

# Лікувальна фізична культура, спортивна медицина й фізична реабілітація

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## AWARENESS OF PATIENTS WITH METABOLIC DISEASES OF THE IMPORTANCE OF PHYSICAL ACTIVITY IN TREATING THEIR DISORDERS

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### Abstracts

Non-communicable chronic diseases, including metabolic diseases, represent a major cause of morbidity and mortality worldwide. Regular physical activity is considered a crucial component of improving the health condition of people suffering from metabolic diseases. Prescription of physical activity by the general physician or other medical specialist can influence patients' behaviour in a significant way. **Objective.** To get acquainted with the fulfilment of recommendations for performing physical activities by patients with metabolic diseases. **Methods.** The study group consisted of 407 patients diagnosed with some of the metabolic diseases. One of the important criteria for inclusion in the study was the fact that the diagnosis did not prevent performance of physical activity. To obtain the research data we used the questionnaire method – a questionnaire compiled for the needs of this particular research. **Results.** Patients involved in our study, in the prevention and treatment of their health problems, put particular emphasis on nutrition and eating habits. In terms of priorities, physical activity is only ranking third in this respect. The vast majority of patients involved in the study had been informed about the importance of purposeful physical activity by physicians; however, nearly half of the patients admitted their lack of willingness to carry out any form of it. The most common activities that patients undertake are domestic chores and walks. **Conclusions.** The data obtained suggest that some patients are not sufficiently physically active, a number of them are not even aware of the role and importance of physical activity in the treatment of their disease. There are even patients who do not consider such information relevant. This study was supported by Grant project 1/0825/17 «Recommendations for physical activities in prevention and control of non-communicable diseases and their implementation in the eastern part of Slovakia», implemented at Pavol Jozef Šafárik University in Košice.

**Key words:** Chronic diseases, patients, physical activity, prevention, awareness.

Алена Букова, Агата Горбач, Ленка Сердйова, Ладіслав Кручаніца, Сузана Кухелова, Ян Юнгер, Івета Цімболакова, Сільвія Дуранкова **Обізнаність хворих із метаболічними порушеннями про роль фізичної активності в контексті їх захворювання.** Неінфекційні хронічні захворювання, уключаючи метаболічні, є головною причиною захворюваності та смертності в усьому світі. Регулярні фізичні навантаження вважаються найважливішим компонентом покращення стану здоров'я людей, які страждають на метаболічні захворювання. Призначення фізичного навантаження лікарем загальної практики або іншим медичним фахівцем може суттєво вплинути на поведінку пацієнтів. **Мета** – ознайомитись із виконанням рекомендацій щодо виконання фізичних навантажень пацієнтами з обмінними захворюваннями. **Методи.** Дослідницька група складалася з 407 пацієнтів з діагнозом деяких метаболічних захворювань. Одним із важливих критеріїв для включення в дослідження було те, що діагноз не заважав виконувати фізичні навантаження. Для отримання даних про дослідження ми використовували метод анкетування – анкету,

складену для потреб цього конкретного дослідження. **Результати.** Пацієнти, які беруть участь у нашому дослідженні, у профілактиці та лікуванні своїх проблем зі здоров'ям, роблять особливий акцент на харчуванні та харчових звичках. За пріоритетами фізична активність займає лише третє місце в цьому плані. Більшість пацієнтів, які брали участь у дослідженні, були проінформовані про важливість цілеспрямованих фізичних навантажень лікарями; однак близько половини хворих визнали відсутність готовності виконувати будь-яку її форму. Найпоширенішими видами діяльності, якими займаються пацієнти, є домашні справи та прогулянки.

**Висновки.** Отримані дані свідчать про те, що деякі пацієнти недостатньо фізично активні, а ряд із них навіть не усвідомлює роль та значення фізичних навантажень у лікуванні своєї хвороби. Навіть є пацієнти, які не вважають таку інформацію актуальною. Це дослідження підтримано грантовим проектом 1/0825/17 «Рекомендації щодо фізичних занять по профілактиці та боротьбі з незаразними захворюваннями та їх реалізацією в східній частині Словаччини», реалізованим в університеті Павола Юзефа Шафарика в Кошице.

