

Comparison of the Motor Performances of 11 and 12 Years Old Boys and Girls Skiing Athletes

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Received: April 22, 2019

Accepted: May 4, 2019

Online Published: May 15, 2019

doi:10.11114/jets.v7i7.4219

URL: <https://doi.org/10.11114/jets.v7i7.4219>

Abstract

The aim in this study, will comparison anthropometric characteristics and motor performance tests to be between according to the ages of boys and girls ski athletes. A total of 41 Girls and 47 Boys ski athletes participated in this study voluntarily. One Wey ANOVA and LSD tests were used.

In this study, there were differences in height and body weights statistical ($p < 0.001$). 12 year old girl ski athletes were taller. Again, the body weight of girls is higher than men. In this study, the Sit and Reach Test values of girls and boys at 11 years of age were significantly higher than the values of boys and girls at 12 years of age ($p < 0.001$). There was no difference between boys and girls ($p > 0.05$). The flamingo test values of boys and girls 11 and 12 aged changed according to gender and age statistical ($p < 0.01$). The plate tapping test values of boys and girls 11 and 12 aged changed according to gender and age not statistical ($p > 0.05$). It was statistically significant that girls' sit up and Standing Long Jump value was better than boys ($p < 0.001$). It was statistically significant that boys' Bent Arm Hang test and mini cooper test was better than girls ($p < 0.001$).

Conclusion: Anthropometric characteristics and motor performance tests were found to be within normal limits according to the ages of boys and girls ski athletes. Physical characteristics and motor performance parameters can change according age and sex for 11 and 12 aged Child. For ski training and education's plans, according age and gender should be taken into consideration on child.

Keywords: girls, boys, ski

1. Introduction

Physical activity is considered as the effect factor for a healthy physical and mental development of children (Denker & Andersen, 2008; Ortega et al., 2011); currently, the increasing prevalence of overweight/obesity in children make children at risk of developing several chronic diseases later in life, also because children who are not physically active are unlikely to become so in adulthood (Milanese et al., 2010). Activity level may also imply the normal level of growth or the probable health problems. The individuals with physical activity have fewer problems while their body compositions are better (Haskell et al., 2000). Having a sporting habit in childhood period minimizes the probable future physical, metabolically and functional health risks. In addition to sedentary living style of children, the increase in the irregular fast food consumption habit causes too many health problems. It has been known that when sports, physical activity and exercise program are applied to the children along with diet, it decreases many health problems (Altuncan, 2013; Ayan, 2018).

The five basic of training and performance for Skiing are Endurance, Strength, Speed, Skill and Flexibility. The window for optimal skill training begins at 9 years of age for boys and 8 years of age for girls. The window of optimal trainability occurs at the onset of the growth spurt. For boys, the first speed training window occurs between seven and nine years of age and the second window occurs between 13 and 16 years of age (Balyiet al., 2005). Physical fitness is closely related to both health and skills since it is one of the most important factor that affect daily life, activity and sportive productivity of the individual (Houwen, 2006; Riddoch and Boreham, 2000). Physical training is quite crucial to increase the performance of the identified children and adopt them to the society, which could only be managed by determining and evaluating the level of their motor development and their body structures with respect to their physical conditions (Şahin et al., 2012; Şimşek et al., 2014). To assess physical fitness, updated values for the target population are necessary. Owing to methodological differences in the protocols of assessment of physical fitness, comparing and interpreting the results between and among different population studies is complicated (Ortega et al., 2005; Ortega et al.,

