THE RELATION BETWEEN PHYSICAL ACTIVITY AND HEALTH AMONG HIGHLY AND MODERATELY ACTIVE STUDENTS

Vitas Linonis[1], Laura Daniusevičiūtė[1], Rasa Šulnienė[1], Loreta Šapokienė[1], Šarūnas Klizas[2], Vaidas Mickevičius[3]
Kaunas University of Technology[1], Kaunas, Lithuania
Lithuanian Academy of Physical Education[2], Kaunas, Lithuania
Kaunas Technical College[3], Kaunas, Lithuania

ABSTRACT

Research background and hypothesis. Lack of physical activity is influenced by a number of chronic non-infectious, mental (Corbin et al. 2001; Golden et al., 2004) and other diseases (Katzmarzyk et al., 2003). Students' physical activity and nutrition research remains relevant, especially for those students the future profession of which is not related to physical activity and health.

Research aim. The aim of the study was to estimate the relation between physical activity and health among highly and moderately active students.

Research methods. All the subjects (n = 327) were grouped according to their physical activity levels. The group highly physically active students – female athletes (n = 32) and male athletes (n = 79) who were physically active more than 3000 minutes per week. The group of moderate physical activity included females (n = 47) and males (n = 169) who were physically active 600–3000 minutes per week (Ainsworth, Levy, 2004). The respondents filled in anonymous questionnaires: the International Physical Activity Questionnaire (IPAQ). The questions dealt with the time being physically active in the last seven days. The survey took place in February–April, 2012.

Research results. The subjects in high physical activity group gave a subjective evaluation of their physical activity as high (53%) and moderate (32%). The subjects in the moderate physical activity group evaluated their physical activity as moderate (60%) and high (26%). All subjects in both groups indicated that their health was good. The headache symptoms, stomach, abdominal or back pains, sadness, depression, insomnia and dizziness were rare or not common at all to subjects in high (63%) physical activity group. Sadness, depression, nervous tension and irritability, and bad mood were common to subjects in moderate (59%) physical activity group. The subjects in high physical activity group had their meals three – four times per day (76%), but subjects in moderate group ate only two - three times per day (61%). Irregular lunch and dinner were common to subjects in moderate physical activity group (63%).

Discussion and conclusions. Research results showed that subjects in high and moderate physical activity groups gave correct subjective evaluations of their physical activity forms. Also subjects in high physical activity group had breakfast, dinner and supper on regular basis and they had balanced diets more often ($p < 0.05$).

Keywords: physical activity, health, nutrition.

INTRODUCTION

Lack of physical activity (PA) is related to a number of chronic non-infectious, mental (Corbin et al. 2001; Golden et al., 2004) and other diseases and premature mortality (Katzmarzyk et al., 2003). It is known that low levels of physical activity influence cardiovascular (Shephard et al., 1999), diabetes (HU et al., 2003), osteoporosis (Nguyen et al., 2000), cancers and other diseases (Thune, Furbenger, 2001), high levels of physical activity help control body weight

(Ross et al., 1998) and improve the quality of life (Acree, 2006). According to the recommendations of World Health organization (WHO), other health relevant governmental and public organizations, physical activity should last at least 30 minutes per day. It is known that children should be physically active no shorter than one hour per day (Harro et al., 2006). Boys' physical activity is usually higher than that of girls (Harro et al., 2006). Physical activity can be divided into shorter periods of time (shorter than ten minutes), which has a positive effect health (Corbin et al., 2001). Physical activity in Lithuania was mostly studied as an integral part of lifestyle in the field of biomedical and sociological research. Physical activity of Lithuanian schoolchildren and students was established as higher than the average in the European Union. The project data showed that leisure time activities including sports for at least 30 minutes four or more days per week in Lithuania increased since 1994, but in 2006 they were only 23 percent (Pomerleau et al., 2000). The study on health behaviors Lithuanian adults showed that only very few patients admitted that they were advised to increase their physical activity by their doctor (6.9%) or other health care specialists (1.6%), family members (24.1%), or other persons (10.2%) (Pomerleau et al., 2000). Studies have shown that even would-be medical and public health professionals have unbalanced diets, wrong eating habits and do not follow nutritional guidelines. Established (Škėmienė et al., 2007), even 40.0% of first-year female and 54.7% male doctors failed diet regimen. Not regularly ate 29.5% of third-year females and 46.3% males. R. Stucco and V. Dabravolskij (2009) for future public health professionals showed that 89.5% of males and 62.5% of girls fail to comply with dietary treatment, the difference between sex and diet, compliance is statistically significant. Students' physical activity and nutrition research remains relevant, especially if students' future profession is not related to physical activity or health. The aim of the study was to estimate the relation of physical activity and health among highly and moderately active students.

