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Postawa wobec aktywności ruchowej i ocena sprawności fizycznej studentów fizjoterapii Warszawskiego Uniwersytetu Medycznego i Akademii Wychowania Fizycznego w Warszawie

The assessment of the attitude towards physical activity among the Physiotherapy students of Warsaw Medical University (WMU) and the students of Physical Education Academy (PEA)

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Streszczenie

Aktywność fizyczna stanowi kluczowy i integrujący element zdrowego stylu życia. Sprawność fizyczna decyduje o zaradności człowieka w różnych sytuacjach życiowych, a jej wysoki poziom może ułatwić wykonywanie pracy, poszerzać możliwości funkcjonalne i współtworzyć prozdrowotny styl życia. Badania wykazują, że fizjoterapeuci są szczególnie predysponowani do promowania zdrowego trybu życia wśród pacjentów. Z drugiej strony, ze względu na charakter wykonywanej pracy, są narażeni na urazy mięśniowo-szkieletowe.

Celem pracy była: ocena postawy wobec aktywności ruchowej oraz ocena sprawności fizycznej studentów fizjoterapii Warszawskiego Uniwersytetu Medycznego (WUM) i Akademii Wychowania Fizycznego (AWF) w Warszawie.

Metodyka: Badaną grupę stanowiło 90 osób (37 K, 9 M z WUM oraz 22 K, 22 M z AWF) w średnim wieku 22,7 ±2,0 lat. Do oceny postawy wobec aktywności ruchowej został wykorzystany opracowany samodzielnie kwestionariusz ankiety. Poziom sprawności fizycznej badanych studentów fizjoterapii przebadano Międzynarodowym Testem Sprawności Fizycznej.

Wyniki. Ilość godzin lekcyjnych przeznaczonych na zajęcia ruchowe jest istotnie statystycznie mniejsza na Uniwersytecie Medycznym (1,6 ±1,5) niż w Akademii Wychowania Fizycznego (3,6 ±1,7), p<0,001. Wykazano bardzo duże (80%) zainteresowanie studentów aktywnością fizyczną w czasie wolnym, choć zauważa się większą tendencję do aktywności ruchowej wśród studentów fizjoterapii AWF niż WUM (p=0,07). Zaobserwowano istotnie gorszy poziom sprawności fizycznej studentów WUM w porównaniu z wynikami studentów AWF.

Wnioski. 1. Bardzo duże zainteresowanie aktywnością fizyczną w czasie wolnym, w obu badanych grupach, należałoby wykorzystać i rozwinąć w procesie kształcenia. 2. Studenci fizjoterapii Warszawskiego Uniwersytetu Medycznego prezentowali znacznie niższy poziom sprawności niż studenci Akademii Wychowania Fizycznego, co może być skutkiem mniejszej ilości godzin zajęć ruchowych na WUM. 3. Wobec dużych oczekiwań względem fizjoterapeutów w pracy zawodowej, wydaje się, że sprawność fizyczna winna być jednym z elementów doboru studentów w procesie rekrutacji prowadzonej na Warszawskim Uniwersytecie Medycznym.

Słowa kluczowe:
Aktywność ruchowa, ocena sprawności fizycznej, studenci fizjoterapii

Abstract

Physical activity is a key integrating element of a healthy lifestyle. Physical Fitness determines the resourcefulness in various life situations, its high level may facilitate work, broaden the capabilities and contribute to a healthy lifestyle. Studies show that physical therapists are particularly predisposed to promote a healthy lifestyle among the medical patients. On the other hand, due to the nature of their work, they are at risk of muscular and skeletal injuries.

The objective was to assess the Warsaw Medical University (WMU) and the Academy of Physical Education (APE) Physiotherapy Students' attitude toward physical activity and physical fitness.

Methodology. Examined was a group of 90 students (37 females, 9 males from WMU and 22 females, 22 males from PEA) of the age 22.7 on average ±2.0 years. Prepared questionnaire designed to assess attitudes toward physical activity was used. The level of physical fitness of the investigated students was examined with International Physical Fitness Test.

