



CONSTRUCTION OF BODY FAT PERCENTAGE NORMS FOR MALE ADOLESCENTS OF KARNATAKA

(Received on: 28 March 2017, Reviewed on: 21 May 2017 and Accepted on: 22 June 2017)

Mr. Udaya Kumar, Research Scholar

Dravidian University, Kuppam

Mr. Chandrappa N., Professor

Department of P.G. Studies and Research in Physical Education

Karnataka State Akkamahadevi, Women's University, Vijayapura

Karnataka (India)



ABSTRACT

Sedentary life style poses several threats to health and physical fitness of children. The present day adolescents are forced to lead an inactive lifestyle due to their parent over protectiveness. Obesity is a common health condition nowadays which is an outcome of sedentary lifestyle. In this context, there is a need for timely assessment of body fat in adolescents. The purpose of the present investigation was to construct body fat percentage norms for male adolescents of Karnataka. The subjects for the study were 950 adolescents studying in various schools of Karnataka state. The subjects were selected from various age groups. The data on body fat percentage was collected through HBF-375 Body Composition Monitor – Omron. The obtained results were statistically treated using descriptive statistics including mean and standard deviation. Further, percentile norms were constructed for each age group under investigation. A five point rating scale was also constructed to give better evaluation of percent body fat. An adolescent in the age group 13 to 14 years with percent body fat 23.28 and above; in 15 to 16 years with 23.82 and above; and in 17 to 18 years with 26.01 and above are considered obese.

Keywords: Health, Fitness, Obesity, Body fat percent, Norms, Percentiles.

INTRODUCTION

Adolescents in the present day are forced to lead an inactive lifestyle due to their parent over protectiveness. The parents have been overprotective and do not let their children involve in physical activities sports and other similar activities. The risk involved in sending their children outdoor for physical activities is overweighing the health benefits of such activities (Sinha, 2000). Therefore, children in present context are being confined to indoors with their gadgets and sedentary lifestyle. India carries a double burden of both malnutrition and obesity in children, signifying the extreme socio-economic disparities in our country. Sedentary life style poses several threats to health and physical fitness of children (Canoy and Bundred, 2011). The health of sedentary children is at stake and leads to plethora of non-communicable diseases including diabetes, hypertension, cancers, cardio-vascular diseases etc (Scott, 2008). The health related physical fitness is steeply diminishing in recent times. There is an increase in the number of children and adolescents who have high blood levels of sugar, salt, fat or cholesterol in India (Sood, et. al., 2007). It is a condition where there is excess body fat, both visceral and subcutaneous, accumulated in the body of an individual. Modern lifestyle including inactivity, faulty eating habits and stress leads to Obesity irrespective of age and sex. Obesity makes an individual vulnerable to many health problems and reduces the productivity. In this context, there is a need for timely assessment of body fat in adolescents (Rout, Mishra and Behera, 2017). This can track their health condition and make them aware of their body fat. Further, there is a need for constructing body fat norms for adolescents of Karnataka in order to evaluate their body fat. An attempt has been made in the present investigation to construct body fat percentage norms for male adolescents of Karnataka in the present scenario. The purpose of the present investigation was to construct body fat percentage norms for male adolescents of Karnataka.



METHODOLOGY

Total 950 adolescents studying in various schools of Karnataka state were selected as subjects for this study. Age groups were 13 to 14 years (N=303); 15 to 16 years (N=323); and 17 to 18 years (N=324). The data on body fat percentage was collected through HBF-375 Body Composition Monitor – Omron. Omron provides full body sensing technology for a more accurate and precise body composition measurement. It comes with a step on analyzer function, reading displayed are skeletal muscle percent, fat percent and subcutaneous body fat. The obtained results were statistically treated using descriptive statistics including mean and standard deviation. Further, percentile norms were constructed for each age group under investigation. A five point rating scale was also constructed to give better evaluation of percent body fat.

Findings

The raw data on body fat percentage was statistically analyzed through suitable statistics and following results were obtained. It is observed that the minimum performed Percent body fat was 4.60 and the maximum was 42.00. On the basis of following results, percentile norms were constructed and the results are provided in table 1.

TABLE 1.
RESULTS ON PERCENTILE NORMS FOR PERCENT BODY FAT OF MALE ADOLESCENTS OF
DIFFERENT AGE GROUPS OF KARNATAKA

Percentile scores	Percent Body Fat		
	13 to 14 years	15 to 16 years	17 to 18 years
100	42.00	30.20	37.30
90	24.20	23.82	24.80
80	21.22	20.72	22.80
70	19.10	17.66	20.15
60	17.40	16.30	18.50
50	15.70	14.80	16.80
40	14.26	13.70	15.20
30	13.12	12.40	13.80
20	11.80	10.90	12.10
10	10.14	9.50	9.80

Table 1 makes it evident that the 10th percentile score in percent body fat is 10.14 and the 100th percentile score is 42.00. In 15 to 16 years group, it evident that the 10th percentile score is 9.50 and the 100th percentile score is 30.20. In 17 to 18 years, the 10th percentile score in percent body fat is 9.80 and the 100th percentile score is 37.30. It is observed that all other scores fall in between 10th and 100th percentile. The scores on percent body fat of male adolescents of Karnataka in different age groups were expressed in 5-point grading scales for further understanding of their assessment and evaluation.