**Ключові слова:** хронічні захворювання, хворі, фізичне навантаження, профілактика, обізнаність.

**Алена Букова, Агата Горбач, Ленка Сердева, Ладислав Кручаница, Сузана Кухелова, Ян Юнгер, Ивета Цимболакова, Сильвия Дуранкова Осведомленность больных с метаболическими нарушениями о роли физической активности в контексте их заболевания.** Неинфекционные хронические заболевания, включая метаболические, является главной причиной заболеваемости и смертности во всем мире. Регулярные физические нагрузки считаются важнейшим компонентом улучшения состояния здоровья людей, страдающих метаболическими заболеваниями. Назначение физической нагрузки врачом общей практики или другим медицинским специалистом может существенно повлиять на поведение пациентов. **Цель** – ознакомиться с выполнением рекомендаций по выполнению физических нагрузок у пациентов с обменными заболеваниями.

**Методы.** Исследовательская группа состояла из 407 пациентов с диагнозом некоторых метаболических заболеваний. Одним из важных критериев для включения в исследование было то, что диагноз не мешал выполнять физические нагрузки. Для получения данных об исследовании мы использовали метод анкетирования – анкету, составленную для нужд этого конкретного исследования. **Результаты.** Пациенты, принимающие участие в нашем исследовании, в профилактике и лечении своих проблем со здоровьем, делают особый акцент на питании и пищевых привычках. По приоритетам физическая активность занимает лишь третье место в этом плане. Подавляющее большинство пациентов, участвовавших в исследовании, были проинформированы о важности целенаправленных физических нагрузок врачами; однако почти половина пациентов признали отсутствие готовности выполнять любую ее форму. Наиболее распространенными видами деятельности, которыми занимаются пациенты, есть домашние дела и прогулки. **Выводы.** Полученные данные говорят о том, что некоторые пациенты недостаточно физически активны, а ряд из них даже не осознает роль и значение физических нагрузок в лечении своей болезни. Даже есть пациенты, которые не считают такую информацию актуальной. Это исследование поддержано грантовым проектом 1/0825/17 «Рекомендации по физическим занятиям по профилактике и борьбе с незаразными заболеваниями и их реализацией в восточной части Словакии», реализованным в университете Павла Юзефа Шафарика в Кошице.

**Ключевые слова:** хронические заболевания, больные, физическая нагрузка, профилактика, осведомленность.

**Introduction.** The medical state of patients suffering from metabolic diseases (MD) significantly correlates with their lifestyle. The prevention lies in the comprehensive actions directed at the so called modifiable risk factors, i.e. those, which can be influenced by lifestyle modifications. Diet changes as well as changes in physical activity appear to be the fundamental requirements for this process. Prevention should also include counselling on the harmful effect of smoking and alcohol consumption and their influence on cardio-metabolic health.

Data collected from population groups at risk estimates that 20 % of premature deaths could have been prevented by regular physical activity (PA). However, most people do not recognise these statistics and their PA is nowhere near close to the recommendations [3; 7; 13; 4; 18; 20]. Even the most advanced medicament treatment is not sufficient without active cooperation of a patient. The main goal of PA is to help patients regain their condition, prevent declining health and possible complications which should minimize the risk of future health problems.

In most cases, physical activity in adults suffering from chronic diseases is proved to have therapeutic effect. It can decrease comorbidities and prevent the occurrence of factors that contribute to the progression of metabolic diseases, such as type 2 diabetes, obesity, thyroid gland problems, with the exception of osteoporosis which can actually cause deterioration in the patients' condition. However, these patients should be engaged in the physical activity programme to prevent other diseases connected with sedentary lifestyle. In general, metabolic disease patients can tolerate low intensity exercise for 150 min. weekly, or preferably, 30–60 min. sessions, 3 to 5 times a week. It appears that 10,000 steps daily is beneficial to prevent and treat all types of

diseases and, according the U.S. Department of Health and Human Services, it does not result in the progression of the knee osteoporosis [16]. These exercises are of aerobic character and need to be adjusted according to gender, age, musculoskeletal condition, but also by experience and mental state. The recommended activities are swimming, walking, Nordic walking and moderate strength exercises.

**Objective.** The aim of this study was to obtain the information necessary to assess the level of implementation of the PA-related recommendations given to patients suffering from metabolic diseases in eastern Slovakia.

