UNIVERSITY STUDENTS LIFESTYLE AND SELECTED BODY COMPOSITION FEATURES IN EVALUATION AT ACADEMIC LEVEL OF EDUCATION

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Abstract:
The paper contains various type comparison and evaluation of somatic body composition according most popular indicators. The main aim of paper is to evaluate body composition of the University student in relations to their lifestyle. Authors presented somatic characteristic among anthropology metric, statistic methods, and graphic interpretations. From the conducted analysis it follows that less than 2% males and female respectively were classified in the group leading unhealthy lifestyle.

INTRODUCTION

The lives of the youth is often modeled after ideas derived from the media and other sources. They are also from direct contacts with their heroes or persons regarded as authorities for the youth. The inspiration to lead lifestyles similar to what they observed is gained from them. This lifestyle is according to Zimna et al. (2009) influenced by things such as proper nourishment, physical activity, ability to maintain friendly relationships as well as coping with stress. These factors in turn impact on the physical, psychological and social development of the youth (Zimna et al. 2009). This also influences the youth's body composition which it sustains irrespective of the state of health and learning. It has become very common in Poland to observe ideals associated with their, so-called, preferred healthy lifestyle. People are becoming more increasingly actively involved, physically. This can be observed especially during street racing, in parks as well as at numerous fitness clubs. It is not uncommon to observe people using varied forms of dietary programs. Siciński had in 1978 stated that defining lifestyle is difficult and even more difficult to measure, although this is often characteristic for a given human society. It is a characteristic way of life of a given society (Siciński 1978). The university student is at a characteristic stage of the personal development. The study period is associated with gaining suitable levels of education, which comes to an end when fully accomplished (Kocka et al. 2014). The attainment of a specific, and often dreamt about social status involves, besides other things, having the corresponding high level of knowledge concerning a specific field. This should also involve the skills of making appropriate life decisions. It is the time to fine-tune suitable habits and pro-health attitudes that would enable one to function in everyday adult life (Cieśla 2009). Man's contemporary life is intertwined with the good-wills of civilization that encourage the youth, but not alone, by offering them unlimited opportunities. Undeniably, it comes with huge negative consequences that demands new working styles, with due respect, however, to full professionalism, high aspirations and strong desires for self-fulfillment. This so-called "Art of living" is a way of life which promotes models of such active recreation as travelling around the world and involvement in cultural life forms, amongst others (Biernat 2014). Active lifestyles are implicitly connected with healthy dieting, which is becoming a popular attribute

of modern man, who is aware of the consequences of poor nutrition. Virtually, every illness of civilization is not unrelated with nutrition. Nonetheless, developments in the medical field have been impressive despite its concentration on repairing rather than on disease prevention. Man's way of life must, in the light of this, play a dominating role. This is associated mainly with appropriate diet and physical activity. These two factors ought to constitute basic requirements for sustaining the right composition of human body. There exists the awareness of the possible occurrence of body disorders even amongst the physically active youth (Krzyka et al. 2011).

THE AIM OF THE WORK

The objective of the paper is to evaluate body composition of the University student in relations to their lifestyle. The following three research questions for which answers were sought in a different section of the paper were posted, namely does student conduct healthy lifestyles? Is the youth differentiated regarding their sex because of their lifestyle? How does belonging to various groups, based on lifestyles, impact on the body composition of the youth? Authors focus to find answer for questions and make a following conclusions.

THE MATERIAL AND THE METHODOLOGY

The respondents of the study conducted in November, 2014 were 804 students of the University of Rzeszow, made up of 532 females and 272 males that had physical education as a compulsory part of their education. The study, which evaluated the lifestyles involved the use of a questionnaire designed by the authors. Their body compositions were assessed based on the following features, namely fatty skin folds (subscapular, humeral and abdominal areas), BMI, Rohrer and Quetelet indicators, WTR (fat distribution), Škerljia and Marty corpulence as well as the sum of the three fatty skin folds (Drozdowski 2002).

The youth were classified based on responses to each of the survey questions. Three groups of students were identified. The respondents could obtain points ranging from 0 to 4 (5) points for each survey question. The maximum points obtainable was 25, which indicates a very high level lifestyle. The group distribution were for values ranging 0-14 for unhealthy lifestyle, 15-20 for people with moderate lifestyles and 21-25 for those with a healthy lifestyle. Data analysis was conducted using Statistica 9.0 Pl software. The level of statistically significant differences was accepted at $p < 0.05$.

