

Factors determining physical activity of Ukrainian students

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Abstract

Objective. Scientific reports provide information concerning an insufficient level of physical activity of societies. The objective of the study is recognition of the level of physical activity among Ukrainian students, and factors which condition this activity: gender, place of residence, self-reported physical fitness, and the BMI.

Methods. The study was conducted in 2013 among 2,125 Ukrainian students using a long version of the International Physical Activity Questionnaire (IPAQ), supplemented with data concerning the respondents' physical development.

Results. The results of the study showed that the mean total physical activity of students was 3.560 MET, and its highest percentage pertained to the area of activity in sports – 1.124 MET. Significantly higher statistically physical activity was observed among males than females. In males, the highest activity was related to participation in sports classes, while in females – engagement in household chores. It was found that males, compared to females, were significantly more physically active in such areas as occupational activity (education) and sports activity, whereas females showed higher activity performing household chores.

According to the place of residence, inhabitants of medium-size towns and rural areas obtained the most favourable results in activity, while the inhabitants of large cities the poorest. Self-reported physical fitness was significantly correlated with the results in physical activity obtained by the students. No relationship was found between the BMI and the level of student's physical activity.

Conclusion. Considering the very large population of respondents, the results obtained may be considered as an up-to-date pattern of physical activity among Ukrainian students.

Key words

students, Ukraine, physical activity, International Physical Activity Questionnaire (IPAQ)

INTRODUCTION

It is commonly emphasized that regular physical activity is not only prophylaxis, but also one of the methods of treatment of diseases, mainly of the cardiovascular system [1, 2, 3, 4, 5].

Students' experiences related with a health promoting life style acquired at school also exert a great effect on the level of their physical activity [6, 7], the studies of which are performed practically using various methods, some of which require specialist equipment [8, 9]. Investigations with the use of a questionnaire, which are the easiest to perform, occupy an important position [10, 11, 12]; however, due to the application of various methods of measurement it is not possible to compare the results obtained. The development of the International Physical Activity Questionnaire (IPAQ) [13, 14] allowed both the measurement of this activity and comparison of the results obtained by respondents from various countries. The Polish version of the questionnaire developed by Biernat et al. [15] enabled the undertaking of studies of physical activity among various social and occupational groups in Poland.

Despite the fact that several years after Rutten et al. [16] perceived some problems with the methodological nature of this questionnaire, at present the IPAQ is still recommended as the most objective instrument for evaluation of physical activity.

During the period 1996–1999, on the initiative by the Institute of Public Health in Helsinki, Finland, an international research project was completed concerning the state of health, including physical activity of population aged 25–64, from six countries in Central-Eastern and Western Europe: Finland, Spain, Germany, Poland, Russia and Hungary. The results of the study showed a very high variation in the level of physical activity among inhabitants of these countries. In Poland, studies were conducted among the large-city population of Łódź [17]. The highest percentage of respondents who declared high physical activity was observed in Finland (30.2%), whereas the lowest – in Poland (6.4%). According to the criterion of the sedentary mode of life, Poland occupied the first unfavourable position (72.9%), while the most favourable percentage of respondents who reported a sedentary mode of life was found in Finland (10.5%).

A different image of physical activity among the Polish population, compared to other European Union member states, was presented by Piątkowska [18]. It is noteworthy that these studies also confirmed a varied level of total physical activity of the inhabitants of individual countries. It was found that physical activity of Poles and Europeans remains on a similar level, which should be welcomed. A more beneficial indicator of individuals with a high level of physical activity was observed in Holland, whereas the lowest – in Sweden. The percentage of respondents with a low level of physical activity was also the lowest among the inhabitants of Holland – 13.3%, whereas it was the least favourable in France – 43.1%. In Poland, every fourth respondent (27.9%) declared a low level of physical activity. In the remaining

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countries of the European Union this indicator was higher and reached 31.0%.