**Material and Methods.** The survey was conducted from 10/2018 to 2/2019 at outpatient clinics in eastern Slovakia and comprised patients from 19 cardiology, 14 metabolism and 9 oncology clinics. We were given written permission from the representatives of all the clinics in advance to contact and approach patients. We randomly addressed 1,193 adult patients treated in these clinics, of whom 282 refused to participate in the survey. We further excluded another 18 patients for not meeting one or more of the essential criteria listed below. The criteria for participating in this research were met by 893 patients – 353 males (38,6 %) and 540 females (61,4 %). From among all participants, 8.29% patients acknowledged more than one chronic disease.

Patients were enrolled in the research at meeting the criteria below:

- over 20 years of age;
- the occurrence of one or more diagnoses of three underlying diseases of affluence that do not prevent physical activity (cardiovascular disease, oncological disease, metabolic disease);
- diagnosis having been treated by a specialist for a minimum of 1 year;
- willingness to give informed consent to participate in the research;
- willingness to fill in questionnaires regarding physical activity and be provided information about physical activity for a given diagnosis.

This study was targeted at the metabolic disease patients. The research sample comprised 407 patients (165 males, 242 females, of average age 49,22). The majority of patients were urban residents (272), and 135 rural residents.

Other demographic indicators are presented in table 1.

Table 1

**Basic Demographic Indicators of Respondents Involved in the Survey (n=407)**

<b>Education</b> (%)	<b>Elementary</b> 2,95	<b>Vocational</b> 5,16	<b>HS Graduate</b> 48,4	<b>University</b> 43,49		
<b>Occupation</b> (%)	<b>Permanent</b> 53,07	<b>Occasional</b> 4,91	<b>Unemployed</b> 3,69	<b>Student</b> 8,35	<b>Retired</b> 29,98	
<b>Occupation</b> (%)	<b>Sedentary</b> 43	<b>Physically Demanding</b> 18,67		<b>None</b> 38,33		
<b>Disease</b> (%)	<b>Obesity</b> 30,2	<b>Diabetes</b> 5,9	<b>Osteoporosis</b> 25,6	<b>Hyperthyroid</b> 10,1	<b>Hypothyroid</b> 12,8	<b>Other MD*</b> 15,5

\*including patients who did not specify their diagnosis

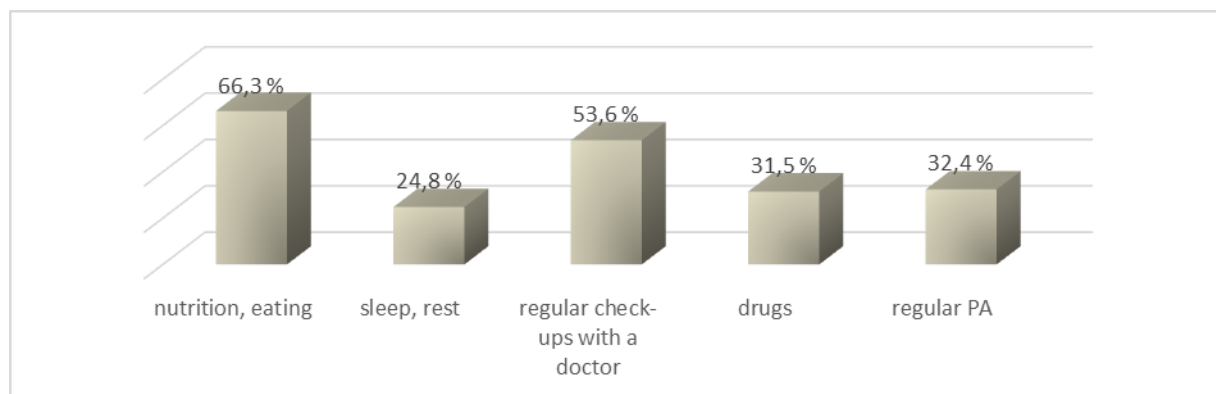
Most questions were closed-ended, but with the option for respondents to elaborate on a certain response, and of factual nature. For the purposes of this questionnaire, we have selected the following questions:

- What is the key component in the prevention and treatment of your health problems? (multiple choice).
- Have you ever been informed by your doctor or medical staff on the importance of physical activity in the prevention and treatment of your health problem?
  - Have you ever been recommended any physical activity by your doctor?
  - Type of physical activity you are mostly engaged in (multiple choice).
  - If active, what physical activity do you perform?
  - If active, how often do you perform physical activity?
  - Daily duration of your physical activity (multiple choice).

