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Determination Of Dietary Status and Anthropometric Measurements of Wrestlers in A Private Sports Club

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ABSTRACT

Aim: This study was conducted to find out the dietary status and anthropometric measurements of wrestlers registered in a private sports club in İstanbul.

Method: Dietary status and anthropometric measurements of wrestlers were examined in this study. All of the wrestlers were free style wrestlers. All of the wrestlers in the study were male. Face-to-face interviews were made with 30 wrestlers, 25 of whom were in national team. Body composition, body fat, body fluid ratio, bone mass, visceral adiposity, basal metabolic rate, muscle mass of the athletes were measured with Tanita BC-730 and their three-day food consumption records (one of these three days being weekend) were taken. Statistical data of the individuals in the study were evaluated with SPSS 22 statistics program. Arithmetic mean (X) ± standard deviation (SD), percentage and frequency (%) distributions were calculated.

Results: Mean age of the athletes included in the study was 21.13 ± 0.72 years. Tanita measurements of the athletes were found as 2104.6 ± 72.06 kkal for basal metabolic rate, as 3.20 ± 0.58 for visceral adiposity (%), as 67.22 ± 2.15 for muscle mass (kg), as 4.66 ± 1.12 for bone mass (kg), as 61.63 ± 0.75 for body fluid ratio (%) and as 12.62 ± 0.97 for body fat ratio (%).When mean three-day food consumptions of the athletes were examined, energy consumption was found as 2999.68 ± 138.87 cal, protein consumption was found as 136.57 ± 8.08 g, fat consumption was found as 148.2 ± 8.40 g, carbohydrate consumption was found as 281.67 ± 19.80 g and pulp consumption was found as 24.88 ± 1.74 g. Mean Vitamin A intake of the wrestlers was found as 1974.74 ± 125.30 µg, while their mean carotene intake was 4.4 ± 0.64 mg, mean Vitamin E intake was found as 24.83 ± 2.48 mg, mean Vitamin B2 intake was found as 2.32 ± 0.12 mg, mean Vitamin B1 intake was found as 1.51 ± 0.14 mg, mean Vitamin B6 intake was found as 2.02 ± 0.10 mg, mean total folic acid intake was found as 436.52 ± 18.96µg and mean Vitamin C intake was found as 145.18 ± 18.10 mg. In our study, when the mineral consumption of the wrestlers was examined, sodium consumption was found as 7708.27±681.6 mg; mean potassium intake was found as 3583.05±185.24 mg; mean calcium intake was found as 1106.34±66.76 mg; mean magnesium intake was found as 399.29 ±17.58 mg; mean iron intake was found as 18.68 ±1.01 mg; mean zinc intake was found as 18.8 ±1.24 mg and mean phosphorus intake was found as 1908.93 ± 98.03 mg.

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Conclusion: In order for athletes who will represent our country to have top level performance, appropriate lists should be prepared by dietitians who are experts about sports nutrition; in addition, athletes should be trained about the importance of sufficient and balanced nutrition before, during and after competitions.

Keywords: *Wrestler nutrition; athlete nutrition, anthropometric measurements*

INTRODUCTION

Wrestling is defined as a sport in which both the mind and body of two people try to outdo each other (Şahin, 2006). In another definition, wrestling is a sport in which two athletes compete physically close with high qualifications (Gökdemir, 2000). Today, Greco-Roman style and free style wrestling are based on outscoring the opponent or pinning in the game in order to win (Avcuoğulları, 1993). In providing the highest level of performance in athletes, adequate and balanced nutrition is extremely effective as well as the level of training (Kuter and Öztürk, 1999). Athlete nutrition is defined as sufficient and balanced intake of nutrients, taking athletes' gender, age, physical activity, body anthropometric values into account considering the training and competition periods of the athlete's sport branch (Yaşar and Melek, 2003; Güneş, 2005). High levels of stamina, agility, flexibility, strategy and well-developed balance are required for wrestlers to perform at high levels (Yoon, 2002). Muscle strength is also important in providing balance (İbiş, 2017). In addition, balance between muscle and nervous system also affects performance (Atılgan, 2003). It is important for athletes to provide sufficient energy for muscles to perform well. For optimum performance, athletes should give importance to adequate and balanced nutrition, adequate fluid intake, keeping rapid loss weight to a minimum and consuming different food (Karabudak, 2003). When food consumption of champion athletes is examined, it can be seen that their personal diet is different from other athletes and athletes reach their goal with adequate and balanced diet (Güneş,1999). The aim of this study is to determine the dietary status and anthropometric measurements of wrestlers in a private club.

