

PHYSICAL ACTIVITY OF ADOLESCENTS IN THESSALONIKI#

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SUMMARY

Nowadays, the use of instruments decreases manual work, and consequently the overwhelming majority of people follows a sedentary life. This lifestyle offers a lot of comfort, but leads to the reduction of energy expenditure. This reduction can be observed not only in adults but also in adolescents. The purpose of this study was to record physical activity of adolescents in Thessaloniki and their preferred activities. Such a study has not been conducted before in Greece. The sample constituted of 1003 high school students of mean age 14.62 ± 1.53 years. The data was collected with the use of a specific questionnaire regarding their physical activity. According to our results, an important percentage of adolescents in Thessaloniki (30.9%) did not exercise at all. Boys exercised more than the girls: 78.0% and 60.4% respectively. The energy expenditure of exercise was higher for the boys compared to the girls. A significantly higher percentage of younger (<15yrs) adolescents exercised (73.5%) when compared with older (≥ 15 yrs) ones (64.6%). Boys' preferred activities were basketball, football, cycling and volleyball, while girls preferred volleyball, basketball, aerobics and traditional dances. For the long-term maintenance of body weight, the modification of daily activities and the increase in daily energy expenditure are necessary, in order to improve health condition in adolescents and prevent obesity.

Key words: Physical activity, adolescents, sports

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ÖZET

SELANİK'Lİ ADOLESANLARIN FİZİKSEL AKTİVİTE ÖZELLİKLERİ

Günümüzde alet kullanımı el emeğini azaltmış, böylece insanların çoğunluğu sedanter bir yaşam sürmeye başlamıştır. Bu yaşam tarzı beraberinde konforu getirirse de, enerji harcamasının düşmesine neden olmaktadır. Bu düşüş sadece yetişkinlerde değil, adolesanlarda da gözlemlenir. Bu çalışmanın amacı, Selanik'li adolesanların aktivite tercihlerini ve düzeylerini belirlemektir. Bu tür bir çalışma Yunanistan'da daha önce yürütülmemiştir. Popülasyonu 14.62 ± 1.53 yaşlarındaki 1003 ortaöğrenim öğrencisi oluşturdu. Veriler fiziksel aktivitelere ilişkin özgün bir anket ile toplandı. Sonuçlara göre, Selanik'li adolesanların önemli bir kısmı (%30.9) hiç egzersiz yapmıyordu. Erkeklerin %78.0'i, kızların %60.4'ü egzersiz yapmaktaydı. Enerji harcaması erkeklerde daha yüksekti. Onbeş yaşından küçük adolesanların egzersiz yapma oranı (%73.5), daha büyüklerdekine göre (%64.6) anlamlı şekilde yüksekti. Erkekler basketbol, futbol, bisiklet ve voleybolu tercih ederken kızların tercih sırası voleybol, basketbol, aerobik ve geleneksel danslar şeklinde idi. Vücut ağırlığının uzun süreli korunması için günlük aktivitelerin değiştirilmesi ve enerji harcamasının artırılması gereklidir. Böylece, adolesanların sağlık durumları düzeltilmiş olacak ve obezite engellenebilecektir.

Anahtar sözcükler: Fiziksel aktivite, adolesans, spor

INTRODUCTION

An exercising individual, apart from obtaining an athletic body, develops a high degree of flexibility, muscular stamina and strength, aerobic capacity, speed, agility, balance, co-ordination, strength and speed of reaction (17,21). Physical activity in combination with reduction of energy intake in obese adolescents leads to the reduction of systolic blood pressure, pulse frequency and levels of insulin, as well as to the increase of insulin sensitivity (13). The prevention of ischemic illnesses should begin from the childhood, with the promotion of physical activity (19). Exercise promotes this prevention, as it improves the lipidemic profile of adolescents (reduction of TG, LDL and increase of HDL) and at the same time decreases body fat, contributing to the prevention of obesity (7). Systematic aerobic exercise during adolescence protects from the appearance of coronary illnesses, as it increases serum HDL levels of athletes aged 11-18 years (10).

Furthermore, physical activity contributes to bone density maintenance, and particularly intense physical activity has positive effects on the bone density of adolescent girls (3). According to Anderson, balanced nutrition and physical activity of girls before and during puberty are very important factors for the achievement of higher bone density (4), as 50% of bone mass is acquired during the six years of puberty (15).

In our country, there is not a national record of physical activity of the adolescent population, neither of their preferred sports. The purpose of this study was to keep record of the physical activity of adolescents in the area of Thessaloniki in Northern Greece and of their preferred activities.

MATERIAL AND METHODS

The sample constituted of 1003 high school students aged 14.62 ± 1.53 years, from junior high and high schools from the Eastern, Western and Central Thessaloniki. The selection of the sample was done randomly.

Participants were subjected to anthropometric measurements. Body weight was measured, in light clothing, with a digital scale with an accuracy of ± 100 g (Secca 707, Secca Corporation, Columbia, USA). Height was measured, to the nearest 0.5 cm without shoes with the use of a stadiometer, with an accuracy of 0.5 cm (Secca 220, Secca Corporation, Columbia, USA). BMI was calculated by dividing weight (kg) by square of height (m^2). Triceps and subscapular skinfolds were measured, using a Harpenden skinfold caliper (British Indicator Ltd, London). Skinfolds were measured in duplicate and the average measurement was used. In case there was a discrepancy of above 10% between duplicate measurements, then the measurement was repeated. Body fat percentage was assessed according to Slaughter et al (20).

Exercise's energy expenditure for each participant was obtained from the exercise hours multiplied by the energy cost of each activity, using the tables of Ainsworth et al (2).

RESULTS

Participants' characteristics are shown in Table 1.

