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**Investigation of height, weight and body mass index of Iran's elite 13 to 17 male swimmers**

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**ABSTRACT**

*According to data shortage of the research literature, the purpose of the present study was determination of height, weight and body mass index (BMI) of Iran's elite 13 to 17 years old male swimmers, who have 1<sup>st</sup> to 8<sup>th</sup> ranks in Iran. Fifty-two 13-17 years old male swimmers, who have 1<sup>st</sup> to 8<sup>th</sup> country ranks in various materials, were chosen purposefully and in access. Their height, weight and BMI were measured and computed, and mean and standard deviation were calculated. Height and weight were measured as  $173.41 \pm 5.97$  cm and  $61.88 \pm 10.12$  kg, respectively. BMI was calculated as  $20.64 \pm 2.52$  (kg/m<sup>2</sup>). The present results are some indices of Iran's elite swimmers and could be noticed by swimming talent exploration instructors. However, before an accurate conclusion, further studies, specifically with separation of various swimming materials, are required, because of data shortcoming in the literature.*

**Keywords:** Swimming, Height, Weight, Body Mass Index (BMI), Sport Talent Exploration.

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**INTRODUCTION**

The adequate knowledge of various sports sciences has a great importance to reach the pinnacle of success, though without determination of primary prerequisites, implementation of these sciences would limit the opportunity of useful application of the sciences. Regarding to this issue, besides understanding of the sport sciences, the ability of selecting talent people for a certain sport is one of the duties of sport instructors.

In the sight of the experts, this ability is a very substantial factor and it's the primary and necessary prerequisite to achieve successes in sports. Definitely, inadvertency to some of the factors or deterrent and primary prerequisites that are known as the sport talent exploration, although wouldn't make the success probability impossible, but easily will make it limited and less likely. These prerequisites might have aspects of anthropometric, physiologic, skill, psychological and etc [1].

Knowledge of the effective factors on victory achievement and athletes' success needs numerous studies and researches. Nowadays, to reach the apexes of progress and improvement, notice to the scientific principles is necessary, in sport. The expensive costs and times of elite athletes' education compel sport officials to identify the superior people in particular sports, by consideration of the deterrent factors. One of these particular sports is swimming [2].

Without any doubt, sport execution could mostly be predicted by anthropometric, physiologic and physical variables, and that's a way which could assure some part of sporting success. The anthropometric measurements

have been mainly used in; (a) description of an athlete's body in a particular sport [3, 4], (b) comparison of physical differences in various sports and among both genders [5,6,7], (c) determining differences of race groups on clarifying the possible interpretations for their successes in a particular sport, for example; the dominance of the east of Africa in running [8], (d) and anthropometric variables as the key of execution quoting [4,9,10].

In a research, studies of execution and anthropometrics properties have been mainly compared in short distances, and it has been shown tall height, great upper limbs and long hands of speed swimmers accompany with high upper fat mass and low lower fat mass [11]. It has been indicated the bikers, who compete in speed matches, have heavier body and longer feet than endurance ones [12].

The aim of the present study was determination of height, weight and BMI in 13-17 years old male swimmers, who have 1<sup>st</sup> to 8<sup>th</sup> ranks of Iran.

**MATERIALS AND METHODS**

Fifty-two 13-17 years old male swimmers, who acquired 1<sup>st</sup> to 8<sup>th</sup> ranks in various materials of the country swimming championship competitions, were chosen purposefully and in access, and their ages were recorded. Their heights and weights were measured by height gauges and digital scale, respectively. Also, their body mass indices were calculated by division of weight (kg) to squared height (m<sup>2</sup>). The obtained values from the participants were described by the statistical methods of mean and standard deviation. The statistical software SPSS v.16 was used to carry out statistical calculations.

**RESULTS**

The statistical description of height, weight and BMI among 13-17 years old male swimmers, who have 1<sup>st</sup> to 8<sup>th</sup> ranks in the country, has been represented in table 1.

