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NUTRITION PROFILE OF SWIMMERS BETWEEN 12-14 YEARS OLD

ABSTRACT

The swimmer group analyzed in this study participated to the national competition. Their foods intakes for seven consecutive days were determined energy content of the food consumed were calculated. The swimmers height, weight and fat characteristics were measured, their training time is observed. Hemoglobin and hematocrit quantities in their bloods samples were determined. As a result their age 12.9, their height 158, weight 46.9, fat ratio 9.6%, body mass index 17,9 are found. In the other hand their hemoglobin values were 12.9, hematocrit 39.1. Their mean energy in takes was 1668 kcal, protein 79 gr, calcium 855 mgr, Iron 12 mgr, Vitamin A 2863 IU and Vitamin C 65 mgr. These results were discus with respected literature. As a results of the swimmer has deficiency of energy respect to their needs and compared to advised values for swimmers. To balance their energy intake, an individual study of each swimmer energy needs should be evaluated. Accordingly, adequate nutrition diet program can be established.

Keywords: Swimmer, Nutrition, Energy Intake, Sport, Race

12-14 YAŞ YÜZÜCÜLERİN BESLENME PROFİLLERİ

ÖZET

Bu çalışmada, ulusal yüzme müsabakalarına katılan yüzücülerin beslenme profilleri incelenmiştir. Yüzücülerin yedi günlük aldıkları ve tükettikleri besin maddeleri belirlenerek enerji ihtiyaçları hesaplanmıştır. Yüzücülerin ağırlık, boy, yüzde yağ oranları, haftalık antrenman süreleri ve hemoglobin hematokrit değerleri ölçülmüştür. Yüzücülerin yaş ortalamaları 12.9, ağırlık ortalamaları 46.9 kg, boy ortalamaları 158 cm, vücut kitle indeks ortalamaları 17.9 olarak bulunmuştur. Kan parametreleri incelendiğinde ise; hemoglobin değeri 12.9 hematokrit değeri 39.1 olarak tespit edilmiştir. Yüzücülerin günlük ortalama 1668 kcal enerji, protein 79 gr, kalsiyum 855 mgr, demir 12 mgr, Vitamin A 2863 IU, Vitamin C 65mgr aldıkları belirlenmiştir. Çalışma sonucunda araştırmaya katılan yüzücülerin enerji miktarları değerlendirilmiş, tükettikleri besinlerin belirlenen değerler göz önüne alınarak eksik olduğu saptanmıştır. Buna göre yüzücülerin diyet programlarının yeniden yapılandırılmasının gerekli olduğu önerilmiştir.

Anahtar Kelimeler: Yüzücü, Beslenme, Enerji Alımı, Spor, Müsabaka



1. INTRODUCTION (GİRİŞ)

Adolescence is the development stage that lies between childhood and adulthood. It begins and ends imprecisely, starting just before the teenage years and ending just after them. This imprecision reflects the nature of society's treatment of the period: Adolescents are considered to be no longer children, but not yet adults. Clearly though, adolescence is a time of considerable physical, cognitive and social growth and change [1].

The growth in height and weight during adolescence can be breathtaking. In only a few months, an adolescent can grow several centimeters and require an almost entirely new wardrobe. In fact boys and girls undergo a surprisingly rapid transformation, at least in physical appearance from children to young adults. During the adolescent growth, height and weight increase as quickly as they did during infancy. On average, boys grow 4.1 inches, a year and girls 3.5 inches in a single year (Tanner, 1972). The rapid physical growth of adolescence is fueled by an increase in food consumption particularly during. The growth spurt, most adolescents eat substantial quantities of food, increasing their intake of calories a day, and on average a boy takes 2800 cal and girls takes 2200 cal.

Of course not just any calories help nourish adolescents growth. Several key nutrients are essential, including in particular calcium and iron. The calcium provided by milk helps bone growth, which may prevent the later development of osteoporosis. Similarly iron is necessary to prevent iron-deficiency anemia, an ailment that is not common among teenagers. The most common nutritional concern during adolescence is obesity, which is defined as body weight that is more than 20 percent above the average for a given age and height. Under this definition, some 5 percent of adolescents are formally classified as obese and additional 15 percent are overweight to some degree (Gans, 1990). Although poor nutrition is most common in economically depressed or isolated population, it also may result from concern with body image and weight control (Vereecken and Maes, 2000). Eating disorders both extreme over eating and extreme under eating are most prevalent in industrialized societies, where food is abundant and attractiveness is equated with slimness (Becker, Grinspoon, 1999).

