

Part II. Physical activity of social and professional groups
Dział II. Aktywność fizyczna grup społecznych i zawodowych

A FIELD OF STUDY AS A FACTOR DETERMINING PHYSICAL ACTIVITY, BMI INDICATOR AND SELF-ASSESSMENT OF PHYSICAL ACTIVITY OF STUDENTS IN THE VISEGRAD COUNTRIES

KIERUNEK KSZTAŁCENIA JAKO CZYNNIK WARUNKUJĄCY AKTYWNOŚĆ FIZYCZNĄ, WSKAŹNIK BMI I SAMOOCENĘ SPRAWNOŚCI FIZYCZNEJ STUDENTÓW Z PAŃSTW WYSZEHRADZKICH

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- G. Funds collection
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Summary

Background. The objective of the research was to present the diverse nature of physical activity, BMI indicator and indicator of self-assessment of physical activity of students from the Visegrad group countries depending on their fields of study.

Material and methods. 2237 students from humanistic, medical and technical faculties were tested. The International Physical Activity Questionnaire (IPAQ) was used for the analysis in its extended version. BMI indicator and indicator of self-assessment of physical activity were also characterized.

Results. More than half of the students were characterized by a high level of physical activity. In most cases, they possessed the correct value of body mass index (BMI) and the average self-esteem of physical fitness.

Conclusions. The field of study does not differentiate significantly the level of body mass index (BMI), which in most tested cases achieved the correct value. The statistical analysis did not reveal any significant statistically relation between fields of study and self-assessment of physical fitness.

Keywords: physical activity, IPAQ, field of study, BMI, physical activity

Streszczenie

Wprowadzenie. Celem badań było ukazanie zróżnicowania aktywności fizycznej, wskaźnika BMI i samooceny sprawności fizycznej studentów z państw wyszehradzkich w zależności od kierunków kształcenia.

Materiał i metody. Badaniom poddano 2237 osób studiujących kierunki humanistyczne, medyczne i techniczne. Do oceny aktywności fizycznej wykorzystano Międzynarodowy Kwestionariusz Aktywności Fizycznej (IPAQ) w wersji długiej, charakterystyce poddano również wskaźnik masy ciała BMI i samoocenę sprawności fizycznej.

Wyniki. Ponad połowa studentów charakteryzowała się wysokim poziomem aktywności fizycznej. W większości badani dysponowali prawidłową wartością wskaźnika masy ciała (BMI) i średnią samooceną sprawności fizycznej.

Wnioski. Kierunek studiów nie różnicuje istotnie statystycznie poziomu wskaźnika masy ciała (BMI), który w większości przypadków u badanych przyjął wartość prawidłową. Analiza statystyczna nie wykazała również istotnego statystycznie związku kierunku kształcenia z samooceną sprawności fizycznej.

Słowa kluczowe: aktywność fizyczna, IPAQ, kierunek studiów, BMI, sprawność fizyczna

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Introduction

The issue of physical activity of students is often discussed in scientific publication both in the country [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14] and abroad [15, 16, 17, 18, 19, 20, 21]. Despite a noticeable increase of the level of health awareness and active participation in physical culture a vast majority of the society does not see the dependency between physical activity and health.

The societies of economically developed countries lack sufficiently strong cultural stimuli towards physical activeness. In this context, physical activity may be considered as a critical social problem [22]. Hence one of the most important operational targets of National Health Programme for the years 2016-2020 in Poland is an increase of physical activity within the society. A conviction about benefits stemming from regular physical activity are reflected in the results of scientific research [23]. They point to the beneficial impact of exercises on physical and mental state. Changes occurring under the influence of physical activity include stable and slim figure, pliable walk, better musculature and lack of the signs of tiredness in physical work, improved well-being and better motoric skills. Research of CBOS from 2013 conducted among the adult inhabitants of Poland indicated that 66% of the respondents had taken up physical activity during the previous year, whilst 40% had taken it up on a regular basis while 26% sporadically. Taking up physical activity was, above all, a domain of young people, well-educated, happy with their material situation, city inhabitants [24].

Limiting everyday physical activity, getting stronger with the development of civilization constitutes a real threat to human health. Thus, physical activity forms a key factor of shaping health, developing habits and other pro-health behaviours as well as a valuable form of spending free time [25]. Furthermore, physical activity impact better scores at school. Research in Great Britain indicated that students who trained at least 20 minutes a day reached by approx. 10% better results than students who did not regularly conduct any physical activity [19].

The level of physical activity among academic youth is defined by its present and future attitude towards health and strengthening pro-health attitudes of students has a significant importance in shaping their future behaviours. Taking up physical activity by students is conditioned by many factors: schedule of their didactic classes, tiredness, additional work as well as habits brought from homes. The objective of research within this work was to show the diverse nature of physical activity, BMI indicator and self-assessment of physical efficiency of students of the Visegrad group states (V4) depending on their field of study.

