

PECULIARITIES OF PHYSICAL ACTIVITY AND SELF-ESTEEM OF YOUNG PEOPLE WITH DIABETES MELLITUS TYPE 1 AND HEALTHY PERSONS AGED 18–25 YEARS

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ABSTRACT

Research background and hypothesis. Careful diabetes control slows the onset and progression of life-threatening complications, the development of disability and early disability-related unemployment, and prolongs life expectancy (Danytė et al., 2000). The benefits of physical activity on regular basis comprise improved cardiovascular health, increased lean body mass, improved blood lipid profile, enhanced psycho-social wellbeing and decreased obesity (Riddell, Iscoe, 2006). Physical activity is one of the main factors influencing glucose level in diabetic patients' blood (Wiśniewski, 2010). Analysis of self-esteem of the studied revealed a wide range of findings, from trying to outline the modest achievements, pride, and even unwillingness to discuss it to low self-esteem, feeling of guilt and self-reproach for mistakes and failures (Žemaitis, 1995).

The aim of the study was to determine physical activity and self-esteem of healthy subjects and patients with diabetes mellitus type 1 aged 18–25 years.

Methods. The study included 140 individuals (aged from 18 to 25 years). Among 41 patients with type 1 diabetes mellitus there were 33 young women and 8 young men, and among 99 healthy persons – 79 young women and 29 young men. All the subjects were asked to fill in the questionnaire orientated to physical activity and self-esteem. The short IPAQ questionnaire was used to research physical activity and Rosenberg's Self-Esteem Scale was used to assess self esteem.

Research results. Approximately 60% of subjects with diabetes mellitus type 1 and about 50% of healthy persons rated their physical activity as moderate. Intensive 60-minute-physical activity was reported by 48.5% of healthy subjects and 34.1% of diabetic patients, moderate 60-minute-physical activity was pointed out by 38.2% of diabetic patients and 35.8% of healthy research participants. The largest walking interval was 1–1.5 hours: in the diabetic group– 28.8%, in the healthy group – 31.65%. Healthy young men and women were physically more active than diabetic patients. Self-esteem in both genders of healthy subjects and diabetic patients was determined as moderate.

Discussion and conclusions. Physical activity of women and men with diabetes mellitus type 1 aged 18–25 years was valued as moderate, meanwhile physical activity in healthy persons – moderate or high. Self-esteem is moderate in both groups of patients with diabetes and healthy persons. Healthy men are more active than diabetic patients, similarly, women having diabetes mellitus type 1 are more physically passive than healthy ones. Both patients with diabetes mellitus type 1 and healthy individuals aged 18–25 reported moderate self-esteem.

Keywords: diabetes mellitus type 1, physical activity, self-esteem.

INTRODUCTION

Recently diabetes as a chronic disease has been the focus of attention. So far few studies have been in Lithuania. However, we think that this is a relevant problem, which requires a deeper investigation and may provide

patients with information and advice on how to live with this disease. Although the disease is incurable, people with diabetes can still lead a normal life. Diabetes mellitus is the most prevalent disease of the endocrine system and is characterized by person's

inability to perform normal glucose regulation and carbohydrate metabolism (Hoffman, 2002). Thus, in this case, administration of insulin injections is necessary. People with type 1 diabetes do not experience any health disorders or inconveniences if they have the right dose of insulin at a suitable time.

The morbidity from diabetes mellitus is growing all over the world. Lithuania is not an exception. According to the data of the Lithuanian Health Information Center, morbidity from diabetes mellitus in the people aged 18 and above was 62% or 26.63 cases per 1000 population (*Lithuanian Health Information Center*, 2009). This illustrates that the scale of the disease is growing but there is still a lack of preventive measures. Sufficient physical activity is one of the primary prevention factors, reducing morbidity from ischemic heart disease, diabetes mellitus and stroke, mortality from ischemic heart disease and general mortality (Leon, Connett, 1991). Although the authors determined this fact twenty years ago, people with diabetes still lack help to integrate into the society without feeling of being humble. As H. Pek et al. (2002) assert, whether people assess themselves positively they usually have high self-esteem. According to them, self-respect may be assessed in terms of family, parents, education, age, activities and economic status. We agree with the authors since the environment and people who surround these patients are of great importance. A family should help diabetic patients adjust to the disease and perform their daily activities, such as working, studying and entertaining. Education and special training should help them acquire knowledge about the disease. Socio-economic conditions may provide better possibilities to obtain newer and more effective drugs.