Results. The number of physical activity hours is significantly lower at the Medical University (1.6 ±1.5) than PE Academy (3.6 ±1.7), p<0,001. Very high (80%) interest in physical activity during leisure time has been demonstrated, with higher tendency among Physiotherapy PEA students than the WMU students (p = 0.07). A significantly lower level of physical fitness among WMU students, as compared to PEA students, was also found.

Conclusions. 1. Very high interest in physical activity during leisure time, in both groups, should be taken advantage of and developed in educational process. 2. Medical University students presented a much lower fitness level than PEA students, which may have resulted from fewer hours of physical activities at the Medical University of Warsaw (WMU). 3. Due to higher expectations in case of physiotherapists, it seems that physical fitness should be one of the recruitment process criteria at Medical University of Warsaw.

Key words:
physical activity, assessment of physical fitness, physiotherapy students

Introduction

It is generally accepted that physical activity is a key integrating element of a healthy lifestyle. It constitutes the fundamental human needs in every period of human life. Research shows that human health is 50-60% dependent on the lifestyle. Where physical activity plays the most important role [1]. The results of clinical and epidemiological studies on the common health, show that many diseases are more common in people of little or no physical activity, than those who are regularly engaged in moderate or vigorous activity [2].

Physical Fitness determines the resourcefulness in various life situations, its high level may facilitate work, broaden the capabilities and contribute to a healthy lifestyle. It seems reasonable, therefore, (especially among physiotherapy students) to popularize a healthy lifestyle and rational use the advantages of a regular physical activity with particular emphasis on the level of personal fitness [3].
Studies show that physical therapists are particularly predisposed to promote a healthy lifestyle among the medical patients. On the other hand, due to the nature of their work, they are at the risk of muscular and skeletal injuries. [6] Good fitness and healthy habits certainly improve the quality of duties and reduce health problems of the future employees.

The objective was to assess the Warsaw Medical University (WMU) and the Academy of Physical Education (PEA) Physiotherapy Students' attitude toward a physical activity and physical fitness.

Research methodology

Examined was a group of 90 students (37 females, 9 males from WMU and 22 females, 22 males from PEA) aged 22.7 on average ±2.0 years. Body Mass Index (BMI) was 17.9 to 26.0. 22.5 average ±2.1 kg/m2.
In order to assess the attitudes toward physical activity, an independently developed questionnaire and diagnostic methods had been used. Questionnaire questions related to, inter alia, preferred forms of physical activity, motives for physical activities, and university role in motivating students to spent leisure time actively. The level of physical fitness of the investigated students was examined with International Physical Fitness Test. Before individual skill tests, the participants were briefed, and had 10-minutes warm-up. Eight skill tests were made.

The **50 m run test.**
Participants took ready position at starting line. A 50 m run started at signal and the score included the shorter time of the two runs, measured with a 0.1 s accuracy .

Distance leap from stationary position
Participants stood legs slightly apart with parallel feet at the starting line. The leap length was measured from the start line to the nearest trace left by a leaping heel. The score

included the result of the longer leap recorded with 1 cm accuracy.

The 50 m run test. 800 m- females, 1000 m – males
The experiment was conducted on a running track. Participants took positions at starting line and covered the designated distance in the shortest possible time. Score time was measured with 1s accuracy.

Palm strength measurement test
When performing this test, the participants took a stand, legs slightly apart. With favourite hand, he/she grasped tightly the previously tested dynamometer. Both arms lowered freely along the body line (the dynamometer hand not touching the body). Participant squeezed the dynamometer with maximum force. Two attempts were made, with better result taken into account.

Relative strength measurement test
Women test while hanging on bend arms. The task was to maintain the longest possible trapeze hanging position, with slightly bent elbows. The bar grip from a top, at shoulder span, chin above the bar. The attempt began with a chin over the bar, and ended at eyes below the bar position. Only one attempt was possible, scored with time measured in seconds.

Pull from the bar hanging position test
The participant grasped the bar (jumping) and went to full hanging position. At a signal, the participant bent his elbows and pulled his body up until his chin was over the bar, then he returned to the full hanging position. The test ended when the hanging time took more than 2 sec. or pulling attempt resulted in the chin under the bar level. A score included the number of successful attempts. Only one attempt was allowed.

