

THE LEVEL OF PHYSICAL ACTIVITY OF UNDERGRADUATE STUDENTS AT THREE FACULTIES OVER A SEVEN-DAY PERIOD

Ksenija Fučkar Reichel¹, Natalija Špehar² and Jelka Gošnik³

¹University of Zagreb, Faculty of Science, Croatia

²Technical Polytechnics Zagreb, Croatia

³University of Zagreb, Faculty of Humanities and Social Science, Croatia

Abstract

Regular physical activity stimulates at the level of the whole body a series of positive adaptive transformations that contribute to the enhancement of functional capabilities, and advance health and quality of life. Our study includes 2000 undergraduate students (M=47.98%; F=48.98%, and the rest of forms were not usable) of the first year at the three institutions of higher education in Zagreb. The goal of our study was to determine the level of physical activity over the last seven days with the criterion of minimum of 30 minutes of physical activity per day, and if there is difference between genders of students from different faculties. The results show that the level of physical activity over the last seven days in male students is higher than in the female students, particularly evident in the level of physical activity in 3 days and more. The most active students are of the Technical Polytechnic of Zagreb, and they are the most statistically distinguished group in our study.

Key words: university, young adults, physical education, sport, free time

Introduction

The physical activity is the most efficient and the healthiest way to properly maintain our bodies. German biologist, Wilhelm Roux (1850-1924) coined the phrase “function maintains function” more than a century ago. A lack of muscular activities lowers functionality of all physical and biochemical mechanisms related to the motion and aging. However, our modern times are characterized by a longer and longer educational periods that require less and less physical activity, from the earliest age to maturity, while exposing students to more and more psychological demand and stress. Today students experience growing educational load, rapid lifestyle changes during the transition from high school to the undergraduate study, longer commute and fast-changing socio-economic elements of our society that all together contribute to less attention being devoted to proper nutrition and physical activities, and thus to their health.

Regular physical activity (PA) is the essential element during the whole lifetime to maintain good health and to improve the overall quality of life (CDC, 2008; WHO, 2009; Vouri, 2010). The hypokinesia is the fifth most common cause of the increase in the mortality rate after a high blood pressure, an elevated glucose in blood, smoking and obesity (WHO, 2009). People that do not exercise regularly have 20-30% higher mortality risk in comparison to people that workout at least 30 minutes at moderate intensity at least four days in a week (WHO, 2010). A lack of PA is especially problematic in minors and adolescents (Huddleston et al., 2002). This is also confirmed in a survey of undergraduate students at the University of Zagreb that shows a decrease of PA right at the beginning of their undergraduate program with respect to preceding level of PA in high school (Gošnik et al., 2002; Matković et al., 2010). Adults in Croatia continue to contribute to a unhealthy trend of insufficient PA with progressing age as shown by various methodological studies (Action plan, 2010; Eurobarometer 2005; Milošević et al., 2009; Jurakić et al., 2009).

Numerous international and national studies show that positive habit of regular exercise adopted at early age has beneficial influence on healthy habits of young adults (Telama et al., 2005). Especially the role of teachers of the physical and health culture is of significant consequence for the formation of the positive, as well as negative, attitude towards exercise (Luke and Sinclair, 1991), which can be transformed in the regular engagement in the sports and recreational activities for the rest of one's life.

The goal of this study is to establish the level of physical activities in undergraduate students at three institutions of higher education in different fields over the last seven days with criterion of at least 30 minutes of physical activity per day. Also, we want to determine the differences between genders and different faculties.

Methods

Sample of students

This study was conducted on a quota sample (N=2000) comprised of the 1st year undergraduate students from three institutions of higher education (three faculties in different fields of science) at the University of Zagreb recorded in Table 1. This sample consists of 47.98% male students, 48.98 female students and 3.04% questionnaire were not properly filled in.

