands in front of her body to be up as much as lengthen front in this position try the most advanced point is fixed. To be able to read the values apply the test correctly, try the next point, featured or have been asked to wait until 1-2 seconds from the back stretch. By standing next to the person, that implements the test athletes athlete's knees bending. Test value that is repeated twice and recorded high[2; 7; 19].

Flamingo balance test

Flamingo test was used to measure the balance parameter. A board of 50 cm long, 4 cm high and 3 cm wide was used. The athletes tried to stay in balance on the balance board as long as they could. Two trials were taken and the best one was recorded as the test result. [14; 19].

Grip strength test

Hand grip strength test measurements were made with a hand dynamometer (Takei Grip brand) that can measure between 5 and 100 kg. Two repetitions were made, first the right hand, then the left hand. Maximum hand grip strength was measured and the best result was recorded.[16; 21; 25].

Agility test

In agility test measuring is used wireless photocell device (Smart speed model of the fusion sport brand). Agility test for pro-agility test protocol has been applied. Prior to the measurements it was given for warm up to athletes for 10 min. duration. Measurements will be applied to the track to the right side of the center point 4, 57 m and is marked to be 4, 57 m to the left. Participants in the test athletes stand between the middle point with photocell respectively right (1), provide direction to the left direction (2) and (3) ran between the maximum speed towards the photocell. It was recorded by taking the top two again[29].

Speed measurement test

Speed test measures wireless photocell device (Smart speed model of the fusion sport brand) was measured. In this test the start and finish points are 30 m distance to photocell. Athletes can run at maximum speed from the start until the finish through photocell ending. End photocell, photocell device after passing the running speed on automatically. In this test, the speed measurement of 0-30 meters was measured in seconds. After two attempts, the best has been recorded[3; 12].

30 Seconds continuous jumping test

Automatic performance measurement device was used in 30 seconds continuous jump test. The athletes were allowed to stand between the laser sensor apparatus on the ground. Participants were asked to jump continuously for 30 seconds in a vertical position without bending their knees. At the end of the test, the values (jump number, contact time, air time, altitude, power, step) were recorded with the help of a computer and a camera connected to the measuring device[8].

Active bounce test

An automatic performance measurement device was used in the active jump test (microgate brand optojump model). Participants were kept in a double footed position on the mat apparatus that was laid on the floor of the measuring device. With the command, they were asked to jump upwards with the help of their knees with all their might. Afterwards, they were allowed to fall on both feet without bending their knees. Each athlete has been granted after two tries and best values (cm) are recorded with the help of the computer that is connecting to the measuring device[11; 25].

Calculation model for determining by priority weight of the motoric function

The importance of physical and motor skills test that is applied to this topic weight we used to calculate the sample model is shown below.

Z, T and ideal standard score

Determine how far a score in any data group is from the mean relative to the standard deviation.

In addition, these scores must be standardized in order to be able to compare data from different data groups.

Namely, it must be converted into the same standard score. The computed Z is hard to interpret whole number of points to convert and easy to interpret T needed to score.

The ideal standard score is obtained from the Z and T scores in the sample model. It provides standard scores to the tests applied by using the weight of importance formula.[13]. Anthropometric and each age group for which performance tests is a higher level of importance to model analysis is made. The content of the sample model was planned as a model that enables to create a skill score for each athlete. In this study; The sample model has been discussed until the part where the significance weights of the tests applied are determined as a percentage.[13].

The weight of importance and calculating the weight of importance

The concept of the age of the test duration is important weight group were made to determine their percentage rates. Test numbers and varieties may vary, we can get data about the test each motor function is the implementation of the property.

In order to determine the importance weights of each test according to age groups, the Z value was found first. T values were calculated according to the Z values. As a result of this calculation, ideal standard scores were obtained for each age group. After the ideal standard scores were found, importance weights of each test according to age groups were calculated.

1. Physical and motor skills tests applied his confidence that the resulting values are recorded to the Excel program.
2. After the recorded values to Excel, SPSS statistics software.
3. SPSS for different age groups values passed to the environment and applied to the analysis of the tests was mean, standard deviation, and recorded in an Excel program.
4. Physical and motor skills are applied to each age group for tests for the severity you want to attain their weight, respectively, Z, T and İdeal Standard has been applied to each age group formulas Points.

1. Formula

$$Z = \frac{\text{6. Age Sit and Reach Average} - \text{All Ages Sit and Reach Average}}{\text{All Ages Sit and Reach Standard Deviation}}$$

- It calculated separately for all age groups and tests

2. Formula

$$T = 10 \times Z + 50$$

- It calculated separately for all age groups and testing.

3. Formula

$$\text{Ideal Standard Points} = T - \text{Total number of people}$$

- It calculated separately for all age groups and testing.

5. Finally, the importance weights formula was applied for each age group and each test separately with the help of ideal standard scores calculated respectively.

$$\text{The Weight Of Importance (\%)} = \frac{\text{Ideal Standard Points}}{\text{Total Ideal Standard Points}} \times 100$$

- It calculated separately for all age groups and testing.

