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## Dietary behaviour and nutritional profile of Indian wrestlers

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### Abstract

This study was undertaken to assess dietary habits and nutritional profile of wrestlers staying in Akhadas. The sample comprised of twenty male wrestlers staying in one of the Akhadas of Delhi. An oral questionnaire was formulated to collect general information and morbidity profile. Information on dietary habits, meal pattern, daily activity and exercise pattern was also gathered. Three day's dietary record method was used to collect information about dietary intake. Anthropometric measurements included height, weight, chest circumference and waist and hip circumference. BMI and WHR were calculated. Mean age of wrestlers staying in Akhada was 20.3 + 2.21 years and they were reportedly spending 4-6 hours daily in training. Mean weight of respondents was 76 kg + 13 and their mean BMI was around 27 kg/m<sup>2</sup> which according to Garrow's classification would be categorized as overweight. The nutritional intake analysis of the wrestlers revealed mean energy intake of 7501+907 Kcal which was much higher than recommended. Further, percentage contribution of macronutrients in energy indicated higher energy (43%) coming from fat sources. Thus, the study clearly showed that wrestlers staying in Akhadas were taking diet requiring modification in terms of fat component in order to prevent them from any adverse health effects.

**Keywords:** Dietary, behaviour, nutritional, profile

### Introduction

Pahlwani or modern Indian wrestling is a synthesis of an indigenous form of wrestling that dates back at to the 5th Century BC (Alter, 1992a, Alter, 1992b) [1, 2]. Wrestling competitions known as Dangals, held at village levels, have their own rules which vary from place to place. This sport is quite popular in India and many Indian wrestlers have brought laurels to the country at International level. Therefore, more and more young children are attracted toward this sport and join Akhadas. Akhadas are places where trainees reside and follow the diet and exercise regime as per the traditions of Akhada formulated by the Gurus. The training that they receive is meant to build strength, develop muscle bulk and improve flexibility through exercises using their own weight, yoga, 'dand baithak' and employing indigenous weight training devices like, nal, gada etc. (Gandhi and Kumar, 2007) [5].

The dietary intake of wrestlers staying in Akhadas depends largely on the experience of older wrestlers. A high caloric and nutritious diet is advocated and the emphasis is more on milk, butter, ghee and nuts. As per the traditions of akhadas, wrestling is considered as an inherently rajasic nature, which pehalwan counteracts through the consumption of so called satvic foods. Milk and ghee are regarded as the most satvic of food and along with almonds, comprise the holy trinity of pahalwan's khurak or diet. Some pahalwans eat meat inspite of its rajasic diet culture.

Wrestling is one of the most physically demanding sports around, so proper nutrition is paramount for good performance. The quality of one's diet can be established by eating the right amounts of macronutrients-Carbohydrates, proteins and fats and sufficient amounts of micronutrients meeting the increased needs during training. For wrestlers the contribution of energy from these macronutrients should be 55% from carbohydrates, 15% Proteins and 30% from fat (ICMR 1991) [8]. However, it has been frequently reported that wrestlers consume higher amounts of fat in their diets which may have long term adverse effects on their health (Priti and Siddhu, 2008, Daneshvar *et al.*, 2013) [4]. Carbohydrates are the most important component of a wrestler's diet, since they provide most of the energy needed for physical activity. Protein primarily serves a building block for muscle tissue and increase in muscle

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mass translates to muscle strength and endurance. Moreover, the higher the muscle mass, the easier it is to burn fat. Although fat intake helps in absorption of nutrients and increase the rate of muscle growth to an extent, higher body fat levels in the body can slow down the endurance and recovery time. Thus, in the diets of wrestlers where right proportions of macro-nutrients as well as micro-nutrients can put them at an advantage of over opponents, poor nutrition may hamper their peak performance. Not many studies have been carried out to evaluate the diets of wrestlers in Akhadass, hence, such studies are imperative.

### Objectives

This study was undertaken to get an appraisal of the dietary practices and nutritional adequacy of Wrestlers staying in Akhada of Delhi.

### Methodology

The study was carried out on a total of 20 male wrestlers in the age range of 18-30 years staying in Akhada located in Najafgarh area of Delhi and only those subjects who were willing to participate were selected for the study. A questionnaire was formulated to elicit information regarding general information, morbidity profile, dietary habits, meal pattern and daily activity schedule. Nutrient intake assessment was done by recording their diets for three days. Weight using bathroom scale and height with the measuring tape were measured and BMI was computed. Waist circumference, hip circumference and chest circumference were also measured using measuring tape and Waist to hip ratio was calculated. The data was presented as Mean+S.D and percentages wherever necessary.

### Results

The study was conducted on a total sample of twenty wrestlers staying in Akhada. Mean age of subjects was 20.3 + 2.21 years (range 18-24 years). Table 1 depicts the dietary profile and activity pattern of the subjects. It is evident from table 1 that 50% of the subjects were vegetarian. Although in Akhadass more stress is given to vegetarian diets only for body building, 50% of the subjects were found to be non-vegetarians. It can also be seen from table 1 that majority of wrestlers were spending 4-6 hours in training every day.

