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A SURVEY OF THE SUBCUTANEOUS FAT OF THE TRICEPS, UNDER THE SCAPULAR, SUPRASPINALE AND THE CALF MUSCLES OF IRAN'S ELITE 13 TO 17 YEARS OLD MALE SWIMMERS

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ABSTRACT

According to data shortage of the research literature, the purpose of the present study was determination of the subcutaneous fat of the triceps, under the scapular, supraspinale and the calf muscles of 13-17 years old male swimmers, who have 1st to 8th ranks in Iran. Fifty-two 13-17 years old male swimmers, who have 1st to 8th country ranks in various materials, were chosen purposefully and in access. Their subcutaneous fat of the triceps, under the scapular, the supraspinale and the calf muscles were measured, and mean and standard deviation were calculated. The subcutaneous fat of the triceps, under the scapular, the supraspinale and the calf muscles were calculated 7.81 ± 2.68 mm, 7.70 ± 2.35 mm, 5.64 ± 2.96 mm and 8.05 ± 2.76 mm, respectively. 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 research literature.

Keywords: *Swimming, Subcutaneous Fat, Triceps, Under the Scapular, Supraspinale, Calf, Sport Talent Exploration*

INTRODUCTION

One of the factors that could be relevant in champions' successes achievements is physical structure and characteristics, which has important role in most sports. Hence, each sport has its particular physical figure and configuration, because of its specific conditions. A collection of these characteristics could be a criterion for selection, in a particular sport.

In order to achieve the championship, athletes are chosen according to these characteristics, and thereafter the athletes are placed in especial tests and exercises. The science and experience showed the people who have an appropriate figure and configuration for a sport, are more successful than the persons who haven't necessary physical characteristics of that sport. Therefore, the knowledge of appropriate physical properties and selection of athletes, upon these characteristics, could be very effective at the championship levels.

Swimming is a basic sport, which isn't exceptionable from this issue. By consideration of these indices, the instructors might able to select some swimmers for participating in educational and exercise schedules, who could achieve remarkable successes in a shorter period, despite spending less time and cost. While viewing harmonic movements and execution of complicated skills of the champions, some questions come to mind whether all of interested persons can reach themselves to the championships levels with specific exercises.

Whether, the athletes must have especial physical and mental properties, to achieve the championship levels. Whether, the instructor shall explore some persons with especial physical and mental characteristics, to compensate the shortcomings in the fields of sport competitions. And finally, what's the index of becoming elite in each sport (Asfarjani, 2000)?

Because, possession of anatomic and anthropometric properties is one of the important parameters of success acquirement in various sports, another question that could come to mind, is whether the instructors can identify the persons, who have the ability of becoming elite in a particular sport, and dedicate a meritorious help to the talent exploration process, by investigation of anthropometric properties of the athletes of various sports. Most researches have been guided toward an attempt to provide

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understanding of influence range of body size and configuration of the athletes on execution of various sports (Reilly *et al.*, 1990).

The anthropometric measurements have been mainly used in; (a) description of an athlete's body in a particular sport (Larsen *et al.*, 2004; Slater *et al.*, 2005), (b) comparison of physical differences in various sports and among both genders (Bourgois *et al.*, 2000; Perez-Gomez *et al.*, 2008; Vicente-Rodriguez *et al.*, 2007), (c) determining differences of race groups on clarifying the possible interpretations for their successes in a particular sport, for example; the dominance of east of Africa in running (Larsen, 2003), (d) and anthropometric variables as the key of execution quoting (Slater *et al.*, 2005; Kerr *et al.*, 2008; Knechtle *et al.*, 2008). The aim of the present study was determination of the subcutaneous fat of the triceps, under the scapular, the supraspinale and the calf muscles of 13-17 years old male swimmers, who have 1st to 8th ranks in Iran.

MATERIALS AND METHODS

Fifty-two 13-17 years old male swimmers, who acquired 1st to 8th ranks in various materials of the country swimming championship competitions, were chosen purposefully and in access, and their ages were recorded.

