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COMPARISON OF SOME PERFORMANCE VARIABLES ACCORDING TO AGE GROUP OF 10-13 YEAR OLD CHILDREN SELECTED WITH TALENT SEARCHING METHOD IN ATHLETICS

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Abstract

Purpose.

The purpose of this study was to determine and to compare some performance variables of 10-13 year old children who were selected with talent searching method in athletics according to age group.

Methods.

Top 10% of children were selected to the athletics at their age group according to the normative study in Ankara (Pekel H. A., 2007). 147 children (30 girls & 18 boys at 10-year-old, 14 girls & 24 boys at 11-year-old, 11 girls & 22 boys at 12-year-old, 12 girls & 16 boys at 13-year-old) were volunteered to participate in this study. Each subject performed flexibility, 30 m run test, standing long jump, and Illinois agility run test.

Results.

As the age increases, the body height and body weight increase with it. In boys, there was significant difference in 30 m sprint performance between age group. Although there were not significant differences in jump and agility performance, the improvement was found with age increasing in boys children. On the other hand 11-year-old girls group have better performance values than 12-year-old girls group in all performance tests.

Conclusions.

Body height, body weight, jump, sprint and agility performance improvement was observed in parallel with age increasing. For further study, children's maturation status should also investigate whether this improvement would effect from maturation.

Keywords: Children, talent searching, athletics

Purpose

Talent identification is a serious component of many sports, and a scientific systematic approach continues to elude recruitment officers (D. T. Pearson et al, 2006). Talent in sport is identified by characteristics that are at least partially genetically determined, affected by numerous environmental conditions and difficult to determine accurately (B. C. Elliot et al, 1989). Furthermore, talent in adolescents is recognised within on interaction of innate abilities, demonstrations of mature play patterns at an early age and demonstrations of highly sport-specific skills (M. J. A. Howe et al, 1998).

Many sports scientists are interested in talent searching and talent identification to get the top level achievement in sports. They focus on this area and study the fundamental requirements of talent search. One of the most important fundamental condition is to determine the talented children as early age as possible using the scientific methods and to orient them the appropriate sport branches (M. Yalçıner, 1993).

In order to identify sportive talent, it is necessary to determine the form of the tests used to conduct measurements and how evaluation will be performed. The requirements for each sports event must be ascertained in order to determine what will be measured, and the method to be used to establish evaluation standards must be determined before the process of evaluation is started (B. G. Ko et al, 2003). Consequently, normative studies about talent searching play a very important role for each country and they should categorized according to each age group in children.

Talent searching consist of many different studies and periods in order to find more children and youth who are ready to start the specific children and youth training or a general education in sports (K. Karl, 2001). In athletics, these periods divided in to three stages: (a) Basic selection:

Consisting of 8-10 age group (b) Pre selection: Consisting of 10-12 age group (c) Final selection: Consisting of 13-14 age group (N. Candan et al, 1996, K. Karl, 2001, Y. Sevim, 2002). In pre-selection period, as many as possible children should be included and tested for many times (S. Muratlı, 2003,Y. Sevim, 2002). While using the scientific tests to determine the talented children, children's maturation status should not be forgotten. Because, hormonal changes exhibit a profound effect on exercise physiology and performance (T. W. Rowland, 2005).

There are many studies about talent searching (B. C. Elliot et al, 1989, Australian Sports Commission, 1994, J. Loco et al, 2000, Hands, B., 2000, H. A. Pekel, 2007, R Vaeyens et al, 2009). But each sports branch requires different tasks and motor abilities, therefore these tests need to be applied according to sports' branches requirements and constantly renewed. Hence, the purpose of this study was to determine and compare some performance variables of 10-13 year- old children who had been selected with talent searching method in athletics according to age group.

Method

Top 10% of children were selected to the athletics from their age group according to the normative study in Ankara (H.A.Pekel, 2007). 147 children (30 girls & 18 boys at 10-year-old, 14 girls & 24 boys at 11-year-old, 11 girls & 22 boys at 12-year-old, 12 girls & 16 boys at 13-year-old) were volunteered to participate in this study and the informed consent were taken from all parents. Body height and weight were measured before the tests. Each subject performed flexibility, 30 m run test, standing long jump, and Illinois agility test. The statistical analyses were performed using the Sigma Plot 11.0 (Systat Software Inc). Kruskal Wallis one way analysis of variance on ranks was applied to ascertain any differences between the groups. Statistical significance was set at $p<0.05$.