A significantly higher ($p < 0.05$) percentage of younger (<15yrs) adolescents exercised (73.5%) when compared with older (≥ 15 yrs) ones (64.6%). Adolescents' preferred activities are given in Table 2.

Table 1. Participants characteristics according to exercise.

	Boys	Girls
N	495	508
Age (yrs)	14.6 ± 1.5	14.7 ± 1.6
Weight (kg)	64.1 ± 13.4	56.8 ± 9.5
Height (m)	1.71 ± 0.10	1.64 ± 0.07
BMI (kg/m ²)	21.9 ± 3.4	21.2 ± 3.0
Body fat (%)	24.0 ± 9.6	24.4 ± 5.9
Non-involvement in sports (%)	22.0	39.6
Involved in sports (1-4h/wk) (%)	37.2	31.7
Involved in sports (>4h/wk) (%)	40.8	28.7
Exercising for pleasure (1-4h/wk) (%)	27.9	30.6
Exercising for pleasure (>4h/wk) (%)	25.5	21.3
Exercising for championship (1-4h/wk) (%)	18.6	6.3
Exercising for championship (>4h/wk) (%)	15.4	6.9
Exercising for good physical condition (%)	50.3	29.7
Exercising for body weight reduction (%)	27.7	30.7
Exercise's energy expenditure (kCal)	208.4 ± 164.6	131.2 ± 110.4

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Table 2. Sports in which boys and girls participate (h/wk).

	Boys				Girls			
	1-4		>4		1-4		>4	
	N	%	N	%	N	%	N	%
Basketball	167	33.7	61	12.3	74	14.6	11	2.2
Volleyball	42	8.5	7	1.4	103	20.3	17	3.3
Football	120	24.2	43	8.7	5	1.0	-	-
Handball	9	1.8	7	1.4	10	2.0	3	0.6
Waterpolo	4	0.8	2	0.4	2	0.4	1	0.2
Tennis	9	1.8	-	-	21	4.1	1	0.2
Table tennis	16	3.2	4	0.8	5	1.0	-	-
Track and field	11	2.2	5	1.0	16	3.1	15	3.0
Swimming	15	3.0	14	2.8	15	3.0	17	3.3
Diving	-	-	1	0.2	4	0.8	-	-
Gymnastics	-	-	-	-	9	1.8	3	0.6
Artistic gymnastics	-	-	-	-	9	1.8	1	0.2
Bicycling	35	7.1	24	4.8	15	3.0	12	2.4
Sailing	7	1.4	2	0.4	3	0.6	-	-
Weight lifting	12	2.4	4	0.8	2	0.4	-	-
Skiing	6	1.2	1	0.2	8	1.6	1	0.2
Judo	6	1.2	-	-	1	0.2	-	-
Wrestling	2	0.4	-	-	-	-	-	-
Karate	19	3.8	2	0.4	9	1.8	-	-
Aerobics	1	0.2	-	-	48	9.4	11	2.2
Traditional dances	7	1.4	-	-	48	9.4	1	0.2
Modern dances	1	0.2	-	-	24	4.7	2	0.4
Mountaineering	12	2.4	1	0.2	10	2.0	-	-
Rowing	14	2.8	11	2.2	16	3.1	6	1.2

DISCUSSION

According to the results of this research the mean value of body mass index was within the normal range for both boys and girls (21.9 and 21.2, respectively). The mean value of both boys' and girls' body fat (24.0% and 24.4%, respectively) was within the normal limits, for their gender and age (14). An important ratio of adolescents in Thessaloniki exercised (30.9%). Boys' preferred sports were basketball, football, cycling and volleyball, while girls' preferred activities were volleyball, basketball, aerobics and traditional dances.

Today, sedentary lifestyle offers a lot of comforts but leads to the reduction of energy expenditure. About 30% of the English population follows a sedentary life (13), while the corresponding percentage in the USA is higher (50%). Only 20-25% of the children and adolescents exercise. However, 85% of their families believe that their children are in good physical condition (19).

In the present research, more boys than girls were found to be exercising. The mean energy expenditure due to exercise was higher for males (208kcal) compared with females (131kcal). Only 40.8% of the boys and 28.7% of the girls were involved in sports more than four hours weekly. Exercise for championship (1-4 hours weekly) was reported by 18.6% of the boys and 6.3% of the girls. Exercise for championship (above four hours weekly) was reported by 15.4% of the boys and 6.9% of the girls. Motives to exercise were to have good physical condition and body weight reduction, which are in agreement with other researchers' results.

According to Bratteby et al, the mean proportion of high and maximum intensity activities to total energy expenditure is significantly higher in boys (4.6%), compared to girls (1.6%) (7). Many researchers share the opinion that male adolescents exercise more often than their female counterparts (3,6,8,10,15,16). Females adolescents of younger age report higher physical activity in comparison with older ones (15), while males display the opposite approach (8). All these observations are in accordance with the results of the present study, where we report a significantly higher percentage of younger adolescents who exercise (<15yrs), when compared with older ones. Similarly, other researchers support the idea that after the age of 15 years old, physical activity decreases (12,18). Thus, at the age of 17 years adolescents had a reduction of 48% in attendance in physical activity classes in high school (1,17).

Consequently, when submitted to the pull test exercise, 30% of the boys and 50% of the girls could not execute even a single pull. This can be attributed to the fact that half of the young persons exercised systematically and only a quarter of the girls exercised as to sweat (5, 11).

In conclusion, our study revealed that 30.9% of the adolescents in Thessaloniki did not exercise (22.0% of the boys and 39.6% of the girls). In order to prevent obesity in adolescence, many changes are requisite in school education, in the general national health policy as well as in the environment that adolescents grow. For the long-term maintenance of body weight, the modification of daily activities and the increase in daily energy expenditure are necessary, which will help improving health condition in general.

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