A Study of

Certain Fitness and Physiological Variables of Children Selected with Talent Search Method in Athletics

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ABSTRACT

The purpose of this study was to determine and compare some performance variables of children who had been selected with talent search method in Athletics, according to age group. Total thirty (Male = 15, Female = 15) subjects were recruited, from children within the age range of under 17 yrs, belonging to Come and Play Scheme, that were held at Netaji Subhas National Institute of Sports, Patiala, Punjab, during the period of study. Positive and significant relationship was observed between anaerobic power with height, acceleration and explosive power of the boys. Significant and direct relationship of aerobic capacity with explosive power was observed in the present study, in the case of girls as well as in the case of boys.

KEYWORDS

Aerobic Capacity, Talent Identification, Athletics, Fitness

INTRODUCTION

Talent identification is a serious component of many sports, and a scientific systematic approach continues to elude recruitment officers (Pearson et al, 2006). Talent in sport is identified by characteristics that are at least partially genetically determined and affected by numerous environmental conditions and difficult to determine accurately (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 (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 conditions is to determine the talented children as early as possible, using the scientific methods, and to orient them to the appropriate sport branches. 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 physical fitness was the sum of five motor abilities namely speed, strength, flexibility, endurance and coordinative abilities and their complex form like strength endurance, maximum strength, explosive strength; and maximum speed and agility were the basic prerequisites of human motor action (Lewis D.A , 1986).

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Therefore, the sports performances depend to a greater extent on these abilities. The improvement and maintenance of specific physical fitness or condition is the main aim of sports training.

METHODOLOGY

Total thirty (Male = 15, Female = 15) subjects were taken from children within the age range of under 17 years, belonging to 'Come and Play' Scheme, training at Netaji Subhash National Institute of Sports, Patiala, Punjab, during the period of study. The volunteers, for the study, were selected only from the Athletics discipline.

The purpose of this study was to determine and compare some performance variables of children who had been selected with talent searching method in Athletics according to age group.

Each subject was briefed on the purpose of the study and the experimental protocol. All risks involved were also explained and written / verbal consents were taken from them. The study was conducted to find out the status of selected performance variables and physiological variables.

RESULTS & DISCUSSION

The mean age of boys was observed as 15.73 (±0.79) and girls 14.73 (±1.22). The mean height (cm) of boys was observed as 168.7 (±4.8) and girls 159.7 (±5.04). The mean weight (kg) of boys was observed as 56.61 (±7.71) and girls 49.67 (±4.56).

Table-1 (A): Mean and Sd of Physical Parameters of Children of Present Study

PARAMETER	BOYS MEAN ± SD	GIRLS MEAN ± SD
AGE (YEARS)	15.73 (0.79)	14.73 (1.22)
HEIGHT (CM)	168.7 (4.8)	159.7 (5.04)
WEIGHT (KG)	56.61 (7.17)	49.67 (4.56)

Table-1 (B): Mean and Sd of Fitness Abilities of Children of Present Study

PARAMETER	BOYS MEAN ± SD	GIRLS MEAN ± SD
ACCELERATION ABILITY (Sec)	4.7 (0.38)	5.7 (5.1)
EXPLOSIVE SRENGTH (kg)	39.6 (3.7)	28.26 (7.07)
BODY STRENGTH AND EXPLOSIVE POWER (Kg)	11.19 (1.9)	6.3 (1.3)
FLEXIBILTY (Cm.)	8.93 (5.02)	7.8 (2.0)
SPEED AND AGILTY	15.6 (1.5)	18.0 ((1.25)
ABDOMINAL STRENGTH	22.1 (2.4)	17.4 ((2.1)

The mean and SD pertaining to the fitness variable acceleration[30 m start test (sec)] of children were statistically analyzed. The mean time taken for 30 m run of boys was 4.7 (0.38) 1 (±0.38) and girls 5.7 (±5.1). The mean best of score (cm) of vertical jump test of boys was 39.6 (3.7) and girls 28.26 (±7.07). The mean best score (m) of medicine ball throw test of boys was 11.19 (1.9) and girls 6.3 (±1.3). The mean and SD pertaining to the fitness variable flexibility measured by bend and reach test of children were statistically analyzed. The mean best score (m) of bend and reach test of boys was 8.93 (5.02) and girls 7.8 (±2.0).. The mean of scored (secs) of shuttle run test of boys was 15.6 (1.5) and girls 18.0 (±1.25).

Table-1 (C): Mean and Sd of Anaerobic Power of Children of Present Study

PARAMETER	BOYS MEAN ± SD	GIRLS MEAN ± SD
Aerobic Capacity (ml/kg/min)	32.4 (5.4)	30.5 (4.5)
Anaerobic Capacity	8.4 (3.4)	6.6 (2.1)

The mean and SD pertaining to the fitness variable of athlete's abdominal strength measured by sit up test of children were statistically analyzed. The mean of number of sit ups of sits up test of boys was 22.1 (2.4) and girls 17.4 (±2.1).

The mean and SD pertaining to the physiological variable aerobic capacity measured by Astrand Rhyming Test of children were statistically analyzed and the results are presented in Table 1-C. The mean of maximum oxygen consumption (ml/kg/min) of boys has been observed 32.4 (5.4) and girls 30.5 (±4.1).

The mean and SD pertaining to the physiological variable anaerobic power measured by modified de Bruyn Prevost test of children were statistically analyzed and the mean of anaerobic power index of boys was 8.4 (3.4) and girls 6.6 (±2.1).

Multi-correlations were computed to bring out possible relationship between the selected morphological as well as physiological transients.

Anaerobic power reflects the ability of the adenosine triphosphate and phosphocreatine (ATP-PCr) energy pathways to produce energy for muscle contraction. This system is depleted quickly and is used for short bursts of intense power output. Sprint or track cyclists, sprint runners, Hockey players, and other athletes that use short, high-intensity efforts benefit from training under this system. Positive and significant relationship was observed between anaerobic power with height, acceleration and explosive power of the boys.

Table-1 (D):Multi-Correlations

BOYS	Anaerobic Power & Height	0.456*
	Anaerobic Power & Acceleration	0.493*
	Anaerobic Power & Explosive Power	0.483*
	Aerobic Capacity & Explosive Power	0.479*
GIRLS	Aerobic Capacity & Age	0.658*
	Aerobic Capacity & Explosive Power	0.461*

* Correlation is significant at the 0.05 level (1tailed).

Aerobic capacity is largely determined by maximum cardiac output and arterio-venous difference which in turn dependent on stroke volume and heart rate. Aerobic exercise in adults, improves the transport of oxygen by improving circulatory muscle blood flow, capillary density, cardiac output, arterio-venous difference and plasma volume (Chumlea et al, 1983). The determination of VO_2 max is essential in evaluating an individual's capacity, to perform aerobic work (Astrand, 1960). The absolute VO_2 max may be one of the best indices of an individual's cardio respiratory fitness to transport oxygen to working muscles (Taylor et al, 1955).

CONCLUSION

Significant and direct relationship of aerobic capacity with & explosive power was observed in the present study in the case of girls as well as in the case of boys, thus indicating the right selection of athletes.

The unique profile of different sports disciplines related to energy system changes should be taken into consideration while administering training to the miniature and young athletes, in various sports.

The physical fitness and physiological variables of the sportspersons engaged in various sports need to be analysed at regular intervals; and prompt counselling of the results will enable the sportsperson to achieve higher level of sporting excellence.

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