Table 1: Frequency (N) and percentage (%) of the 1st year undergraduate students at the Faculty of Humanities and Social Sciences (FF), the Faculty of Sciences (PMF) and the Technical Polytechnic of Zagreb (TVZ)

	FF		PMF		TVZ	
Gender	N	%	N	%	N	%
Male (M)	177	23.76	234	34.16	541	86.01
Female (F)	568	76.24	430	62.77	50	7.95
missing	0	0.00	21	3.07	38	6.04
total	745	100%	664	100%	591	100%

Data collection and sample of variables

The 1st year undergraduate students at three faculties from at the University of Zagreb participated in a survey during the winter semester of the 2011-12 academic year. Students completed a questioner for the purpose of improving the education in the course of Physical education. It is voluntary and anonymous survey and the results are interpreted at the level of group. The motivation and the goal of the study was explained to the students prior to them taking this survey which contains of 26 questions divided into a several groups for the purpose of determining the following three points. 1) The participation in regular physical activities over the last seven days over at least 30 minutes; 2) Gender of student; 3) The faculty at which student is studying. In this survey we did not include the questionnaire of specific intensity of physical activity, but only participation according to recommendation of the World Health Organization for adults that considers a minimum of 30 minute of exercise per day as necessary condition to maintain a good health.

Method for data analysis

Collected data from students' questionnaire was processed with statistical software package STATISTICA 7.0. All variables are analyzed through basic descriptive parameters to determine their key statistic properties (frequency, percentage, mean value and standard deviation). The Student t-test for independence of sample was used to determine statistical significance of differences. The analysis of variance and Newman-Keuls test was employed to establish difference in mean values of the variables grouped by gender and attending specific faculty. The entire analysis was conducted at the level of significance of $p < 0.05$.

Results

The level of physical activity over the last seven days with criterion of at least 30 minutes of exercise (PA 7/30) was determined with the scale of basic descriptive parameters for a number of PA days. The students had to select the number from 1 for not a single day, to 6 for 5 days or more of PA lasting at least 30 minutes. This created 6 groups according to the level of PA presented in table 2.

Table 2: Frequency (N) and percentage of students (%) according to level of physical activity over the last seven days (TA 7/30) as three faculties – FF, TVZ, PMF total and according to gender

Faculty	Gender	Frequency Percentage	Not a 1 day	1 day	2 days	3 days	4 days	5 days or more	Missing
FF	M	N	31	35	44	20	18	29	0
		%	17.5	19.8	24.9	11.3	10.2	16.4	0.00
	F	N	139	140	136	77	31	44	1
		%	24.47	24.65	23.94	13.56	5.46	7.75	0.18
	Total	N	170	175	180	97	49	73	1
		%	22.82	23.49	24.16	13.02	6.58	9.80	0.13

PMF	M	N	38	92	64	27	13	18	3
		%	14.90	36.08	25.10	10.59	5.10	7.06	1.18
	F	N	57	199	101	39	22	11	1
		%	13.26	46.28	23.49	9.07	5.12	2.56	0.23
	Total	N	95	291	165	66	35	29	4
		%	13.87	42.48	24.09	9.64	5.11	4.23	0.58
TVZ	M	N	58	85	105	121	79	131	0
		%	10.02	14.68	18.13	20.90	13.64	22.63	0.00
	F	N	12	7	12	9	4	6	0
		%	24.00	14.00	24.00	18.00	8.00	12.00	0.00
	Total	N	70	92	117	130	83	137	0
		%	11.13	14.63	18.60	20.67	13.20	21.78	0.00

We have calculated the mean value and the standard deviation for the level of PA over the last seven days (PA 7/30). We have also tested the significance of difference between the results for male and female students with the Student t-test.

Table 3: Statistical parameters (Mean, and Standard deviation) and the t-test for PA 7/30 variable

Faculty	M		F		t-test	
	Mean	±SD	Mean	±SD	t	p
FF	3.26	1.69	2.74	1.49	3.92	.000*
PMF	2.77	1.37	2.54	1.15	-2.29	.022*
TVZ	3.84	1.64	3.08	1.65	-3.13	.001*

The results of t-test (Table 3) show that there is statistically significant difference in variable PA 7/30 between male and female students at all three faculties. Variance analysis grouped according to gender and faculty shows that there is statistically significant difference ($F=48.56$, $p=0.00^*$) so we can reject the null hypothesis. We also performed the Newman-Keuls test to determine what specific difference had the most importantly contributed to statistically significant results (Table 4).