Their subcutaneous fat of the triceps, under the scapular, the supraspinale and the calf muscles were measured by caliper. 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 AND DISCUSSION

The statistical description of the subcutaneous fat of the triceps, under the scapular, the supraspinale and the calf muscles of 13-17 years old male swimmers, who have 1st to 8th ranks in the country, has been represented in table 1.

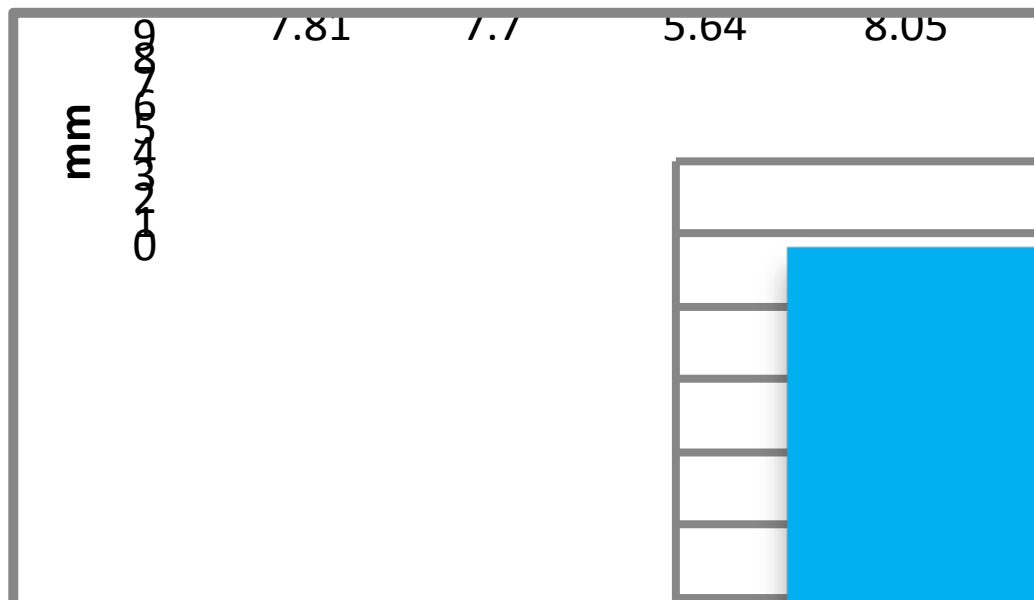


Chart 1: Statistical description of subcutaneous fat of triceps, under the scapular, supraspinale and calf muscles of 13-17 years old men swimmers, having 1st to 8th ranks of the country

The subcutaneous fat of the triceps, under the scapular, the supraspinale and the calf muscles were calculated as 7.81 ± 2.68 mm, 7.70 ± 2.35 mm, 5.64 ± 2.96 mm and 8.05 ± 2.76 mm, respectively.

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Table 1: Statistical description of subcutaneous fat of triceps, under the scapular, supraspinale and calf muscles of 13-17 years old men swimmers, having 1st to 8th ranks of the country

Variables	Mean ± Standard deviation
Subcutaneous fat of triceps (mm)	7.81±2.68
Subcutaneous fat of under the scapular (mm)	7.70±2.35
Subcutaneous fat of supraspinale (mm)	5.64±2.96
Subcutaneous fat of calf (mm)	8.05±2.76

Discussion

Base on the results of the present study, the subcutaneous fat of the triceps, under the scapular, the supraspinale and the calf muscles were calculated as 7.81±2.68 mm, 7.70±2.35 mm, 5.64±2.96 mm and 8.05±2.76 mm, respectively.

Several researches have been done about the connection of structure and physical properties with their success achievement in swimming championship. Sprague performed a research on 7-17 years swimmers. He realized that the swimmers, who had higher fat percentages, swam slower in crawl and had more times than the ones, who had lower fat percentages (Sprague, 1970).

