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Physical Education in Universities
Researches – Best Practices – Situation

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Introduction

You are holding a book "Physical Education in Universities: Researches - Best Practices - Situation" prepared by FIEP, Slovak Technical University and Comenius University in Bratislava.

The book is part of the 4th Physical Education World Wide Survey, which is carried out by UNESCO in cooperation with FIEP and its partners. The publication is part of one of its lines, focusing on mapping the basic characteristics of physical education and physical activities of children and youth in the world at individual levels of schools, from pre-school education to universities.

In 2017 the book "Physical Education in Primary School: Researches - Best Practices - Situation", edited by D. Collela, B. Antala and S. Epifani, was published by Pensa Multimedia in Italy and has 502 pages. 102 authors from 27 countries and 5 continents participated. In 2018, it was followed by a publication "Physical Education in Secondary School: Researches - Best Practices - Situation", published by the University of Montenegro in cooperation with the Montenegrin Sport Academy. The editors were S.Popovič, B.Antala, D.Bjelica and J.Gardaševič. It had 343 pages and was prepared by 84 authors from 24 countries and 5 continents. The publication "Physical Education in Early Childhood Education and Care: Researches - Best Practices - Situation" was published in Slovakia by the Slovak Scientific Society for Physical Education and Sport in 2019. Its editors were B. Antala, G. Demirhan, A. Carraro, C. Oktar, H. Oz and A. Kaplánová. It had 464 pages. 120 authors from 32 countries from 5 continents participated. A series of these 4th Physical Education World Wide Survey publications will continue in 2021 with the publication of "Physical Education and Sport for Children and Youth with Special Needs: Researches - Best Practices - Situation".

This book is divided into four parts. In the first part of the publication called "Researches", we bring the latest research findings aimed at exploring the physical activity in universities, faculties and institutes. The second part, the "Best Practices" brings examples of good practice from different countries of the world and the third part "Situation" is focused on presenting knowledge related to the characteristics of the state of the issue in various countries in the world. Last, fourth part of the book is focused on French language write articles. Due the agreement between FIEP and CONFEJES, the book was open for articles write in French language also. Seven articles, especially from African countries, are situated in this last part of the book.

136 authors from 28 countries and five continents participated in the book, of which 13 were European countries/regions (France, Italy, Ireland, Kosovo, Nord Macedonia, Portugal, Russia, Serbia, Slovakia, Spain, Sweden, Ukraine, United Kingdom), 2 countries from America (Mexico, USA), 4 countries from Asia (Lebanon, Malaysia, Saudi Arabia, Singapore), 6 countries from Africa (Algeria, Benin, Burkina Faso, RSA, Senegal, Tunisia) and 3 countries from Oceania (Australia, New Zealand, Samoa). Therefore, the publication brings a broad international perspective on the issue of university physical education and physical activities.

A book "Physical Education in Universities: Researches - Best Practices -Situation" is prepared also for celebration of 60th anniversary of Faculty of Physical Education and Sports Comenius University in Bratislava in Slovakia where FIEP have already many years its European seat. Book celebrate also 80th anniversary of Faculty of Chemical and Food Technology from Slovak University of Technology in Bratislava. Its Department of Physical Education and Sport is a partner for preparation of this book. More complex information about these two important Slovak institutions are presented in the beginning of book in the part Introduction.

A thank you goes also to the reviewers who, through their comments and advice, helped the authors improve the quality of their contributions. We thank also the Foundation for Development of Faculty of Chemical and Food Technology of Slovak University of Technology in Bratislava and the faculty management for financial and moral support in publishing this publication.