RESEARCH METHODS

The research participants. The study included 140 individuals (aged from 18 to 25 years). Among 41 patients with type 1 diabetes mellitus there were 33 young women and 8 young men, and among 99 healthy persons – 79 young women and 29 young men (Table).

The study design. The questionnaire-based study was performed in February–April, 2011. The healthy subjects were randomly selected. The subjects with diabetes mellitus type 1 were identified through Diabetes Association. The

questionnaires to the healthy subjects and subjects with diabetes were sent by e-mail. The selected subjects with diabetes were given two weeks to send a reply. Out of 160 sent questionnaires, 140 answers were received. Each questionnaire consisted of 23 questions. A few questions were about the personal data of the studied: gender, age, height, weight, presence of diabetes, etc.

Table. Anthropometric data of healthy subjects and subjects with type 1 diabetes

Subjects Anthropometric data	With type 1 diabetes (n = 41)		Healthy (n = 99)	
	Women (n = 33)	Men (n = 8)	Women (n = 79)	Men (n = 29)
Height, m	1.70 ± 0.07	1.86 ± 0.1	1.70 ± 0.1	1.83 ± 0.1
Body mass, kg	66.8 ± 11.9	85 ± 12.5	62.1 ± 9.7	78.3 ± 11

The study instruments. Young people with type 1 diabetes and healthy subjects of the experimental group were asked to fill in the questionnaire orientated to physical activity and self-esteem. The questions regarding the duration of low, moderate and high physical activity were included. Additionally, the participants had to reply to the questions concerning their self-esteem, social equality, self-satisfaction, etc.

The short IPAQ questionnaire was used to analyze physical activity. Seven open questions on high, moderate and low physical activity were presented concerning the amount of daily physical activity and the number of days per week. Physical activity was estimated in MET values.

Rosenberg's Self-Esteem Scale was used to assess self esteem. The 10-point Likert scale offered four answers: „Strongly agree“ (SA), „Agree“ (A), „Disagree“ (D), and „Strongly disagree“ (SD). Each answer was given a score. The scores were calculated as follows: Items 1, 2, 4, 6 and 7 – by 3 for the answer „Strongly agree“, etc. Items 3, 5, 8, 9 and 10 (which are reversed in valence) – 0 for the answer „Strongly agree“. The subjects were introduced to the aim of the study, they were also allowed to refuse the participation. Prior to starting filling in, the respondents were given explanations how to complete the questionnaire.

Statistical analysis. Statistical analysis of the data was performed using *Statistical Package for Social Science* („SPSS 15“) and *Microsoft Office „Excel 2003“*. Pearson's correlation coefficient r was used to analyze the relationships between groups, $p < 0.05$ was taken as the level of significance.

RESEARCH RESULTS

Physical activity of subjects with diabetes mellitus type 1 and healthy subjects aged 18–25 years and a comparison between these two groups.

Students accounted for the largest group of the respondents: 51.2% of subjects with type 1 diabetes and 68% of healthy subjects. The number of employed (22%) and school pupils (26.8%) ranked the second and was similar in both groups (Figure 1).

Subjects with diabetes mellitus type 1 and healthy persons rated their physical activity as moderate, 60% and 50%, respectively. While one-fifth of healthy subjects rated physical activity as high, nobody in the group of subjects with type 1 diabetes persons gave a positive answer (Figure 2).

Intensive daily 60-minute-physical activity was pointed out by 48.5% of healthy subjects and 34.1% of subjects with diabetes and it was as follows: lifting heavy things, playing basketball, doing aerobics, or riding a bicycle vigorously. Mean 60-minute-lasting physical activity was reported by 38.2% of subjects with type 1 diabetes and 35.8% of healthy respondents. The largest walking interval was from 1 to 1.5 hour in the diabetes group – 28.8% and 31.6% in the healthy group.

Healthy men and women showed higher physical activity compared to the subjects with diabetes of both genders (Figure 3).