Material and methods

Research material consists of students of universities from Czech Republic, Slovakia, Hungary and Poland. The research was conducted in 2015 among 2237 persons studying at humanistic, medical and technical fields of study. Female participants amounted to 1169 persons (52.3%) and male ones to 1068 (47.7%). The research participants constituted a relatively complex set of 3 analysed groups of fields of study. Within the research the International Physical Activity Questionnaire was applied in its extended version which allowed to conduct an analysis of physical activity in individual areas of human life (within professional work during commuting, housework, recreation and sport) [26]. Questions were supplemented by data of self-assessment of physical fitness and height and body mass which enabled calculation of BMI indicator.

The statistical analysis was conducted with the use of STATISTICA v. 10 software. In order to reveal dependencies which would be statistically significant for qualitative variables of test of independence of Chi square, while in case of quantitative variables arithmetic means were calculated and the non-parametric test of Kruskal-Wallis was applied. In all the analysed cases the significance level $p=0.05$ was set.

Research results

Characteristics of basic parameters of the participants

Over half of students (50.3%) was characterized by high level of physical activity, 40,7% by an average one and only 9% by a low one. Almost 67% of researched students possesses the correct value of body mass index (BMI) and an average self-assessment physical activity (table 1).

Table 1. Characteristics of basic parameters of research participants

| Fields of study | | |
|-------------------------------------|------------------|--------------------|
| Humanistic sciences | Medical sciences | Technical sciences |
| 662 (29,6%) | 733 (32,7%) | 842 (37,6%) |
| Level of physical activity | | |
| low | moderate | high |
| 202 (9,0%) | 911 (40,7%) | 1124 (50,3%) |
| BMI classification | | |
| underweight | Correct value | overweight |
| 258 (11,7%) | 1464 (66,7%) | 472 (21,5%) |
| Self-assessment of physical fitness | | |
| low | moderate | high |
| 274 (12,2%) | 1499 (66,7%) | 472 (21,0%) |

Level of physical activity among test participants considering fields of their study

Based on the conducted analysis of test results it was noted that the level of total physical activity of students amounted to 5588.5 MET min/week. The highest share was received by physical activity in the area of work (1689.6 MET-min./week) and physical activity in the area of sport (1644.4 MET-min./week), while the smallest one activity in commuting (1122.6 MET-min./week), (fig. 1).

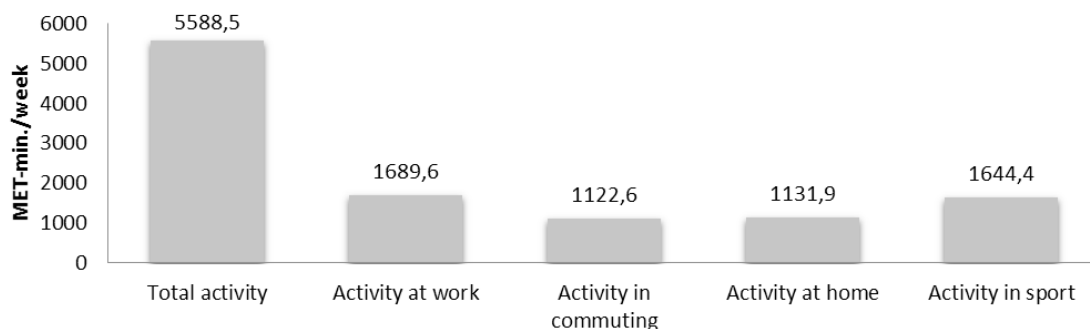


Figure 1. Areas of physical activity of female and male students

Level of physical activity of female and male students of medical fields of study was the highest in the three out of five analysed areas of physical activity: total activity (6004.0 MET-min./week), activity at work (1981.4 MET-min./week) and activity during commuting (1201.8 MET-min./week). In the remaining areas (activity at home and activity in sport) the highest level of physical activity was obtained by students of humanistic fields of study. In all the analysed areas students of technical fields of study were characterized by the lowest level of physical activity (fig. 2). Statistical analysis indicated some significant variation (p=0.0102) only in the area of total activity to the disadvantage of students of technical fields of study (table 2).

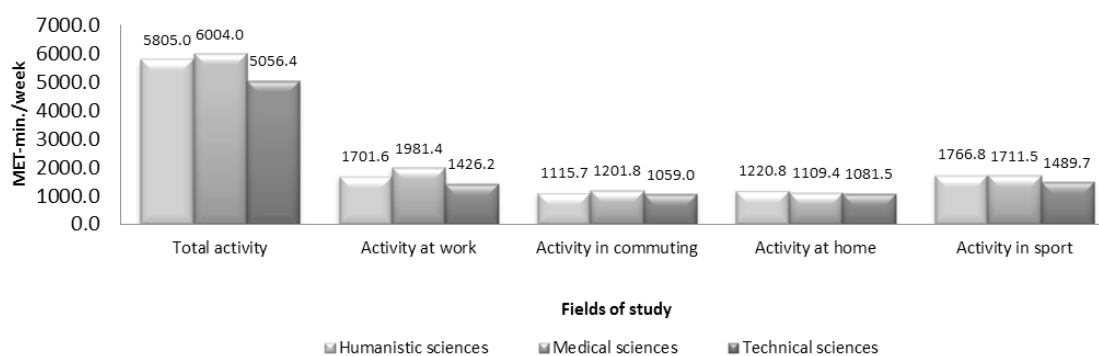


Figure 2. Areas of physical activity of female and male students considering fields of study