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Editors

Level of Physical Activity in Universties Students: a Cross-Cultural Studies

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Abstract

The aim of the present study was to assess the level of physical activity of university students from Serbia and Brazil. It is a cross-cultural study, with a quantitative approach and cross-sectional design. The non-probabilistic sample was composed of 60 students (95% female) in first years at Faculty of Education University of Jagodina, Serbia and 50 students (32% female) from the initial years of the Faculty of Physical Education and Sport, Santos, Brazil. To assess the level of physical activity, all participants were submitted to the international Physical Activity questionnaire (IPAQ short version), using validated and translated versions for Serbian and Brazilian students. The data were tabulated to calculate the mean and standard deviation of the time spent in vigorous, moderate activities, walking and sitting time. After verifying the non-normality of the data using the Kolmogorov-smirnov test ($p<0.05$), the Mann-Whitney nonparametric comparison test was applied. The results found show that more than 50% of the sample has high levels of physical activity (53% Serbia and 68% Brazil). No significant differences were found between countries for time spent on vigorous physical activity ($p = 0.721$) and time spent sitting ($p = 0.216$). For moderate physical activities, significant differences were found in favor of Brazilian students ($p = 0.02$). in contrast, the time spent on walks was significantly higher for Serbian students ($p = 0.00$). Such differences may have been influenced by differences in the distribution of women among men in the groups, and by different characteristics of Education and Health courses. Further research with a larger number of subjects is suggested to better understand physical inactivity among university students in different cultures. , since sedentary lifestyle presents itself as a worldwide public health problem.

Key words: Level of physical acitvity, Sedentary behavior, University students

Introduction

Physical activity is defined according to Caspersen (1985) as any body movement produced by skeletal muscles that results in higher energy expenditure than resting levels. Physical activity is an important element for quality of life and health promotion. Among its many benefits are the improvement of muscle and cardiorespiratory fitness, reduction the risk of diseases such as hypertension, heart disease, stroke, diabetes, cancer and depression, weight control, improvement of bone and functional health and balance of energetic expenditure. In contrast, physical inactivity can lead to increased of mortality. People who do not practice adequate physical activity have an increased risk of death compared to active people. Estimates from 2012 indicated that not meeting physical activity recommendations is responsible for more than 5 million deaths globally each year (Ekelund et al., 2016; Biswas et al., 2015).

According to the World Health Organization, adults between 18 and 64 years old should perform 150 minutes of moderate-intensity physical activity, or 75 minutes for vigorous-intensity physical activity throughout the week, for at least 10 continuous minutes. For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity (WHO, 2010). Already the American College of Sports Medicine (Haskel et al., 2007) states that adults should perform at least 30 minutes of moderate physical activity five times a week or 20 minutes of physical activity for at least three times a week three. Both recommendations suggest the sum of 150 minutes, however, ACSM establishes a minimum frequency. This slight difference is important for health, as the effect of physical activity on insulin levels, for example, occurs within a maximum of 12 to 48 hours. In addition, the concentration of large volumes of physical activity can cause injuries (Lima et al., 2014). This way, meeting the weekly recommendations in distributed sessions during the week becomes more appropriate.

Although all the benefits of physical activity are recommended for health, a reduction in the levels of physical activity has been observed in recent years, this is a global phenomenon and especially observed in the last 100 years (Morshet et al., 2016; Kalman et al., 2015). However, some groups are more susceptible to this decline, especially academic students who are exposed to stressful situations of daily life, such as competitiveness, accumulation of academic papers, tests and expectations as to insertion in the labour market (Melo et al., 2016; Keating et al., 2005).The changes in the daily habits upon entering university, especially in the spend time sitting and the lack of time to make physical exercises results in developing diseases (Petersen et al., 2014).

The profile of students from different academic courses can be an influencing factor in the level of physical activity. Physical education students, for example, showed a higher level of physical activity when compared to other courses in the health area. On the other hand, the lack of male teachers is a recurring theme in educational discussions. The female numerical domain of basic education has been considered a problem in several countries in the 19th century, as well as today (Lahelma, 2006). Thus, in addition to the educational implications, female hegemony in basic education courses can influence the pattern of physical activity observed in students of this course.

Deforche et al (2015) conducted a prospective longitudinal design study to assess changes in weight, physical activity level and sedentary behavior of youngs during university entry. In addition to changes in body weight, increased time spent at the computer and alcohol consumption was also associated with entry into higher education.

Sedentary behavior is often defined by intensity alone (A) or intensity + posture (B). The difference between the definitions is that behaviors that are not seated/reclining and are also low intensity (≤1.5 METS), e.g. standing, are considered sedentary behavior by the intensity definition (A) but light intensity by the intensity + posture definition (B) (Gibs et al., 2015).