RESEARCH METHODS

The subjects. The study included 327 students of Kaunas University of Technology. All subjects were grouped according to their physical activity levels. High physical activity group involved females athlete (n = 32) and male athletes (n = 79) who were physically active more than 3000 minutes per week. Moderate physical activity group included females (n = 47) and males (n = 169) who were physically active for 600–3000 minutes per week (Ainsworth, Levy, 2004).

The questionnaire. The respondents got anonymous questionnaires: the International Physical Activity Questionnaire (IPAQ) – Short Form (Ainsworth, Levy, 2004). The purpose of the questionnaire survey was to obtain comparable data on health related physical activity. The questions dealt with the time being physically active in the last seven days. The questionnaire was divided into four parts according to physical activity: 1) vigorous physical activity refers to activity which requires much physical effort and makes breathing much harder than normal; 2) moderate activity refers to activity that requires moderate physical effort and makes breathing somewhat harder than normal; 3) walking, which includes activities at work and at home, walking to travel from place to place, and any other kinds of walking for recreation, sport, exercise, or leisure; 4) sedentary activity includes time spent at work, at home while doing course work and during leisure time, also time spent sitting at a desk, visiting friends, reading, sitting or lying while watching television. Following the guidelines of the International Physical Activity Questionnaire *(IPAQ — Short and Long Forms,* 2005), all respondents were grouped according to their physical activity levels: high, moderate and low physical activity. We also ascertained students' nutrition habits and frequency, subjective health assessments, complaints and the frequency of visiting doctors.

Testing schedule. The anonymous questionnaire survey was conducted in February–April, 2012. The subjects were randomly selected in Kaunas University of Technology. Before completing the questionnaire, subjects were explained the aim of the study and then they were asked to fill in the questionnaire. The researcher explained possible ambiguities. On average, filling in the questionnaires took about 15 minutes. The data were processed and analyzed using the statistical package *SPSS 13.0.* To check the hypothesis chi-square (χ^2) test was applied, the statistical inference confidence level was $p < 0.05$.

RESEARCH RESULTS

Female athletes admitted having vigorous physical activities two - three 3 days per week, male athletes – from three to five days per week. Female students had vigorous physical activities from one to three days per week, and males – from two to five days per week. The difference was statistically significant comparing the duration values of female athletes and females in moderate activity group ($p < 0.05$). The same significant difference was found comparing the duration values of male athletes and males in moderate activity group ($p < 0.05$; Figure 1).

Female athletes admitted having moderate physical activities up to two days per week, male athletes – five days per week. Females were having moderate physical activities from one to three days per week and males – two 2 days per week. The difference was statistically significant comparing the duration values of female athletes and females in moderate activity group ($p < 0.05$). The same significant difference was found comparing the duration values of male athletes and males in moderate activity group ($p < 0.05$; Figure 2).

Female athletes indicated walking up to seven days per week, male athletes – to seven days per week. Females walked to seven days per week and males – seven days per week ($p < 0.05$; Figure 3).

Female athletes indicated that they spent from four to six hours per day sitting. Male athletes sat from four to five hours per day. Females sat from four to five hours per day and males – from one to six hours per day (Figure 4). Females and males in moderate of physical activity group spent time more sitting than female and males athletes, the difference was statistically significant ($p < 0.05$; Figure 4).

The subjects in high physical activity group subjectively evaluated their physical activity as high (53%) and moderate (32%). The subjects in moderate physical activity group subjectively evaluated their physical activity as moderate (60%) and high (26%). All subjects in both groups thought