RESULTS

The first chart illustrates the types of sports and recreational activities students are obliged to take in their physical education classes and are deemed as the most attractive by the youth. Almost half (44.3%) of the entire population indicated that exercises associated with team sports were most attractive. Nearly a third chose fitness and aerobics, although the number would be much higher in the females groups and lower in all male groups. Only a tenth of respondents selected standard indoor activities as attractive form of activities.
A slightly lower number, 7% chose tourism and individual sport activities. Only 10 respondents (1.2 %) showed lack of interest in any physical activity.

Types of students activity
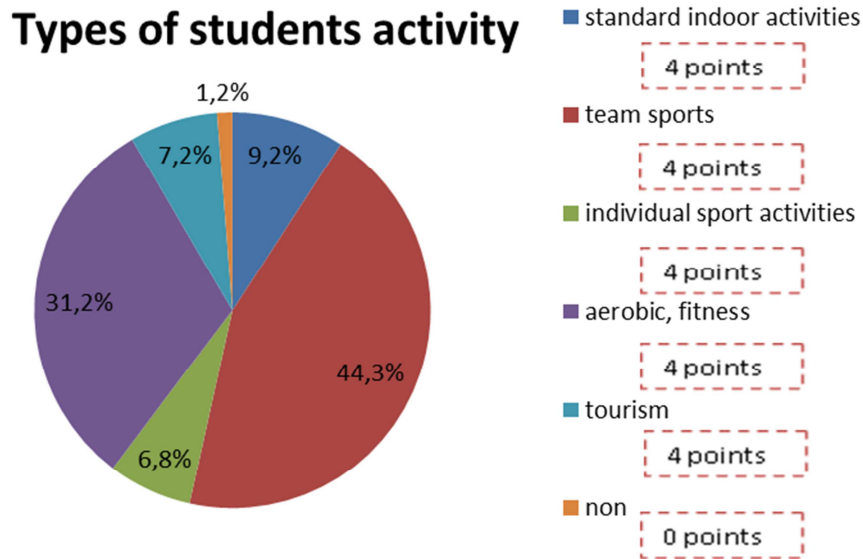
Figure 1. Types of compulsory sports and recreational activities for students at PE classes, deemed as most attractive

When the youth were asked about what motivates them to be active 47% of them indicated their desire for improved appearance and shape, while another 41% pointed to the need for improved health and well-being. Rivalry as a motivating factor was selected by only 6% of respondents. Such factors as friends, family and media were only sporadically chosen. It was revealed that 2% of the respondents did not partake any activities.

Students motivating factors of participating in physical activities
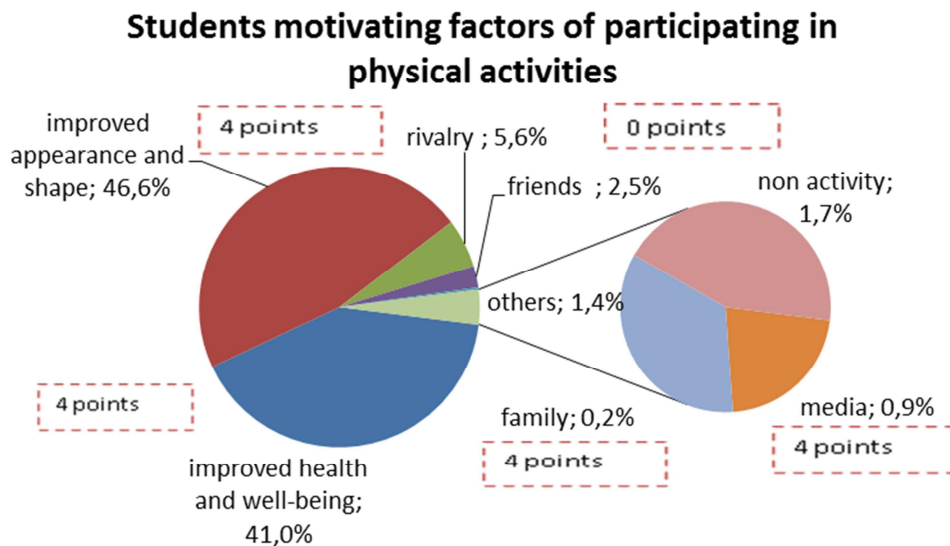
Figure 2. Motivating factors for students to participate in physical activities

The students' lifestyle measured by the declared maximum kilometers run strongly differentiated the respondents. More than 10% of respondents declared their inability to even run a distance of one kilometer. While 30% of the youth indicated their ability to run between 1 and 3 kilometers without stopping, almost 5% opined they could run 3 – 5 kilometers. While every third student declared they could cover a distance longer than 5 kilometers, slightly less than 15% declared they could cover a distance longer than 10 kilometers.