Although the recommendations paid more attention to the intensity of activities, there is strong evidence that sedentary behavior, especially time spent sitting, is related to metabolic changes, obesity, type 2 diabetes and cardiovascular disease. That is, sedentary behavior is a disease predictor independent of time spent in activities with moderate and vigorous intensities (Patel, 2010). Castro 2018 performed a systematic review to evaluate correlations between sedentary behavior and university routine. The study concluded that the levels of physical activity, obesity markers and gender were related to sedentary behavior (Castroa, et al., 2018).

Objective

The aim of this study was to evaluate the physical activity level of physical education university students from two different countries.

Methodology

Sample

Students in first years at Faculty of Education University of Jagodina, Serbia participated in Survey in Serbia. A total of 60 students from first year were invited to take part in the paper-based questionnaire. Research sample consisted dominantly from female participants, 57 of them or 95 %, while only 3 were male students or 5 %. In Brazil, the sample consisted of students from the Faculty of Physical Education and Sport of Santa Cecília University. Being 68% male participants. All of them were students at the first year of the faculty at courses for elementary teachers and preschool teachers. This is a quantitative cross-sectional study and a non-probabilistic sample.

Materials ans intruments

The level of physical activity was assessed using the International Physical Activity Questionaire-IPAQ (Short Version). IPAQ short version consists of seven questions related to the amount of times per week and time spent per day on vigorous, moderate activities, walking and sitting time. These questions refer to the activities performed in the last seven days. For Brazilian students, the Portuguese version translated and validated for the Brazilian population of Matsudo et al., Xx was used. For Serbian students, version translated on serbian by expert from the Sport medicine assiocition of Serbia and posted on their website.

Procedures

The anonymous questionnaire was delivered and completed after lectures. All the questionnaires were filled in the same week during last month of the winnter semester 2019. The same instructions were used to complete the questionnaires in Serbia and Brazil. After completing the questionnaires, data were tabulated for statistical treatment.

Data Analysis

For statistical analysis, the Statistical Package for Social Sciences (SPSS 25) software was used. Data were submitted to descriptive and inferential analyzes. The dependent variables analyzed were the time spent per week with vigorous, moderate activities, walking and time spent sitting time during a week day. As an independent variable we used first year students of the Physical Education course

at Santa Cecília University in Brazil and students enrolled at the Faculty of Education University of Jagodina, Serbia. The on the amount of time spent on physical activity and sitting for the students from Serbia and Brazil are given below in the form of mean and standard deviation.

Table 1 Mean and standard deviation for time spent (minutes) in the week on vigorous, moderate activity, walking, and sitting time

	Physical Activity			**Sedentary Behavior**
	Vigorous	Moderate	Walking	Sitting
Serbia	301,86±309,26	185,42±168,61	632,54±436,25	293,50±237,03
Brazil	399,30±436,13	436,20±383,49	264,20±227,70	328,70±185,24

Then, for the inferential analyzes, the data were submitted to the test of normality of data distribution and homogeneity of variances. After verifying non-normality (Kolmogorov-smirnov e Shapiro Wilk Test) and homogeneity (Levene Homogeneity Test) of data, the nonparametric comparison test was applied (Table 2)

Table 2 Mann-Whitney test for independent samples

	Time Spent Vigorous Activity
Mann-Whitney U	1416,500
Asymp. Sig. (2-tailed)	, 721
	Time Spent Moderate Activity
Mann-Whitney U	978,500
Asymp. Sig. (2-tailed)	, 002
	Time Spent Walking
Mann-Whitney U	647,500
Asymp. Sig. (2-tailed)	, 000
	Time Spent Sitting
Mann-Whitney U	1295,000
Asymp. Sig. (2-tailed)	, 216

*Grouping Variable: University (Serbia and Brazil)

Finally, the IPAQ score table was used to classify the level of physical activity as high, moderate and low. This rating is calculated based on the amount of minutes spent per week on vigorous, moderate physical activity and walking. Results are presented in table 3 and Table 4.

