

Evaluation of Nutritional Knowledge and Habits of Female Handball Players

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Abstract: This study was carried on to evaluate the nutritional habits and knowledge of female handballers and to contribute to athletes and coaches on this subject. Population of this study consists of 168 athletes playing in first league A. Based on voluntariness, all athletes were tried to be reached, however feedbacks from only 80 athletes could be taken. It was seen that %37.5 of them took training at most 3 days in a week, % 32.5 of them 6 hours and %71.3 of them joined training 2 hours a day. % 20 of them declared that they had smoking habit and %2.5 gave up smoking. % 62.5 of the athletes said that they had three regular meals a day. % 90 of them had regular breakfast, %85 had lunch and %88.8 had dinner. %53.8 consumed fruit and %33.8 had nuts. In the study, %27.5 of the female handball players sometimes took vitamins, %13 took vitamins regularly and %7.5 of them took protein powder sometimes and %7.5 of them took it just before the game. In the study it was also found out that %71.3 of the athletes did not have a habit of drinking energy drinks whereas %65 of them had sports drink in different time intervals. %7.5 of them told that they used other ergogenic materials. It was determined that %47.5 of them finished eating three hours before the game and %70 of them consumed water or mineral water an hour before the game. %91.3 consumed water either during the game or in the half time. %30 of the female players did nothing extra for recovery and %27.5 preferred to sleep after the game. As a result, it can be said that the athletes who participated in the study acquired positive habit about nutrition knowledge and habit. However, it is crucial for the athletes to stay away from the bad habits to increase the sportive success and it is necessary to be careful about to use nutritional and ergogenic materials for the team success. It is recommended to the clubs to hold regular seminars for the athletes and trainers about the awareness of the nutrition and habit and to work with an expert about nutrition plan related to the training season and type.

Key words: Female Handball Players • Eating Habits • Nutrition Knowledge

INTRODUCTION

Balanced and adequate nutrition are necessary for healthy and successful athletes. In our society sport has a very important place. Sport means competition, winning, success notions for us. Main purpose in sport is to win. Performance should be maximized to win. A proper nutrition is required so that athletes can afford vital energy and energy required for training and spent energy can be replaced.

Success levels cannot be achieved right away in sport. Outcome is accompanied by a variety of conditions. One of the most important one of these conditions is conscious nutrition. As a result of good adjustment of energy balance with nutrition athletes achieve the goal. Athlete's nutrition significantly depends on training kinds [1]. Athletes' nutrition components vary depending on

sports branch they practice. It should be frequently controlled whether the athlete is nourished adequately or not [2]. Because it takes much time to compensate for long term unbalanced nutrition or it establishes a ground for failure. Thus athlete weight should be controlled by weighing the athlete on regular periods. Only a good nutrition does not make an unsuccessful athlete a champion. However, performance can be enhanced with a good diet program prepared with cooperation of trainer and nutritionist with other factors as well.

For example, gymnasts tend to take less nutrient to protect their proper body sizes. Wrong applications performed in this process can affect improvement and performances of gymnasts negatively [3]. In a study made by Aydos, it is seen that a rapid weight loss of 5% can affect general endurance, basic strength, rapid strength and aerobic capacity in different levels in wrestlers and it

is seen that these effects are continued decreasingly even after recovery [4]. If athlete needs to lose weight it would be right to lose weight in control of a nutritionist by spreading it over time and by considering the intake of necessary nutrients to establish a ground

Carbohydrates, fats and proteins are food groups that can provide energy for body. Proteins are rarely used for the purpose of energy. Energy is provided by fats and carbohydrates in approximately equal ratios in resting and light movements and most of energy is provided by fats for long time in stronger muscle activities [1]. It is important that food eaten before competition should be eaten 3-4 hours before competition and consists of light and digestible foods. Glucose and mineral containing fluid intake should be provided to prevent dehydration during competition. After competition, glucose-containing fluids and mixed carbohydrate-containing foods should exist and water and electrolyte loss should be considered in this period [5].

In light of scientific truth, endurance can be improved for 40% and strength for 25%. Reduction and injuries and increase in the time of activities relating to sportive competition are seen [6]. Rapid increase of loading increases catecholamine rate and thereby causing increase of motion. This notion considered as sport anemia may be caused by wrong nutritional habits. In a study, two different diet programs were applied to two different groups. At the end, runners to whom second type nutrition was given have better running time [7] This explains us the importance of the adjustment of branch-specific nutrition and content.