MATERIAL AND METHOD

This study was conducted in a private sports club in İstanbul between June and November 2018. The sample size of this study was determined as 30 wrestlers with 95% reliability and 5% margin of error. Ethics committee approval was taken in our study. A survey was given face-to-face to athletes who participated in the study. Body composition, body fat, body fluid ratio, bone mass, visceral adiposity, basal metabolic rate and muscle mass measurements of the athletes were taken with Tanita BC-730 One Size device. In order to determine dietary status, three-day food consumption records, one of which was on the weekend, were taken from the athletes. Mean± standard deviation values of the energy, macro and micro nutrient intakes obtained as a result of food consumption were determined. Descriptive statistics, arithmetic means (X), standard deviations (SD) and frequency (%) distributions of the data obtained from the study were calculated. All statistical analyses were analyzed with SPSS 22.0 package program.

RESULTS

Table 1 shows the age distribution of the individuals in the study.

TABLE 1: Age distribution of the wrestlers

	n	Min	Max	Mean ± Std.
Yaş (yıl)	30	17	29	21.13 ± 0.72
Güreşe Başlama Yaşı (yıl)	30	8	15	11.3 ± 0.30

Mean age of the athletes included in the study was found as 21.13 ± 0.72 years. The youngest athlete was 17 years of age, while the oldest athlete was 29 years of age. When the age of starting wrestling was evaluated, mean age was found as 11.3 ± 0.30 years. The youngest age to start wrestling was found as 8, while the oldest age was found as 15. It was found that all of the athletes included in the study were male, 14 (46.7%) athletes were high school graduates, while 16 (53.3%) athletes were university graduates. None of the athletes were found to have health problems diagnosed by a doctor.

TABLE 2: Body composition values of the athletes

	N	Min.	Max	Mean ± Std.
BMH (kkal)	30	1557	3040	2104.6 ± 72.068
İç organ yağlanma oranı (%)	30	1	10	3.20 ± 0.587
Kas kütlesi (kg)	30	49	94	67.22 ± 2.153
Kemik kütlesi (kg)	30	3	37	4.66 ± 1.12
Vücut sıvı oranı (%)	30	54	69	61.63 ± 0.757
Vücut yağ oranı (%)	30	6	26	12.62 ± 0.979

As a result of the body composition values measurements of the athletes, mean basal metabolic rate was found as 2104.6 ± 72.06 kkal, mean visceral adiposity rate (%) was found as 3.20 ± 0.58, mean muscle mass was found as 67.22 ± 2.15 kg, mean bone mass was found as 4.66 ± 1.12 kg, mean body fluid rate (%) was found as 61.63 ± 0.75, mean body fate ratio (%) was found as 12.62 ± 0.97. Table 3 shows the three-day food consumption records, energy and nutrient elements distribution of the athletes.