Exercise or lack of it affects both physical and mental health. It improves strength and endurance, helps build healthy bones and muscles, helps control weight, reduces anxiety and stress and increases self-confidence. Even moderate physical activity has health benefits if done regularly for at least 30 minutes on most and preferably all days of the week. Many boys and especially girls become less active during adolescence. Young people who exercise generally feel better than those who do not. They tend to be more confident and spend more time with friends suggesting that they may use sports as a means of socializing (Hickmann at all 2000).

To practice a sport activity during the adolescence even at the age of childhood is the concept which is initiated in recent century. After the word war II the selective athletic preparation for competitive sports become an common practice. For the competition the parents and the trainers are forcing the children for their own prestige. The capacity and the ability of the children should be evaluated very precisely before initiating any sport; otherwise pushing children to do a sport will case dramatic results. During the



adolescence, practicing of the sports will help to get some good way of life habits for the future.

Male adolescence is a period of heavy growth and muscular development, requiring high energy support. For males, the edition of an intense training program means male swimmers can have trouble eating enough kilojoules to meet energy needs. For female adolescence beings hormonal changes, which promote an increase in body fat. Despite heavy training loads, many female swimmers can struggle to maintain low body fat levels.

Sportsman and women recognize that the food they eat can influence how they perform. For some of these athletes, nutrition is seen as a way of compensating lack of talent. Training and motivation even though it is clear that is not the road to successful performance in the sport. At the elite and of spectrum, however, where all the competitors have the genetic potential to succeed and where all have under goes the most rigorous preparation, attention to diet can make the difference between success and failure (Maughan, 2002).

2. RESEARCH SIGNIFICANCE (ÇALIŞMANIN ÖNEMİ)

In this study we deal with the dietary issue of the swimmer. Swimming requires a serious commitment to training includes also some land base aerobic training such as running, cycling and weight training sessions. Swimmers tend to be tall with pronounced upper body muscle development. Low body fat is an advantage, since swimmers need to move their body weight through water. However, some body fat in the right distribution may enhance flotation.

3. FINDINGS AND DISCUSSIONS (BULGULAR VE TARTIŞMALAR)

Fourth swimmer between 12-14 years old gave their informed censed and volunteered to participate in this study. All participants were fully informed about the nature and demands of the study. The investigated periods consist seven days camp duration, before Turkish National Championship. During this period the swimmer training time is also determined.

The overall data are collected in three phase.

- The physical characteristics like weight and height are measured. The body mass indexes of players are determined by the measurements of fat rate at abdominal, biceps, triceps, sub scapula thorax suprailiac and quadriceps. These measurements are done by Holtrain under skin fat caliper with 0.1 mm precision.
- The nutritional profile is established by the aid of seven day camp diet and personal questioner individual interview of each swimmer.
- The blood samples withdrawn from the participants. Those samples are analyzed in laboratory. The data were analyzed using the methods. For collected data mean, maximum minimum and standard deviations are calculated and compared with those Turkish and international proposed standards values.

The analysis was carried out through the minimum, maximum and Mean±S.S in SPSS 13 programme.



Table 1. Physical characteristics and blood values of swimmers
(Tablo 1. Yüzücülerin fiziksel özellikleri ve kan değerleri)

No.	Age (Year)	Height (cm)	Weight (kg)	Body Mass Index	Body Fat Ratio (%)	Hemoglobin (gr/dl)	Hematocrit (%)
1	12	150	36	16	7.9	11.7	35.5
2	12	158	50	16	8	13.4	39.3
3	12	163	48	18	11	12.9	39.3
4	13	156	41	17	10	11.6	37.1
5	13	156	45	18	8	13.5	40.9
6	13	156	45	16	8	13.2	39.6
7	13	160	49	19	9	13.2	38.9
8	14	172	60	20	9	14.2	43
9	13	155	43	17	10	12.8	39
10	13	151	38	16	8.6	12.5	36.9
11	14	155	60	20	9	13.3	40.2
12	13	151	38	17	9	12	36.6
13	13	170	60	22	20	13.6	41.1
14	12	160	44	18	7	13.1	40.4
Mean \pm S.S	12.9 \pm 0.7	158.1 \pm 6	46.9 \pm 8.2	17.9 \pm 1.8	9.6 \pm 3.2	12.9 \pm 0.7	39.1 \pm 2.0
Min.	12.0	150.0	36.0	16.0	7.0	11.6	35.5
Max.	14.0	172.0	60.0	20.0	20.0	11,6	43.0