Physical activity levels were as follows: low physical activity: 600 MET min/week, moderate: 600–3000 MET min/week, high: more than 3000 MET min/week. Mostly healthy men reported

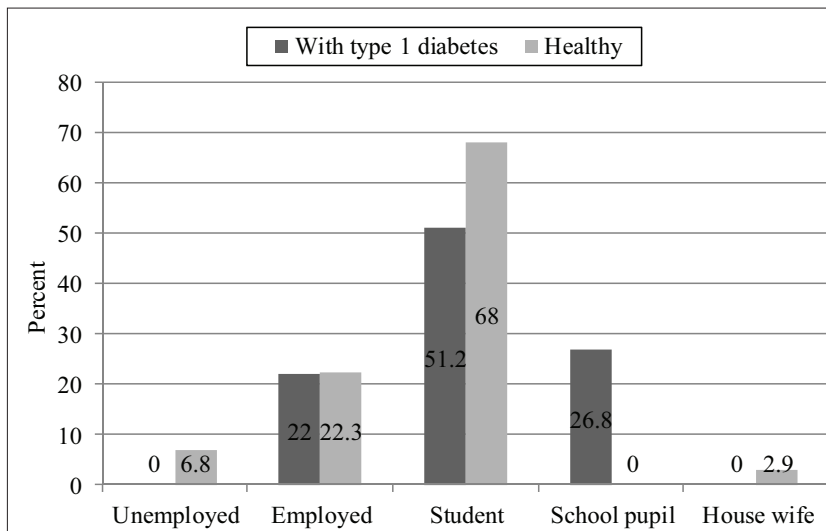


Figure 1. Distribution of respondents by their status

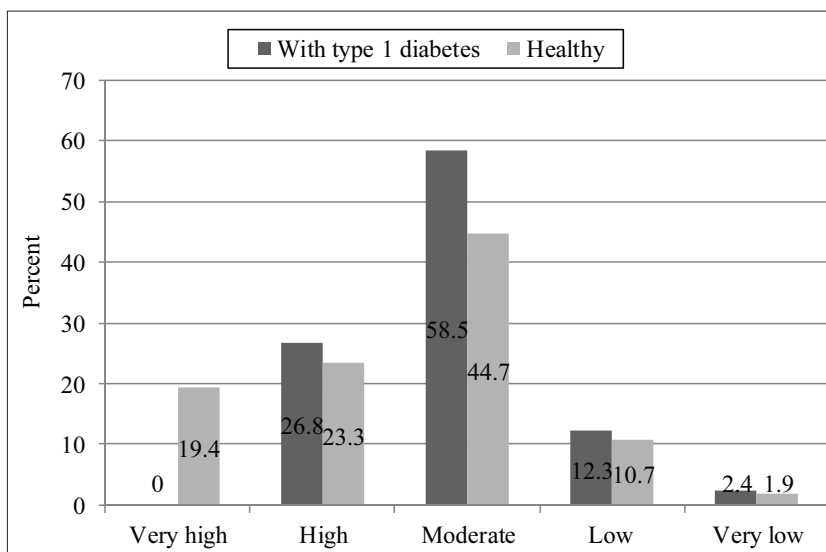


Figure 2. Percentage of self-rating of physical activity in healthy subjects and subjects with type 1 diabetes

their physical activity as intensive, their physical activity was high, 6256.6 MET min/week. The men with diabetes reported lower results compared to healthy men, 3120 MET min/week, but they still fell into the high level category. Both healthy women and women with type 1 diabetes women demonstrated a moderate physical activity level (Figure 4).