Generally it is believed that vitamin needs are met adequately with rich and diverse foods of which intake is taken in sports such as cross, ski, bicycling, mountaineering, endurance runs and the like which require high energy[8]. Adequately and balancedly arranged diet can meet daily needs. However it is important that it is not skipped. In that, a nutrition discipline should be formed.

Adequate and balanced arranged diet is stated to be adequate for success of an athlete. Energy need increased depending on physical training of athletes by increasing food intake and arranged tit on determined basis [9]. Use of material-method and substances apart from natural skill and training with the aim of improving sportive performance is termed as ergogenic assistance. The administration of use of an agent or physiological materials foreign to organism in abnormal amounts or abnormal way to enhance competition performance artificially and illegally is called doping [10]. Athletes

commonly use additional foodstuffs with the purpose of protecting and improving general health thereof. Additional substances are particularly common among strength and endurance athletes for whom increased muscle mass may be beneficial [11]. These products used for success by athletes can be ranked as: protein concentrates, amino acid products, carbohydrate and energy concentrates, vitamin and mineral concentrates, whey products, diet products, chocolate-containing products, L-carnitine products and creatine mono hydrate etc. [12].

It is known that many ergogenic components relating to nutrition in well-trained well-nourished athletes do not improve performance while there are some scientific data relating to ergogenic effects of some components such as caffeine, creatine, carnitine and sodium bicarbonate [13]. Studies have shown that caffeine produces ergogenic effect on endurance exercises. Nevertheless, it can cause side effects such as increase in urination and as a consequence water loss, trembling and insomnia [4]. In studies performed on vitamins it has been revealed that intake of vitamins under daily need causes loss in performance, but intake above necessity does not have a performance-increasing effect on performance [1,8,9]

Much amino acid use causes dehydration and calcium loss in urine as well as delaying muscle formation as a result that amino acids affect one another's absorption negatively [13]. In some studies, it is seen that carbohydrate intake delays fatigue and prolongs exercise period. However, there are also studies showing that it has no effect on performance or affects performance negatively [14].

In the present study we aimed to evaluate information and habits of female and contribute to athletes and trainers relating to the matter. As a result, it will contribute to improvement, performance and sportive success of athlete having right information and experience positively.

MATERIALS AND METHODS

The sample of the study consists of 168 athletes playing in I. league A group. Each athlete was tried to reach related to the volounteerly but only 80 of them answered the questionnaire. The average age interval of the participants was 15-32 years, their education status was that 12 of them were secondary school, 53 of them were high school and 15 of them were university graduates. Population of this study consists of 168 athletes playing in first league A. Based on voluntariness,

Table 1: Distribution of athletes participating in the study according to regions and age

County	Number	Percent	Age	Number	Percent
Adana	7	8,8	15,00	2	2,5
Kastamonu	7	8,8	16,00	4	5,0
Amasya	12	15,0	17,00	7	8,8
Ordu	6	7,5	18,00	10	12,5
Ýzmir	8	10,0	19,00	10	12,5
Ýstanbul	10	12,5	20,00	19	23,8
Eskiþehir	8	10,0	21,00	11	13,8
Samsun	5	6,3	22,00	5	6,3
Sivas	10	12,5	23,00	3	3,8
Rize	7	8,8	24,00	3	3,8
			25,00	3	3,8
			26,00	1	1,3
			27,00	1	1,3
			32,00	1	1,3
Total	80	100	Total	80	100,0

all athletes were tried to be reached, however feedbacks from only 80 athletes could be taken. Athletes were applied questionnaires of which validity and reliability have been tested previously. Raw materials obtained were evaluated as frequency percent distribution with the aim of SPSS program.

When distributions of athletes participating in the study were examined, it is seen that the most participant is from Amasya with 15.0%, Sivas and Istanbul with 12.5%, Izmir and Eskisehir with 10.0%, Adana, Kastamonu and Rize with 8.8%, Ordu with 7.5% and the least participation is from Samsun with 6.3%. When age distributions of volunteers were examined, it was determined that most participation is 20,00 with 23.8% and the least participation is 26,00, 27,00 and 32,00 with %1.3 (Table 1).