The test of swinging 4 x10 m distance run with carrying blocks
The test started from a starting line, one leg forward, next, the run to two blocks. The task was to grab one block and run back to the start line, leave the block, run and grub another one and carry it back beyond the starting line again. The block had to be placed not thrown, on the pain of nullity of the task. Better time measured with 0.1 s accuracy, made the score.

The 30 s sit from laying position test
The task was to lie down with right angle legs bent, feet resting on the ground, at the heap level. Palms on neck, feet stabilised/loaded with a partner's help. At signal, the test taker was to bend his body until elbows touched his knees and return to the initial lying position. The testing time 30 s. Only one attempt

allowed and the score was made by the number of the successful attempts.

Body bending from erected position
Test taker stood on a stool, toes on the edge, feet together, knees straight. The task was to bend his body as far as possible with fingers reaching the maximum level on the scale fixed at the toes. Two attempts allowed. Results in cm.

Statistics

The SAS 9.2 package designed for statistical analysis was used. (SAS, Institute Inc, Cary, NC, USA). Measured values presented in the form of arithmetic means and standard deviations. In case of International Physical Fitness Test Results, also the calculated dispersion ie. the smallest and the largest values for each study subgroup (women or men) had been taken into account. After analysing the typical characteristics, the differences between mean values were found with the unpaired t-test (equal variance) or Cochran-Cox (various variances) tests. Typos were tested with the Shapiro-Wilk homogeneity test of F variance. Quality presented in form of proportion. Quality spreads were compared using Pearson's Chi^2 test. In cases of small number of expected observations, the Fisher's exact test was employed. The statistical significance was assumed to be the error value and alpha≤0.05 Type. All statistical hypotheses were versatile.

Results

Basing on the Questionnaire, it was found that physical activity classes taken weekly at WMU are significantly less than at PEA (1.6±1,5 vs 3.6 ±1.7, p<0,0001), Table 1.
At PEA, the obligatory physical activities for I° students account for 255 hours of classes, (including general development exercises, music and movement, fitness, swimming therapy). For II° students, 195 hour classes. (including disabled sport, swimming for disabled weight

Table 1. Uni role in promoting healthy and active life style

Does your Uni promote active life style?	WMU students n=46	PEA students n=44	p
Yes n (%)	42 (91.3%)	43 (97.7%)	0.3614
No n (%)	4 (8.7%)	1 (2.3%)	
Number of classes designed for physical activity during a week	1.6 ± 1.5	3.6 ± 1.7	**<0.0001**

training methodology). WMU offers 110 hour mandatory classes of physical activities. (swimming, Nordic walking, Gym-stick), only for I° students. Additionally, the Academic Sport Club of PEA offers such options as i.a.: volleyball, hand ball, swimming, rowing, wrestling, judo, while WMU students are encouraged to take classes in Academic Sport Club (ASC).

Students were observed to favour sports and recreation leisure time options. As many as 80% of respondents selected this kind of activity, while PEA students selected the option significantly (89%) more often comparing with WMU (72%) respondents, $p<0.05$, Table 2.

Table 2. Preferred leisure time activities

Leisure time activities	WMU students n=46	PEA students n=44	p
Sport and recreation n (%)	33 (72%)	39 (89%)	0.0451
Social meetings n (%)	31 (67%)	24 (55%)	0.2114
Watching TV n (%)	6 (13%)	6 (14%)	0.9341
Computer games n (%)	3 (6.5%)	5 (11%)	0.4800
Self-education n (%)	12 (26%)	6 (13.6%)	0.1399
Music listening n (%)	20 (43%)	22 (50%)	0.5353
Reading n (%)	16 (35%)	10 (23%)	0.2072
Other n (%)	4 (8%)	7 (15.9%)	0.2339

PEA preferences include: swimming, jogging, sport and recreation games and biking, while WMU preferences: walking, biking and jogging, Table 3.

