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Dr. Anil K Vanaik
Associate Professor, IGIPES, S,
University of Delhi, New
Delhi, India

Monika Wasuja
Associate Professors, Indira
Gandhi Institute of Physical
Education and Sports Sciences
University of Delhi, B-Block,
Vikasपुरi, New Delhi, India

Dr. Sarita Tyagi
IGIPES, University of Delhi,
New Delhi, India

Correspondence
Monika Wasuja
Associate Professors, Indira
Gandhi Institute of Physical
Education and Sports Sciences
University of Delhi, B-Block,
Vikasपुरi, New Delhi, India

A comparative study of nutritional profiles of Indian wrestlers staying in Akhadas and CRPF camps

Dr. Anil K Vanaik, Monika Wasuja and Dr. Sarita Tyagi

Abstract

This study was done to assess differences (if any) in the dietary habits and nutritional profile of wrestlers staying in Akhadas and other camps. A total of forty male wrestlers (n=40); twenty staying in Akhadas (n=20) and twenty from a CRPF camp (n=20) were chosen for the purpose of this study. An oral questionnaire was formulated to collect general information, dietary information and morbidity profile. Dietary record method for three days was used to gather information about dietary and nutritional 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 while those staying in CRPF camp had mean age of 25.6+ 2.60 years. None of them was reported to be on weight-reducing diet at the time of the study. Majority of the wrestlers in both groups were spending 4-6 hours in training per day. The mean weight of respondents from Akhada was 76+13 kg while respondents from CRPF camp were little lighter at 73.6+ 14.26 kg. For Akhada group, BMI was 26.65+4.25 kg/m² and for CRPF camp mean BMI was 25.08+3.20 kg/m²; according to Garrow's classification it would be categorized as overweight for both the groups. Five wrestlers in Akhada group and eight in CRPF camp had BMI above 25. Waist circumference and WHR for both the groups were falling in healthy values. The nutritional intake analysis of the wrestlers revealed mean energy intake of 7501 Kcal in Akhada group wrestlers while 7782 Kcal in CRPF camp group. The energy intake of wrestlers of both the groups was much higher than the recommended. Further, percentage contribution of carbohydrate, protein and fat in energy indicated higher energy coming from fat sources, however, the fat en% of Akhada group was much higher (43%) than the CRPF group (36%). Thus, the study clearly showed that wrestlers staying in Akhadas as well as CRPF camp were taking diet required some alterations in the fat component of their diet.

Keywords: Comparative, nutritional, profiles, Akhadas, CRPF

Introduction

Wrestling is characterized as a dynamic, high-intensity combative sport that requires complex skills and tactical excellence for success (Zi-Hong *et al.*, 2013)^[12]. Wrestlers need very high levels of physical fitness including components of maximal strength, aerobic endurance, anaerobic power and anaerobic capacity. Wrestlers need to eat a judicious, balanced diet in order to maintain the high energy levels needed for their intense workouts during training period as well as during competitions. Since body composition and body weight should be appropriate for the this sport, these should be enhanced through training and nutrition. Matching of energy intake with energy expenditure is also essential to maintain required body composition levels (Siddhu, 2002)^[9]. If the diet of wrestlers include foods that are high in carbohydrate, low in fat and moderate in amounts of protein on daily basis they will be able to maintain desired body composition levels without being concerned about making weight at the time of competition. For this purpose, proper scientific training programs should be developed with adequate nutritional inputs.

In the diets of wrestlers, carbohydrates can be in the form of simple as well as complex carbohydrates Simple sugars majorly should come from natural sources, such as fruits for fruit juices as it will provide the body with supply of much needed increased needs of vitamins and minerals and fluids at the same time. (Wolinsky, 1998)^[11]. Thus, a variety of high carbohydrate foods must be eaten every day to ensure proper supply of variety of nutrients necessary for peak performance.

Wrestlers must understand that while fat is necessary for various bodily functions, excessive fat is not needed as it will contribute greatly to weight gain and will pose difficulty in losing weight when they need to near the time of competition. A wrestler can maintain desirable body composition and body weight while still remaining healthy, by eliminating excess dietary fat.

In India Pahlwani or modern Indian wrestling is a very old tradition (Alter, 1992) [1]. Wrestling competitions in the form of Dangals are held at village levels. Wrestlers stay in Akhadas and follow the diet and exercise regimes as per the traditions of Akhada formulated by their 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) [4]. The dietary intake of wrestlers staying in Akhadas depends largely on the experience of older wrestlers and a high caloric diet is advocated with more emphasis is on milk, butter, ghee and nuts.