Students covered kilometers declaration
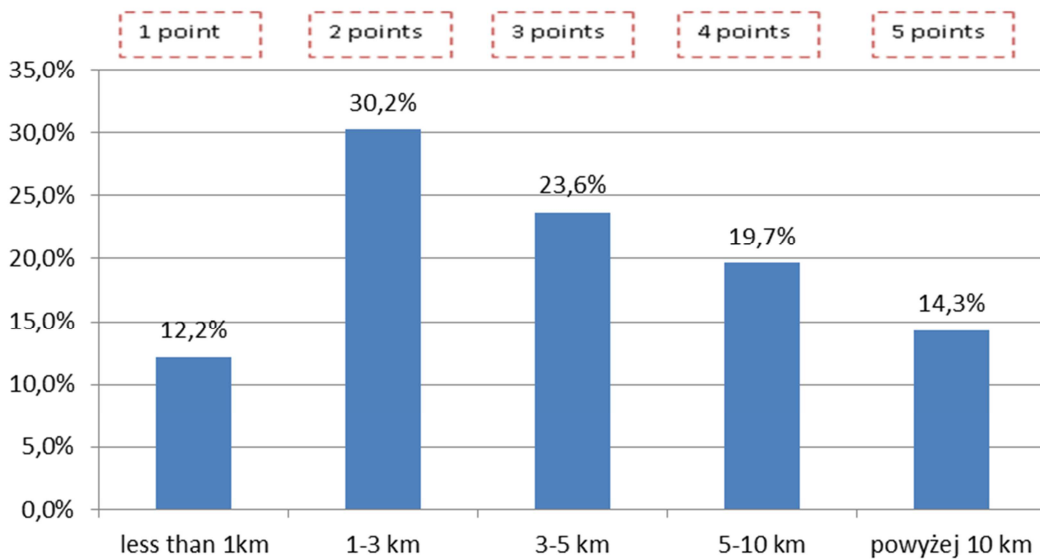
**Figure 3.** Declared maximum number of kilometers covered, running by students

Cigarette smoking turned out to be the question that revealed the students healthy living. Almost 70% indicated they were non-smokers, while 26.6% said they only smoked occasionally and only 3.2% were able to refer to themselves as smokers.

Frequency of smoking declared by students
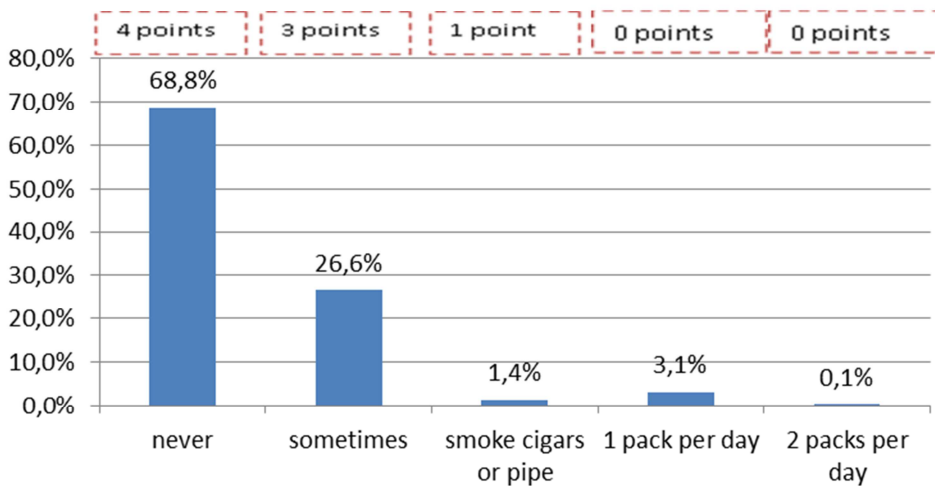
**Figure 4.** Declared frequency of cigarette smoking by University students

Alcohol consumption was next question that showed students to leading healthy lifestyles. On this occasion, however, majority of the students confessed to drinking alcohol occasionally. Almost a tenth denied ever drinking alcohol, while less than every fifth greed they drank alcohol often, meaning more than once a week.