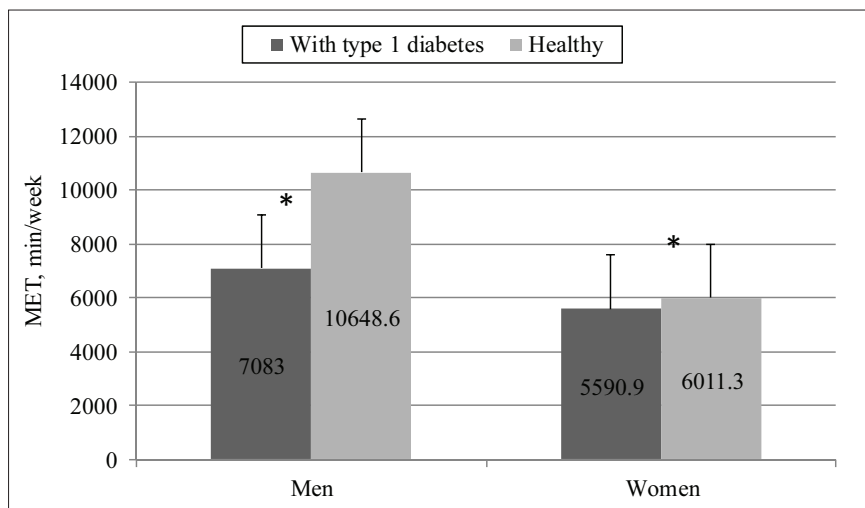
Distribution of moderate physical activity in the research participants was similar: healthy men ranked first, 1785 MET min/week, however, there was only a slight difference in the group of subjects with type 1 diabetes for men – 1613.8 MET min/week. The lowest moderate physical activity was 1225.5 MET min/week (Figure 5).

Healthy men walked most – 2778.3 MET min/week; a slight difference was reported by men with diabetes – 2178 MET min/week. Women with

diabetes walked 2484 MET min/week. Interestingly, healthy women reported the least duration of walking, 1972.9 MET min/week (figure 6).

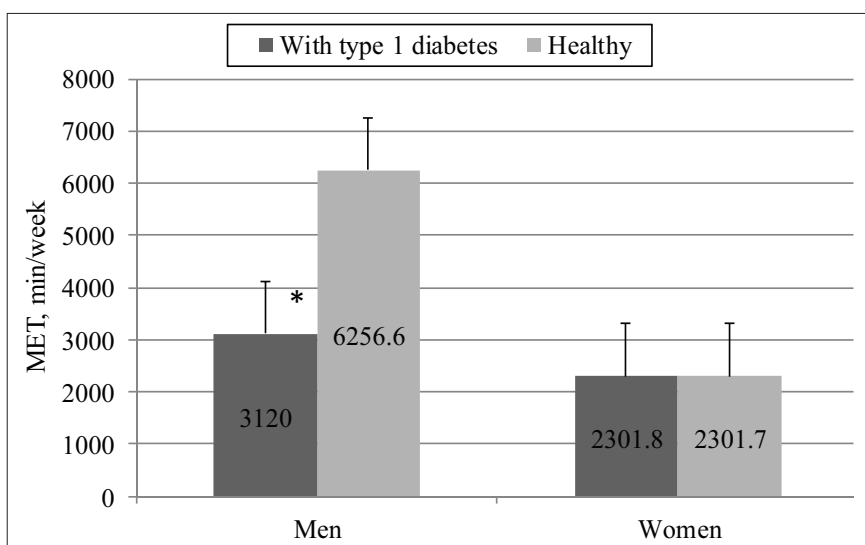
Self-esteem of young persons with diabetes type 1 and healthy subjects aged 18-25 years and a comparison between the groups. The data of Rosenberg's Self-Esteem Scale were calculated by scores (the highest score was 30). The lower score a person received, the lower self-esteem he/she had, and the opposite. Scores from 15 to 25 were valued as normal self-esteem; scores below 15 suggested low self-esteem. Healthy men valued their self-esteem by 18 within normal range. The women reported 17; thus, self-esteem was normal in both genders. Women and men with diabetes valued their self-esteem as normal. High self-esteem was when the scores were between 25 and 30 (Figure 7).

Figure 3. Physical activity of healthy and subjects with diabetes type 1 in MET values



Note. * – $p < 0.05$.

Figure 4. High physical activity assessed in MET values in the healthy and diabetes groups



Note. * – $p < 0.05$.

DISCUSSION

Three main aspects such as diabetes mellitus type 1, physical activity and self-esteem of young women and men aged 18–25 years were assessed in our study. These three aspects by themselves have significance for person’s health and wellbeing.