2011). Physical fitness and its tests reflect the relationship among the health, sport and physical activity (Yüksel et al., 2014; Çetinkaya and İmamoğlu, 2018a). Applying Eurofit tests on children of different age groups and can be in determining their general health and diet conditions, in assessing their exercise habits and playing sports, in providing data on the anatomical and functional qualities of children (Chasan et al., 2010; Erikoğlu et al., 2015). Many have suggested that the multifaceted nature of the ski sport is the most thematic factor when considering training and talent identification. A thorough understanding of particular physiological requirements and how they affect training, competition and recovery processes is therefore essential to ensure certain, quality training without wasted time or working (Hartmann et al., 2005; Laurent et al., 1993; Neumayr et al., 2003; Turnbull et al., 2019). Skiers need moderate and high aerobic capacity and very high anaerobic power. Besides aerobic and anaerobic power; motor parameters such as quickness, balance speed and coordination are also needed (Andrea et al., 1993). However, it includes rapid, irregular and variable, short-term, high-intensity efforts in ski, cold and mountain environments (Turnbull et al., 2019). It was stated that students who are engaged in sports can gain more positive personality traits (Koca et al., 2018). Again with sports the students' leadership characteristics are well accepted (Çetinkaya and İmamoğlu, 2018b). Ski clothes and colors have an impact on the psychological state of children. Sliding ambient white the importance of being is not to be ignored. White is used for purity, peace, goodness. It represents calm, relaxation and inner peace (Yamaner and Imamoglu, 2018; Imamoglu, 2010; Imamoglu 2011). In the skiing, the Slalom competition, where the distance between the two doors is the least, extends towards the descent competition, where the distance between the two doors is the most frequent, is required. Fast turns, bumps and lowering, especially fast and quick, flexibility, balance needs to be able to stay. These and similar features should be developed from the early ages (Güneş et al., 2019). Simultaneous assessment of anthropometric parameters and motor abilities will provide more accurate information on the developmental process of child ski athletes.

The aim in this study, will comparison anthropometric characteristics and motor performance tests to be between according to the ages of boys and girls ski athletes.

2. Method

2.1 Materials and Methods

Subjects: A total of 41 Girls and 47 Boys ski athletes participated in this study voluntarily. The families of the children were informed in detail related to the study and their consent was obtained.

Data Collecting Tools: Anthropometric measurements and the physical fitness tests were at gym. When a ski athletes underwent two measurement session, eligible one was considered.

Anthropometric Measurements

Measurement of Body Weight and Body Height: The weight of the Children's were measured by a weighing which measures with a $\pm 0,1$ kg sensitivity. The Height of the Children's was taken the measure by a stadiometre devices (Holtain UK).

Sit and Reach Test: The ski athletes sat down and laid their naked feet to the testing tool in a smooth manner. The body was leaned forward, the knees were not bent, and the hands were in front of the body, the ski athletes stretched forward as far as they could, and pushed the ruler slowly. They were kept waiting for 1-2 seconds without bending forwards or backwards. The test was repeated twice, and the highest value was recorded.

Flamingo Balance Test: The Flamingo Balance Test was used to measure the body balance. A 50-cm long, 4-cm high and 3-cm wide iron bar was used for the measurement. The ski athletes tried to stand on the balance iron for one minute, and the number of the trials was recorded as the test result.

Plate Tapping: In order to measure the arm movement speed, touching the disks test was applied. The ski athletes touched the 20-cm-diameter A and B plastic disks placed 80 cm away with the dominant hand with the highest possible speed within 30 seconds. The number of the touches was recorded.

Standing Long Jump Test: For the standing long jump test, the ski athletes stood feet next to each other, the tips of the toes were kept before the jumping line; and jumped forward as far as s/he could by swinging hands to and fro and by bending the knees. Two trials were made, and the best value was recorded.

Sit-up Test (for 30 seconds Test): To do the movement, the ski athletes lay on supine position, held both hands on the nape, pulled the knees to the stomach, knees in 90° position; the soles of the feet lay on the mat. While moving upwards, the subject touched the knees by bringing his/her elbows to the front. Within 30 seconds, the ski athletes did the movement as fast as s/he could, and the number of the movements was recorded as the test result.