Frequency of alcohol consumption by students
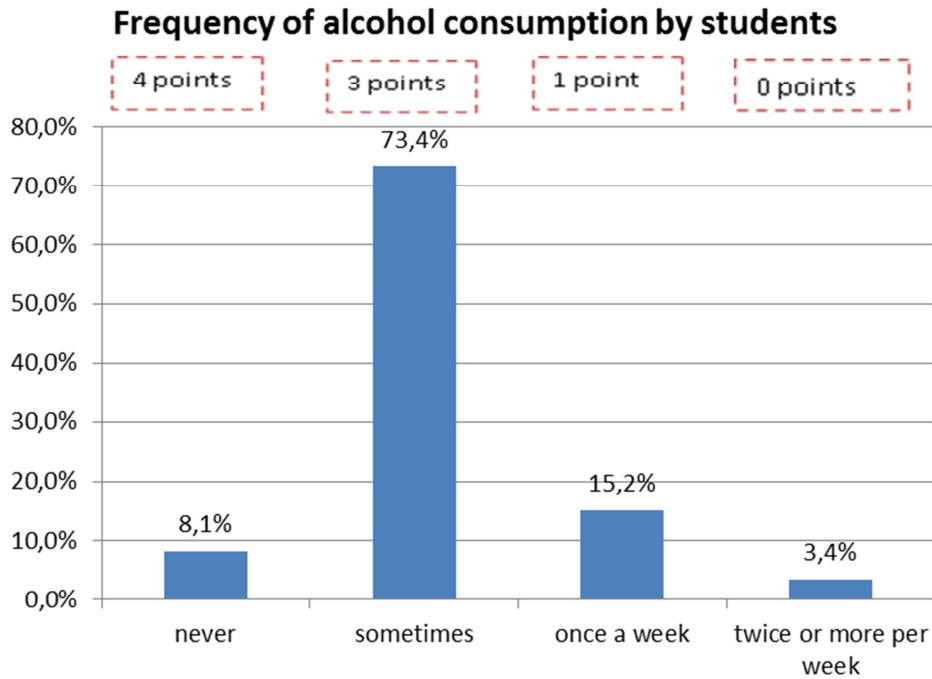
Figure 5. Declared frequency of alcohol consumption by University students.

The number of hours slept also differentiated the respondents. While every fourth student spent rather short hours (less than 7) sleeping, majority of them slept for 7 – 8 hours. Almost 15% slept for almost 9 hours with 2.7% sleeping longer than 9 hours.

Number of sleeping hours
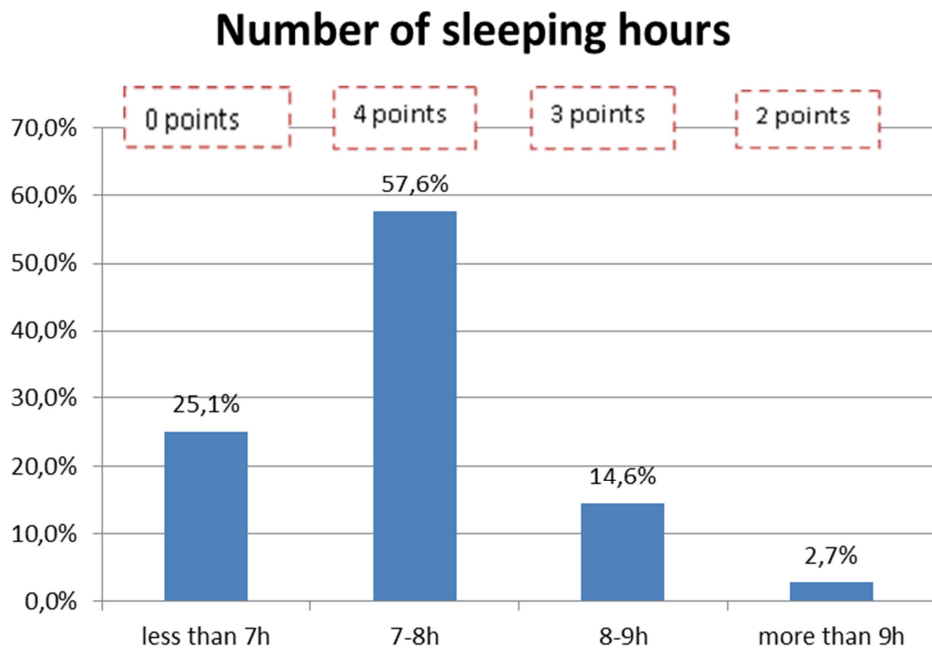
Figure 6. Declared number of hours spent sleeping by University students