Table 2. Variation of areas of physical activity of female and male students considering fields of study

| Kruskal-Wallis Test | | | |
|-----------------------|------|---------|-----------|
| Area of activity | H | p | Variation |
| Total activity | 9.17 | 0.0102* | 3-1,2** |
| Activity at work | 5.62 | 0.0601 | - |
| Activity in commuting | 1.81 | 0.4049 | - |
| Activity at home | 1.93 | 0.3813 | - |
| Activity in sport | 1.85 | 0.3962 | - |

* - significant variation at $p < 0,05$

** - fields of study between which in a given area a statistically significant variation occurs 1- humanistic sciences, 2- medical sciences, 3-technical sciences

When analysing the level of physical activity of female and male students considering fields of study it was noted that the largest group was formed by persons characterized by high level of physical activity. The largest percentage of high physical activity was obtained by students of medical fields of study (50.9%), a moderate one by students of humanistic fields of study (41.1%) and the lowest by students of technical fields of study (9.5%). Statistical analysis did not reveal any significant relation between fields of study and the level of physical activity (fig 3).

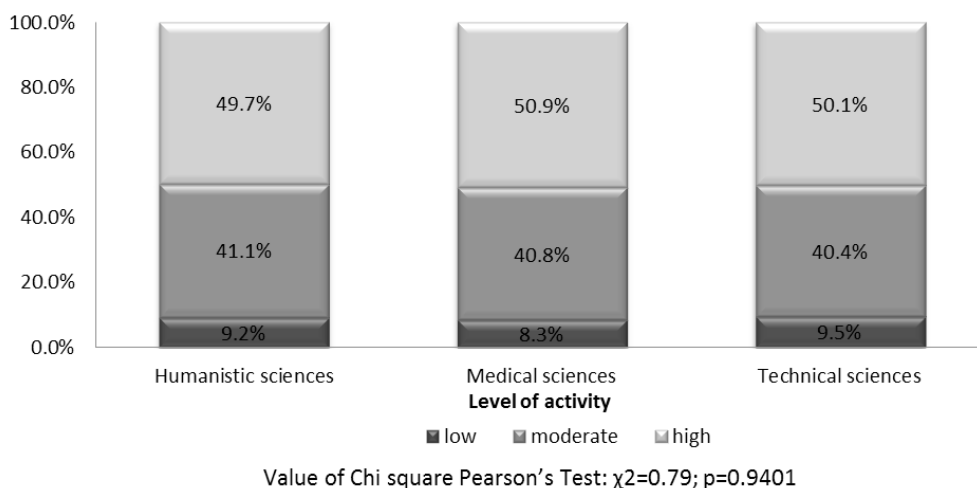


Figure 3. Level of physical activity of female and male students considering fields of study

Level of physical activity of male students considering fields of study

Students of medical fields of study obtained the highest level of physical activity in as many as four areas: total activity (7245.9 MET-min./week), activity at work (2409.9 MET-min./week.), activity in commuting (1360.7 MET-min./week) and activity in sport (2258.7 MET-min./week). Whilst, the highest level in the area of activity at home was obtained by students of humanistic studies (1284.3 MET-min./week). As previously, in all analysed areas students of technical studies were characterized by lowest level of physical activity (fig. 4). The statistical analysis indicated significant variation ($p=0.0001$) in the area of total activity for the disadvantage of students of technical studies towards others as well as in the area of activity in sport ($p=0.0013$) between students of medical and technical studies, for the disadvantage of the first group (table 3).

