Views of 10-12 Years Old Girls about Sports, Free Time and their Relation with BIM

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ABSTRACT---- *The aim of this study was to examine factors such as BMI in relation to girls' age and attitude towards athletics. The participants were girls 10-12 years old (M.=10,98 years, S. d.=0,82 years) and were chosen from all primary schools of a city of West Macedonia, (685 girls: 235 ten years olds, 230 eleven years olds and 220 twelve years olds). Questionnaires were used in order to count a) girls' Body Mass Index (BMI), b) distribution of parents' athletic activities, c) distribution of girls' athletic activities based on their future intentions and d) the reasons for the lack of free time to exercise. Chi Square Test and One Way ANOVA were used in order to analyse data. The statistical analysis of the data showed significant difference (p<0,001) in the distribution of girls' BMIa) the frequency of their weekly exercise, b) their parents' exercise, c) girls's involvement in athletics and their desire to exercise in the future, and d) the differentiation of the three age categories and the reasons of lack of free time. Thus, the above factors affect girls' involvement in athletic activities.*

Key words--- Obesity, Body Mass Index (BMI), Free Time
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1. INTRODUCTION

Sporting activity affects in a positive way the physical and mental health and it is important for all stages of our life, from childhood till an older age. Sporting activity also, specifies young people's level of health and quality of life. Many studies have shown that children and teenagers who take part in organized sporting activities are spiritual, psychological and physical healthy (Theodorakis, Natsis, Papaioannou & Goudas, 2002; Papacharisis & Goudas, 2003; Avgerinos et. al., 2010).

However , despite the positive effects of sports , many people in the developed world do not take part in sport activities (Kamtsios, 2010). Children's and adolescents' lack of sporting activity is a very important problem, since chronic adult diseases initiate during childhood (Tzetzis , Kakamoukas , Tsorbatzoudis & Goudas , 2005; Taylor et al., 2006; Canucks , 2010; Stamatopoulos , 2011) . International and Greek studies have pointed out a large number of students who are overweight and obese (Karayannis et. Al., 2003; Wang, 2004; Elgar, Roberts, Moore & Tudor-Smith, 2005; Lobstein et. Al., 2005 ? Greek Medical Society of Obesity , 2005; He & Beynon, 2006; Bertoncello et. al., 2007). During adolescence have been observed a stronger reduction of athletic activity (Kimm et al., 2006), especially for girls (Kamtsios, 2010). Today's girls waste a lot of time in front of TV. Also their diet is to a large extent incorrect (Caroli, Argentieri, Cardone & Masi, 2004).

Obese children, boys and girls, are stressed and have low self esteem and poor body image (Tzetzis al., 2005). Usually they do not participate in many athletic activities because of distinction from their peers and their own low performance (Tzetzis al., 2005; Kaloyannis, 2006).

The purpose of this study was to investigate factors such as BMI in relation to age and systematic exercise. Also it was examined the relation of parents' and girls' exercise, the causes of disruption of their exercise and their views on future athletic activity.

2. METHODOLOGY

In the survey were involved 685 girls in the age between 10-12 years (mean = 10.98 years , SD = 0.82 years , 235 girls were aged 10 years , 230 aged 11 years and 220 age - 12 years) . The data was collected by the method of questionnaire and conducted with the rules of health education . Based on the requirements of our research, we used a structured questionnaire with closed questions which then was coded numerically based on statistical analysis (Bey et al, 2001). The questionnaire was weighted by Papadeli 2004 . The test has validity (r = 0,73-0,96) and reliability index (a = 0,87). It consists of 20 questions of which a) the distribution of girls' weight BMI (4 questions), b) the distribution of sporting activities for parents (5 questions), c) the distribution of sporting activities on an intention to engage girls to sporting activities in the future (5 questions) and d) the reasons for the lack of free time for sport activities (6 questions). The Data was collected by the method of interview. To identify the body mass index (BMI), we used a measuring rod (brand: SEGA), and an electronic scale (brand: SEGA, precision: 0,1 kgr.). We measured girls' weight and height and we identified their body mass index. To determine the composition of mass based on BMI (Body maw Index = BMI), we used the international definition limits (World Health Organization = WHO, 2000), which are affecting children and adolescents between 2-18 years old and is ratio of body weight to height squared and is related to the percentage of their body fat. From the dependent variables of the questionnaire was conducted factor analysis (Factor Analysis), in which the orthogonal rotation of factors seems to be the first responsible factor for 23.47 % of the variance , the second for 19.85 % , the third for the 19.49 % and the fourth for 18.77 % (81.58 % total) . Independent variable was the age of girls 10 to 12 years old and dependent variables : a) the distribution of weight (BMI) girls b) the distribution of sporting activities for parents , c) the distribution of sporting activities on an intention to engage girls to sporting activities in the future and d) the reasons for the lack of free time to exercise. In order to control cases we used both Chi Square Test, and One Way ANOVA, also whenever it was needed we used post-hoc (Bonferoni), to see in which exactly pairs was identified statistically significant differences.