The next analysis conducted in the study was to determine the body composition in groups created based on responses to research questions. The charts illustrate only those features and questions for which the differences were statistically significant.

The youth was classified into specific groups, relying on their responses to survey questions. These answer, in the case of the males, were decisively more pro-health, while gender differences were also confirmed using the Kramer V coefficient, based on the chi-square Pearson test, that showed a statistical significance at p=0.002** level. As much as 52% of males were included in the best group, while only five of them were in the "unhealthy" group. 40.2% of females were included in the group that led healthy lifestyles, 55% were moderate, while almost 5% led unhealthy lifestyles. The findings are illustrated in table 1.

Table 1. Healthy lifestyles of the youth

| | | | gender | | total |
			female	male	
Type of healthy lifestyle (max. 25 pts.)	up to 14 pts. unhealthy	N	26	5	31
		%	**4,9%**	**1,8%**	**3,9%**
	15 to 20 pts. temperate	N	293	125	418
		%	**55,0%**	**46,1%**	**52,0%**
	21 to 25 pts. healthy	N	214	141	355
		%	**40,2%**	**52,0%**	**44,2%**
total		N	533	271	804
		%	**100,0%**	**100,0%**	**100,0%**
p=0,002**, V Kramera=0,13, Chi-square=12,73 (df=2)					

The youth, divided into three groups, revealed several statistically significant differences in their body composition. The regularity noted was that the arithmetic mean for each feature in all cases, except for Marty index, was lower in the group displaying moderate lifestyle. The inclusion of the group characterized by unhealthy lifestyle invariably leads to rather different conclusions. For example, the average thickness of the abdominal fold, BMI, Quetelet, WTR, Škerljia corpulence and Marty indexes were smallest, although the differences were statistically significant only in two instances (table 4). Both the average subscapularis fold and sum of the three fatty skin folds in this group separated the other groups, they in both cases remained statistically significant. The humeral folds alone had the highest arithmetic mean and median and the differences proved statistically significant at p=0.016* level. It is worth noting that the standard deviations for the group leading unhealthy lifestyle are definitely the smallest in most cases.

Table 2. The body composition of the youth in three groups representing varied lifestyles

| | Youth lifestyle (max. 25pts.) | | | | | | | | | p Kruskal Wallis test |
| | Less than 14 pts. unhealthy. | | | 15-20 pts. temperate | | | 21-25 pts. healthy | | | |
	Av.	M	S	Av.	M	S	Av.	M	S	
Subscapularis fold	**13,02**	12,00	3,87	**13,65**	12,00	4,91	**12,60**	11,65	4,49	0,007**
Arm fold	**15,48**	15,00	4,81	**14,48**	14,00	5,52	**13,49**	13,00	5,29	0,016*
Abdominal fold	**16,16**	16,00	4,63	**17,30**	17,00	6,16	**16,48**	16,00	6,18	0,117
BMI	**20,92**	20,63	2,50	**22,34**	21,68	3,60	**21,97**	21,59	2,87	0,067
Rohrer index	**1,33**	1,26	0,25	**1,36**	1,28	0,30	**1,30**	1,26	0,20	0,166
Quetelet index	**345,66**	341,32	46,12	**374,55**	364,31	66,04	**373,02**	365,67	59,13	0,030*
WTR	**272,82**	279,35	46,44	**278,79**	283,96	38,22	**279,56**	281,13	30,94	0,741
Škerljia classification	**32,25**	32,04	2,57	**32,38**	32,24	3,47	**31,70**	31,30	3,03	0,013*
Marty's classification	**43,82**	44,38	8,07	**46,41**		7,50	**46,77**	46,77	5,81	0,108
Sum of Tyree skin folds	**44,66**	44,50	11,10	**45,39**	44,00	14,57	**42,57**	42,00	13,73	0,033*