Table 2: Distribution of athletes participating in the study according to graduation, marital status and family type

School	Number	Percent	Civil status	Number	Percent	Family structure	Number	Percent
Orta	12	15,0	Bekar	78	97,5	Çekirdek	44	55,0
Lise	53	66,3	Evli	2	2,5	Geniþ	36	45,0
Üniversite	15	18,8						
Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 3: Distribution of athletes participating in the study according to amateurism-professionalism years

Amateurism	Number	Percentage	Professionalism	Number	Percentage
0,00	1	1,3	,00	3	3,8
1,00	1	1,3	1,00	4	5,0
2,00	3	3,8	2,00	11	13,8
3,00	5	6,3	3,00	9	11,3
4,00	23	28,8	4,00	12	15,0
5,00	26	32,5	5,00	12	15,0
6,00	17	21,3	6,00	13	16,3
7,00	1	1,3	7,00	4	5,0
8,00	2	2,5	8,00	4	5,0
9,00	1	1,3	9,00	1	1,3
			10,00	3	3,8
			11,00	1	1,3
			12,00	1	1,3
			15,00	1	1,3
			17,00	1	1,3
Total	80	100,0	Total	80	100,0

Table 4: Distribution of athletes participating in the study according to weekly training number, weekly and daily training times

Weekly training Day	Number	Percentage	Weekly training number	Number	Percentage	Daily training times	Number	Percentage
2,00	12	15,0	4,00	5	6,3	2,00	57	71,3
3,00	30	37,5	5,00	2	2,5	3,00	22	27,5
4,00	26	32,5	6,00	26	32,5	4,00	1	1,3
5,00	9	11,3	8,00	22	27,5			
6,00	3	3,8	9,00	10	12,5			
			10,00	10	12,5			
			12,00	5	6,3			
Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 5: Distribution of athletes participating in the study according to whether they practice weight training

Weight Training	Number	Percentage
Yes	43	51,3
No	37	48,8
Total	80	100,0

Table 6: Distribution of athletes participating in the study according to daily sleep, walking and television-computer watching times

Daily sleep	Number	Percentage	Daily Walking	Number	Percentage	Daily TV. PC. Watching	Number	Percentage
4,00	6	7,5	,00	11	13,8	,00	2	2,5
5,00	9	11,3	30,00	5	6,3	1,00	38	47,5
6,00	11	13,8	60,00	47	58,8	2,00	27	33,8
7,00	13	16,3	90,00	1	1,3	3,00	10	12,5
8,00	14	17,5	120,00	12	15,0	4,00	3	3,8
9,00	9	11,3	180,00	1	1,3			
10,00	14	17,5	240,00	3	3,8			
11,00	1	1,3						
12,00	2	2,5						
14,00	1	1,3						
Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 7: Distribution of athletes participating in the study according to whether they work in a job

They Work In Another Job	Number	Percentage
No	76	95,0
Yes	4	5,0
Total	80	100,0

Table 8: Distribution of athletes participating in the study according to smoking, still smoking and alcohol use status

Smoking	Number	Percentage	Still smoking	Number	Percentage	Use Alcohol	Number	Percentage
Yes	16	20,0	Not Smoking	66	82,5	No	67	83,8
No	64	80,0	Smoking	14	17,5	Yes Daily	4	5,0
						Yes Weekly	9	11,3
Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 9: Distribution of athletes participating in the study according to daily meal numbers, their breakfast, lunch, supper and snack habits

Daily meal number	Number	Percentage	Regular Breakfast	Number	Percentage	Regular Lunch	Number	Percentage	Regular dinner	Number	Percentage	Snack food	Number	Percentage
2,00	3	3,8	Yes	72	90,0	Yes	68	85,0	Yes	71	88,8	Brunch	7	8,8
3,00	50	62,5	No	8	10,0	No	12	15,0	No	9	11,3	Mid-Afternoon	28	35,0
4,00	24	30,0										Night	23	28,8
5,00	3	3,8										Consumption	22	27,5
Total	80	100,0	Total	80	100,0	Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 10: Distribution of athletes participating in the study according to eating particular nutrients

	Number	Percentage		Number	Percentage		Number	Percentage		Number	Percentage		Number	Percentage
,00	40	50,0	,00	49	61,3	,00	37	46,3	,00	53	66,3	,00	51	63,8
Chocolate	40	50,0	Pastry	31	38,8	Fruit	43	53,8	Nuts	27	33,8	Dried Fruit	29	36,3
Total	80	100,0	Total	80	100,0	Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 11: Distribution of athletes participating in the study according to their vitamin and protein powder use