TABLE 2
FIVE-POINT RATING SCALE FOR PERCENT BODY FAT IN MALE ADOLESCENTS OF
KARNATAKA IN THE DIFFERENT AGE GROUPS

Normative group	Body fat percentage		
	13 to 14 years	15 to 16 years	17 to 18 years
Obese	23.28 & above	23.82 & above	26.01 & above
Over weight	19.57 – 23.27	18.41 – 23.81	20.14 – 26.00
Normal	13.85 – 19.56	12.99 – 18.40	14.26 – 20.13
Under weight	8.14 – 13.84	7.58 – 12.98	8.39 – 14.25
Morbidly under weight	8.13 & below	7.57 & below	8.38 & below

From table 2 it becomes clear that the male adolescents in age group 13 to 14 years scoring 23.28 and above are considered Obese and similarly those scoring 8.13 and below are considered morbidly underweight. At the same time, it is obvious that the adolescents scoring between 13.85 and 19.56 are said to have normal body fat. In 15 to 16 years age group, 23.82 and above are considered obese and similarly those scoring 7.57 and below are considered morbidly underweight. At the same time, it is obvious that the adolescents scoring between 12.99 and 18.40 are said to have normal body fat. In 17 to 18 years age group, 26.01 and above are considered strong in terms of Obese similarly those scoring 8.38 and below are considered morbidly underweight. At the same time, it is obvious that the adolescents scoring between 14.26 and 20.13 are said to have normal body fat.

Discussion of Findings

The above norms can be considered for future studies on percent body fat in adolescents of Karnataka. It gives clear picture of population specific percent body fat in adolescents of Karnataka. Any adolescent of Karnataka can place their values on percent body fat in the norms constructed in the present investigation and understand his/her status.

In a similar study, Khadgawat, et. al., (2013) compared Body mass Index based obesity classifications to percentage body fat classifications determined by DXA in 1,640 North-Indian children and adolescents. BMI misclassified 13-14% of boys and 11-14.5% of girls into an incorrect adiposity category. We suggest that 85th centile of percentage body fat cutoff may be used to define moderate body fat while 95th centile to define excess body fat in North-Indian children and adolescents. Given the rapid rise in obesity in India, it is important to know the "weight of the nation." Due to the long-term consequences, the cost burden of obesity on the health care system is enormous. A better understanding of the numbers and causes can help overcome barriers to the primary prevention of obesity for youth and adults in communities, medical care, schools, and workplaces (Kalra and Unnikrishnan, 2012).

Conclusion

An adolescent in the age group 13 to 14 years with percent body fat 23.28 and above; in 15 to 16 years with 23.82 and above; and in 17 to 18 years with 26.01 and above are considered obese.

References

- Sood, A., Sundararaj, P., Sharma, S., Kurpad, A. V. and Muthayya, S. (2007) BMI and Body Fat Percent: Affluent Adolescent Girls in Bangalore City, Indian Pediatrics, Volume – 44 (17). PP: 587-91.
- Khadgawat, R., Marwaha, R. K., Tandon, N., Mehan, N., Upadhyay, A. D., Sastry, A. and Bhadra, K. (2013) Percentage Body Fat in Apparently Healthy School Children from Northern India", Indian Pediatrics, Volume-50; PP: 859-66.
- Rout, B., Mishra, S. P. and Behera, T. R. (2017) Study of BMI and Body Fat% in Adolescent Boys, International Journal of Physiotherapy and Research, Volume- 5(3), PP:2035-38.



- Kalra, S and Unnikrishnan, A. G. (2012) Obesity in India: The Weight of the Nation, Journal of Medical Nutrition and Nutraceuticals; Volume -1, PP:37-41.
- Sinha, B. L. (2000) Education Psychology of Children, Youth and Adult". Anmol publication. Pvt. Ltd. New Delhi.
- Scott, J. R. (2008) Heart Disease and Your Weight. Retrieved from <http://weightloss.about.com/od/obesityhealth/a/heartdisease.htm>
- Canoy D, Bundred P (2011) Obesity in Children, Clinical Evidence (Online) 2011, pii: 0325 [<http://www.ncbi.nlm.nih.gov/pubmed/21463538>]

IJPEHSS