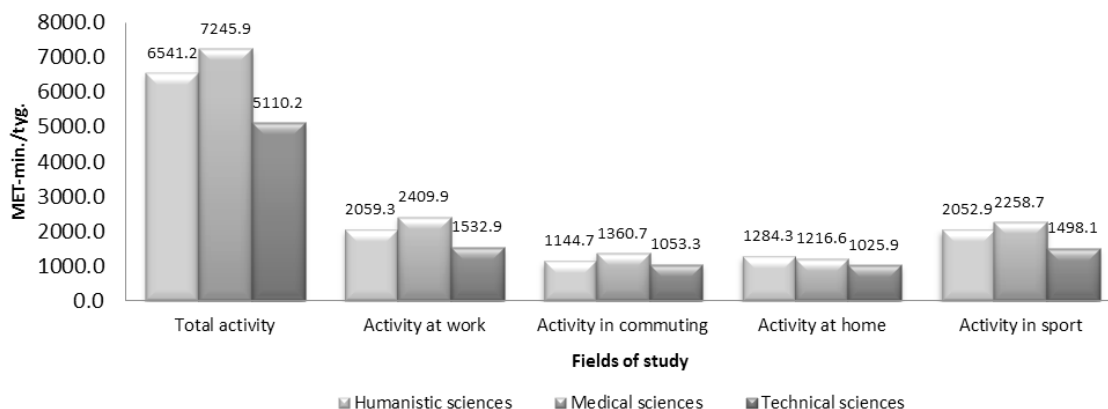


Figure 4. Areas of physical activity of students considering fields of study

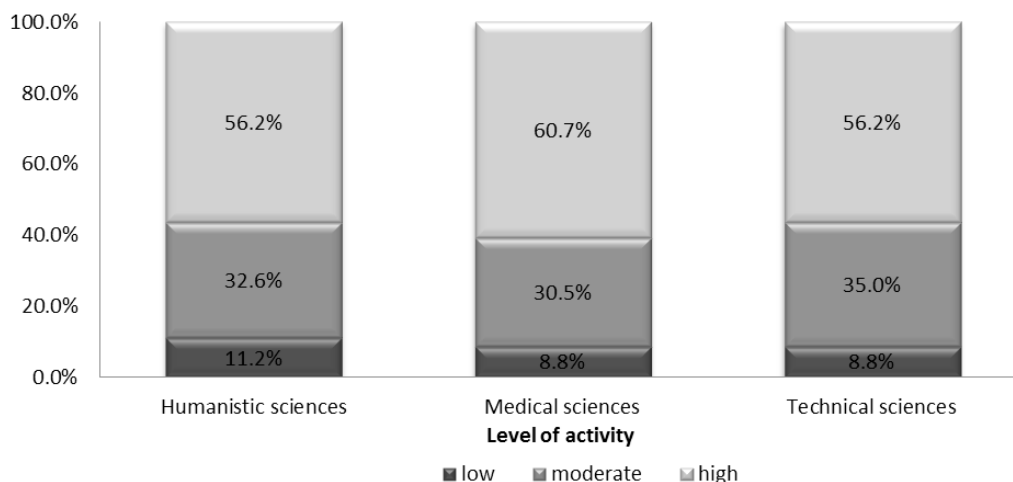
Table 3. Variation of areas of physical activity among students considering fields of study

| Kruskal-Wallis Test | | | |
|-----------------------|-------|---------|-----------|
| Area of activity | H | p | Variation |
| Total activity | 19.97 | 0.0001* | 3-1,2** |
| Activity at work | 4.74 | 0.0936 | - |
| Activity in commuting | 3.32 | 0.1897 | - |
| Activity at home | 4.77 | 0.0920 | - |
| Activity in sport | 13.25 | 0.0013* | 2-3** |

* - significant variation at $p < 0,05$

** - fields of study between which in a given area a statistically significant variation occurs 1- humanistic sciences, 2- medical sciences, 3-technical sciences

When analysing the level of physical activity of students considering fields of study it was noted that the larger group was made up of persons characterized by high level of physical activity. The largest percentage of high physical activity was obtained by students of medical studies (60.7%) and the same level for students of humanistic fields of study (32.6%) and the smallest percentage was formed by students of medical studies (30.5%). Whilst 11.2% of students of humanistic studies were characterized by small level of physical activity and the same percentage (8.8%) was obtained by students of medical and technical studies. The statistical analysis did not reveal an significant relation between fields of study and the level of physical activity of students (fig. 5).



Value of Chi square Pearson's Test: $\chi^2=3.08$; $p=0.5439$

Figure 5. Level of physical activity of students considering fields of study

The level of physical activity of studying female students considering fields of study

The level of physical activity of female students of humanistic fields of study was the highest in the three areas of physical activity: total activity (5278.6 MET-min./week), activity at home (1175.5 MET-min./week) and activity in sport (1562.2 MET-min./week). In the remaining two areas (activity at work and activity in commuting) the highest level of physical activity was obtained by female students of medical fields of study. On the other hand, female students of technical fields of study were characterized by the lowest level of physical activity in three of five analysed areas (total activity, activity at work and activity in commuting) (fig 6). The statistical analysis showed no significant variation in the level of physical activity of female students considering fields of study in neither of the analysed areas of physical activity (table 4).