**Table 1:** Dietary Profile and Activity Pattern of the Subjects (n=20)

Characteristics	Number (n=20)	Percentage
Vegetarian	10	50%
Non-Vegetarian	10	50%
Meal Pattern		
Fixed	12	60%
Variable	8	40%
Total training Period		
< 5 years	14	70%
5-10 years	6	30%
Time spent in training per day		
<4 hours	0	0%
4-6 hours	18	90%
> 6 hours	2	10%

**Table 2:** Anthropometric Profile of the Subjects (n=20)

Anthropometric Profile	Mean + SD (n=20)
Weight (Kg)	76+13.13
Height (cm)	170.6+6.07
BMI (kg/m <sup>2</sup> )	26.65+4.25
Waist Circumference (cm)	85+9.77
WHR	0.86+0.50
Chest Circumference (cm)	97.2 + 8.31

Table 2 shows the anthropometric profile of the subjects of the study. Mean weight of these wrestlers was 76+13.13 kg and mean height was 170.6+6.07 cm. Mean BMI was 26.65+4.25 kg/m<sup>2</sup>. Waist circumference was found to be 85+9.77 cm and WHR 0.86+0.50.

**Table 3:** Nutritional Profile of the Subjects (n=20)

Nutrient Intake	Mean + SD (n=20)
Energy (Kcal)	7501+907
Carbohydrate (gm)	789.6+134 (42 en%)
Protein (gm)	249+65 (15 en%)
Fat (gm; visible+invisible)	325+41.5 (43 en%)

Table 3 depicts the nutrient intake profile of the wrestlers and it reveals energy intake as 7501+907 kcal, protein intake as 249+65 gm and fat intake as 325+41.5 gm.

### Discussion

The study was conducted on a total sample of twenty wrestlers staying in Akhada. Mean age of the subjects was 20.3 + 2.21 years (range 18-24 years) and none of them was married, probably they were following the tradition of Akhadass. They did not report any medical problem and were not suffering from any acute or chronic illness at the time of study. None of them was on any weight reducing diet or were adopting any method to make weight which is a general practice in weight category sports (Hall 2001, Gulati *et al.*, 2006) [7, 6]. As is evident from table 1 that 50% of the subjects were vegetarian. Although in Akhadass more stress is given to vegetarian diets only for body building, 50% of the subjects were found to be non-vegetarians. Further, majority of wrestlers were spending 4-6 hours in training every day (table 1). The type of exercises reportedly done during training included running, partner exercises, weight training, freehand exercises, circuit training etc.

Anthropometric profile of the subjects (table 2) of this study showed that mean BMI was 26.65+4.25 kg/m<sup>2</sup> which according to Garrow's BMI classification would be classified as overweight category but BMI has a limitation in using it as an indicator of normo- or over- weight in such groups because wrestlers might have higher muscular mass, hence, higher body weight. Hence, detailed body composition analysis is recommended particularly in strength game players. Waist circumference and WHR that are indicative of accumulation of fat in central region of the body, were found to be 85+9.77 cm and 0.86+0.50 respectively. The normal waist circumference is 90 cm for males and normal WHR is 0.90 or less according to WHO, hence, the present study indicated normal waist circumference and WHR in the subjects.

The nutrient intake profile of the wrestlers (table 3) revealed energy intake as 7501+907 kcal, protein intake as 249+65 gm and fat intake as 325+41.5 gm. Wrestlers need to consume sufficient energy to meet their training demands, and ICMR (1991)<sup>[8]</sup> has recommended total energy intake of 70 kcal/kg body weight. The energy intake in this study was found to be much higher than recommended. The study was carried out in off-season and there is a general tendency of these wrestlers to consume high caloric diet and during competition time they restrict energy consumption in order to make weight for their weight category. However, this is not a recommended pattern because if weight is reduced rapidly, generally it is through water loss and there is evidence in literature that it adversely affects the performance particularly in wrestlers and boxers (Webster, 1990; Gulati *et al.* 2006)<sup>[9, 6]</sup>. It is therefore, important that for these athletes individualized requirements are established by determining their energy expenditure during training as well as during off-season so that diets could be suggested in order to maintain desired body weight and body composition levels all through the year. Further, as table 3 shows the percentage contribution of carbohydrate, protein and fat in energy, it indicated higher energy coming from fat sources (43%). During investigation, wrestlers revealed that they take desi ghee after practice in the morning. They believe that ghee consumption would make them stronger and full cream milk and almonds were also integral part of their diet taken twice a day in large amounts. Wrestlers should adhere to a diet that provides them 50-55% energy from carbohydrates, 15-20% from proteins and not more than 30% from fats while in the present study, the fat was contributing to 43% in total energy intake. The protein consumption was however, contributing to 15 en% but the absolute amounts were much higher than 2gm/kg Body Weight.

### Conclusion

Thus, the study done on 20 wrestlers staying in a Akhada of Delhi clearly indicated that wrestlers required some modifications in their diets that would help them in attaining their desired body composition levels, contribute to better performances in competitions yet prevent early onset of degenerative and chronic diseases.

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