TABLE 3: Daily energy and nutrient intake values of the athletes

	N	Min.	Maks.	Mean ± Std.
Enerji (kkal)	30	1399	4473	2999,68 ± 138,878
Su (ml)	30	829	2507	1628,09 ± 83,564
Protein (g)	30	72	244	136,57 ± 8,081
Yağ (g)	30	73	220	148,2 ± 8,403
Karbonhidrat (g)	30	104	518	281,67 ± 19,805
Lif (g)	30	11	44	24,88 ± 1,74
Vitamin A (µg)	30	1051	4412	1974,74 ± 125,303
Karoten (mg)	30	2	21	4,4 ± 0,644
Vitamin E (mg)	30	9	66	24,83 ± 2,488
Vitamin B2 (mg)	30	1	4	2,32 ± 0,12
Vitamin B1 (mg)	30	1	3	1,51 ± 0,145
Vitamin B6 (mg)	30	1	3	2,02 ± 0,101
Toplam folik asit (µg)	30	256	617	436,52 ± 18,967
Vitamin C (mg)	30	30	400	145,18 ± 18,106
Sodyum (mg)	30	3575	15909	7708,27 ± 681,6
Potasyum (mg)	30	1826	5337	3583,05 ± 185,244
Kalsiyum (mg)	30	454	1885	1106,34 ± 66,769
Magnezyum (mg)	30	231	630	399,29 ± 17,586
Demir (mg)	30	11	31	18,68 ± 1,017
Çinko (mg)	30	8	35	18,8 ± 1,248
Fosfor (mg)	30	919	3309	1908,93 ± 98,033

Mean daily energy and nutrient intake of the athletes was found as 2999.68 ± 138.87 kkal; mean protein intake was found as 136.57 ±8.08 g; mean fat intake was found as 148.2 ±8.40 g; mean carbohydrate intake was found as 281.67 ±19.80 g; mean fibre intake was found as 24.88 ±1.74 g; mean Vitamin A intake was found as 1974.74 ± 125.30 µg; mean vitamin E intake was found as 24.83 ± 2.48 mg; mean vitamin B1 intake was found as 1.51 ± 0.145 mg; mean Vitamin B2 intake was found as 2.32 ± 0.12 mg; mean Vitamin B6 intake was found as 2.02 ± 0.10 mg; mean total folic acid intake was found as 436.52 ± 18.967 µg; mean Vitamin C intake was found as 145.18 ±18.10 mg; mean mineral sodium intake was found as 7708,27 ± 681,6 mg; mean potassium intake was found as 3583.05 ± 185.24 mg; mean calcium intake was found as 1106.34 ± 66.76 mg; mean calcium magnesium intake was found as 399.29 ± 17.58 mg; mean iron intake was found as 18.68 ± 1.01 mg; mean zinc intake was found as 18.8 ± 1.24 mg; and mean phosphorus intake was found as 1908.93 ± 98.03 mg.

DISCUSSION

In our study, mean age of the athletes was found as 21.13 ± 0.72 years. When the age of starting wrestling was evaluated, mean age of starting wrestling was found as 11.3 ± 0.30 years. In a study conducted on 153 wrestlers, Çimen (2020) found mean sport age of the athletes as 10.45±3.31 years. Öcal (2007) reported that mean age of Turkish national team camp wrestlers was 23.35 years. It is important to start sports at young ages and this is one of the most important factors affecting success. In the present study, the age of starting wrestling was found as 8-15 years. In the light of the information given in literature, it can be seen that athletes generally started wrestling between 13 and 15 years of age. Young and talented wrestlers generally start getting good degrees at 6-8 years of age. Therefore, a large number of studies have emphasized the necessity of starting wrestling at a young age (Ağaoğlu, 1994).

In order for wrestlers to show higher levels of performance, it is very important to prepare individual dietary programs specific for athletes (Ulus,2008). Since wrestling is one of the most strength requiring sport among medium-term sports, in order for wrestlers to endure this heavy workout, to increase their performance and to be successful in sports, the energy lost as a result of intense training and competitions should be taken back in sufficient and balanced amount in the shortest time possible. The energy spent during trainings and competitions with high loading should be met with a regular diet program (Brustad,1993). The American College of Sports Medicine recommends that athletes consume adequate energy during training periods (Potgieter,2013).

In our study, when the three-day food consumption of athletes was examined, their energy consumption was found as minimum 1399 kkal; maximum 4473 kkal and as mean 2999.68±138.878 kkal. In order to prevent unhealthy weight losses in the training and nutrition programs of wrestlers, daily energy intake should not be less than 1700-2000 kkal (www.tgf.gov.tr).