Table 4: Results of the Newman-Keuls test for PA 7/30 variable grouped according to gender and faculty

Gender/Faculty	{1}	{2}	{3}	{4}	{5}	{6}
M/FF {1}		.006*	.000*	.007*	.000*	.265
M/PMF {2}	.006*		.000*	.853	.329	.055*
M/TVZ {3}	.000*	.000*		.000*	.000*	.000*
F/FF {4}	.007*	.853	.000*		.216	.090
F/PMF {5}	.000*	.329	.000*	.216		.004*
F/TVZ {6}	.265	.055	.000*	.090	.004*	

Discussion and Conclusions

Regular physical activity stimulates many beneficial changes in a body that contribute to the enhancement of functional capabilities, improvement of health and quality of life (Šarić and Heimer, 2012). The education of physical education (PE) at the undergraduate level should be continuation and expansion of the program of PE in high school. Students enter undergraduate programs with different knowledge and awareness of physical activities, as well as different motoric and functional skills influenced by different attitudes and habits. Every semester students can select kinesiological program according to their needs and personal preferences depending on material and support conditions at a specific faculty. Due to a typical decrease of PA and common spread of sedentary lifestyle it is necessary to educate and motivate young adults to make regular PA healthy habit for lifetime.

The results of our study show that the level of PA over the last seven days is higher for male students than for female students, and it is particularly evident for the level of physical activity with three days or more. The results of a higher PA in male students with the respect to female students confirm the results of some of previous studies conducted on undergraduate students at the University of Zagreb (Gošnik et al., 2002; Fučkar et al., 2006; Fučkar et al., 2012; Gošnik et al., 2011). The analysis of variance for the PA 7/30 variable grouped according to gender and faculty confirms the statistical significance of difference, while the Newman-Keuls test shows what variables are the most important contributors to the statistically significant results. Male student at the Technical Polytechnic of Zagreb are the most active and statistically distinguished from all other test groups, while female students at the Technical Polytechnic of Zagreb are statistically different from their male colleagues and female students from the Faculty of Sciences. Male students at the Faculty of Humanities and Social Sciences are statistically different from all groups except female students at the Technical Polytechnic of Zagreb. Male students at the Faculty of Science are different from all other male students and female students at the Technical Polytechnic of Zagreb. Female students at the Faculty of Sciences are significantly different only from male students at the Faculty of Sciences and the Technical Polytechnic of Zagreb, and they are not significantly different from their male colleagues.

The results of this study conducted on the total sample of 2000 male and female undergraduate students at three faculties of the University of Zagreb confirms downward trend of activity among younger generations. According to a study of physical activity of Croatia population from 2009, 60% of adults do not participate in any form of physical exercise. The alarming indicator is that the lowest level of physical activity is characteristic for adolescent and young adults (15-25 years of age) which makes this group a priority target for the promotion of physical activities (Jurakić et al., 2009). Modern lifestyle with increasing sedentary characteristics and passive free time requires community and educational effort to stimulate development of positive attitude and habit in students towards the physical activity and improvement of the quality of life. The role of teachers is becoming more and more critical because we have to motivate students and offer them interesting and rewarding kinesiological program through the course of Physical education.

This study is based on only one generation of the 1st year undergraduate students, hence in the future we aim to repeat it on the following generations to conduct longitudinal analysis on a bigger sample encompassing several successive age cohorts across a number of different faculties at the University of Zagreb. We also plan to refine investigation of a scale of intensity, types and length of activity to obtain more complete picture and thus establish more precise guidelines that can better motivate students to pursue regular exercise and quality use of the free time for the lifetime.

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