In modern day wrestling, national camps are organized where wrestlers from all over the country are trained and prepared for International competitions. There along with rigorous training, they are suggested diets according their requirements wherein the energy requirements are based on their body weight and contribution of macronutrients-55en% from carbohydrates, 15en % Proteins and 30en% from fat is provided (ICMR 1991) [7]. However, it has been frequently reported that wrestlers in general consume higher amounts of fat in their diets which may have long term adverse effects on their health (Priti and Siddhu, 1993, Daneshvar *et al.*, 2013) [8, 3]. There is scarcity of studies that have been conducted in India out to evaluate the diets of wrestlers in Akhadas vis-a-vis Camps, therefore, this study was carried out to see any differences in their nutrient intakes.

Objectives

This study was undertaken to compare the nutritional adequacy in the diets of Wrestlers staying in Akhadas with those attending Camps.

Methodology

The study was carried out on a total of forty male wrestlers (n=40); twenty male wrestlers staying in a Akhada located in Najafgarh area of Delhi were taken and twenty wrestlers were taken from the CRPF camp that was located in Jharodha Kalan, Delhi. Those subjects, only, were taken for the study who ensured their participation in the study. A questionnaire was formulated to gather information regarding age, marital status, morbidity profile, dietary habits, activity and meal pattern of the subjects. Nutrient intake assessment was done by recording their diets for three days and then using a computerized nutrient analysis software, nutrient analysis was done. Weight using bathroom scale and height with the measuring tape were measured and BMI was calculated using standard formula. 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 forty wrestlers out of which twenty wrestlers selected for the study were staying in Akhada (20.3 + 2.21 years; range 18-24 years) and twenty wrestlers were taken from CRPF camp (25.6+ 2.60; range 22-30 years). Table 1 depicts the dietary profile and activity pattern of the subjects which shows that all subjects in Akhada group were unmarried while 60% of subjects were married in CRPF group. It can also be seen from table 1 that maximum number of subjects spent 4-6 hours in training every day in both the groups.

Table 1: Dietary Profile and Activity Pattern of the Subjects

Characteristics	AKHADA (n=20) Number Percentage		CRPF CAMP (n=20) Number Percentage	
Marital status				
Married	0	0%	12	60%
Unmarried	20	100%	8	40%
Vegetarian	10	50%	2	10%
Non-Vegetarian	10	50%	18	90%
Meal Pattern				
Fixed	12	60%	20	100%
Variable	8	40%	0	0%
Total training Period				
< 5 years	14	70%	0	0%
5-10 years	6	30%	11	55%
11-15 years	0	0%	8	40%
> 15 years	0	0%	1	5%
Time spent in training per day				
<4 hours	0	0%	2	10%
4-6 hours	18	90%	18	90%
> 6 hours	2	10%	0	0%

Table 2: Anthropometric Profile of the Subjects

Anthropometric Profile	AKHADA (n=20) Mean + SD	CRPF CAMP (n=20) Mean + SD
Age (years)	20.3 + 2.21	25.6+ 2.60
Weight (Kg)	76.0+13.13	73.65+14.26
Height (cm)	170.6+6.07	170.6+6.23
BMI (kg/m ²)	26.65+4.25	25.08+3.20
Waist Circumference (cm)	85+9.77	80.5+5.60
WHR	0.86+0.50	0.85+0.03
Chest Circumference (cm)	97.2 + 8.31	102.4 + 9.98

Table 2 shows the anthropometric profile of the subjects of the study. Mean weight of Akhada group wrestlers was 76+13.13 kg and for CRPF group it was 73.65+14.26 kg. Mean height was similar for both the groups. Mean BMI was 26.65+4.25 kg/m² for Akhada group and 25.08+3.20

for CRPF group. Waist circumference of Akhads wrestlers was higher as compared to CRPF group and WHR was also higher in Akhada group 0.86+0.50. Chest circumference is of Akhada group wrestlers was 97.2 + 8.31 while for CRPF campers it was 102.4 + 9.98.

Table 3: Nutritional Profile of the Subjects

Nutrient Intake	Akhada (n=20) Mean + SD	CRPF CAMP (n=20) Mean + SD
Energy (Kcal)	7501+907	7782+1095
Carbohydrate (gm)	789.6+134 (42en%)	970.0+160 (50en%)
Protein (gm)	249+65 (15en%)	264+30 (14en%)
Fat (gm; visible+invisible)	325+41.5 (43en%)	305+56.1 (36en%)

Table 3 depicts the nutrient intake profile of the wrestlers and it reveals higher energy intake in CRPF campers as 7782+1095 and Akhada wrestlers were consuming a total of 7501+907 kcal, the protein intake of wrestlers in Akhada was little less than 249+65 gm CRPF campers and fat intake was higher 325+41.5 gm in Akhada group.