Considering the duration of time spend sitting (with a mean value for UE- 40.6% on weekdays), the percentage of the Polish population sitting for at least 6 hours daily was 42.0%. The highest percentage (+/-3 years) was noted among the inhabitants of Denmark – 55.6%, while the lowest – among Portuguese citizens – 23.5%.

Among studies of physical activity conducted with the use of the International Physical Activity Questionnaire in other countries, reports should also be mentioned concerning female students in the Ukraine [20], students in Turkey [23], and school adolescents in Lithuania [19] and Poland [21, 22].

Objective. The primary goal of the study was recognition of the level of physical activity among Ukrainian students, with consideration of factors determining this activity, such as: gender, place of residence, self-reported physical fitness, and BMI.

MATERIALS AND METHOD

The study was conducted in 2013 using the long version of the IPAQ among 2,125 students of 12 specialties at the National University in Lutsk, Ukraine, aged 17–22 – 1,291 females (60.8%), and 834 males (39.2%). Also, data concerning the basic parameters of physical development were used, i.e. body weight and height, which enabled calculation of the BMI indices.

RESULTS

While searching for the factors conditioning the level of physical activity among Ukrainian students, basic determinants were considered, such as gender and place of residence, as well as rarely used self-reported physical fitness and the BMI.

Level of physical activity according to gender. The total level of male students' physical activity was 3,863 MET, which was significantly higher than that of the female students – 3,365 MET (Tab. 1, Fig. 1). The highest physical activity in males was related with participation in sports classes – 1,352 MET, whereas in females – with the performance of household chores – 1,130 MET.

Males were significantly more active physically than females in such areas as occupational activity (education)

Table 1. Differences in areas of students' physical activity according to gender

| Field of activity | Mann-Whitney U test | | Z | p |
|-----------------------|---------------------|--------|----------|----------|
| | Total rank | | | |
| | Females | Males | | |
| Total activity | 1307380 | 951495 | -4.70346 | 0.00000* |
| Occupational activity | 1279479 | 979396 | -6.77109 | 0.00000* |
| Mobility | 1367724 | 891151 | -0.33432 | 0.73814 |
| Household chores | 1459616 | 799259 | 6.32124 | 0.00000* |
| Sports activity | 1261113 | 997762 | -8.05420 | 0.00000* |

* – significant relationship $p < 0.05$

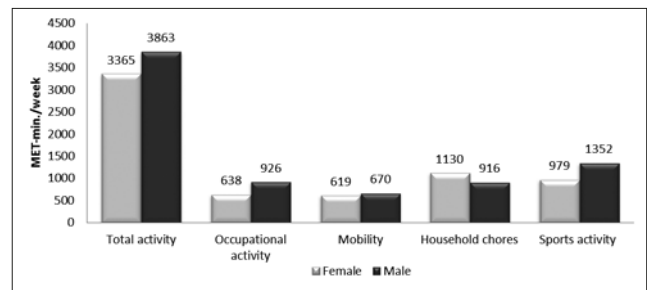


Figure 1. Areas of students' physical activity according to gender

and sports activity, whereas females were more active with household chores. No significant differences between genders were found with respect to activity related with mobility.

Level of physical activity with consideration of place of residence. The highest physical activity was observed among students living in medium-size towns – 4,034 MET and in rural areas – 3,861 MET, while the lowest among inhabitants of large cities – 3,245 MET (Fig. 2, Tab. 2).

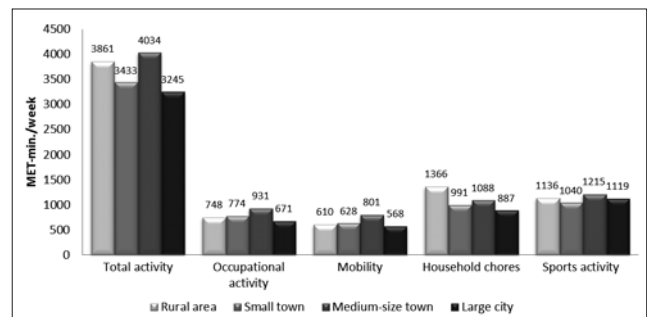


Figure 2. Areas of students' physical activity according to place of residence

Table 2. Differences in areas of students' physical activity according to place of residence