The resulting three groups of females showed several statistically significant differences in their body composition. The regularity observed was that the arithmetic mean for each feature in all instances except for the WTR index were lower for the group leading healthy lifestyle than for the group with moderate lifestyle. The inclusion of the group with unhealthy lifestyle invariably led to rather different conclusions. For example, the average thickness of the subscapularis and abdominal folds, BMI, Quetelet, WTR, Škerljia corpulence, and Marty indexes as well as the sum of the three fatty skin folds were the smallest (table 4).

Table 3. The body composition of women in three groups representing varied lifestyles

	FEMALE									
	Youth lifestyle (max. 25pts.)									Youth lifestyle (max. 25pts.) Less than 14 pts. unhealthy
	Less than 14 pts. unhealthy			15-20 pts. temperate			21-25 pts. healthy			
	Av.	M	S	Av.	M	S	Av.	M	S	
Subscapularis fold	**12,96**	12,00	3,23	**14,35**	13,00	4,74	**13,46**	12,50	4,38	0,088
Arm fold	**16,35**	15,50	4,42	**16,34**	16,00	4,73	**15,65**	16,00	4,41	0,361
Abdominal fold	**16,63**	16,00	4,22	**18,86**	18,00	5,47	**18,22**	18,00	5,77	0,076
BMI	**20,58**	20,21	2,42	**22,12**	21,26	3,68	**21,23**	20,76	2,76	0,019*
Rohrer index	**1,34**	1,26	0,27	**1,39**	1,33	0,32	**1,31**	1,26	0,23	0,026*
Quetelet index	**334,60**	329,57	36,39	**360,47**	347,40	60,65	**348,04**	337,54	49,58	0,019*
WTR	**274,26**	284,92	50,62	**280,92**	288,00	42,94	**283,09**	285,71	33,90	0,842
Škerljia classification	**32,09**	31,89	2,74	**32,93**	32,74	3,24	**32,30**	31,91	3,18	0,020*
Marty's classification	**42,56**	43,92	8,16	**44,48**	44,69	7,68	**44,35**	44,30	5,53	0,183
Sum of Tyree skin folds	**45,94**	46,75	9,68	**49,49**	48,00	12,60	**47,34**	47,00	11,74	0,182

The differences in four of all the cases were statistically significant. The standard deviations were, with the exception of the Marty, Rohrer and WTR indexes, highest in the first group, namely those leading unhealthy lifestyle. The differences, however, only proved to be statistically significant with the Rohrer index as illustrated in figure 1.

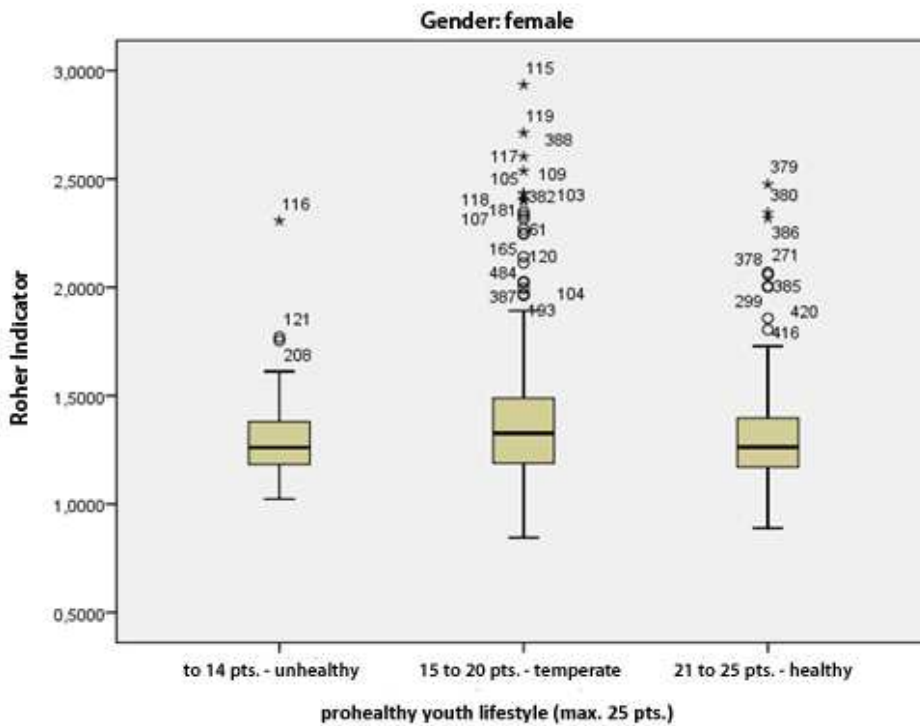Graphic presentation of Rohrer Index in three groups