Results

The highest increase of body height was at aged 12 year in girls (from 146.8±3.9 cm to 152.5±5.9 cm; 3.8%) and at aged 13 year in boys (from 150.8±6.9 cm to 161.8±8.7 cm, 7.2%) (Table 1). Girls were taller than boys until the age of 13-year-old. In both groups, the highest increasing of body weight was in 13-year-old (13%in girls, 25.2% in boys) (Figure 1).

Boys at each age group completed with higher increment percent of their performance values in all tests compared with the girls.

The body height, body weight, flexibility, 30 m and standing long jump test values in both boys and girls at age 10-11-12-year-old were higher than according to H. A. Pekel normative study in Ankara city.

Discussion and conclusion

Physical growth is the most important factor in the development of physical responses to exercise during the childhood years. Many studies addressed the importance of athletes' body height and body weight to achieve the highest sports performance level. During early childhood, a progressive, almost linear, increase is observed, with average values for boys slightly but consistently greater than for girls at puberty, the added influence of sex hormones on somatic growth causes an acceleration in boys (from increased levels of circulating testosterone) and plateau in girls as they reach sexual maturity (T. W. Rowland, 2005).

In parallel with the highest increase of body height in girls and boys at aged 12 and 13 years respectively, the flexibility was decreased in both groups at aged 12 year. This result associated with the puberty. Pubertal changes can constitute a background for development of motor abilities and flexibility as an important component of physical fitness. But, N. O. Kanbur et al (2005) found sexual maturation stages in pubertal period would not effective in determining the flexibility at their study. Body size and physical fitness vary dramatically in any group of 12-year-old children. That is because each child is on different curve of biologic growth. Some are early matures, some late and some in between. Boys and girls who maturate early are taller and heavier than their peers and demonstrate grater lean body mass. They tend to perform better on motor tasks and are likely to be more successful in sport competition (at least at that age) (T. W. Rowland, 2005). Therefore, our study' limitation is the lack of maturation status information of the subjects. The other important point is the biologic age. Because, biologic age may not be parallel with chronologic age. This situation also must not be missed out by trainers and scientists.On the other hand, De Ste Croix et al (2002) studied the effects of age, body size, and sexual maturation on the development of isokinetic knee extension and flexion using multilevel modelling. Forty one subjects (20 boys and 21 girls) were studied on eight occasions over a four-year period, beginning when they were 10±0.3 years old. Both stature and mass were found to be significant predictors of both peak knee extension and flexion, but once these variables were accounted for in the analysis, age and sexual maturation did not contribute peak knee strength.

J. Loco et al (2000) reported the existence of several periods in motor performance status in

10-17-year-old Estonian girls: 1) The biggest differences in the mean results of the tests on motor abilities occurred between ages 10-11, 11-12, and 12-13 which coincide with the biggest differences in height and weight at the same age. 2) The differences in the mean results of most tests on motor abilities stabilized between the age groups of 13 and 14. The mean results of 14-year-old girls were lower in some tests compared to the results of 13-year-olds. (This result shows similarity to our findings). 3) The positive differences in the mean results remained between the age groups of 14-15 and 15-16. 4) The final stabilization of motor abilities occurred at the age of 16-17. 11-year-old girls have better performance values than 10 and 12-years-old girls. Consequently, it could be said this group is more talented than older. One of the aims of talent searching is to find more talented generation, so it could be said this study accessed to the aim. In conclusion, body height, body weight, jump, sprint and agility performance improvement was observed in parallel with age increasing. For further study, children's maturation status should also be investigated whether this improvement would effect from maturation.