| Field of activity | Kruskal-Wallis test | | Differences |
|-----------------------|---------------------|----------|-------------------|
| | H | p | |
| Total activity | 38,03319 | <0.0001* | 1-2,4; 2-3; 3-4** |
| Occupational activity | 1,779485 | 0.6194 | - |
| Mobility | 30,95871 | <0.0001* | 1-4; 3-4** |
| Household chores | 73,18911 | <0.0001* | 1-2,3,4; 3-4** |
| Sports activity | 11,92369 | 0.0076* | 2-3** |

* – Significant relationship $p < 0.05$

** – Number of variables between which a significant relationship was observed, $p < 0.05$

1 – Rural area, 2 – Small town, 3 – Medium-size town, 4 – Large city

Significant differences in the level of total physical activity were noted to the benefit of inhabitants of medium-size towns, compared to inhabitants of small towns and large cities, whereas students living in the rural areas were significantly more active than those living in small towns and large cities. Activity in individual areas varied according to the place of residence.

Concerning mobility, a significantly higher activity was observed between inhabitants of rural areas (610 MET) and large cities (568 MET), and between inhabitants of medium-size towns (801 MET) and large cities (568 MET).

With respect to activity related with performance of household, rural inhabitants (1,366 MET) significantly dominated, compared to any other place of residence, whereas

the lowest activity was noted among inhabitants of large cities (887 MET). Inhabitants of medium-size towns were also significantly more active, compared to their colleagues from large cities. In sports activity, students from medium-size towns dominated (1,215 MET), who were significantly more active than those living in the environment of small towns (1.040 MET). No significant differences were found between place of residence and activity in the area of work/education.

Level of physical activity according to self-reported fitness.

The level of physical activity was equivalent to the students' self-reported fitness. The group of students who highly evaluated their fitness was characterized by the highest physical activity, expressed in MET – 4,410, those who evaluated their fitness as mediocre – 3,560, and students who evaluated their fitness as low – only 2,669. (Fig. 3). Significantly lower physical activity was observed among students who evaluated their fitness as low, compared to those who declared that their fitness was mediocre and high (Tab. 3). Students who evaluated their fitness as high had a significantly higher physical activity, compared to those who evaluated their fitness as mediocre.

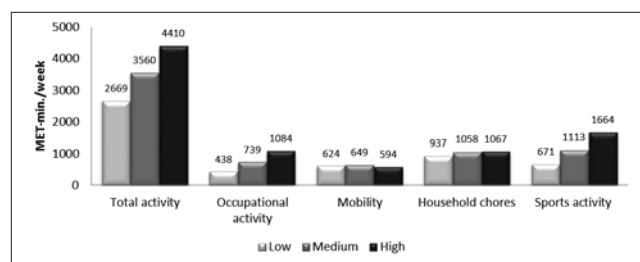


Figure 3. Areas of students' physical activity according to self-reported physical fitness

Table 3. Differences in areas of students' physical activity according to self-reported physical fitness

| Field of activity | Kruskal-Wallis test | | Differences |
|-----------------------|---------------------|--------------------|---------------------|
| | H | p | |
| Total activity | 83,85445 | <0.0001* | 1-2,3; 2-3** |
| Occupational activity | 52,93391 | <0.0001* | 1-2,3; 2-3** |
| Mobility | 0,2476279 | 0.8835 | - |
| Household chores | 4,439918 | 0.1086 | - |
| Sports activity | 143,2417 | <0.0001* | 1-2,3; 2-3** |

* – Significant difference $p < 0,05$

** – Number of variables between which a significant relationship was observed, $p < 0,05$

1 – Low activity, 2 – Mediocre activity, 3 – High activity

Similar regularities to the benefit of students who mentioned that their physical activity was high were confirmed with relation to occupational activity/sports and sports classes. However, no differences were noted in such areas of activity as household chores and mobility.