Although health is of great biological and social value, scientists have noticed that young people are less likely to consider it as important (Urbonaitė et al., 2002). We had anticipated that the analysis of physical activity and self-esteem of subjects with diabetes type 1 would have shown worse results than that of healthy persons. Patients with diabetes

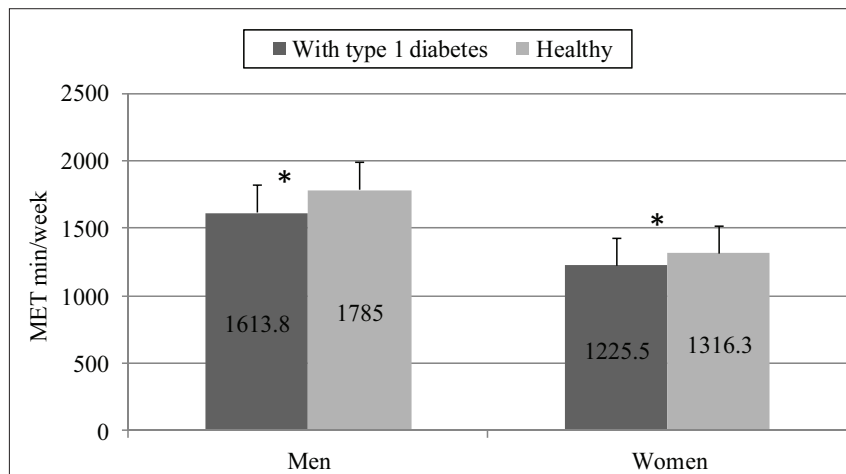


Figure 5. Moderate physical activity expressed by MET values in the healthy and diabetes groups

Note. * – p < 0.05.

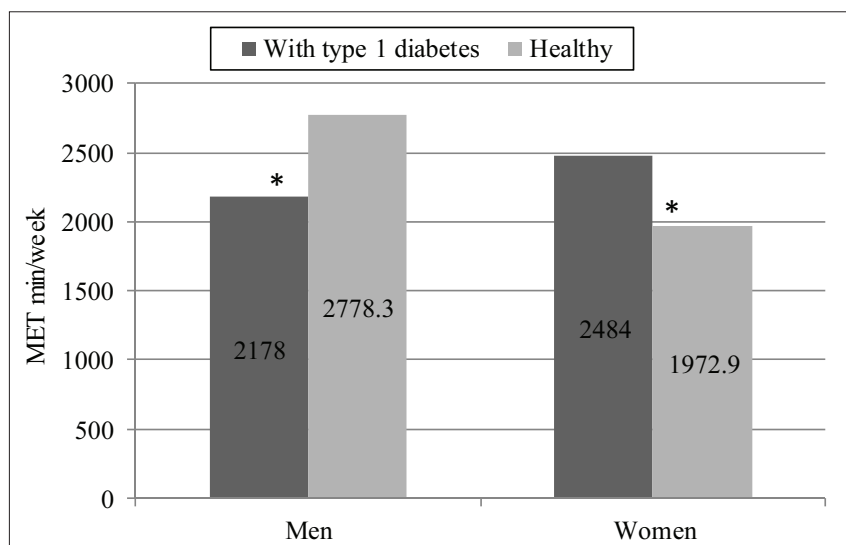


Figure 6. Assessment walking in MET values in healthy subjects and subjects with type 1 diabetes in both groups

Note. * – p < 0.05.

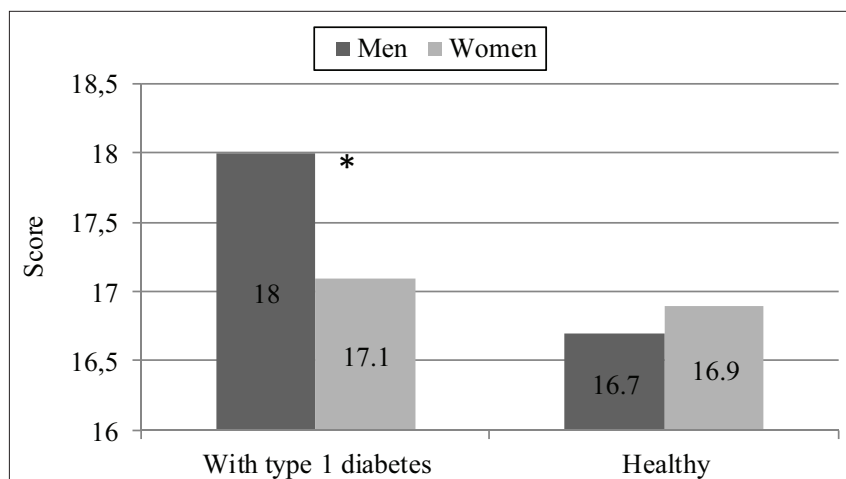


Figure 7. Self-esteem in healthy and subjects with type 1 diabetes groups

Note. * – p < 0.05.