Bent Arm Hang test: The ski athletes stood below the horizontal bar, and held the horizontal bar at the shoulder length with regular grip. The ski athletes pulled himself/herself upwards until the chin reached over the bar. The ski athletes

kept this position as much as s/he could without touching the bar. When the ski athletes could not keep the position and when the eyes came to the level of the bar, the test was ended. The time was recorded as seconds.

30 m sprint: The children ran a maximum sprint on a 30 m limited track. The running time was recorded in seconds using a stopwatch. Two trials were given and the best time was recorded.

Mini Cooper Test (specific endurance test): Running and walking distance of the athletics track for 6 minutes were recorded in meters.

2.2 Statistical Analyses

All data analyses was performed with IBM SPSS (version 23.0) statistical program. One Way ANOVA and LSD test were used to compare the mean values of the groups and determine the difference.

3. Results

In Table 1, compared ski athletes anthropometric characteristics according to gender and age level. In Table 2, was compared ski athletes motor performances according to gender and age Level.

Table 1. Anthropometric characteristics of skier's according to gender and age level

| | Ski athletes | n | Mean | Std. Deviation | F/LSD |
|-------------------|-------------------|----|--------|----------------|-----------------------------|
| Height (cm) | 11 age/ Girls (1) | 18 | 146,13 | 2,13 | 10,13** 3>1,2,4 |
| | 11 age/ Boys(2) | 20 | 144,47 | 2,16 | |
| | 12 age/ Girls (3) | 23 | 149,41 | 5,16 | |
| | 12 age/ Boys(4) | 27 | 145,65 | 4,25 | |
| Body Weights (kg) | 11 age/ Girls (1) | 18 | 40,41 | 4,78 | 27,32** 1<3 2<1,3 4<3 |
| | 11 age/ Boys(2) | 20 | 36,62 | 4,56 | |
| | 12 age/ Girls (3) | 23 | 43,24 | 4,27 | |
| | 12 age/ Boys(4) | 27 | 37,97 | 4,03 | |

**p<0.001

Table 2. Girl and Boys Ski Athlete's motor performances according to gender and age level

| | Ski athletes | Mean | Std. Deviation | F/LSD |
|--------------------------------|-------------------|--------|----------------|-----------------------------|
| Sit and Reach Test (cm) | 11 age/ Girls (1) | 30,54 | 3,62 | 15,13** 1,2>3,4 |
| | 11 age/ Boys(2) | 31,00 | 4,34 | |
| | 12 age/ Girls (3) | 29,75 | 3,12 | |
| | 12 age/ Boys(4) | 28,63 | 3,05 | |
| Flamingo balance test (Errors) | 11 age/ Girls (1) | 6,97 | 1,33 | 13,14** 1<2,3,4 2<3,4 |
| | 11 age/ Boys(2) | 8,00 | 1,39 | |
| | 12 age/ Girls (3) | 9,26 | 2,26 | |
| | 12 age/ Boys(4) | 8,90 | 1,31 | |
| Plate Tapping (sec) | 11 age/ Girls (1) | 10,12 | 0,99 | 0,59 |
| | 11 age/ Boys(2) | 10,16 | 0,81 | |
| | 12 age/ Girls (3) | 11,58 | 0,75 | |
| | 12 age/ Boys(4) | 11,70 | 0,75 | |
| Sit -up (30 sec) | 11 age/ Girls (1) | 12,43 | 2,43 | 12,50** 1,3>2,4 |
| | 11 age/ Boys(2) | 10,11 | 1,41 | |
| | 12 age/ Girls (3) | 12,78 | 2,20 | |
| | 12 age/ Boys(4) | 10,25 | 1,31 | |
| 30 m sprint (sec) | 11 age/ Girls (1) | 6,11 | 0,29 | 4,09* 2,4<1,3 |
| | 11 age/ Boys(2) | 5,94 | 0,37 | |
| | 12 age/ Girls (3) | 6,10 | 0,29 | |
| | 12 age/ Boys(4) | 5,84 | 0,29 | |
| Standing Long Jump (Cm) | 11 age/ Girls (1) | 150,41 | 4,14 | 12,14** 1,3>2,4 |
| | 11 age/ Boys(2) | 144,46 | 3,79 | |
| | 12 age/ Girls (3) | 150,66 | 5,95 | |
| | 12 age/ Boys(4) | 145,39 | 3,68 | |
| Bent Arm Hang test (sec) | 11 age/ Girls (1) | 16,84 | 5,46 | 58,07** 1,3<2,4 |
| | 11 age/ Boys(2) | 19,34 | 1,91 | |
| | 12 age/ Girls (3) | 17,07 | 4,43 | |
| | 12 age/ Boys(4) | 19,79 | 1,71 | |
| Mini Cooper Test (m) | 11 age/ Girls (1) | 809,00 | 95,0 | 66,04** 1,3>2,4 |
| | 11 age/ Boys(2) | 831,85 | 98,0 | |
| | 12 age/ Girls (3) | 818,38 | 101,2 | |
| | 12 age/ Boys(4) | 849,85 | 99,12 | |