In the table 1 the measured values for each swimmer are given. The swimmers body composition is considered by calculating body mass index, percentage of body fat. The average age of the swimmer is 12.9 year, height is 158.1 cm, weight is 46.9 kilo, body mass index is 18% and body fat ratio is 9%.

Table 2. Swimmer's daily training programs (Swimming distance in meters)

(Tablo 2. Yüzücülerin günlük antrenman programları (yüzme mesafeleri))

DAYS	Session 1	Session 2	Session 3	Session 4	Session 5	Session 5	Recovery	TOTAL
1.	2000	2000	-	-	-	150	1100	5250
2	2700	-	-	-	1500	100	1300	5600
3	2300	-	2300	-	-	-	1300	5900
4	2200	-	-	-	1500	200	1200	5100
5	2600	2600	-	-	-	200	500	5900
6	2600	-	-	2600	-	-	1000	6200

The swimmer weekly training program is shown in table 2. In a daily program they apply 2-3 session at resistance swimming between 2000-2660 meters. Each day undertake 2-3 session of sprinter style of 150 to 1500 meters. At the end of the each day they have a recovery session of 500-1300 meters.



Table 3. Nutrition intake of swimmers
(Tablo 3. Yüzücülerin aldıkları besin öğeleri)

No.	Required Energy (Cal.)	Intake Energy (Cal.)	Protein (gr)	Carbon - hydrate (gr)	Fat (gr)	Vit.A (IU)	Vit.C (mg)	Iron (mg)	Calcium (mg)	Potassium (mgr)
1	3114	1523	20	138	99	2,436	77	4,75	117	1605
2	4325	1368	64	170	48	4917	79	5,2	912,5	243
3	4151	1288	58	183	36	2373	56	6,64	516	149
4	3546	1350	52,2	208	34,4	3827	97	5,86	669	241
5	3892	1737	62	300	32,1	1610	29	8,46	871	1915
6	3892	1319	79	188	27,9	3726	55	8,43	869	2249
7	4238	1409	67	193	41	3041	63	10	915	2587
8	5189	1567	73	204	51	3594	75	5,9	921	1497
9	3719	1951	67	306	51	2779	58	6,2	780	1935
10	3287	2346	115	233	106	4938	86	13	1505	3542
11	5189	3144	233	418	60	2975	64	17	1383	3431
12	3287	2156	114	263	72	2351	81	19	1602	3258
13	5189	1033	60	142	25	1696	36	5	541	1644
14	3806	1162	46	159	38	2254	50	4,5	422	1216
Mean ± S.S	4059±708	1668±567	81±52	222±77	57±26	3037±1051	65±19	12±5	855±433	1822±1135
Min.	3114	1033	20	138	25	1610	29	5	117	149
Max.	5189	3144	233	418	106	4938	97	19	1602	3542

In table 3 the individual calorie needs for each swimmer is calculated according to their program. Their calorie burns chance 3000 to 5000 calories a day. The mean value is around 4000 calories. The best way to replenish these calories is with high-carbohydrate diet. Those results show that the analyzed group is in the deficiency of daily energy in takes. That is 1668 cal.

4. CONCLUSION AND SUGGESTIONS (SONUÇ VE ÖNERİLER)

In this study three type of data are collected. These are related to 1) physical characteristics, 2) Training time, 3) Nutritional and diet during the preparation.

In the table 1 the measured values for each swimmer are given. The considered parameters are; age, height, weight, hemoglobin, hematocrit. Their total swimming experiences are also given in table 1. The swimmers body composition is considered by calculating body mass index, percentage of body fat. The average age of the swimmer is 12.9 year, height is 158.1 cm, and weight is 46.9 kilo. The study on the Turkish population of adolescence shows that for the 12 years old male children the average height is 145.06 and weight is 36.15 kilo (Özçaldıran, Doğan, 1996). Other study (made on the adolescence for the average age 12.4 years old, their height 146.8 m, the average weight is 40,6 kilo was found. The influence of the socio economics factor on the



Turkish adolescence population is analyzed in Ankara discreet at two schools. Private collage students have 168 cm height and state school students have 154 cm height. Comparing these results swimmer group has the greater height and weight characteristics than the mean Turkish adolescence. Generally, the swimmers have greater height and more weight compared to their same ages people (Helmuth, 1980; Durmaz, Özcaldıran Doğan, Varol, 1995).