Level of physical activity according to BMI. The level of total physical activity was the highest among respondents who were overweight (3,824 MET). Overweight students were also characterized by higher values in individual areas of activity (Fig. 4); however, the level of respondents' physical activity was not significantly higher according to the BMI value (Tab. 4).

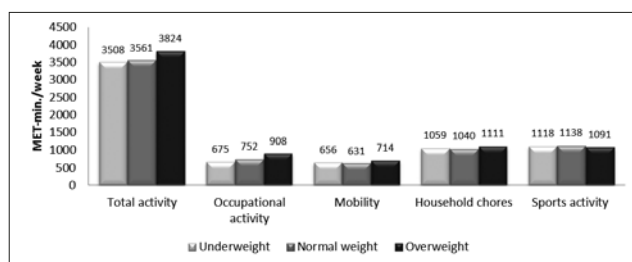


Figure 4. Areas of students' physical activity according to the BVMI classification

Table 4. Differences in areas of students' physical activity according to BMI classification

| Field of activity | Kruskal-Wallis test | | Differences |
|-----------------------|---------------------|--------|-------------|
| | H | p | |
| Total activity | 2.199659 | 0.3329 | - |
| Occupational activity | 5.780893 | 0.0556 | - |
| Mobility | 0.1529670 | 0.9264 | - |
| Household chores | 1.962232 | 0.3749 | - |
| Sports activity | 0.7331288 | 0.6931 | - |

DISCUSSION

Knowing how important an adequate physical activity is in the life of contemporary societies it is necessary to seek factors which condition this activity. According to the results of the presented study, an undisputable regularity is the fact that males show a higher physical activity than females. This is confirmed by the results of studies by other researchers who used the same instrument (IPAQ) [21, 22, 23, 24, 25, 26]. In the current study, such a search concerns, apart from gender, place of residence, self-reported physical fitness, and the BMI.

It is commonly assumed that higher activity and physical fitness is observed among populations living in large agglomerations. However, the study conducted among Ukrainian students has not fully confirmed this regularity. The highest physical activity was observed among inhabitants of medium-size towns (population over 100,000) and respondents living in rural areas, whereas it was the lowest among inhabitants of large cities. The results of the presented study confirm that the differences in physical activity of adolescents from smaller environments continue to disappear. It may even be presumed that the physical activity of respondents from large agglomerations is decreasing, which may be a result of the rapid industrialization of these cities, and consequently, smaller opportunities for physical activities, e.g. walking or bicycle riding, or a smaller scope of household chores.

The factor of students' self-reported physical fitness is an interesting investigation, which is very rarely applied in the studies of physical activity.

The presented study unequivocally shows that the level of physical activity calculated in MET is significantly related with self-reported physical fitness. Students who evaluated their fitness in high terms were characterized by the highest level of total physical activity. Significant relationships were also found in such areas as occupational activity/education and sports classes. Thus, it may be presumed that among mature adults – the students – belonging to a kind of social elite, self-reported physical fitness is the measure of their

awareness of the important role of physical activity in concern for own health.

In the presented study, the relationship was also investigated between the BMI and the level of students' physical activity. It might be presumed that respondents with a more favourable value of the BMI should be characterized by higher physical activity. However, this study, which allowed the classification of students on three levels, according to the BMI value, as: obese/overweight, normal weight and underweight, did not show any significant relationships with the level of their total physical activity, nor in its individual areas. It is interesting that respondents who were overweight showed a higher physical activity (3,824 MET), compared to those with normal weight (3,561 MET), and underweight (3,508 MET), although this difference was not statistically significant. Therefore, it may be presumed that a new, favourable phenomenon is observed concerning a higher awareness of obese/overweight students of the need for a higher physical activity. If this phenomenon was permanent, it would provide a good example for how to take care of own health for other social groups in the Ukraine, and in other countries of the continent. Considering the fact that the study covered a group of over 2,000 students, which is not common in this type of study, it seems that the results obtained allow for objective generalizations.

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