Vitamin Usage	Number	Percentage	Frequency of Vitamin use	Number	Percentage	Frequency of Whey powder use	Number	Percentage
0,00	3	3,8	0,00	50	62,5	0,00	2	2,5
Yes	13	16,3	Everyday	4	5,0	2-3 in aWeek	5	6,3
No	42	52,5	2-3 in aWeek	12	15,0	sometime	6	7,5
Sometimes	22	27,5	sometime	5	6,3	Pre-match	6	7,5
			Pre-match	3	3,8	Match Day	3	3,8
			Match Day	3	3,8	Post match	1	1,3
			Post match	3	3,8	Not Use	57	71,3
Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 12: Distribution of athletes participating in the study according to use of energy drink, athlete drink or other ergogenic substance

Energy Drink	Number	Percentage	Athletes Drink	Number	Percentage	Other Ergogenic substance	Number	Percentage
Occasionally	2	2,5	everyday	3	3,8	,00	5	6,3
pre-match	5	6,3	Haftada2-3	13	16,3	No	69	86,3
Match day	10	12,5	occasionally	15	18,8	available	6	7,5
after the match	6	7,5	pre-match	8	10,0			
not use	57	71,3	Match day	3	3,8			
			after the match	2	2,5			
			not use	36	45,0			
Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 13: Distribution of athletes participating in the study according to how many hours before match they consume a meal and what they consume one hour before match

Last Meal Pre- match	Number	Percentage	What do you eat an hour before the match	Number	Percentage
1hour	6	7,5	Tea and coffee	6	7,5
2hours	29	36,3	Fruit juice-cola	4	5,0
3hours	38	47,5	Water-mineral water	56	70,0
4hours	7	8,8	Chocolate-candy	7	8,8
			Nothing	7	8,8
Total	80	100,0	Total	80	100,0

Table 14: Distribution of athletes participating in the study according to what they consume as fluid, amount and time thereof and what they consume after match-halftime

What do you consume											
liquid pre-match	Number	Percentage	Quantity consumption	Number	Percentage	Recent consumption .dk	Number	Percentage	During the match.	Number	Percentage
Never	3	3,8	,00	3	3,8	,00	3	3,8	water	73	91,3
Water	70	87,5	1,00	45	56,3	1,00	1	1,3	Juice	3	3,8
Juice	5	6,3	2,00	25	31,3	3,00	1	1,3	Special drinks	2	2,5
Athletes Drinks	2	2,5	3,00	5	6,3	5,00	14	17,5	none	2	2,5
			4,00	1	1,3	10,00	13	16,3			
			6,00	1	1,3	15,00	4	5,0			
						20,00	5	6,3			
						30,00	8	10,0			
						60,00	23	28,8			
						120,00	8	10,0			
Total	80	100,0	Total	80	100,0	Total	80	100,0	Total	80	100,0

Table 14: Distribution of athletes participating in the study female hand ballers do nothing extra for recovery after match 30% of female hand ballers do nothing extra for recovery after match while 27.5% prefer sleeping (Table 15)

For recovery	Number	Percentage
Nothing	24	30,0
Deep breath	1	1,3
Sleep	22	27,5
Shower	12	15,0
Do not listen to music	1	1,3
Exercise	6	7,5
Massage	4	5,0
Recreation	7	8,8
Sauna	1	1,3
Walking	2	2,5
Total	80	100,0

It is seen that 66.3% of athletes participating in the study are high-school graduates, 97.5% are single and 55% have nuclear family structure (Table 2).

When their amateurism times were examined, it is seen that 5-year amateurs are the most common with a ratio of 32.5% and the least common is 1,3 and 9-year amateur athletes with 1.3% ratio are present in teams. It is

seen that 16.3% of the group are 6-year professionals and the least ratio consists of 9, 11, 12, 15 and 17-year athlete with 1.3% ratio (Table 3).

It has been determined that 37.5% of athletes at most train for 3 days a week and minimum 3.8% train for 6 days a week and athletes with a ratio of maximum 32.5% train for 6 hours a week, minimum 6.3% train for 4-12 hours and their daily training times is 2 hours with a ratio of 71.3% (Table 4).

When table above is examined, it is seen that 51.3% perform weight training (Table 5).

As seen in table majority sleep for 8 and 10 hours a day with a ratio of 17.5%, walk for 60 minutes with a ratio of maximum 58.8% and again majority sit by television or computer 1 hour a day with a ratio of 47.5% (Table 6).

It is seen that only 5% of athletes work a job (Table 7).

It has been determined that 80% of athletes participating in the study do not smoke and 20% smoke and 2.5% has quitted smoking (Table 8).

When table is examined, it is seen that 62.5% eats on 3-meal regular basis, 90% do not skip breakfast, 85% lunch and 88.8 supper (Table 9).