mellitus type 1 were the least physically active, their self-esteem was lower, they reported experiencing a shortage of happiness and sense of inequality. Our study revealed that distribution by gender was similar; about a quarter of healthy subjects and subjects with type 1 diabetes were women, and the rest were men. Not long ago, diabetes mellitus accounted for 5% of the world population, furthermore, its prevalence is doubling with every generation. The highest prevalence of the disease is in India suggesting also the highest number of patients (approximately 35 million) (Marso, 2003). The study revealed that young people with diabetes mellitus type 1 were physically more passive. We did not find any significant difference. Subjects with diabetes mellitus type 1 rated their physical activity as moderate, so did the healthy individuals. At this point, it should be taken into consideration that the *American Diabetes Association* (2004) recommends enhancing daily exercising that is beneficial for patients with diabetes. The implementation of these recommendations in the meetings with patients is linked to better results of physical and mental health. Only one-fifth of healthy research participants rated their physical activity level as high, meanwhile the subjects with type 1 diabetes gave a negative answer. Every day or few days per week healthy persons and patients with diabetes mellitus type 1 reported having the intensive physical activity such as lifting heavy things, playing basketball, doing aerobics or riding a bicycle vigorously. The subjects with diabetes pointed out that they mostly had daily 60-minute physical activity. Mostly moderate 60-minutes of physical activity were reported by individuals with diabetes mellitus type 1. Most commonly, healthy persons were physically active about 60 minutes. Physical activity level of the studied was as follows: moderate in diabetic patients, high – in healthy subjects for men, low in healthy subjects, and moderate – in subjects with type 1 diabetes for women. S. Kanner and V. Hamrin (2003), who investigated depression in young people, found that the peculiarities of depression in young patients with diabetes mellitus type I were more significantly expressed compared to the general

population. Moreover, depression poses a threat to most young people with other diseases, such as behavioral problems, personality disorders, substance abuse, obesity, intrapersonal conflicts (Zalsman et al., 2006). Similar to women, self-esteem of men with diabetes mellitus type 1 was moderate, the difference between them was not significant. Our results obtained were similar to those of A. L. Unsdén and et al., (2008), who concluded that the quality of life, self-esteem and mental wellbeing of diabetic women were worse, compared to those of men. Therefore, it is important to work out the strategies enhancing the quality of life, self-esteem in diabetic patients. Healthy women and men reported moderate self-esteem. High self-esteem is when scores are between 25–30. J. M. Norris and G. J. Klingensmith (2001) determined that both adolescences and adults with diabetes were more frequently prone to depression compared to healthy individuals, and depression was more prevalent in women than in men. Lower physical activity and lower self-esteem results mean the poor quality of life. In our opinion, this fact is due to a lack of awareness of other people surrounding these patients, insufficient help, and a judicious approach to the problem of our community and the state. In order to improve the condition of patients with diabetes mellitus it is necessary to aggregate all institutions, and only then tangible benefits can be achieved.

CONCLUSIONS AND PERSPECTIVES

Physical activity of women and men with diabetes mellitus type 1 aged 18–25 years is valued as moderate, meanwhile physical activity in healthy persons – moderate or high. Self-esteem is moderate in both groups of patients with type 1 diabetes and healthy persons. Healthy men are more active than diabetic patients, similarly, women having diabetes mellitus type 1 are physically more passive than the healthy ones. Both patients with diabetes mellitus type 1 and healthy individuals aged 18–25 report moderate self-esteem.