In a study conducted by Karaman (2019) on wrestlers, energy intake was found as 2688,4-7278,3 with a mean of 4600,1 ±1055,1 kkal. When Ulus (2008) examined the mean three-day food consumption of young wrestlers, it was found as 2748,91 ±491,11 in athletes who received nutritional support and as 1914.89 ±467.10 in those who did not. In Acar's study (2019), energy consumption was found as 2007.14 kkal in young wrestlers and as 1689.25 kkal in seniors. There were also athletes who consumed low calorie energy.

It is recommended for wrestlers to take 20-25% of total energy from fat (www.tgf.gov.tr). American College of Sports Medicine and American Academy of Nutrition and Dietetics reported that dietary fat should be between 20-35% of total energy (Potgieter,2013). In our study, fat consumption of athletes was found as 148.2 ±8.403g. In Karaman's study, mean fat intake was found as 210.7±53.5 g, while mean fat percentage was found as 40.5±3.7. In Acar (2019)'s study, fat consumption of young wrestlers was reported as 86.5 g. Daily protein need differs individually in terms of the sport branch. Strength athletes have a high requirement

of muscle tissue and diet protein; sufficient level of high quality protein is required in each course for the repair of muscle tissue following exercise. 1.4-2.0 g/kg/day protein should be consumed. This amount corresponds to approximately 15-20% of the energy (Güneş,2005). In our study, when the mean three-day food consumption of athletes was examined, protein consumption was found as 136.57±8.081 g. Karaman (2019) found mean protein in athletes' diet as 219.4±52.7 g. Acar (2019) found protein consumption of young wrestlers as 64.35 g and as 61.87 g in seniors.

In our study, when the mean three-day food consumptions of athletes were examined, their carbohydrate consumption was found as 281.67 ± 19.805 g and their pulp consumption was found as 24.88 ± 1.74 g. In Karaman (2019)'s study, carbohydrate consumption was found as 450.4±134g, while no pulp consumption was reported. In Acar (2019)'s study, carbohydrate consumption of young wrestlers was reported as 238.02 g and their pulp consumption was reported as 20.77 g.

In our study, mean Vitamin A intake was found as 1974.74 ± 125.30 µg; mean carotene intake was found as 4.4 ± 0.644 mg, mean vitamin E intake was found as 24.83 ± 2.48 mg; mean Vitamin B2 intake was found as 2.32 ± 0.12 mg; mean vitamin B1 intake was found as 1.51 ± 0.145 mg; mean Vitamin B intake was found as 2.02 ± 0.10 mg; mean total folic acid was found as 436.52 ± 18.967 µg and mean Vitamin C intake was found as 145.18 ±18.10 mg.

In Acar (2019)'s study, vitamin E consumption was found as 13.23 mg in young wrestlers, vitamin K consumption was found as 319.57 mcg in senior wrestlers, vitamin B1 consumption was found as 0.76 mg in young wrestlers, vitamin B2 consumption was found as 1.1 mg in young wrestlers, total folic acid amount was found as 283.75 mcg in young wrestlers and vitamin C consumption was found as 50.11mg. Karaman (2019) found mean food consumption records of wrestlers as 2204.5±776.1 mcg for Vitamin A, as 42.1±10.6 mg for Vitamin E, as 2.3±0.6 mg for Vitamin B1, as 3.5±0.8 mg for Vitamin B2, as 39±13.1 mg for niacin, as 3.3±0.7 mg for Vitamin B6, as 640.7±154.1 mcg for folic acid, as 18.3±6.9 mcg for Vitamin B12 and as 261.1±87.1 mg for Vitamin C.