It is seen that volunteers consume fruit with a ratio of maximum 53.8% and nuts with a ratio of minimum 33.8% (Table 10).

It is seen in this study that 52.5% of female athletes do not use vitamins, 27.5% use sometimes and 13% use on regular basis and when use frequency of users were examined it is seen maximum 15% take 2-3 times a week. While 71.3% of athletes do not use protein powder, on examination of ratio of users it draws the attention that occasional and pre-match use has a ratio of 7.5% (Table 11).

It is seen in the study that 71.3% of athletes do not use energy drink while 65% use energy even with different intervals. It has been stated that 7.5% of athletes use other ergogenic materials (Table 12).

It is seen that 47.5% of athlete consume their last meal 3 hours before a match and 70% consume water-mineral waters one hour before the match (Table 13).

It is seen that 87.5% of athletes consume water before match and 56.3% of them drink 1 glass and maximum 28.8% consume 60 minutes before. It has been stated that 91.3% of athletes consume water during match and halftime (Table 14).

DISCUSSION AND CONCLUSION

With the increase in attention towards sport, nutrition of athletes has become increasingly discussed and searched subject. Many methods are important for regular and balanced nutrition. A variety of situations effecting athletes directly or indirectly such as increasing of performance, weight loss and prevention of excess gaining weight, prevention of disorders caused by electrolyte loss in body, regular functioning of digestive system and replacement of energy sources in recovery period can be provided by balanced nutrition [15].

When distributions of athletes participating in the study were examined, it is seen that the most participant is from Amasya with 15.0%, Sivas and Istanbul with 12.5%, Izmir and Eskisehir with 10.0%, Adana, Kastamonu and Rize with 8.8%, Ordu with 7.5% and the least participation is from Samsun with 6.3%. It is thought that application of questionnaires before match affects feedback of questionnaires. When age distributions of volunteers were examined, it was determined that most participation is 20,00 with 23.8% and the least participation is 26,00, 27,00 and 32,00 with %1.3. This is caused by the fact that 62.6% of athletes are in an age range of 18-2. It is seen that 66.3% of athletes participating in the study are high-school graduates, 97.5% are single and 55% have nuclear family structure.

In a study carried out it has been determined that low economic level and problems of athletes living alone are critical problems of adequate and regular nutrition of athletes [15]. In a study performed by Jazayeri and Amani on male and female bodybuilders, obvious difference between education levels and diet prescriptions. They stated that knowledge deficiency of athletes relating to nutrients is too high [16].

When their amateurism times were examined, it is seen that 5-year amateurs are the most common with a ratio of 32.5% and the least common is 1,3 and 9-year amateur athletes with 1.3% ratio are present in teams. It is seen that 16.3% of the group are 6-year professionals and the least ratio consists of 9, 11, 12, 15 and 17-year athlete with 1.3% ratio. It is thought that as active sport experience of athletes increase it will contribute them to have a more conscious period both in terms of nutrition and health by incorporating knowledge and experience.

It has been determined that maximum 37.5% of athletes train for 3 days a week and minimum 3.8% train for 6 days a week and athletes with a ratio of maximum 32.5% train for 6 hours a week, minimum 6.3% train for 4-12 hours and their daily training times is 2 hours with a ratio of 71.3%. It is important to use proper severity, time and frequency during training for children and young people for both sportive improvement and biological improvement. When training frequency, severity and time is low at young ages, it should be increased as age progresses [17]. At this point, it is thought that the difference in training frequency of athletes is caused by sport histories and ages thereof.

It is seen in our study that 51.3% of athletes perform weight training. Weight trainings should be programmed in a systematic way for provision of obvious strength increase in athletes of 15 or above. Main purposes are to increase strength and power of muscle groups, locally increase muscle endurance, improve motoric performance, increase general body weight, increase muscle hypertrophy and decrease body fat amount[18]. A male athlete of 65 kg spends approximately 270-450 (kcal/hour) energy during weight training. When energy is not supplied by foods in a long term, reduction in muscle tissue together with weight loss is seen and performance is decreased with strength and endurance loss. On the contrary, in case of excess intake of energy by foods, weight gaining is seen and performance is decreased in athletes with a weight over recommended body weight by restriction of movement ability thereof [19]. Thus, proper diet is very important in the period weight training is applied.