3. RESULTS

From the statistical analysis with the One Way ANOVA there seems to be a marginal difference between the girls' ages and their BMI $F_{2, 682} = 2,81$; sig. = 0,06 (Table 1), from the post-hoc however there were no important difference between the three levels of girls' ages. The results showed that 52.0% of girls had normal weight, 30.2% were overweight and 5.4% obese and 12.4% had less than normal body weight.

Table 1: Frequency distribution, rates, averages and standard deviations of BMI of girls and their age.

BMI	10 years old		11 years old		12 years old		Total	
Low weight	39	16,6%	30	13,0%	16	7,3%	85	12,45
Normal eight	122	51,9%	113	49,1%	121	55,0%	356	52,0%
Overweight	62	26,4%	74	32,2%	71	32,3%	207	30,2%
obese	12	5,1%	13	5,7%	12	5,4%	37	5,45
Total	235	100%	230	100%	220	100%	685	100%
$F_{2,682}=2,81$; sig.=0,06	A. 2,20	S.D. 0,77	A. 2,30	S.D. 0,77	A. 2,36	S.D. 0,70	A. 2,29	S.D. 0,75

Table 2: Frequency distributions, rates, averages and standard deviations of BMI of girls and their weekly fitness training frequency.

BMI	Not at all (1) level		1-2 times a week (2) level		3-4 times a week (3) level		5-7 times a week (4) level		Total	
Low weight	26	30,6%	30	35,3%	21	24,7%	8	9,4%	100%	
Normal weight	50	14,0%	118	33,2%	139	39,0%	49	13,8%	100%	
Overweight	177	85,5%	15	7,3%	10	4,85	5	2,4%	100%	
Obese	32	86,5%	5	13,5%	0	0,0%	0	0,0%	100%	
Total	285	-	168	-	170	-	62	-	685	
	x2=316,82, df=9, p<0,001									
$F_{3,681}=122,44$; p<0,001	A. 2,13	S.D. 0,96	A. 2,53	S.D. 0,90	A. 1,24	S.D. 0,65	A. 1,14	S.D. 0,34	A. 2,01	S.D. 1,01
Post Hoc Test Bonferroni	There is a significance between level(1) and levels (2),(3),(4) p<0,001		There is a significance between level(2) and levels (1),(3),(4) p<0,001		There is a significance between level(3) and levels (1),(2), p<0,001 and level(4) sig=1,0		There is a significance between level (4) and levels (1),(2), p<0,001 and level (3) sig=1,00			

However, from analysis with the Chi Square Test (Table 2) there was no significant difference between the distribution of girls' BMI and the frequency of their weekly exercise ($x2 = 316,82$, df = 9, p <0.01). It is noted that 14.0% of the girls have normal weight, 85.5% are overweight, 86.5% obese and 30.6% of the girls who have less body weight, state that they are not physically active in their free time.

Furthermore, with Chi Square Test analysis (Table 3) there was a significant difference in the distribution of girls' BMI and the exercise of their parents ($x2 = 57,69$, df = 3, p <0,001). Moreover the majority of parents are not involved in sports activities, 76.5% of parents with girls that have less than normal weight, 58.1% normal weight, 83.8% obese and 87.0% overweight girls whose parents do not exercise at all.

Table 3 : Frequency distributions, rates, averages and standard deviations of BMI of girls and the exercise of their parents.

BMI	*Parent who is not exercised*		*Parent who is exercised*		*Total*	
Low weight	65	76,5%	20	23,5%	85	100%
Normal weight	207	58,1%	149	41,9%	356	100%
Overweight	180	87,0%	27	13,0%	207	100%
Obese	31	83,8%	6	16,2%	37	100%
Total	483	-	202	-	685	100%
	x2=57,69, df=3, p<0,001					
F3,681=20,88; p<0,001	Low weight: A.: 1,24 & S.D:0,43 Normal weight: A.: 1,42 & S.D: 0,49 Overweight: A.:1,13 & S.D: 0,34 Obese: A.: 1,16 &S.D.: 0,37 Total: A. 1,29 & S.D. :0,46					
Post Hoc Test Bonferroni	There is significance between Lower weight and Normal weight sig = 0,003, as well as normal weight and overweight p <0,001 and normal weight and obese sig = 0,004.					

The results of the statistic analysis showed a difference in the distribution of sporting activities for girls currently performed and those who wish to get involved in the future ($x2 = 259,25$, df = 10, p <0,001) (Table 4). In addition, there was a significant difference between the three age groups of girls and the selection of sport activities that they would like to do in case of having free time ($x2 = 45,13$, df = 20, p <0,001). (Table 5). If girls would have free time, then only 14.4% would not like to involve in sports activities.

Table 4: Frequency distribution and rates of sporting activities for girls who currently performed and those who wish to do it in the future.