In our study, when mineral consumption of wrestlers was examined, it was found as 7708,27 ± 681,6 mg for sodium, as 3583.05 ± 185.24 mg for potassium, as 1106.34 ± 66.76 mg for calcium, as 399.29 ± 17.58 mg for magnesium, as 18.68 ± 1.017 mg for iron, as 18.8 ± 1.24 mg for zinc and as 1908.93 ± 98.033 mg for phosphorus. In Beyhan et al. (1989)'s study, mean daily zinc consumption amount of wrestlers was reported as 23.17 + 3.29 mg.

In Acar (2019)'s study, while sodium consumption of wrestlers was found as 5461.7 mg in senior wrestlers, magnesium consumption was found as 198.94 mg. In Karaman (2019)'s study, mean values of minerals taken with diet were as 6.8±2 g for sodium, as 6.1±1.4 g for potassium, as 1732.4±461.9 mg for calcium, as 747±150.1 mg for magnesium, as 3231.2±779.1 mg for phosphorus, as 30.1±7.3 mg for iron and as 31.3±8.5 mg for zinc in wrestlers. When Sten et al. (1986) examined the diets of 42 wrestlers throughout the season, it was reported that most wrestlers could not meet their energy, protein, Vitamin C, A, B6, thiamine, iron, zinc and magnesium needs. In Gürel (1999)'s study, when the thiamine consumption of wrestlers was examined, it was found that 31.8% of the wrestlers had a sufficient consumption, 68.2% consumed 23 mg and higher iron daily. In studies conducted with wrestlers, there are results which show that their Vitamin A intake is lower than recommended (Short et al., 1983). There are also study results which show that calcium intake of gymnasts, ballet dancers and wrestlers is lower than the recommended level (Steen et al., 1986; Delistraty et al., 1992).

In wrestling, body composition and body fat percentages of athletes are very important. In our study, when body analyses made with Tanita BC-730 were examined, basal metabolic rate was found as 2104.6 ± 72.06 kkal, visceral adiposity rate (%) was found as 3.20 ±0.58, muscle mass was found as 67.22 ±2.15 kg, bone mass was found as 4.66 ±1.12 kg, body fluid rate (%) was found as 61.63 ±0.75, body fat ratio (%) was found as 12.62 ±0.97. In his study, Acar (2019) reported mean lean body mass was found as

61.18±9.28 kg; muscle intensity of young wrestlers was found as 63.36±7.97 kg; total water weight was found as 45.69±6.76 kg. Yamaner and Kaplan (2001) reported mean body fat percentage of Greco-Roman wrestling national team as 10%; Zorba (1995) reported that the mean body fat percentage of wrestlers in the first place was 6.6%, while the mean body fat percentage of wrestlers in the second place was 6.8% in 17-18 age group Turkey Championship. Açıkada (1991) reported the body fat ratio of some wrestlers in the Olympics as 12.7%. Öcal (2006) reported mean body weight of free style wrestlers as 81.1 kg and mean body fat percentage of free style wrestlers as 9.85%. In a study on free and Greco-Roman national team wrestlers, Kaya (2006) found mean body fat percentage of 17-20 age group free style wrestlers as 7.49%. In our study, body fat ratio was found as 12.62 ± 0.97. In another study, body fat percentages of 53 Greco-Roman and 39 free style amateur and elite wrestlers were found as 10.3±2.2, 11.1±2.5 and 13.7±2.7 (García-Pallarés, 2011). Karaman (2019) found the mean fat percentage of athletes as 12.4±5.1.

Turkey Wrestling Federation determined minimal body fat percentage as 7% for junior and young wrestlers (www.tgf.gov.tr). The American College Sports Organization found mean body fat ratio as 9.5% in evaluations excluding heavy weight wrestlers (Khalili-Borna et al.,2005). According to this, mean fat values of wrestlers was high in our study.

CONCLUSION

It is a known fact that nutrition is important not only for a healthy lifestyle, but also in increasing training and competition performance. In order for athletes who will represent our country to have top level performance, appropriate lists should be prepared by dietitians who are experts about sports nutrition; in addition, athletes should be trained about the importance of sufficient and balanced nutrition before, during and after competitions.

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