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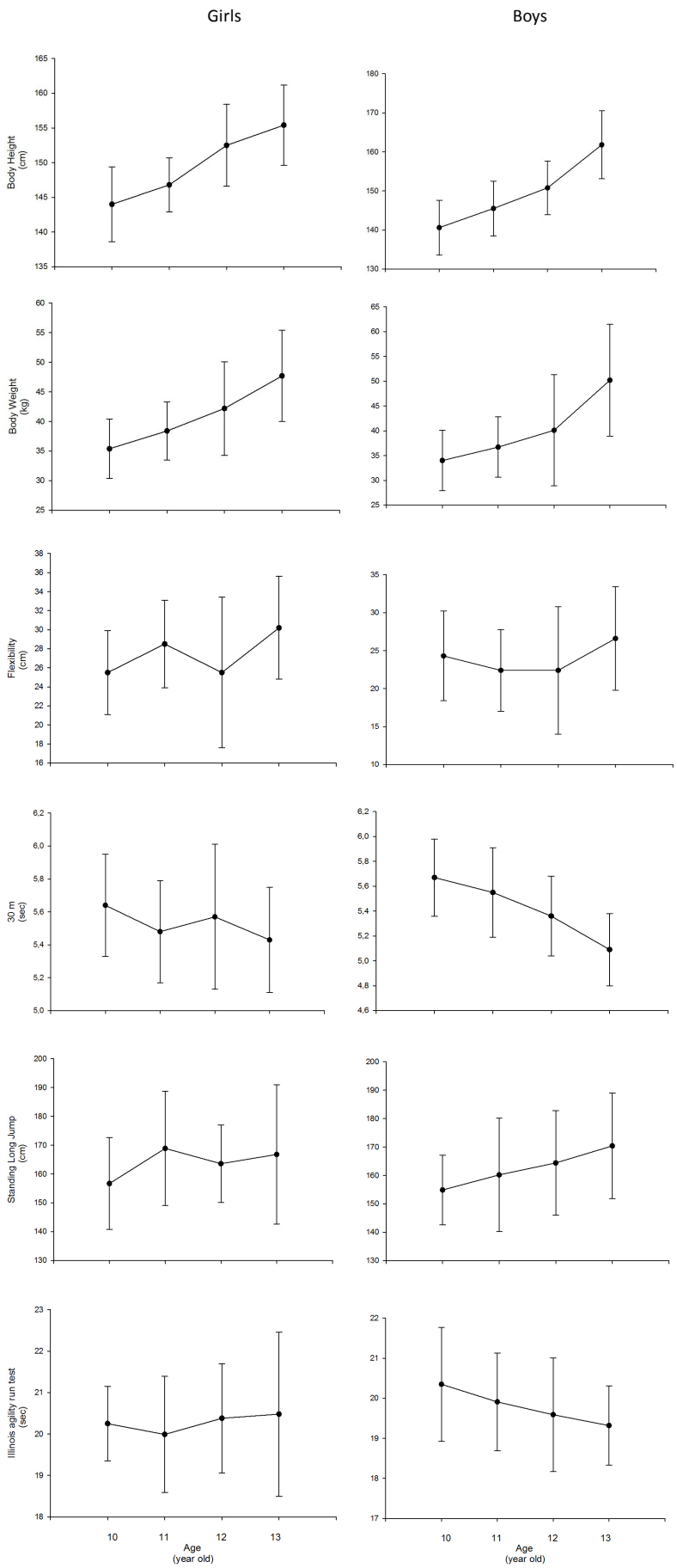

Figure 1. Some performance variables of 10-13-year-old girls and boys.

Table 1. Subjects' characteristics and their flexibility, sprint, jump, and agility performance according to age group of 10-13-year-old girls and boys.

	10-year-old (a)		11-year-old (b)		12-year-old (c)		13-year-old (d)	
	Girls *(n=30)*	Boys *(n=18)*	Girls *(n=14)*	Boys *(n=24)*	Girls *(n=11)*	Boys *(n=22)*	Girls *(n=12)*	Boys *(n=16)*
Body height (cm)	144.0±5.4[c,d]	140.6±7.0[b,c,d]	146.8±3.9[c,d]	145.5±7.0[a,c,d]	152.5±5.9[a,b]	150.8±6.9[a,b,d]	155.4±5.8[a,b]	161.8±8.7[a,b,c]
Body weight (kg)	35.4±5.0[d]	34.0±6.1[d]	38.4±4.9[d]	36.7±6.1[d]	42.2±7.9	40.1±11.2[d]	47.7±7.7[a,b]	50.2±11.3[a,b,c]
Flexibility (cm)	25.5±4.4[d]	24.3±5.9	28.5±4.6	22.4±5.4	25.5±7.9	22.4±8.4	30.2±5.4[a]	26.6±6.8
30 m (sec)	5.64±0.24	5.67±0.31[c,d]	5.48±0.31	5.55±0.36[d]	5.57±0.44	5.36±0.32[a,d]	5.43±0.32	5.09±0.29[a,b,c]
Standing long jump (cm)	156.7±15.9	154.9±12.2	168.9±19.8	160.2±20.0	163.6±13.4	164.4±18.4	166.8±24.1	170.4±18.6
Illinois agility run test (sec)	20.25±0.9	20.35±1.42	19.99±1.40	19.91±1.22	20.38±1.32	19.59±1.42	20.48±1.98	19.32±0.99