Kind of Exercise	*Girls who currently performed*		*Girls who wish to do it in the future*	
No	285	41,6%	99	14,4%
Football	19	2,8%	19	2,75
Basketball	32	4,7%	62	9,0%
Swimming	92	13,4%	128	18,7%
Gym	48	7,0%	55	8,0%
Squeezer	38	5,6%	72	10,6%
Karate	19	2,8%	14	2,0%
Dance	112	16,3%	65	9,5%
Music	19	2,8%	15	2,2%
Volleyball	21	3,1%	28	4,1%
Handball	0	0,0%	128	18,8%
Total	685	100%	685	100%
x2=259,25, df=10, p<0,001				

Table 5: Frequency distribution, rates, averages and standard deviations of sports activities for girls who wish to get involved in the future if they had free time.

Sports	10 years old (1) level		11 years old (2) level		12 years old (3) level		Total	
No	36	15,3%	35	15,2%	28	12,8%	99	14,4%
Football	9	3,8%	4	1,7%	6	2,7%	19	2,75
Basketball	13	5,5%	34	14,8%	15	6,8%	62	9,0%
Swimming	53	22,6%	33	14,3%	42	19,1%	128	18,7%
Gym	26	11,1%	19	8,3%	10	4,5%	55	8,0%
Squeezer	16	6,8%	29	12,6%	27	12,3%	72	10,6%
Karate	7	3,0%	5	2,2%	2	0,9%	14	2,0%
Dance	24	10,2%	19	8,3%	22	10,0%	65	9,5%
Music	9	3,8%	2	0,9%	4	1,8%	15	2,2%
Volleyball	8	3,4%	7	3,0%	13	5,9%	28	4,1%
Handball	34	14,5%	43	18,7%	51	23,2%	128	18,8%
Total	235	100%	230	100%	220	100%	685	100%
			$x2=45,13$, df=20, p<0,001					
$F2,682=3,09$; sig=0,04	M.O.	T.A.	M.O.	T.A.	M.O.	T.A.	M.O.	T.A.
	5,56	3,28	5,63	3,40	6,28	3,51	5,81	3,41
	Post Hoc Test Bonferroni: There is a significance between level (1) and (3) sig=0,07							

Finally, there was a significant difference between the three age groups of girls and the reasons why they do not have free time and these are: learning a foreign language at a rate of 23.2%, reading 71.5%, lack of suitable premises 3 , 8% and 1.5% other reasons. ($x2 = 35,1$; df = 6, p <0,001) (Table 6).

Table 6: Frequency distribution, rates, averages and standard deviations of three age groups of girls and the reasons why they do not have free time.

Reasons why girls do not have free time	10 years old (1) level		11 years old (2) level		12 years old (3) level		Total	
Homework	157	66,8%	170	73,9%	163	74,1%	490	71,5%
Foreign language	55	23,4%	56	24,4%	48	21,8%	159	23,2%
Lack of time	22	9,4%	1	0,4%	3	1,4%	26	3.8%
Something else	1	0,4%	3	1,3%	6	2,7%	10	1,5%
Total	235	100%	230	100%	220	100%	685	100%
			$x2=35,1$; df=6, p<0,001					
$F2,682=3,29$; sig.=0,03	A. 1,43	S.D.0,68	A. 1,29	S.D.0,54	A. 1,33	S.D.0,64	A.1,33	S.D.0,63
	Post Hoc Test Bonferroni: There is a significance between level (1) and level(2) sig=0,04.							

4. DISCUSSION

The results showed that the relation of specific factors such as the age of girls, the BMI distribution ,today's sporting activities, their intention to work out in the future as well as the sporting activity of their parents, but also the reasons why they do not have free time, had affected the involvement of girls in athletic activities.

From the results was observed that more than one third(1/3) of girls who participated (35.6%) were overweight or obese, which is consistent with the research. This proves that obesity starts in early childhood and tends to become an epidemic disease of the modern world (Canning, Courage & Frizell, 2004; Wang, 2004; Elgar, Roberts, Moore & Tudor-Smith, 2005; Kamtsios , Digelidis, 2007; Kyriazis et al., 2010).

A very worrying fact is that the large proportion of overweight and obese girls do not exercise at all, while girls with normal BMI , play sports several times a week .Still, it cannot be a coincidence that the large proportion of overweight

and obese girls, who are exercising have parents who do not exercise at all. This showes that parents greatly influence the extracurricular athletic engagement of their children (Tsapakidou A. et. Al., 2013). The research also showed a high correlation (r = 0,99) between girls and parents who play sports, according to the distribution of BMI of girls.

Girls prefer more gymnastics and dance. On the other hand, girls who are not working out, say they would like to start working out, if they had free time. The reasons of reducing physical activity are the requirements of a foreign language, of reading, the lack of appropriate spaces and more.

The low participation in sports, is because of the experiences and knowledge for the sports, that children acquire during school years (Tzetzis al., 2005; Kamtsios, 2010). The motivation of children can be either through school in physical education classes, either through the family and the sport activities done in the leisure time of children.

However, children's free time is not enough today as they give greater emphasis to school. So this must be a strong emphasis on proper design, planning and programming of sport activities, with a particular base that should be given to the program of all-day school. Instead, it should be given emphasis on proper planning and programming sport activities and on the all-day school.

So this research might support and trigger further researches and programs that aim at increasing athletic activity at a level that young girls can reap the benefits of a healthier lifestyle.

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