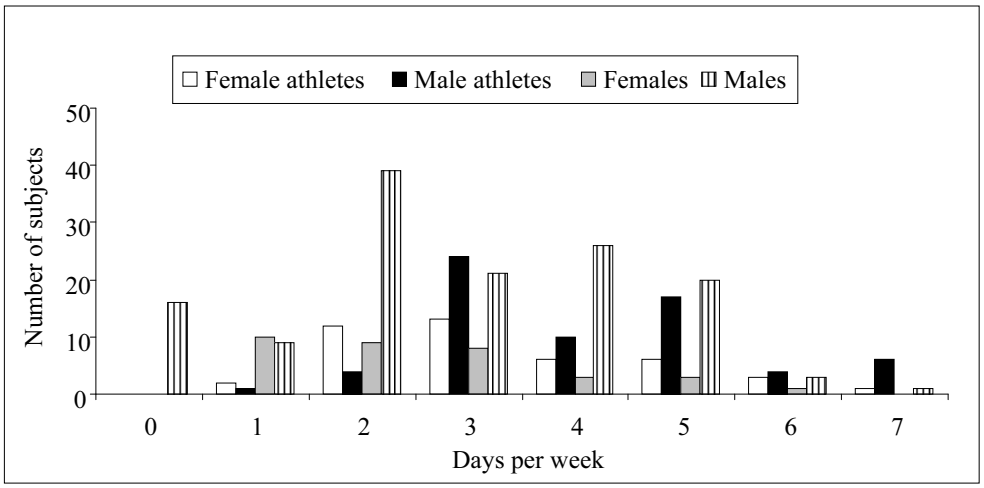


Figure 1. **The frequency of vigorous physical activities (weightlifting, digging, aerobics, or speed cycling)**

Note. $p < 0.05$.

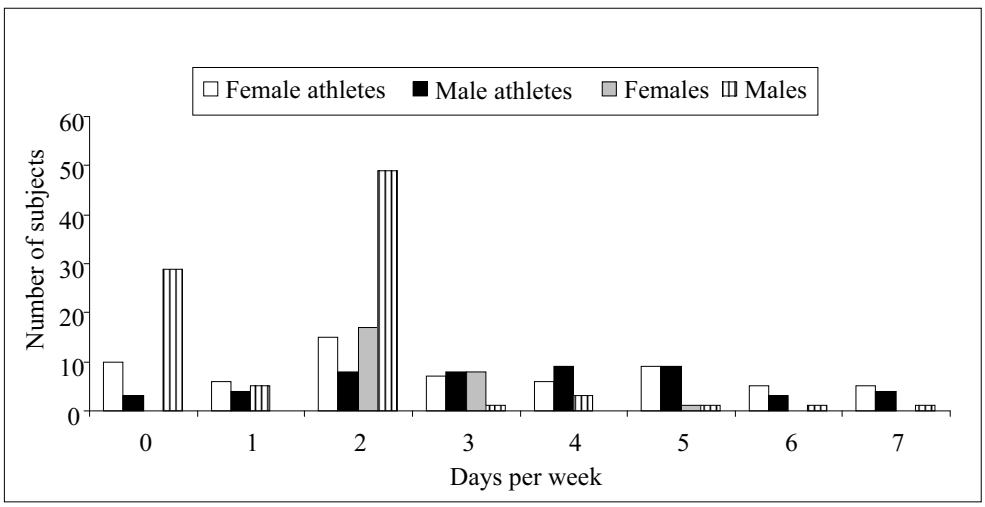
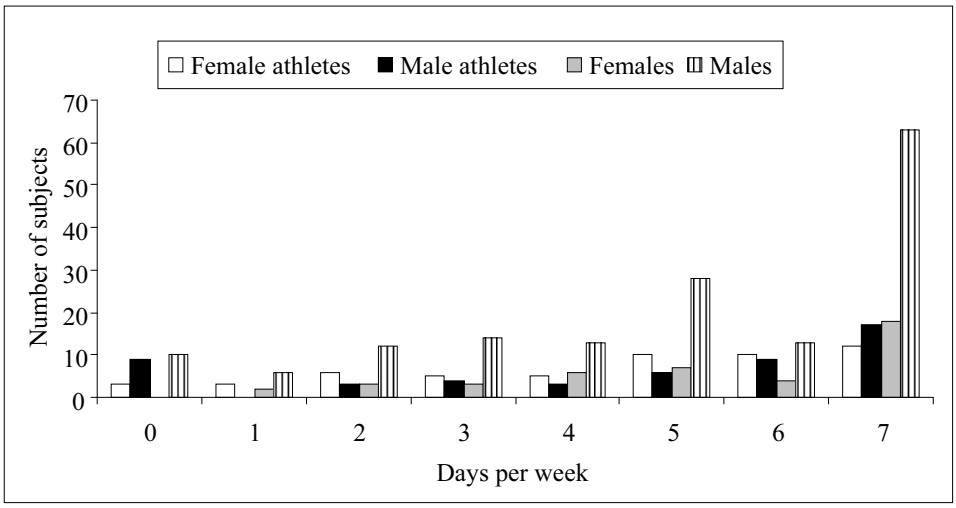