Table 3. Preferred leisure time activities chosen by respondents

Activity form	WMU students n=46	PEA students n=44	p
Walk n (%)	23 (50%)	14 (31.8%)	0.0797
Jogging n (%)	22 (47.8%)	25 (56.8%)	0.3929
Aerobics n (%)	14 (30.4%)	6 (13.6%)	0.0553
Gym n (%)	6 (13.0%)	15 (34.1%)	**0.0183**
Biking n (%)	23 (50%)	19 (43.2%)	0.5169
Sport and recreation games n (%)	10 (21.7%)	19 (43.2%)	**0.0296**
Dance n (%)	10 (21.7%)	7 (15.9%)	0.4800
Swimming n (%)	20 (43.5%)	32 (72.7%)	**0.0050**
None n (%)	0	0	-

The selection level of such activities is satisfactory, as 68% of respondents exercise such activities several times a week (50%) or daily (18%). Only 20% of respondents exercise rarely (several times or once a month), Table 4.

Table 4. The frequency of physical activity exercised outside the Uni

Activity form	Total	WMU students n=46	PEA students n=44	p
Daily	16(18%)	4 (8.7%)	12 (27.3%)	
Several times a week	45 (50%)	22 (47.8%)	23 (52.3%)	
Once a week	11(12%)	7 (15.2%)	4 (9.1%)	0,0780
Several times a week	15 (17%)	11 (23.9%)	4 (9.1%)	
Monthly	3 (3.3%)	2 (4.4%)	1 (2.3%)	
Only Uni activities	0	0	0	

The results of the International Physical Fitness Test in women
PEA students were observed to show significantly better results comparing with WMU students both in respect of the strength tests and endurance test (except bar hanging test), Table 5.

Table 5. The results of the International Physical Fitness Test in women. (PEA vs. WMU)

Elements of International Physical Activity Test	WMU students n=37, x±SD (min-max)	PEA students n=22, x±SD (min-max)	p
The 50 m high start run [sec.]	9.5±1.0 (7.4 -11.1)	8.3 ±0.8 (6.9-9.9)	<0.0001
Long jump from standing position [in cm]	167±25 (132-247)	187±25 (145-237)	0.0049
The 800 m run [sec]	268±56 (178 – 368)	221±49 (134 – 340)	0.0018
Palm strength measurement [Kg]	27.7±6.5 (14-40)	32.3±9.6 (14-45)	0.0324
Hanging with bended arms [sec.]	11.3±5.7 (4.5-27.0)	14.0±5.9 (8.0 -28)	0.0814
Swing 4 x 10 m run [sec.]	13.7±1.7 (10.7-17.2)	11.8±1.4 (9.5-14.4)	<0.0001
The 30 s sit from laying position [number of successful repetitions]	23.4±5.3 (15-38)	28.4±4.1 (20-38)	0.0004
Body bending from erected position [cm]	9.0±6.0 (-3-19)	13.5±6.7 (1-29)	0.0091

The results of the International Physical Fitness Test in men
PEA students obtained better results in six PE tests comparing with WMU ones. No substantial differences had been observed among the students in respect of hanging, lifting and body bending tests, Table 6.

Table 6. The results of the International Physical Fitness Test in men (PEA vs. WMU)

Elements of International Physical Activity Test	WMU students n=9, x±SD (min-max)	PEA students n=22, x±SD (min-max)	p
The 50 m high start run [sec.]	8.0±0.9 (6.7-9.4)	6.9±0.9 (5.7-9.2)	0.0032
Long jump from standing position [in cm]	230±14 (205-252)	259±26 (172-297)	0.0040
The 800 m run [sec]	269±30 (22-314)	218±50 (154-345)	0.0090
Palm strength measurement [Kg]	56.3±17.6 (42-81)	68.6±8.9 (50-83)	0.0033
Hanging with bended arms [sec.]	8.8±3.0 (5.0-15.0)	11.9±4.6 (4.0-20.0)	0.0763
Swing 4 x 10 m run [sec.]	11.8±1.5 (9.5-13.3)	9.7±1.5 (7.3-12.2)	0.0019
The 30 s sit from laying position [number of successful repetitions]	27.8±3.7 (22-33)	31.4±5.4 (16-38)	0.0786
Body bending from erected position [cm]	2.2±4.7 (-5-9.0)	6.9±6.1 (-4 -20)	0.0486

Discussion

Physiotherapists represent the professional group, which is particularly predisposed to promote a healthy lifestyle among patients. Promoters of physical activity are more convincing when taking active part themselves and become an example to follow [4, 5].