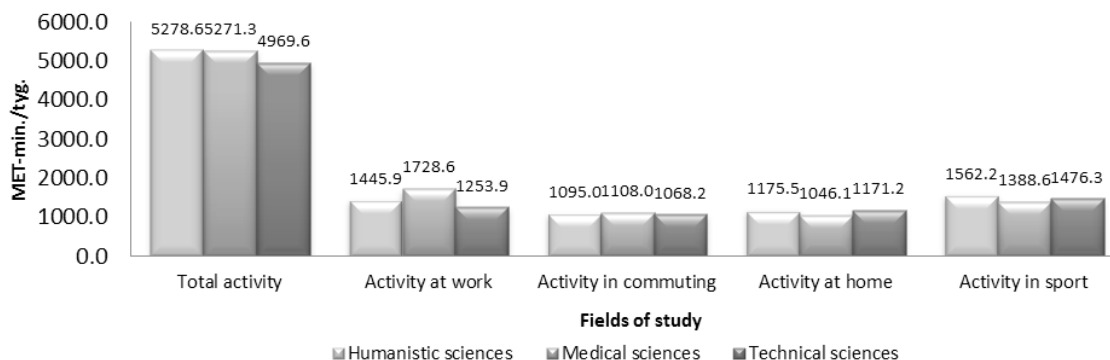
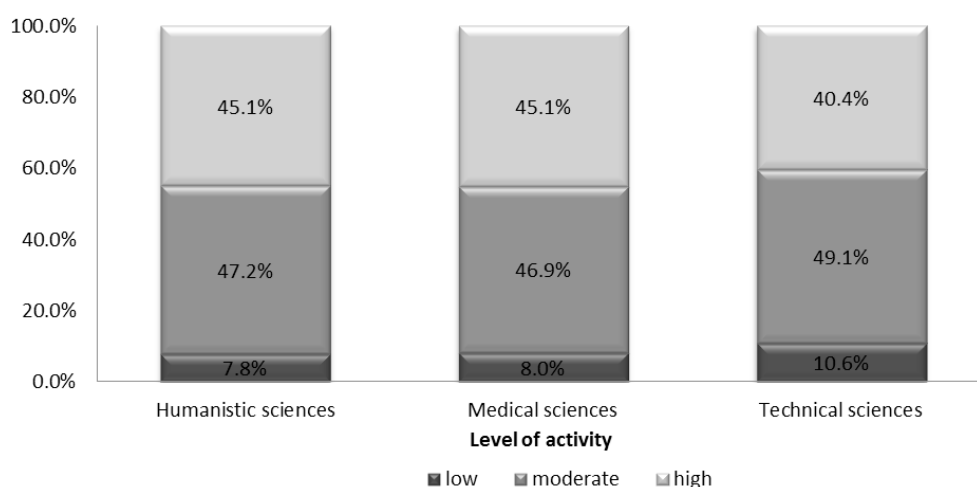


Figure 6. Areas of physical activity of female students considering fields of study

Table 4. Variation of areas of physical activity among female students considering fields of study

| Kruskal-Wallis Test | | | |
|-----------------------|------|--------|-----------|
| Area of activity | H | p | Variation |
| Total activity | 1.32 | 0.5181 | - |
| Activity at work | 5.45 | 0.0656 | - |
| Activity in commuting | 1.04 | 0.5958 | - |
| Activity at home | 0.87 | 0.6471 | - |
| Activity in sport | 0.31 | 0.8560 | - |

The largest group of female students, as opposed to male students, constituted persons characterized by moderate level of physical activity. The largest percentage of moderate physical activity was obtained by female students of technical fields of study (49.1%). High level of physical activity was noted mainly among female students of medical fields of study (8.0%) and humanistic studies (7.8%). The statistical analysis did not reveal any significant relation between fields of study and level of physical activity of female students (fig 7).



Value of Chi square Pearson's Test: $\chi^2=3.32$; $p=0.5063$

Figure 7. Level of physical activity among female students considering fields of study

BMI indicator of research participants considering fields of study

In order to realize the target of research an analysis of BMI (body mass index) was critical among female and male students considering fields of study. It was noted that the largest group comprised persons characterized by correct value of BMI indicator. The largest percentage of overweight persons was noted among female and male students of medical studies (22.3%) while the largest percentage of research participants who were overweight occurred among persons studying at technical fields of study (12.8%). Statistical analysis did not reveal any significant relation between fields of study and body mass indicator (fig. 8).