Discussion

The study was conducted on a total sample of twenty wrestlers staying in Akhada and twenty wrestlers from CRPF camp of Delhi. The wrestlers from Akhada group were younger than CRPF wrestlers this is probably the reason that none of them was married in Akhada group and also it is the tradition of Akhadas to stay unmarried till they compete in dangals. None of the subjects in any group reported any medical problems and were not suffering from any acute or chronic illness at the time of study.

It is a general practice of adopting different methods to "make weight" near to competitions in weight category sports (Hall 2001, Gulati *et al.*, 2006) ^[6, 5]. In the present study, none of the subjects reported to be on any weight reducing diet or strategy. Almost half (50%) of the subjects were non-vegetarian in Akhada group whereas 90% of the subjects were non-vegetarian in CRPF group (table 1). In Akhadas more stress is given only to vegetarian diets for strength, still 50% of the subjects were resorting to non-vegetarian diets reflecting changes seen in their traditions. This assures good quality protein consumption with may help in better muscle regeneration. Further, majority of wrestlers were spending 4-6 hours in training every day from both the groups (table 1).

Anthropometric profile of the subjects (table 2) of the study revealed higher mean body weight of Akhada group wrestlers (76+13.13 kg) as compared to CRPF campers (73.65+14.26 kg). Mean height was similar for both the groups. Mean BMI for Akhada group (26.65+4.25 kg/m²) was also higher than CRPF group (25.08+3.20), however, according to Garrow's classification of BMI, five wrestlers of Akhada group and eight from CRPF group had BMI above 25 and were classified as overweight. BMI has an inherent limitation in using it as an indicator of normo- or over- weight in athletes because they might have higher muscular mass, hence, higher body weight. The wrestlers might be heavier in the present study due to higher muscular mass and not higher body fat%. Therefore, detailed body composition analysis is recommended particularly in strength game players. Waist circumference and WHR that are indicative of central obesity which could be considered as a risk factor for chronic diseases like CVD, diabetes etc. Waist circumference of Akhada wrestlers was higher as compared to CRPF group and WHR was also higher in

Akhada group 0.86+0.50 but were still normal in both the groups. 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. Chest circumference is advantageous in wrestling and was found to be comparatively higher in CRPF camp at 102.4 cm (table 2).

Wrestlers need to consume sufficient energy to meet their training demands and ICMR (1991) ^[7] has recommended total energy intake of 70 kcal/kg body weight. The nutrient intake profile of the wrestlers (table 3) revealed higher energy intake in CRPF campers (7782+1095 kcal) as compared to Akhada wrestlers (7501+907 kcal). The energy intake in this study was found to be much higher than recommended. The study was carried out in off-season and it is commonly seen that athletes that play in weight categories take high caloric diets during off-season and the try to reduce weight near to competition time by restricting energy consumption so that they can 'make weight' for their weight category. This is not a recommended prototype because if weight is reduced rapidly it is generally 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) ^[10, 5]. As far as protein intake of wrestlers was concerned Akhada group was taking little less amount than CRPF campers and fat intake was higher in Akhada group (table 3).

The percentage contribution of carbohydrate, protein and fat in energy (table 3), clearly indicated higher than recommended energy coming from fat sources for both the groups and Akhada group had much higher (43en%) as compared to CRPF group (36en%). In detailed investigation, it was found that wrestlers in Akhada were consuming very high amounts of desi ghee, full cream milk and almonds. CRPF wrestlers besides these food were also including good amount of cereals, fruits, paneer etc. in their diets. Wrestlers should take diets that provide them 50-55en % from carbohydrates, 15-20% from proteins and not more than 30% from fats while in the present study, the fat was contributing in much higher than recommended values in total energy intake. The macronutrient intake of CRPF campers (50 en % from carbohydrates, 14 en% from proteins and 36 en% from fats) was still closer to recommended macronutrient intake as compared to Akhada group (42 en % from carbohydrates, 15 en% from proteins and 43 en% from fats) but still modifications are suggested for further improvements in the diets of both the groups.

Conclusion

Thus, the study done on 20 wrestlers staying in a Akhada and 20 wrestlers from CRPF camp 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 without compromising on health and wellbeing.

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