Figure 7. The Rohrer index for women in three groups representing varied lifestyles

Graphic presentation of BMI Index for three groups
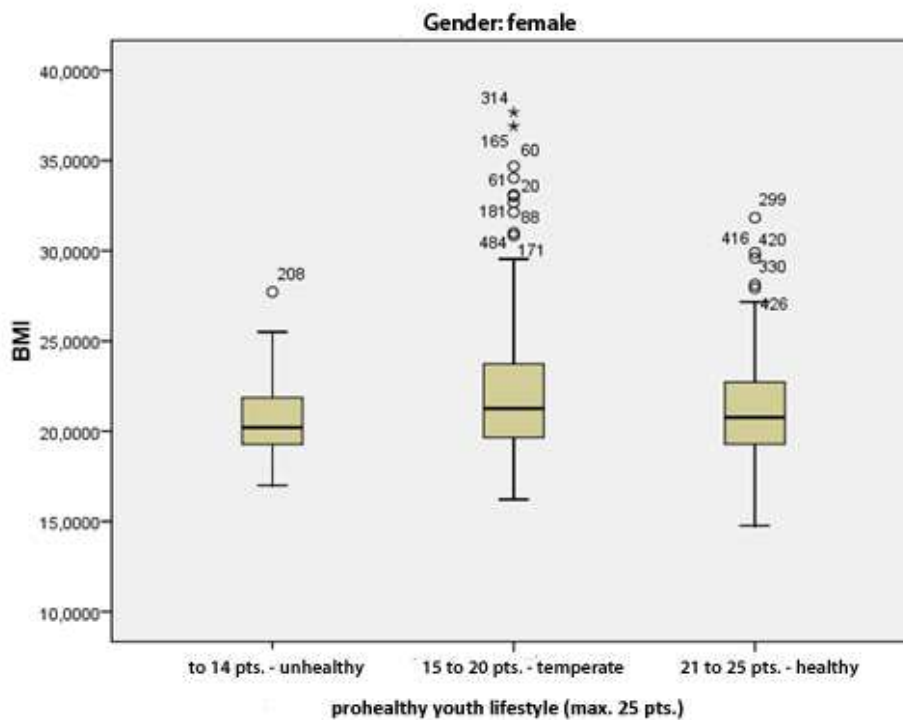

Figure 8. The BMI index for women in three groups representing varied lifestyles

The highest average BMI index was observed in female students engaged in moderate lifestyle. No statistically significant differences were observed in respect of males in their three separate groups. The largest thickness of the fatty skin folds was reported in males with

unhealthy lifestyles. It was noted, though that the greatest values of arithmetic means and medians in respect of weight and height indicators were in the group of males leading healthy lifestyles. In no case, however, did this observation come as close to the level that could indicate a tendency towards overweight.

Table 4. Body composition of males in three groups representing varied lifestyles

	MALE									Youth lifestyle (max. 25pts.)
	Youth lifestyle (max. 25pts.)									
	Less than 14 pts. unhealthy.			15-20 pts. temperate			21-25 pts. healthy			Less than 14 pts. unhealthy
	Av.	M	S	Av.	M	S	Av.	M	S	
Subscapularis fold	**13,30**	14,00	6,87	**12,01**	10,50	4,93	**11,29**	10,00	4,35	0,424
Arm fold	**11,00**	11,00	4,64	**10,12**	9,50	4,72	**10,23**	9,00	4,82	0,852
Abdominal fold	**13,70**	10,00	6,34	**13,66**	12,30	6,17	**13,86**	13,00	5,87	0,925
BMI	**22,71**	21,63	2,36	**22,80**	22,51	3,39	**22,98**	22,37	2,72	0,723
Rohrer index	**1,28**	1,25	0,10	**1,27**	1,24	0,21	**1,29**	1,27	0,16	0,536
Quetelet index	**403,15**	380,25	52,43	**407,55**	404,16	66,63	**410,93**	401,37	51,95	0,865
WTR	**265,33**	262,86	8,73	**273,77**	272,41	23,11	**274,20**	274,07	24,96	0,600
Škerljia classification	**33,12**	32,92	1,27	**31,07**	30,56	3,64	**30,81**	30,82	2,57	0,067
Marty's classification	**50,35**	49,44	2,96	**50,93**	50,70	4,57	**50,44**	50,00	4,03	0,388
Sum of Tyree skinfolds	**38,00**	38,50	16,49	**35,79**	32,00	14,39	**35,38**	33,00	13,43	0,937