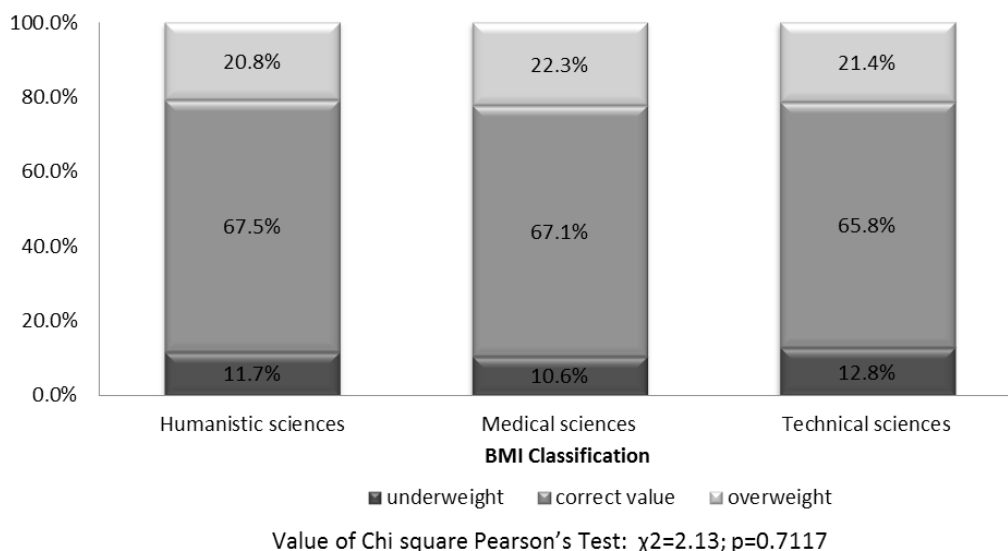


Figure 8. BMI Classification of students considering fields of study

When analysing BMI indicator of men considering fields of study it was noted that the largest group comprised persons characterized by correct value of body mass indicator. The largest percentage with correct value was found among students of humanistic fields of study (74%), followed by students of technical fields of study (65.8%) and medical fields of study (62.6%). The largest number of overweight or underweight persons was noted among students of medical fields of study, respectively 23.3% and 14.1%. Statistical analysis did not reveal any significant relation between fields of study and BMI indicator among male students (fig. 9).

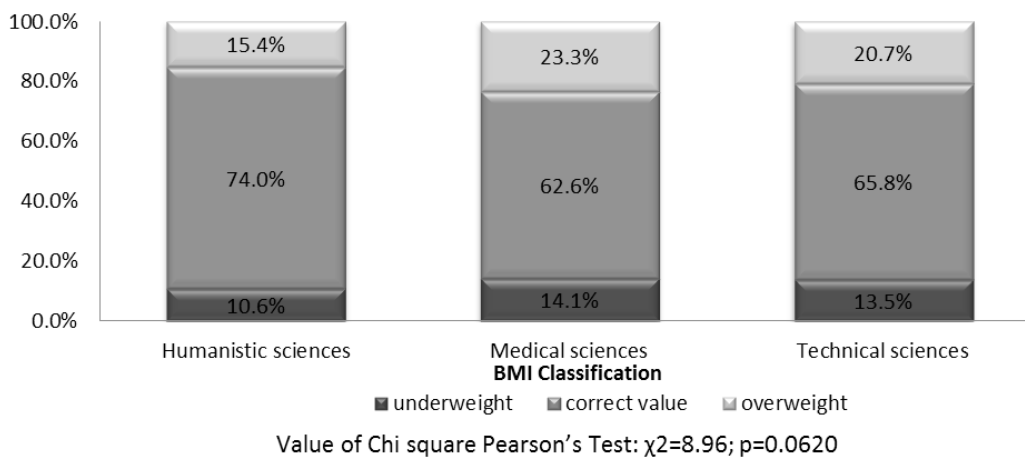


Figure 9. BMI Classification of students considering fields of study

When analysing body mass index of female students considering fields of study it was noted that the largest group comprised persons characterized by correct body mass index. The largest percentage with correct BMI was noted among female students of medical studies (69.8%), followed by female students of technical fields of study (65.9%) and humanistic fields of study (62.6%). The largest amount of persons overweight (24.9%) and underweight (12.6%) was noted among female students of humanistic fields of study. Statistical analysis did not reveal any significant relation between fields of study and BMI indicator among the studying female (fig. 10).

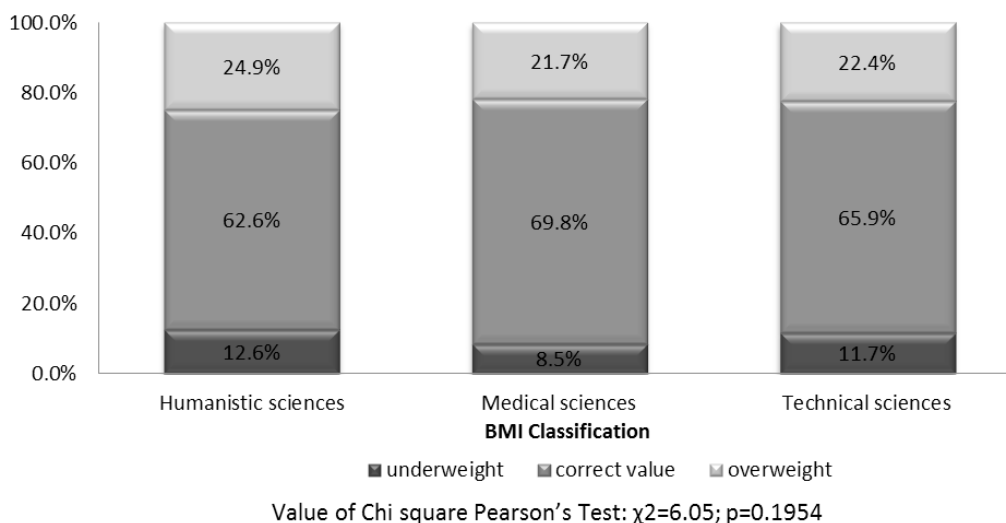


Figure 10. BMI Classification of female students considering fields of study

Self-assessment of physical fitness of research participants considering fields of study

Another important aspect was to obtain knowledge about self-assessment of physical fitness of the tested female and male students considering fields of study. The self-assessment of the participants revealed that the largest group was formed by persons who declared average level of physical activity. The largest percentage of high physical fitness was declared by female and male students of humanistic studies (21.7%), and the lowest-technical fields of study (18.3%). In case of low self-assessment of physical activity the largest percentage was noted among students of technical fields of study (14.5%). Statistical analysis did not reveal any significant relation between fields of study and level of self-assessment of physical fitness of the test participants (fig. 11).