Figure 2. **The frequency of moderate physical activities (carrying light loads, cycling at a regular pace, or tennis)**

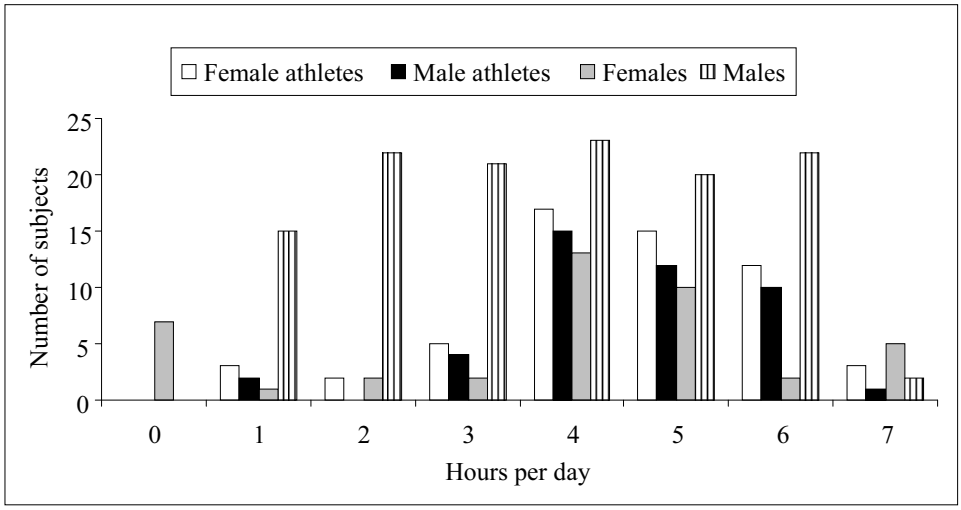
Note. $p < 0.05$.

Figure 3. **Frequency of walking, which includes activities at work and at home, walking to travel from place to place or any other kinds of walking for recreation, sport, exercise or leisure, as indicated by the subjects**



Note. $p < 0.05$.

Figure 4. **The hours of sitting per day as indicated by the subjects**



Note. $p < 0.05$.

their health was good. The headache symptoms, stomach or abdominal pain, back pain, sadness, depression, insomnia and dizziness were rarely or never occurring to subjects (63%) in high physical activity group. Sadness, depression, nervous tension and irritability, bad mood were common to subjects almost every month in moderate (59%) physical activity group. The subjects in high physical activity group had meals three - four times per day (76%), but subjects in moderate group ate two - three times per day (61%). Irregular lunch and dinner were common to subjects in moderate physical activity group (63%).

DISCUSSION

Less physically active students get tired sooner than physically active students and they are in poor health (Bray, Bora, 2004). R. Proškuvienė and M. Černiauskienė (2009) found that subjects rated their health as good, but many of them admitted having a lot of illness symptoms occurring over the last few months. High levels of occupation and lack of time during the studies have a negative impact on students' physical activity and nutrition. Our study revealed that only one-fifth of Kaunas University of Technology students characterized themselves as highly physical active. S. Poteliūnienė and co-authors (2006) found that first year students did not participate in regular physical activities, so it is of high importance to increase their physical activity and motivation to exercise. It is important to eat every day at the same time and to eat not fast (Škėmienė et al., 2007). Students do not have enough time to eat, their eating regime is disrupted (Škėmienė et al., 2007). While all first year students and one third of fourth year students said that their diets were healthy, just more than half of the respondents admitted having breakfast and dinner on regular basis. Other authors (Škėmienė

et al., 2007) also found that students had unbalanced diets: taking too much fat. We found that students regularly having breakfast, lunch and dinner were those in higher physical activity group. They also ate vegetables ($p < 0.05$), fresh fruits ($p < 0.05$) more often and they had balanced diets ($p < 0.05$). Our results were similar to those of other authors (Kriaučionienė et al., 2009). They found that people who followed healthy diet recommendations were physically active as well.