6. Then, the table and graph by age groups and weight of importance of physical motor tests was prepared[13].

Data analysis

The mean and SD values of the studied height, body weight, body mass index, reach, flamingo, grip strength, agility, speed, 30 seconds continuous jump and active jump variables were calculated in IBM SPSS statistics version 20 . The significance weights of the motor tests applied to the research group were calculated in Microsoft Office Excel 2007 program.

Results

For children between six and fifteen year-olds each test importance weights are included in the model Table 2 demonstrates.

Table 2. Importance Weights of Motoric Tests by Age (%).

		The weight of importance of percentages %									
Tests		6 years old	7 years old	8 years old	9 years old	10 years old	11 years old	12 years old	13 years old	14 years old	15 years old
Active Bounce	Area occupied (%)	7,22	6,90	6,58	6,67	6,75	6,75	6,47	6,22	6,54	6,56
	Height (%)	7,02	6,90	6,98	6,89	6,74	6,58	6,56	6,58	6,43	6,49
	To remain in the air (%)	7,09	7,05	7,01	6,90	6,73	6,54	6,60	6,59	6,45	6,55
30 seconds Continuous Jumping Test	Step (%)	5,73	6,16	6,43	6,29	6,32	6,73	6,74	6,86	7,18	7,11
	Power (%)	6,05	6,46	6,31	6,44	6,76	6,67	6,75	6,75	6,85	6,90
	Height (%)	6,22	6,43	6,32	6,76	6,64	6,67	6,80	6,78	6,78	6,76
	To remain in the air (%)	6,22	6,23	6,39	6,35	6,55	6,67	6,86	6,75	6,91	6,93
	Contact (%)	6,55	6,4	6,65	6,31	6,38	6,74	6,73	6,75	7,15	6,86
	Number of jump out (%)	6,51	6,66	6,60	6,53	6,57	6,65	6,51	6,69	6,92	6,83
	0-30 mt (Speed) (%)	7,04	6,79	6,84	6,81	6,81	6,51	6,54	6,51	6,48	6,55
	Pro Agility Test (Agility) (%)	6,85	6,91	6,92	6,75	6,79	6,48	6,54	6,49	6,49	6,61
	Left hand grip (strength) (%)	6,49	6,97	6,89	6,91	6,85	6,77	6,76	6,52	6,32	6,28
	Right hand grip (strength) (%)	6,55	7,02	6,90	6,94	6,90	6,73	6,67	6,49	6,31	6,33
	Flamingo test (balance) (%)	6,09	6,63	6,56	6,71	6,67	6,68	6,82	6,76	6,49	6,63
	Sit and Reach test (flexibility) (%)	5,84	6,50	6,22	6,75	6,53	6,83	6,64	6,87	6,70	6,22

Table 2. six age group examined the results obtained in this age group, the highest weight of the importance of active area occupied the leap test (7.22%) and remain in the air test active bounce (7.09%).

Seven age group examined the results obtained for this age group, the highest weight of the importance of the tests remain in the air test (7.05%) active bounce and right hand force test (7.02%).

Eight age group examined the results obtained for this age group, the highest weight of the importance of the tests remain in the air active bounce test (7.05%) and active bounce height test (6.98%).

Nine age group examined the results obtained for this age group, the highest weight of the importance of the tests right hand grip test (6.94%) and left hand grip test (6.91%).

Ten age group examined the results obtained for this age group, the highest weight of the importance of the tests right hand grip test (6.90%) and left hand grip test (6.85%).

Eleven age group examined the results obtained for this age group, the highest weight of the importance of sit and reach test (6.83%) and the left hand grip test (6.77%).

Twelve age group examined the results obtained for this age group, the highest weight of the importance of the tests remain in the air for 30 sec test (6.86%) and flamingo test (6.82%).

Thirteen age group examined the results obtained for this age group, the highest weight of the importance of sit and reach test (6.87%) of the tests and 30 sec step test (6.86%).

Fourteen age group examined the results obtained for this age group, the highest weight of the importance of the tests in 30 sec. step test (7.18%) and contact for 30 sec test (7.15%).

Fifteen age group examined the results obtained for this age group, the highest weight of the importance of the tests in 30 sec. Step test (7.11%) and remain in the air for 30 sec test (6.93%).

Discussion

Some motor skills for different age groups of properties is examined in this part of the study reached conclusions and on the basis of the findings of the evaluation. In the study, it was aimed to determine the importance percentage of the motoric characteristics of the male and female athletes who study basketball and volleyball in sports schools in Ankara, according to age groups. For this purpose between 6-15 years old ahtletes are applied to 15 different tests. The purpose of the implementation of the different level of 15 tests is a test for each motor function for being selected the property. In terms of the limitations of the study, the number of athletes in a certain age group can be increased. Differences arising from group differences can be avoided.