DISCUSSION

The findings of the current study depict our University students lifestyles as moderate relative to similar studies conducted elsewhere in Poland and abroad. The youth is considered a social investment and their lifestyle will definitely have huge impacts on healthy behaviors of future generations. The practice of certain lifestyles do get passed on from parents to children. University students are in a proper intermediary stage where they can benefit from examples of own lifestyle from their childhood as well as be inspired by the lifestyles of their parents. Current levels of parents' awareness regarding the children movement needs and youth remains unsatisfactory, and thus immensely retarding their development (Kocka et al. 2014, Buławska et al. 2005). According to the WHO health related factors will, in about 70%, be responsible for proper health maintenance by 2020. In order to develop health promoting programs for medical students in the UAE the health needs of pupils were assessed using an individually tailored survey (Carter et al. 2003). As much as 77 % of the responding youth indicated that their level of active life is insufficient. More than half of them describe their diet as unhealthy, while for 65% the level of stress was considered too high (Carter et al. 2003). The mentioned study demonstrated that the male youth led a healthier lifestyle. These are not the first of such studies that showed the male students to be more active than their female counterparts. Cieśla (2009) reported that male students displayed higher levels of healthy life and physical fitness more often than their female counterparts. Romanowska – Tołoczko (2011) showed in her research that students often lead an unhealthy lifestyle than healthy. It may raise concerns that the prognosis for the future are not successful.

The various groups of youth did neither indicate tendency towards being underweight nor overweight, while the BMI index, which is currently most often applied in such measurements (Rodziewicz-Gruhn et al 2010) did not show cause for alarm as well.

The lack of statistically significant differences in body composition in respect of groups of youth that differed in their lifestyles is not uncommon to similar researches. Zimna-Walendzik et al. (2009) failed to also indicate any differences in the body composition of children with moderate and highly active lifestyle when compared to children with low physical activity. Research conducted by Cieśla (2009), however, showed that physical activity differentiate the level of most factors considered. Somatic features and physical abilities that shoed extensive statistically significant differences in women were taken into consideration in the studies. The more frequent occurrence of differences in females was also demonstrated in the current study. Although much statistically significant differences was not noted in males, the observed differences in average arithmetic means or medians, which in majority of cases pointed to the need for further analysis of similar nature are pointers to trends regarding the body composition of with varied life styles.

CONCLUSIONS
1. On concluding the division into three groups, it was demonstrated that almost half of the entire youth included in a group leading healthy lifestyle. Less than 2% males and female respectively were found in the group leading unhealthy lifestyle.
2. The gender differences in lifestyle turned out to be statistically significant in favors of males. Modern half of the males were allocated to the group with healthy lifestyle. The amount in respect of women was only slightly more than 40%. Higher percentage, amounting to almost 5%, was also noted amongst female students that were in the group with unhealthy lifestyle.
3. The youth in their three groups showed statistically significant differences in half of the descriptive features for body composition. The regularity observed was that the arithmetic average for each feature in all case, except for Marty index, were smaller in groups leading healthy lifestyles than in groups characterized by moderate lifestyle. Four statistically significant differences were observed in the body composition of females. The observed regularity was that the arithmetic average of each feature in all cases were, except for WTR index, smaller in the group leading healthy lifestyle than for those with moderate lifestyle. No statistically significant differences were noted amongst males. It was reported, however, that the largest value of the arithmetic means and medians in respect of weight and height indicators are higher in the group of males leading healthy lifestyles. In no circumstances, however, was this state ever closer to levels that would point to any tendency of being overweight.

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