On the other hand, the physiotherapists make a professional group which is exposed to work-related muscular and skeletal disorders (work-related muscular and skeletal disorder - WRMD) [6]. As a large number of methods and techniques used in physiotherapy requires physical efforts, including the use of increased force and prolonged, awkward positions. The classic triangle of motor skills, present in physiotherapist work seem to include muscle strength needed to carry out the exercises involving verticalisation and securing of patients. Another extremely important is the strength required for the repeated daily exercises. In the light of these observations it is very important to prepare good physical fitness of physiotherapy students.

In recent years, a series of studies on physical fitness and attitude towards physical activity of students have been conducted in Poland. Relatively rare, however, prove to be the studies on physical fitness in physiotherapy students. Reports concerning the assessment of physical fitness show that at many universities, due to the rigour of studies, declining is the interest in physical activity, and especially the participation in organized sport activities [7]. However, in case of physiotherapy students of both Warsaw Medical University and Physical Education Academy students, such conclusions cannot be made. Investigation results suggest a very high (80%) interest in physical activity during leisure time, however the higher tendency among Physiotherapy PEA students comparing with the WMU students ($p = 0.07$), is observed. Almost all respondents (93.3%) of both groups are eager to take part in physical activities. PEA students prefer such activities, as: swimming (72,2%), sport and recreation games (43%) and gym (34%). On the other hand, the WMU students prefer walks (50%) and aerobics (30,4%) – such preferences probably are related to the fact that WMU includes more female students. Małachwiej P. and others investigated the Therapy 87.5%), Pharmacy (7.14%), Electroradiology (1.79%) and General Medicine (1.79%) student's activity at Medical University of Bialystok. The most favourite activity forms among those students, both men and women, were walks; 26.91% and 24.14% respectively. Quite popular proved to be: biking (16,06%), swimming (14.06%) and aerobics (12,05%) among women, and gym (20.69%), swimming (10.34%) and team games (10,34%) - among men. [8]

The selection level of such activities is satisfactory, as 68% of respondents exercise such activities several times a week (50%) or daily (18%). Only 20% of respondents

exercise rarely (several times or once a month). Bialystok Medical University Students are less systematic in this respect comparing to Warsaw Students. Responding to frequency of their activities, they responded: daily - 16.96% of respondents, 4-6 times a week - 18.75%, while 22.89% of females and 13.79% of males declared to undertake physical activities once a week and less frequently [8].

WMU Students results are not impressive comparing with PEA students' results. Perhaps a partial explanation for the results is the fact that the Medical University of Warsaw, in contrast to the Academy of Physical Education, is recruiting their students without preliminary examinations of fitness, which may account for less physically-active recruitments. Also, a significant difference in the number of an offered physical activities within the framework of curriculum of both universities falls in favour of PEU Rehabilitation Faculty. This seem to account for better PEU results.

It should be also stressed that PEU is the one who particularly influences popularization of physical activity and health culture, offering the better support for such activities.

WMU and PEA results reflect Lisicki investigations relating to the physical activities among the students of Trojmiasto (GDANSK, SOPOT, GDYNIA) Medical Academy, University of Technology and the University. [9], They selected 3 MTSF criteria (distance jump, the 4x10m, run and body bend). Both men and women of the Marine Academy proved to be the best at swing run, while the worst proved to be the University Students. At flexibility test, the best results were obtained by Medical University women and the Technical University men.

Comparing the above results, PEA females proved to be better in strength test. Medical Academy Students are only slightly better in flexibility test. WMU Students show similar results in the strength test and agility test, comparing with Gdansk Medical Academy Students, while they take the worst position in flexibility test. WMU men, comparing with Gdansk, Gdynia, Sopot students prove to be better at the distance leap and slightly worse in agility test, however the worst in flexibility test. PEA students prove to be favourites of distance leap and swing run, and are the worst at agility test.

The presented classification prove the most neglected is the flexibility domain, (independently of sex) among both WMU and PEA Students.

Conclusions

1. Very high interest in physical activity during leisure time, in both groups, should be taken advantage of and developed in later educational process.
2. Medical University students presented a much lower fitness level than PEA students, which may have resulted

from fewer hours of physical activities offered by the Medical University of Warsaw (WMU).
3. Due to the higher expectations in case of physiotherapists, it seems that physical fitness should be one of the recruitment process criteria at Medical University of Warsaw.

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