In another study, the physical sizes and configuration of elite teenager and young girls were measured, to compare with characteristics of national and Olympic swimmers and those of non-athletics peers. Comparison of obtained results showed the skinfold of triceps of the youngest swimmers group was more than that of non-athletic persons of the same countries, which indicated that the swimmers are taller, somewhat heavier and especially have more lean body weights (Malina *et al.*, 1982).

The connection between the swimming performance, and the 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. 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.

A research, which carried out on various aspects of swimming applied physiology, distinguished that the female swimmers possess further lean body weight than the past ten years and have fat percentages from 14 to 19 percent (Lavoie and Montpetil, 1986). Definitely, no prosperity would achieve without any scientific plan, and the scientific plan requires analysis of some necessities, which are earned form these very scientific studies. The understanding of what anthropometric characteristics of an 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 in swimming sport success achievement, arises. Some of these requirements are technical and mental characteristics, and participation of matches and experience acquirement are very substantial. Other success aspects of the swimming sport should be surveyed, in further researches.

Conclusion

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

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REFERENCES

- Asfarjani F (2000)**. Comparison of some anthropometric and physiologic properties and public physical readiness of volleyball female players of the country championships sites with the national team. *MSc thesis, Tarbiyat-e-Moalem University*.
- Bourgois J, Claessens AL, Vrijens J, Philippaerts R, Van Renterghem B, Thomis M, Janssens M, Loos R and Lefevre J (2000)**. Anthropometric characteristics of elite male junior rowers. *British Journal of Sports Medicine* **34** 213-216.
- Kerr RM, Spinks W, Leicht AS and Sinclair W (2008)**. Predictors of 1000-m outrigger canoeing performance. *International Journal of Sports Medicine* **29** 675-678.
- Knechtle B, Knechtle P, Schulze I and Kohler G (2008)**. Upper arm circumference is associated with race performance in ultra-endurance runners. *British Journal of Sports Medicine* **42** 295-299.
- Larsen HB, Christensen DL, Nolan T and Sondergaard H (2004)**. Body dimensions, exercise capacity and physical activity level of adolescent Nandi boys in western Kenya. *Annals of Human Biology* **31** 159-173.
- Larsen HB (2003)**. Kenyan dominance in distance running. *Comparative Biochemistry and Physiology. Molecular and Integrative Physiology* **136** 161-170.
- Lavoie JM and Montpetit RR (1986)**. Applied physiology of swimming. *Sports Medicine Journal* **3** 165-189.
- Lukaski HE, Siders WA and Bolonchak WW (1993)**. Relationships among swimming performance, body composition and soma type in competitive collegiate swimmers. *Journal of Sports Medicine Physical Fitness* **33**(2) 166-171.
- Malina RM, Meleski BW and Shoup (1982)**. Anthropometric, body composition and maturity characteristics of selected school-age athletes. *Pediatric Clinics of North America* **29**(6) 165-189.
- Perez-Gomez J, Rodriguez GV, Ara I, Olmedillas H, Javier C, Gonza ́lez-Henriquez JJ, Dorado C and Calbet JA (2008)**. Role of muscle mass on sprint performance: Gender differences? *European Journal of Applied Physiology* **102** 685-694.
- Reilly T, Secher N, Snell P and Williams C (1990)**. *Anthropometry* (E. and FN Spon) London.
- Slater GJ, Rice AJ, Mujika I, Hahn AG, Sharpe K and Jenkins DG (2005)**. Physique traits of lightweight rowers and their relationship to competitive success. *British Journal of Sports Medicine* **39** 736-741.
- Sprague HA (1970)**. Relationship of certain physical measurements to swimming speed. *Research Quarterly* **47**(4) 810-816.
- Vicente-Rodriguez G, Dorado C, Ara I, Perez-Gomez J, Olmedillas H, Delgado-Guerra S and Calbet JA (2007)**. Artistic versus rhythmic gymnastics: Effects on bone and muscle mass in young girls. *International Journal of Sports Medicine* **28** 386-393.