The most important influence of the sportive activities for people is observed on their body composition (Turgut and friends 1998). Normally all peoples has some quantities of fat stocks in their body. This fat stocks are inactive mass and if exceed certain limits it will influence as lack of performance. In the literature it is state that the development of the adolescence can be improved by the physical exercises (Özcaldıran 1995). Specially the activities like swimming which requires intensive training can improve adolescent cardiovascular and body composition developments (Mercier, 1987) The body fat ratio of the 16 men is dropped from 12% to 11.03% with three mounts regular swimming training (Akgün, 1996). The swimmer analyzed in this study have 18% body mass index, body fat ratio 9%. On the other hand the other research made on the similar population shows 10% fat ratio (Özcaldıran, 1995).

Swimming requires a serious commitment to training. Typically 6-12 sessions are under taken each week, with the distance covered in each session ranging from 1000-2000 meters for a sprinter 10 km for a distance swimmer. At the elite level work loads can involve 2-3 daily session up to 6 hours at training per day. In addition swimmers may undertake some land based aerobics training as running, cycling, and weight training session. The swimmer weekly training program is shown in table 2. In a daily program they apply 2-3 session at resistance swimming between 2000-2660 meters. Each day undertake 2-3 session of sprinter style of 150 to 1500 meters. At the end of the each day they have a recovery session of 500-1300 meters. As land base training they apply weigh ball and running of least once a week.

When the food intakes of the swimmer are analyzed basically their snakes are composed of milk group, meet group, grain, fruit and vegetables. Besides those fundamental nutrients they eat also fats, jam and sweet. The calculated energy needs of the swimmers and their energy, protein, carbohydrate, fat, Vitamin A, Vitamin C, iron, calcium and potassium in takes are show in table 3. The ideal diet should include the following percentage: carbohydrate 50-60%, fat 20-30%, protein 14-18%. In table 3 the individual calorie needs for each swimmer is calculated according to their program. Their calorie burns chance 3000 to 5000 calories a day. The mean value is around 4000 calories. The best way to replenish these calories is with high-carbohydrate diet. Those results show that the analyzed group is in the deficiency of daily energy in takes. That is 1668 cal. The advised .values for the Turkish population (Alpar, Kasap Karagül, 1987) is 2000 kcal for female and 2200 kcal for males. The daily protein intake is 29 gr, the advised value is 53 gr. Calcium in take of the group is 859 gr. But the nominal value for Turkey is 700 gr (Baysal, 1990). Analyzing the results according to the Turkish populations, it is shown that the group intakes excessive calcium, vitamin C and protein but has some deficiency in energy, iron and vitamin A. The results show also the 52%



of the energy intake is come from the carbohydrate. These values are almost very close the lower limit of the recommended values.

The oxygen is carried in the blood in two ways: In physical solution dissolved in the fluid portion of the blood, in loose combination with hemoglobin, the iron protein molecule in the red blood cell. The blood's oxygen transport capacity varies only slightly with normal variation in hemoglobin content. However, iron deficiency, anemia significantly decreases blood's oxygen carrying capacity and consequently reduce aerobic exercise performance (William, 1981). The mean hemoglobin values of the swimmers are 12.9 gr/dl and hematocrit is 39.1%. The research made on the other group of swimmer (Dinç, 1998) show an value of hemoglobin 14,05 gr/dl and hematocrit 43.13%. These results are higher respect to our measured values.

In this study a group of adolescence swimmer's physical characteristics and their body composition are analyzed. The nutrition profile of the group is also considered according to their training needs. The results shows that the swimmer has deficiency of energy respect to their needs and compared to advised values for swimmers. To balance their energy intake, an individual study of each swimmer energy needs should be evaluated. Accordingly, adequate nutrition diet program can be established.

NOTICE/NOT

9TH Annual congress European college of sport science July 3-6, 2004 Clermont-Ferrand-France oral presented.

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