*p<0.05 and **p<0.001

4. Discussion

Physical activity is a determinant part of a healthy lifestyle. Physical activity is associated with the decreased risk of cardiovascular diseases, metabolic syndrome, adiposity and obesity, and a variety of physiological and psychological problems (Tremblay et al., 2011). In this study, the parameter results are as follows according: In girl ski athletes for 11 and 12 age; height 146.13 and 149.41 cm, body weight 40.41 and 43.24 kg. In boys ski athletes for 11 and 12 age; height 144.47 and 145.65 cm, body weight 36.62 and 37.97 kg. In this study, there were differences in height and body weights statistical ($p < 0.001$). 12 year old girl ski athletes were taller. Again, the body weight of girls is higher than men. This is probably related to earlier development of girls than boys. In the study carried out by Karakas and his colleagues in Malatya on Children's, the average body weight of girls at the age 11 was higher from boys. Chasan et al., (2010) found that in a study conducted on 8-11 age olds, Girls Children's had higher body weight than Boys. It can be said that for Girl ski athletes the increase in the body weight is higher than Boy ski athletes on account of the puberty differences between Girls and Boys. Life standard and cultural situation of the society hereby may be influenced the physical improvement. The fact that 12 ages Girls are heavier in height and weight may also be attributed to the fact that his some may adulthood in the early.

İmamoğlu and Çoknaz (2002) found that Girls showed higher values than males in flamingo test, Plate Tapping and sit-and reach in test in Turkish children aged 12 ages. They found that male Children's showed better values than Girls in Standing Long Jump and Bent Arm Hang test values (İmamoğlu and Çoknaz, 2002). Tomkinson et al., (2017) in a studies, showed that Boys performed better than Girls on muscular strength, muscular power, muscular endurance, speed-agility and cardiorespiratory fitness tests, but worse on the flexibility test. Boys' fitness also generally improved at a faster rate than Girls' fitness, especially during the teenage ages. Yücel et al., (2014) in a study, have found sex and age factors have an effect on Children's' elasticity degrees in common. Gonzales et al. (2014) found the Sit and Reach Test values of girls found better than men. İmamoğlu et al., (2018) in a study, found sit and reach test between 17.90 and 22.06 cm in 173 primary school student wrestlers who are in 9-12 age group. In this study, found 31.00 cm and 28.63 cm in sit and reach Test for Boys 11 and 12 aged. Girls of the same age had 30.54 cm and 29.75 cm for sit and reach test. In this study, the Sit and Reach Test values of girls and boys at 11 years of age were significantly higher than the values of boys and girls at 12 years of age ($p < 0.001$). Sit and Reach Test decreased with age increase. There was no difference between boys and girls ($p > 0.05$). It is understood that considerable differences of elasticity degrees among girls and boys are in favor of girl's beginning from 11 and 12 ages old.