**Table 1: Statistical description of height, weight and BMI in 13-17 years old men swimmers, having 1<sup>st</sup> to 8<sup>th</sup> ranks of the country**

Variables	Mean ± Standard deviation
Height (m)	173.41±5.97
Weight (kg)	61.88±10.12
BMI (kg/m <sup>2</sup> )	20.64±2.52

*Height and weight were measured as 173.41±5.97 m and 61.88±10.12 kg, respectively. And BMI was calculated as 20.64±2.52 (kg/m<sup>2</sup>).*

**DISCUSSION AND CONCLUSION**

According to results of the present study, height and weight were measured as 173.41±5.97 m and 61.88±10.12 kg, respectively. And BMI was calculated as 20.64±2.52 (kg/m<sup>2</sup>).

Several researches have been done about connection of swimmers' physical characteristics and configurations with their success achievement in swimming championship. Sprague carried out a research on 7-17 years old swimmers, and understood that height and age have a significant positive correlation with speed of crawl [13].

Montoye et al (1977) examined the connection between time of female skillful swimmers and age, height and weight, and realized a significant correlation of age (r=0.61), height (r=0.64) and weight (r=0.58) with the time of crawl swimming [14].

In another study, the physical scales and configurations of elite teenager and young girls were measured and studied, to compare with the characteristics of national and Olympic swimmers and those of non-athletics peers. Analogy of obtained results indicated that the younger swimmers are somehow taller than non-athletics peers and have similar weights with them, whereas the elder swimmers are taller and somehow lighter than non-athletics peers [15].

A research, which performed by Siret et al (1991), the connection between anthropometric characteristics of young skillful female swimmers and their competitions results, was investigated. Their goal was determination of some effective anthropometric properties on competitive results of young skillful female swimmer, especially in 100 m and 200 m crawl matches. Seventy-eight female swimmers with average age of 13.4±0.7 years old, from 8 countries (Germany with 15 persons, Russia with 14 persons, Hungary with 12 persons, Poland with 7 persons, Czechoslovakia with 5 persons, Bulgaria with 6 persons, Romania with 8 persons, and Cuba with 11 persons) have

been compared during participating in an international tournament. Their results showed the significant positive correlation of swimming performance with height, lean body weight and body scale [16].

The connection of swimming performance with physical type and configuration was surveyed by Lukaski et al (1993) on 43 university competitive female swimmers, at the beginning and ending of a swimming season. In their research, a significant correlation was observed between swimming performance (time of 100 yards competitive swimming of each swimmer in her specific swim), and height, body fat percentage and lean body weight, at the beginning of the season. Also, another significant correlation was seen between swimming performance, and height, lean body weight and body weight, at the ending of the season [17]. Numerous other studies show the significant correlation of swimming performance with age, height and weight [18].

Definitely, no prosperity would achieve without any scientific plan, and the scientific plan requires analysis of some necessities, which are earned from these very scientific studies. The understanding of what anthropometric characteristics of a successful athlete are remarkable, could aid the instructors about concentration of the exercises, or might help them in prediction of which athlete has anthropometric capacity for prosperity. The knowledge of the successful athletes of a particular sport, who show the same anthropometric properties, is the key of a proper exercise schedule designation. Eventually, it should be mentioned that high physiologic capacity, desirable physical readiness and possession of appropriate anthropometric characteristics wouldn't assure that an athlete could have experience and expertise and would turn to a successful swimming competitor.

Here, the urgent need of other factors, which are important about success achievement in swimming sport, arises. Some of these requirements are technical and mental characteristics. And participating in competitions and experience acquirement are very substantial. Other success aspects of the swimming sport should be surveyed, in further researches.

However, the present results are some indices of elite swimmers of the country, and should be paid attention by the swimming talent exploration instructors. Anyway, before an accurate conclusion, further studies, specifically with separation of various swimming materials, are needed, because of data shortage in the literature.

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