Future studies can be applied to participants from different branch types. In this context, guiding qualities for sports scientists can be increased in terms of branching. Gender differences can be taken into account by considering limitations. Gender differences that may arise from errors could be avoided. In order to be able to perform a study according to gender differences, the number of subjects required can be reached and guidance about motoric tests can be made. According to the gender of the maturation processes motor skills property taking into consideration gender differences and biological maturity can be controlled due to circumstances.

Individual variation depends on performance and physical activity depending on biological maturation[18]. Different physical activities in adolescence support individual change [26; 28]. Considering cardiovascular capacity and metabolic risks in adolescent development; [4; 17]. Traceable to biological maturation. Indicators can be tracked as the skeleton's age and puberty stages[18].

When the default early ripening consideration should be paid to the selected sports. Early ripening obesity, body mass index and physical activity is associated with[30]. Timing in biological maturation is valid. For example the same chronological age, early puberty in girls, in due time has entered adolescence and late puberty in teenagers effective skeletal maturity[18; 20].

We model the choice of field talent imprints routing is designed to be done about the model. In this model, each non-elite child participating in the tests will earn a skill point towards becoming an elite. In this context, it is aimed to collect information about the levels of athletes. Motor test in accordance with points from the sports branches that is intended to correct the routing [13]. In our study, age group average taken according to the model. Significance weights of motoric tests were determined as percentages for each age group. Then, tests and determinations were made about the importance of motoric characteristics at which ages. The similarities and differences between the studies in the literature and our research are shown.

In the research, the average right hand grip strength of the athletes aged 12-14 years was calculated as 22,72 kg and the left hand grip strength average was 21,39 kg. Aktaş et al. [2] calculated the right hand gripping force averages as 22.84 kg and the left hand grippinforce averages as 18.73 kg. It has been determined that the mean values of right hand and left hand grip strength in these studies found in literature are similar to the values in our study. Özsu [23]calculated the right hand grip strength averages as 15,08 kg and the left hand grip force averages as 14,50 kg. When this finding is compared with the results of our study; it is seen that the right and left hand grip strengths of the research group of our study are high.

The agility averages of the athletes aged 14-15 years were calculated as 6.15 sec. Faigenbaum et al. [10] calculated the agility averages as 5.17 sec. The agility values in this study seem to be lower than the study group of our study. The average speed of the athletes aged 12-15 years was calculated as 3.83 s. Chaouachi and colleagues [6] calculated the average speeds as 5,15 s. The speed values in this study seem to be higher than the study group of our study.

In the study, multiple leap averages of athletes aged 6-15 years; height was measured as 18.66 cm and the number of bounces was calculated as 47.25. Dal Pupo and friends [8] from multiple bounce averages; height 42,64cm and the number of bounces 26,60. When these findings are compared with the results

of our research; it is seen that the height of the study group of our study is low, whereas the number of leap of the study group is high.

Percentage weight of the tests applied in our study is checked according to age groups. Accordingly, information is obtained about the order of importance as a percentage of the motoric tests suitable for age groups. A motoric test with the highest significance weight as a percentage of the age group of six age groups emerged from the results of our research, and the motoric test with the lowest significance weight was determined as anaerobic power test. When we look at the age group of seven, it is seen that the highest jump test is the anaerobic power test with the lowest precaution. When we looked at the age group of eight, the highest jump test was found to be the lowest anaerobic power test. When we look at the age group of nine and ten, the hand strength test and the lowest anaerobic power test are the highest test. When we arrived at the age group of 11, the flexibility test had the highest prevalence and the agility test as the lowest percentage of weight appeared to be severe. In the age group of twelve age, the anaerobic power tests are the highest, while the splash tests are the least important. It is determined that the ages of 13 age group have the highest test flexibility, the agility test with the lowest percentage of NMe.

Conclusion

Finally, while the anaerobic power tests seem to have the highest importance when we look at the ages of fourteen and fifteen, the lowest significance tells us as a hand strength test. It is the result of presenting information about which age group of motoric tests will be applicable by going out of the way. The importance weight of the agility, speed, flexibility and jumping parameters of the children included in the research group has become stagnant in the 10 and above age groups. It was determined that the strength ability decreased continuously. By considering groups with high training age, work can be applied on children from different branches. It can be followed by planning a longitudinal study on the same group, by applying tests periodically, motor developments. By examining the motoric properties with different tests, errors caused by tests can be reduced. Gender differences can be considered separately for boys and girls age groups. Studies can be done by taking certain age groups and increasing the number of athletes

There are some limitations of this study, as in all studies in the field of health sciences. The fact that the participants are in a certain age range and the number of participants that can be reached is not evenly distributed can be shown among these limitations. For future research on this subject, widening the age range will provide different results. As a result, it is thought that the study will be a guide for future studies. In line with this thought, it will guide children and young people in performing appropriate tests at the right age. In addition, in order to reach more valid results of the importance weight of the applied tests, more test protocols can be added to future studies and the scope of the study can be expanded. In addition, the sportive abilities of our children, who are the most valuable assets for the society, can be determined with appropriate tests at the right age. Therefore, it has been a study that can help children determine both their own future and the future of society.

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