Anthropometric Status of Elite Indian Female Wrestlers

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ABSTRACT

The purpose of the study was to determine the anthropometric status of the Indian elite female wrestlers within the age range of 20–30 years. The present anthropometric data have been taken on national and international level female wrestlers(N=69) in the month of September 2018 at the various wrestling coaching-academies situated at Hisar, Haryana. Eighteen anthropometric measurements like height, body weight, four bony diameters, four girths and eight skinfolds were taken with standard instruments and standard techniques (Ross et al, 1980;carter, 1980).Somatotype of the national and international level Indian female wrestlers was observed 4.17–4.51–1.98, which falls under the somatotypic classification called endomorphic-mesomorph. The female wrestlers of present study possess 24.12% body fat and 41.2% muscle mass, respectively

KEY WORDS

Somatotype, Body composition, Muscle Mass, Fat Mass.

INTRODUCTION

Understanding of the body composition, an important constituent of anthropometrical study, has remained a focal point for healthy living of human being since long. Analysis of body composition allows us to understand our body in a much clearer way; it gives us insight into our health which, otherwise, we would have never known. Sport is one of the endeavors wherein extra human efforts are required to perform it. Therefore, to know: what is our body made of? is very important to achieve success in any sport. Wrestling is one of the highly demanding sports; it is largely based on the anaerobic capacity of the wrestlers (Horsewill, 1992). It is a weight category sport; therefore, bodily characteristics of a wrestler are hugely detrimental in achieving success in the competition at higher level. Making weight just before the competition and to weigh in a desired weight category– without losing muscle mass – has been always a challenge for the wrestlers. Somatotype is a method for describing the human physique in terms of different traits that related to the body shape and size. In fact, a standard approach that led to the present methods of somatotype was introduced by Sheldon, W. H., Stevens, S. S., and Tucker, W. B. (1940). Bone mass is an essential component of the body composition. In fact, it is a total mass of the bones in a human body. In effect, muscle

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mass, more specifically, the skeletal muscle mass is an important part of the lean body mass. Fat mass is a total body mass which is consisted of the fat in a human body. Fat mass, most of the time, is expressed as a fat percentage. The Present study has highlighted the different compositional factors and somatotype components of the female wrestlers.

METHODOLOGY

The present anthropometric data have been taken on national and international level Indian female wrestlers (N=69), in the month of September 2018,during the various wrestling coaching-academies situated at Hisar, Haryana. Wrestlers were in pre-competition period of training cycle – preparing for the national level competitions. Eighteen anthropometric measurements like height, body weight, four bony diameters, four girths and eight skinfolds were taken with standard instruments and standard techniques (Ross et. al, 1980). Somatotypes were computed by using equations of Carter, 1980. Bone mass and muscle mass were calculated by using Matiegka's method (1921). Percentage body fat was assessed applying formulae of Brozek et al, (1963). Appropriate statistical analysis (Mean, SD, & Range) was used to analyze the data.

RESULT & DISCUSSION

The present study was conducted on 69 female wrestlers, who had an experience of more than 10 years of active involvement in wrestling at national level. Table 1 has shown that the height of the female wrestlers ranges from 144.80 cm to 173.10 cm– having an average height of 159.85 ± 5.97. Body weight of female wrestlers ranges from 46.70 kg to 80 kg with a mean value of 56.66 ± 7.33 kg. Sitting height of female wrestlers was examined 84.02 ± 2.65 cm – having the range from 77.60 cm to 90.30 cm. The body proportion and height weight ratio counts very much in Wrestling. The sitting height is also one of the important factors in revealing the balance ability of the wrestlers.

Table-1:Descriptive Statistics of Anthropometric Parameters of Indian Female Wrestlers (N=69)

Anthropometric Parameters	Mean	Standard Deviation	Minimum	Maximum
Height (cm)	159.85	5.97	144.80	173.10
Weight (kg)	56.66	7.33	46.70	80.00
Sitting-Height (cm)	84.02	2.65	77.60	90.30

Table 2 depicts derived anthropometric parameters i.e. somatotype and body composition of nationaland international level Indian female wrestlers.

The somatotype of present study offemale wrestlers is 4.17–4.51–1.98, thus the somatotypic classification of female wrestlers is endomorphic–mesomorph, wherein the second component is dominant and the first component is greater than the third component. Endomorphy also known as the first component of somatotype ranges from2.03 to 7.09 and mean value is 4.17 ± 1.14. The second componentof somatotype i.e., mesomorphy–range lies between 2.06 to 7.57 and mean value is 4.51± 1.12.

Ectomorphy, also known as the third component of somatotype, is within the range of 0.10 to 5.24 and mean value is 1.98 ± 1.03. It has been found that endomorphy of the female wrestlers are on the higher side.

Body composition of wrestlers includes % body fat, % bone mass, and % muscle mass. While analyzing the body composition, it was found that % bone mass ranges from 12.60 to 18.99 – having the average value of 15.30 ± 1.51%.

Table-2 : Descriptive Statistics of Derived Variables of Elite Indian Female Wrestlers (N=69)

Derived Variables	Mean	Standard deviation	Minimum	Maximum
Endomorphy	4.17	1.14	2.03	7.09
Mesomorphy	4.51	1.12	2.06	7.57
Ectomorphy	1.98	1.03	0.10	5.24
Bone Mass (%)	15.30	1.51	12.60	18.99
Muscle Mass (%)	41.25	3.71	31.77	52.67
Fat (%)	24.12	3.83	17.07	32.83

Average % Muscle mass of the elite female wrestlers was examined 41.25 ± 3.71 – having ranges from 31.77 to 52.67 %.

Average % body fat of present study was recorded 24.12 ± 3.8 – having ranges from 17.07 to 32.83%.

CONCLUSION

As there was a very limited literature available regarding female wrestlers, the present study tried to give a contemporary scenario of thefemale wrestlers from anthropometrical point of view. Somatotype of the nationaland international level Indian female wrestlers was observed at 4.17–4.51–1.98, which falls under the somatotypic classification called endomorphic–mesomorph.Mesomorphy wasthe dominant over two components, which is an important performance factor for the strength oriented sports like wrestling. However, endomorphy was on the higher side.The study concludes that percent body fat and endomorphy component of somatotype of female wrestlers should be reduced by general training methods, game specific training, and balance nutritional diet.Percent muscle mass and mesomorphy component of somatotype of female wrestlers should be improved by a combination of general training methods and specific training along with the balance nutritional diet.

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