Majority sleep for 8 and 10 hours a day with a ratio of 17.5%, walk for 60 minutes with a ratio of maximum 58.8% and again majority sit by television or computer 1 hour a day with a ratio of 47.5%. In a study performed on wrist wrestlers it has been determined that 43.9 of athletes sleep for 6-7 hours a day [20]. It has been detected that those with a night sleeping time less than 7 hours has high obesity risk [21]. In a study carried out on athletes a significant decrease in maximal oxygen consumption and exercise capacity while spirometric measurements with one-night sleep deprivation were not affected [22].

It has been determined that 80% of athletes participating in the study do not smoke and 20% smoke and 2.5% has quitted smoking. In a study made by Pekşen *et al.* [23], it is stated that 29 out of 207 (14.0%) PES students smoke. The fact that our research group has high ratio may be caused by the fact that 66.3% of our sampling consist of high school graduates and highest level of first smoking trials are seen in high school years.

When table is examined, it is seen that 62.5% eats on 3-meal regular basis, 90% do not skip breakfast, 85% lunch and 88.8 supper. It is seen that volunteers consume fruit with a ratio of maximum 53.8% and minimum nuts with a ratio of 33.8. In a study made by Bavlı *et al.* [20] in it has been observed that 52.1% of athletes consume fruit.

It is seen in this study that 52.5% of female athletes do not use vitamins, 27.5% use sometimes and 13% use on regular basis and when use frequency of users were examined it is seen maximum 15% take 2-3 times a week. While 71.3% of athletes do not use protein powder, on examination of ratio of users it draws the attention that occasional and pre-match use has a ratio of 7.5%. There may be increase in protein necessity depending on situations such as combat and impact during competition, scratches and injuries in the body. Thus, 1.2-1.7 g/kg protein consumption is recommended [24]. Thus, supplementation can be considered in periods when adequate protein cannot be taken via nutrients.

Again in the study, it is seen in the study that 71.3% of athletes do not use energy drink while 65% use energy even with different intervals. It has been stated that 7.5% of athletes use other ergogenic materials. In a study performed by Özyılmaz in [25], it is seen that athletes use ergogenic additives before and after training. A adequate and balanced diet, conscious training, consumption of food products in appropriate times and adequate resting, compatibility to performance or training may be maximized. Conscious use of nutrition components supporting energy metabolism (for example, sport drink, carbohydrate, creatine, caffeine, beta-alanine etc.) or shortening recovery period (carbohydrate, protein,

essential amino acids etc.) supported by scientific studies provide benefit to athletes [26]. When a sport drink containing 6-8% carbohydrate (200-250 ml/10-15 minutes) was consumed during competition both adequate hydration was provided and 30-60 g carbohydrate consumption was provided easily [24].

It is seen that 47.5% of athlete consume their last meal 3 hours before a match and 70% consume water-mineral waters one hour before the match. It is seen that 87.5% of athletes consume water before match and 56.3% of them drink 1 glass and maximum 28.8% consume 60 minutes before. It has been stated that 91.3% of athletes consume water during match and halftime. As stated in a study carried out, water should be drunk one day before and on day of match not just to quench but also to protect liquid balance. Fluid intake should be increased in parallel with energy consumption. Water is the most important nutrient component that may affect performance of athlete in short term negatively or positively. Food and fluid intake before competition vary depending on the competition type. Also, it will be adequate to consume 100-300 ml water with 15-20 minutes intervals before and during competition [27]. Still in another study, fluid necessity differs for each athlete depending on last weight during activity and NATA (The National Athletic Trainers Association) recommends approximately 2-3 glass of water 2-3 hours before competition and 1-2 glass of water 10-20 minutes before competition and 1-2 glass of water or sport drink every 1-15 minutes during exercise [24]. American College of Sports Medicine (ACSM) reveals that at least 500 ml fluid consumption within 2 hours before exercise provides fluid required for optimal hydration and it allows excretion of excess water via urination [28]. It is seen that 30% of female hand ballers do nothing extra for recovery after match while 27.5% prefer sleeping.

As a consequence, it can be said that knowledge and habits of athletes participating in the study has improved positively. However, it is very important for success of team that athletes quit all bad habits for improvement of sportive success and they take great care in use of nutrition and ergogenic substance use. It is thought that arrangement of seminars relating to consciousness raising of athletes and trainers with certain intervals by clubs and cooperative working with a nutrition expert continuously for nutrition plan appropriate for athlete, training season and type of training performed will yield better results. In this respect, families should not be ignored. Also, current researches should be incorporated more for conscious raising of athletes in written and visual media.

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