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18–25 METŲ AMŽIAUS SVEIKŪJŲ IR SERGANČIŲ 1 TIPO CUKRINIŲ DIABETU FIZINIO AKTYVUMO IR SAVIVERTĖS YPATUMAI

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SANTRAUKA

Tyrimo pagrindimas ir hipotezė. Tik gerai kontroliuojant diabetą galima atitolinti grėsmingas komplikacijas, sustabdyti jų progresavimą ir taip sumažinti invalidumą, ankstyvą nedarbingumą, pailginti sergančiųjų gyvenimą (Danytė et al., 2000). Reguliarus fizinis aktyvumas gerina širdies ir kraujagyslių fizinę būklę, didina liesąją kūno masę, gerina kraujo lipidų profilį, stiprina psichosocialinę gerovę ir mažina nutukimą (Riddell, Iscoe, 2006). Fizinis aktyvumas laikomas viena iš keturių pagrindinių veiksnių, lemiančių cukriniu diabetu sergančiųjų gliukozės kiekį kraujyje (Wiśniewski, 2010). Savęs vertinimo amplitudė labai plati. Vieni ypač pabrėžia nors ir menkus savo laimėjimus, puikuoja savimi. Kiti, priešingai, net nemėgsta, kad apie tai būtų kalbama. Treti, nors būdami talentingi, pasirodo esą labai nepatenkinti savimi, nuolat save kaltina ir smerkia net už menkiausias klaidas ar nesėkmes (Žemaitis, 1995).

Tikslas – nustatyti 18–25 m. amžiaus sveikųjų ir sergančiųjų 1 tipo cukriniu diabetu fizinį aktyvumą ir savivertę.

Metodai: Tiriamųjų kontingentą sudarė 140 tiriamųjų (amžius – nuo 18 iki 25 m.) – iš jų 41 sergantis 1 tipo cukriniu diabetu (33 merginos ir 8 vaikinai) ir 99 sveiki (79 merginos ir 29 vaikinai). Visi tiriamieji buvo apklausti klausimynais, kurie orientuoti į fizinį aktyvumą bei savivertę. Fiziniam aktyvumui tirti naudotas trumpasis IPAQ klausimyno variantas. Asmens savęs įvertinimui naudota viena iš plačiausiai naudojamų Rosenberg savęs vertinimo skalė.

Rezultatai. Apie 60% sergančių 1 tipo cukriniu diabetu savo fizinį aktyvumą vertino kaip vidutinį, apie 50% vidutiniškai vertino ir sveikieji. Intensyvia 1 valandos trukmės fizine veikla dienos metu užsiima 48,5% sveikųjų ir 34,1% cukriniu diabetu sergančių jaunų žmonių, vidutine 1 valandos trukmės fizine veikla dienos metu užsiima 38,2% sergančių cukriniu diabetu ir 35,8% sveikųjų. Didžiausias vaikščiojimo intervalas yra 1–1,5 h: sergančių cukriniu diabetu grupėje – 28,8%, sveikųjų grupėje – 31,6%. Sveiki vaikinai ir merginos yra fiziškai aktyvesni už sergančius 1 tipo cukriniu diabetu. Abiejų lyčių savivertė tiek sveikųjų, tiek sergančių 1 tipo cukriniu diabetu respondentų grupėse buvo nustatyta kaip vidutiniška.

Aptarimas ir išvados. Sergančių 1 tipo cukriniu diabetu jaunų 18–25 m. žmonių fizinis aktyvumas yra vidutiniškas, o sveikųjų fizinis aktyvumas įvertintas kaip vidutiniškas arba geras. Tiek sergančių 1 tipo cukriniu diabetu, tiek sveikų jaunų asmenų savęs vertinimas yra vidutinis. Sveiki vaikinai yra fiziškai aktyvesni už sergančius 1 tipo cukriniu diabetu jaunos vyrus. Sergančios 1 tipo cukriniu diabetu merginos yra fiziškai pasyvesnės už sveikąsias. Ir sergantys 1 tipo cukriniu diabetu, ir sveiki jauni 18–25 m. žmonės save vertina vidutiniškai.

Raktažodžiai: 1 tipo cukrinis diabetas, fizinis aktyvumas, savivertė.

Gauta 2011 m. lapkričio 21 d.
Received on November 21, 2011

Priimta 2011 m. gruodžio 8 d.
Accepted on December 8, 2011

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