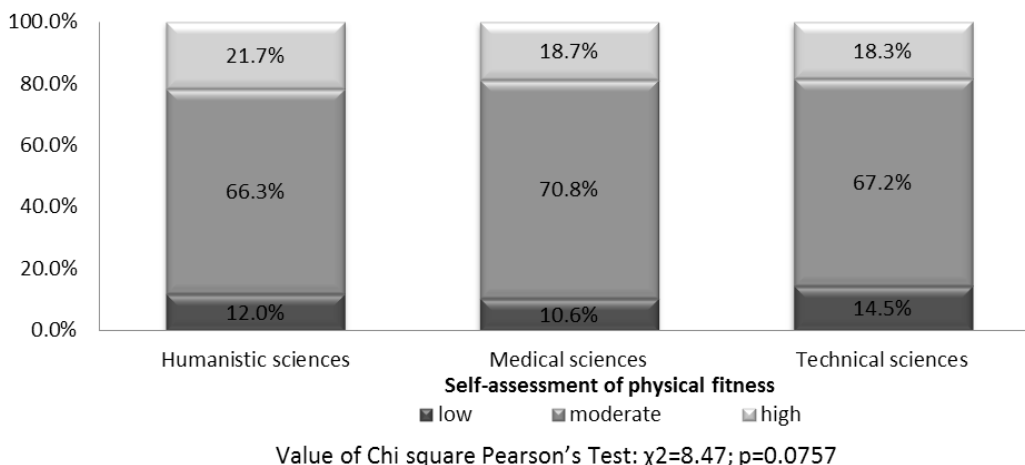
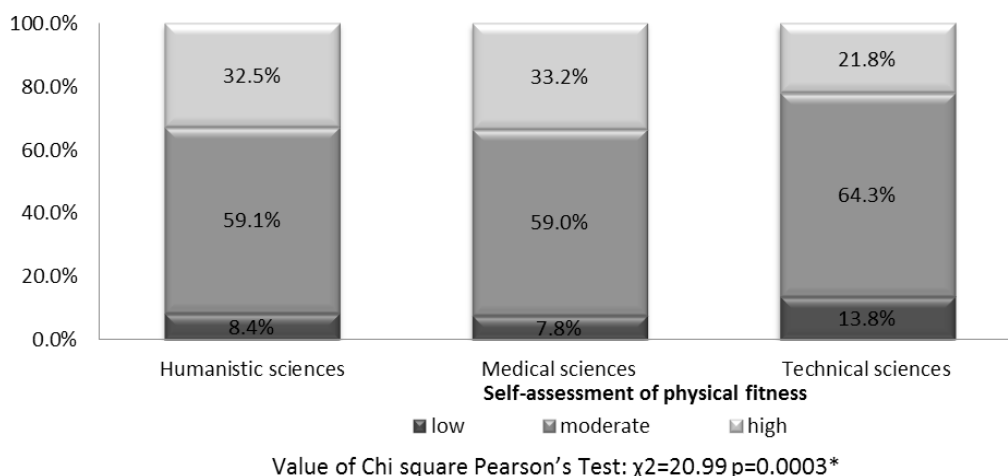


Figure 11. Self-assessment of physical fitness of female and male students considering fields of study

The analysis of self-assessment of physical fitness of men considering fields of study indicated that the largest group comprised students who were characterized by average level of physical fitness. The largest percentage of average physical fitness was declared by students of technical fields of study (64.3%) while almost identical level was declared by students of humanistic studies (59.1%) and medical studies (59.0%). High level of physical fitness was mostly noted among students of medical students (33.2%), and a low level was noted among students of technical studies (13.8%). Based on the conducted statistical analysis it was noted that the fields of study differentiates on a significant scale ($p=0.0003$) the level of self-assessment of physical fitness of male students studying to the disadvantage of technical fields of study (fig. 12).



*-significant variation at $p<0.05$

Figure 12. Self-assessment of physical fitness of students considering fields of study

Self-assessment of female physical fitness revealed the largest group which constituted persons who declared average level of physical fitness above 70%. The largest percentage of high physical fitness was declared by female students of humanistic fields of study while the smallest-medical studies. Statistical analysis did not reveal any significant relation between fields of study and the level of physical fitness among the female students (fig. 13).