Table 3 Level of physical activity classification

*IPAQ Score

	N	High	Moderate	Low
Serbia	60%	53%	17%	30%
Brazil	50%	68%	20%	12%

Table 4 Level of physical activity of students from Serbia and Brazil for Pearspn´s Chi-Square test

	Value	df	Asymp. Sig (2-slide)
Pearson´s Chi-Squared	8,485*	2	, 014

* 0 cells have expected coutn less than 5. The minimum expected count is 8,64

According to the observed results, significant differences were found between Serbia and Brazil in the time spent in moderate activity and walking per week. The moderate activity being higher for the Brazil sample. In contrast, Serbia students had more walking time in the week compared to Brazilian students. No differences were observed for the variables of time spent in vigorous activities and sitting time. Regarding the classification of the level of physical activity, higher values were observed for the students of the Physical Education and Sports course in Brazil compared to the students of the Faculty of Education in Serbia. However, one must take into account the differences in the course and gender in the groups evaluated.

Discussion

The aim of this study was to evaluate the physical activity level of students in the first year of higher education from two different countries. Since the level of physical activity in the general population has declined in recent decades, a percentage of students with lower than expected health levels were expected to be found. Results generally show that more than 50% of the sample had high levels of physical activity (53% Serbia and 68% Brazil), and a lower percentage of students were classified with low levels of physical activity (30% Serbia and 12% Brazil).

It should be emphasized that the students evaluated are attending the first year of the course, being expected according to the literature an increase in physical inactivity over the academic years, this increase being justified by the accumulation of academic tasks and the reduction of leisure time. as well as increased time spent sitting in the classroom and at the computer in research and source studies (Deforche et al., 2015; Melo et al., 2016). In studies found in the literature, university students point out as the main interpersonal barrier to the practice of physical activities the tiredness, pain and lack of motivation, while social barriers are related to physical inactivity of

friends and family, economic costs and public spaces conservation (Úbeda-Colomer, Devis, & Sit, 2019)

Aware of the strong link between physical activity and major noncommunicable diseases, WHO member states have set the goal of a relative 10% reduction in the prevalence of insufficient physical activity by 2025 as one of nine global targets for improved prevention and treatment (Guthold et al., 2018). Thus, physical inactivity has become one of the biggest public health problems of the 21st century (Blair, 2009). Previous research on tudent population in Serbia showed that the frequency of physical activity and / or sport had a statistically significant positive impact on the students morphological status in female students (Dopsaj, 2013).

Differences in the level of physical activity of college students in different socio-cultural contexts may be due to multiple factors. In the present study, these differences may be related to gender and type of university course. According to WHO (2020), physical inactivity is more present in women than in men. These differences are explained by cultural barriers, workload at home and socioeconomic issues. This trand was confermed in Serbian student population in previous research by Macanovic et al., 2013 who found that female students were less involved in sport or other type of physical activity than male students, 43% compared to 57%, respectivly.

Regarding the type of university course, the study by Jesus et al (2017), students of the Physical Education course presented higher levels of physical activity when compared to other university courses. Another factor related to the type of university course, refers to the practical classes held during the school year. The curricular structure of the Physical Education course is composed of different sports practices and experiences of different physical exercise programs.

The high time spent sitting in college students is a risk factor for cardiovascular disease, increased body weight and reduced physical fitness. To Butter et al. (2018) the high involvement in cognitive tasks in the academic environment increases the sedentary behavior of students. This way you have to find strategies to decrease sitting time in class. An alternative to this problem is modification of classroom chairs. Studies have found standing rather than sitting during the same period shows a significant increase in energy expenditure, fat oxidation and reduction in HDL cholesterol (Graves et al., 2015).

The students observed in this study spend an average of five hours sitting during the day (298.50 minutes for Serbian students and 328.70 minutes for Brazilian students). Thus, strategies to reduce this time at university can contribute to this public health problem. Once, replacing 1 hour of sedentary time with equivalent amounts of light intensity activity was associated with a 55% decrease in ACM risk.

Conclusion

According to the results it can be concluded that more than 50% of the university students observed present high levels of physical activity. No significant differences were observed between the time spent in vigorous physical activity and the sitting time between the students of the Faculty of Education of Serbia and the students of the Faculty of Physical Education and Sport of Brazil. Regarding the time spent in moderate physical activity and walking significant differences were found. Finally, the physical activity level classification was found to be associated with the type of course, and relationships were observed between higher levels of physical activity among Brazilian

students. Differences in women's distribution and course type are possible explanations for these diferences (Stamatakis et al., 2019).

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