CONCLUSIONS AND PERSPECTIVES

Research results showed that subjects in high and moderate physical activity groups gave correct subjective evaluations of their physical activity forms. Also subjects in high physical activity group had breakfast, dinner and supper on regular basis and they had balanced diets more often ($p < 0.05$).

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FIZINIO AKTYVUMO IR SVEIKATOS RYŠYS TARP DIDELIO IR VIDUTINIO FIZINIO AKTYVUMO STUDENTŲ

Vitas Linonis[1], Laura Daniusevičiūtė[1], Rasa Šulnienė[1], Loreta Šapokienė[1], Šarūnas Klizas[2], Vaidas Mickevičius[3]

Kauno technologijos universitetas[1], Kaunas, Lietuva
Lietuvos kūno kultūros akademija[2], Kaunas, Lietuva
Kauno technikos kolegija[3], Kaunas, Lietuva

SANTRAUKA

Tyrimo pagrindimas ir hipotezė. Fizinės veiklos trūkumas turi įtakos lėtinių neinfekcinių, psichikos (Corbin et al 2001; Golden et al., 2004) ir kitų ligų atsiradimui (Katzmarzyk et al, 2003). Studentų fizinio aktyvumo ir mitybos tyrimai išlieka aktualūs, o ypač tiems studentams, kurių ateities profesija nėra susijusi su fizine veikla.

Tikslas – įvertinti didelio ir vidutinio fizinio aktyvumo studentų fizinio aktyvumo ir sveikatos ryšį.

Metodai. Buvo tirta 327 Kauno technologijos universiteto studentai. Visi tiriamieji suskirstyti pagal fizinio aktyvumo lygius. Didelio fizinio aktyvumo grupei buvo priskirtos moterys sportininkės (n = 32) ir vyrai sportininkai (n = 79), kurių fizinis aktyvumas sudarė daugiau nei 3000 minučių per savaitę. Vidutinio fizinio aktyvumo grupei buvo priskirtos moterys (n = 47) ir vyrai (n = 169), kurių fizinis aktyvumas sudarė 600–3000 minučių per savaitę (Ainsworth Levy, 2004). Respondentai gavo anoniminį klausimyną – 2005 m. Tarptautinio fizinio aktyvumo klausimyno (IPAQ) gairių trumpąją formą (Ainsworth Levy, 2004). Tiriamųjų klausta, kiek laiko jie buvo fiziškai aktyvūs per paskutines 7 dienas. Anoniminė anketinė apklausa atlikta 2012 metų vasario–balandžio mėn.

Rezultatai. Didelio fizinio aktyvumo grupės tiriamieji įvertino savo fizinį aktyvumą kaip didelį (53%) ir vidutinį (32%), vidutinio fizinio aktyvumo grupės tiriamieji – kaip vidutinį (60%) ir didelį (26%). Abiejų grupių tiriamieji įvertino savo sveikatą kaip gerą. Galvos, skrandžio ar pilvo, nugaros skausmus, liūdesį, depresiją, nemigą ir galvos svaigimą patiria retai arba niekados didelio (63%) fizinio aktyvumo grupės tiriamieji. Liūdesį, depresiją, nervinę įtampą ir dirglumą, blogą nuotaiką beveik kiekvieną mėnesį patiria vidutinio (59%) fizinio aktyvumo grupės tiriamieji. Didelio fizinio aktyvumo grupėje tiriamieji valgo 3–4 kartus per dieną (76%), vidutinio fizinio aktyvumo – 2–3 kartus per dieną (61%). Nereguliariai pietauja ir vakarieniauja vidutinio fizinio aktyvumo tiriamieji (63%).

Aptarimas ir išvados. Didelio ir vidutinio fizinio aktyvumo grupių tiriamieji subjektyviai pažymėjo, kad jie yra pasirinkę tinkamą fizinio aktyvumo formą. Didelio fizinio aktyvumo grupės tiriamieji reguliariau pusryčiavo, pietavo ir vakarieniavo, taip pat dažniau derino maisto produktus nei vidutinio fizinio pajėgumo studentai.

Raktažodžiai: fizinis aktyvumas, sveikata, mityba.

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Corresponding author **Laura Daniusevičiūtė**
Kaunas University of Technology
Donelaičio str. 73, LT-44029 Kaunas
Lithuania
Tel +370 600 65490
E-mail lauruka@yahoo.com