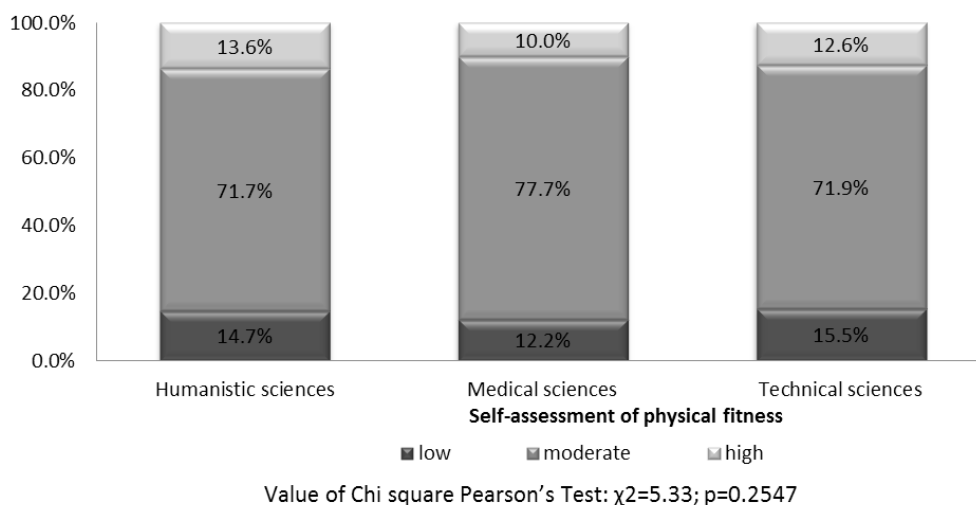


Figure 13. Self-assessment of physical fitness of female students considering fields of study

Discussion

The objective of research was to present variations of physical activity, BMI indicator and self-assessment of physical fitness among the students from V4 countries depending on their fields of study.

The author of the work analysed means of individual types of physical activity depending on the fields of study. The level of total physical activity of the research participants from medical studies was the highest in two out of four analysed areas (activity at work, activity in commuting). The conducted research confirmed that students of medical and humanistic fields of study show higher level of physical activity than students of technical fields of study. Students of these fields of study spend large amount of time in front of computers which surely does not facilitate pro-healthy lifestyle. This is also confirmed by the results of Baran and Stocka [1], who investigated students of public health and Computer Science. According to research by Kościuczuk et al. [14] no other significant differences in physical activity between students of physiotherapy and human nutrition were noted. However, the largest percentage of the surveyed indicated an average level of physical activity

with a small participation of activity at low level. Similar results were obtained also by Bergier et al. [6] in the research of female students from Ukraine.

During the conducted research it turned out also that regardless of the fields of study low activity concerned more often female than male students which finds its reflection also in the results of research of Ślusarska et al. [7].

From the author's own research and from the research of others it is visible that eating habits of the Polish youth are not correct which in consequence leads to overweight and obesity. Findings indicate that a serious problem exists not only in the countries of western Europe, but also in Poland. In author's own elaboration overweight concerns almost 22% of the studying youth. It occurred more often among students of medical and humanistic fields of study. Similar percentage of students (22.6%) with overweight characterized the Silesian students [27]. Whilst, research conducted among American [15] and Columbian [21] students indicated that overweight concerns 26.5% of research participants. The fact, however, that the analysis of values of BMI indicator showed the correct scope among over 65% of survey participants is quite positive. The highest positive values of body mass index have been noted among students of humanistic and medical fields of study. This is also confirmed by the results of research conducted by Walentukiewicz et al. [8] researching female students of medical studies who in vast majority (73.4%) were characterized by correct body mass. Contradictory observations were made by Myszkowska-Ryciak et al. [4], where excessive body mass was noted only among 7% of female students of SGGW.

The findings published by Kochanowicz i Hansdorfer-Korzon [28] indicate that the majority of students correctly identifies physical activity as a factor which contributes to better physical condition, improving well-being and health state. As many as 78% of students realize that good physical fitness is very important. Based on own research over 66% of the research participants qualified for the group with average level of self-assessment of physical fitness. The largest one was declared by research participants from medical studies (70.8%), followed by those from technical studies (67.2%) and humanistic studies (66.3%). It is commonly assumed that in case when one obtains high practical values of features of physical fitness in the youth, many aging processes may be delayed and even stopped for a certain period of time.

Studies are the last stage where one ought to conduct pro-health education on a wide scale, which would be directed at promotion, maintenance and control of physical activity. This is a stage in which one may impact and shape the responsibility for others and for one's own health [10], therefore, it is so important to monitor physical activity of the studying youth from various countries.

Conclusions

Research conducted for the purpose of the hereby work was targeted at indicating relations between fields of study and physical activity, BMI indicator and self-assessment of physical fitness of students of V4 countries. In light of the analysis one may formulate the following conclusions:

Female and male students in majority are characterized by high level of physical activity. Statistical analysis revealed significant relation between fields of study and level of total physical activity of research participants to the disadvantage of persons studying at technical fields of study.

Field of study does not differentiate in any statistically significant way the level of body mass index (BMI), which in majority of cases was correct among the research participants.

Research participants were characterized by an average level of self-assessment of physical activity. The statistical analysis did not reveal any significant statistically relation between fields of study and self-assessment of physical fitness.

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