Gonzales et al. (2014) found 9.3 errors and 9.5 errors values for the Flamingo test for Boys aged 11 and 12 in a study by their colleagues. Girls of the same age had 8.7 errors and 9.4 errors for Flamingo test. In their study, Güneş et al. (2019) found that Flamingo test values were close to each other in 8-10 year-old skiers. In this study, found 8.00 errors and 8.90 errors for the Flamingo test for Boys aged 11 and 12 in a study Girls of the same age had 6.97 errors and 9.26 errors for Flamingo test. In this study, the flamingo test values of boys and girls 11 and 12 aged changed according to gender and age statistical ($p < 0.01$).

Gonzales et al. (2014) found similar values for the Plate taping test for Boys and girls 11 and 12 aged. In this study, found 10.16 and 11.78 values in plate tapping test for Boys 11 and 12 aged. Güneş et al. (2019) found no difference between the pre and posttest Plate Tapping values of 8-10 year-old skiers. Girls of the same age had 10.12 and 11.70 values for plate tapping test. In this study, the plate tapping test values of boys and girls 11 and 12 aged changed according to gender and age not statistical ($p > 0.05$). Yücel et al., (2014) in a study, all the research results are considered, there is rapid increase in Girls' performances than Boys' performances. Gonzales et al. (2014) found higher values for the sit up test for Boys from girls at 11 and 12 aged. In this study, found 10.11 and 10.25 values in sit up test for Boys 11 and 12 aged. Girls of the same age had 12.43 and 12.78 values for sit up test. In this study, it was statistically significant that girls' sit up value was better than boys ($p < 0.001$).

In a study by Gül et al. (2012), a significant difference was found between the values of 30 m sprinting speed in children's male wrestlers by years. In this study, found 5.94 sec and 5.84 sec 30 meter test for Boys 11 and 12 aged. Girls of the same age had 6.11 sec and 6.10 sec for 30 meter test. In this study, it was statistically significant that boys' 30 meter run was better than girls ($p < 0.001$). The difference in 30-meter sprint running and standing-long jump values may be due to ages as well as differences for the genetic features. The genetic features is effective on the 30 meter sprints (Ağaoğlu et al, 2009). In a study by Gül et al. (2012), a significant difference was found no between the values of standing long jump speed in children's male wrestlers by the years. In this study, found 144.45 cm and 145.39 cm long jump test for Boys 11 and 12 aged. Girls of the same age had 150.41 cm and 150.66 cm long jump test. In this study, it was statistically significant that girls' Standing Long Jump test was better than boys ($p < 0.001$).

There are find differences in engine performance between Boys and Girls. Aybek et al., (2011) in a study, was found motivation for the lesson higher in Boys than in Girls. Gonzales et al. (2014) found the higher values for Bent Arm

Hang test for Boys from girls. In this study, found 19.34 and 19.79 values in the Bent Arm Hang test for Boys 11 and 12 aged. Girls of the same age had 16.84 and 17.07 values for Bent Arm Hang test. In this study, it was statistically significant that boys' Bent Arm Hang test was better than girls ($p < 0.001$). Güneş et al. (2019) found that in volunteers aged 8-10 years, the mini cooper test value was higher in boys than in girls. In this study, found 831.85 meter and 849.85 meter in Mini Cooper Test for Boys 11 and 12 aged. Girls of the same age had 809.00 meter and 818.38 meter for Mini Cooper Test. In this study, it was statistically significant that boys' Mini Cooper Test was better than girls ($p < 0.001$).

5. Conclusion

Anthropometric characteristics and motor performance tests were found to be within normal limits according to the ages of boys and girls ski athletes. Physical characteristics and motor performance parameters can change according age and sex for 11 and 12 aged Child. For ski training and education's plans, according age and gender should be taken into consideration on child.

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