After completing the questionnaire, the patients were informed on the advantages of PA and most suitable activity regarding their disease. They subsequently obtained a leaflet which presented general instructions on PA based on the FIIT principles. MS Excel was used to process collected data and present basic characteristics. The character of questions resulted in utilisation of the percentage and frequency analysis. Frequency Matching Test was used to test the frequency match between frequencies. We evaluated the results at significance level  $\alpha = 0,05$ . We also used graphs to visually illustrate our results.

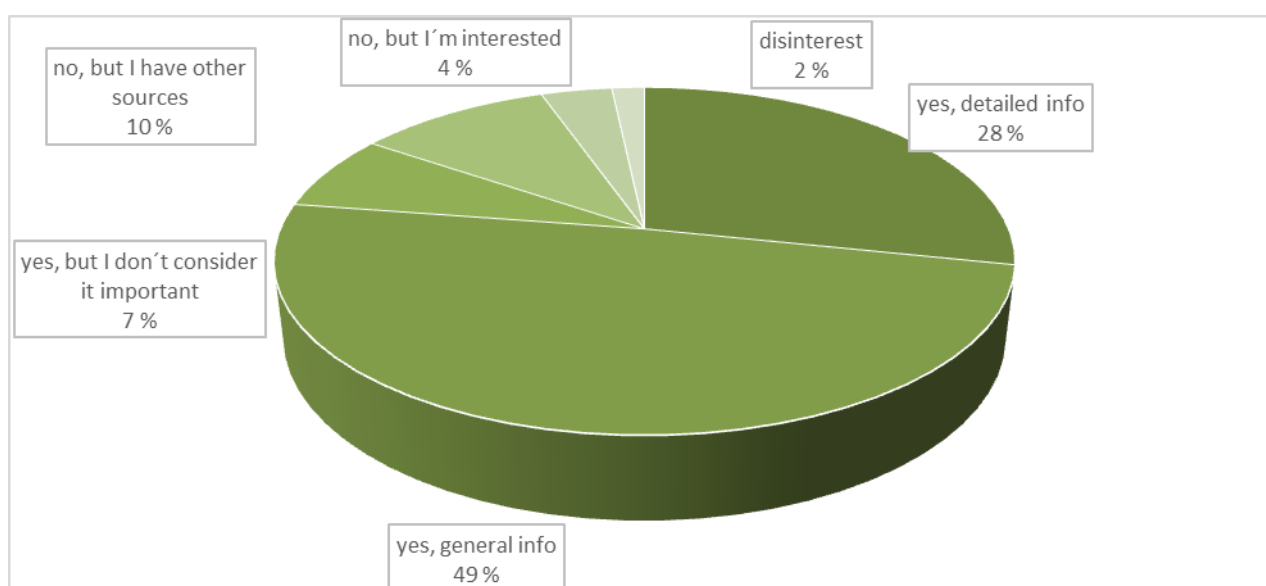
This study was supported by Grant project 1/0825/17 «Recommendations for physical activities in prevention and control of non-communicable diseases and their implementation in the eastern part of Slovakia», implemented at Pavol Jozef Šafárik University in Košice. The research was approved by the UPJŠ Ethics Committee (PJSU-1/0825/17).

**Results.** Medical condition of MD patients is significantly influenced by their lifestyle. In the survey, our sample could have identified three factors in this regard, and also present an opinion on what the most important factor was for improving their medical status. Only two patients decided to present such opinion, however they did not identify any factor in particular. The MD patients put particular emphasis on nutrition and eating habits (66,3 %), regular check-ups (53,6 %). Only few patients indicated other factors (fig.1). Based on the frequency test, we found that there was a statistically significant difference between the first two answers relative to the other answers ( $p \leq 0,05$ ). There is no significant difference between the first two answers.



**Fig. 1.** Importance in Prevention and Treatment

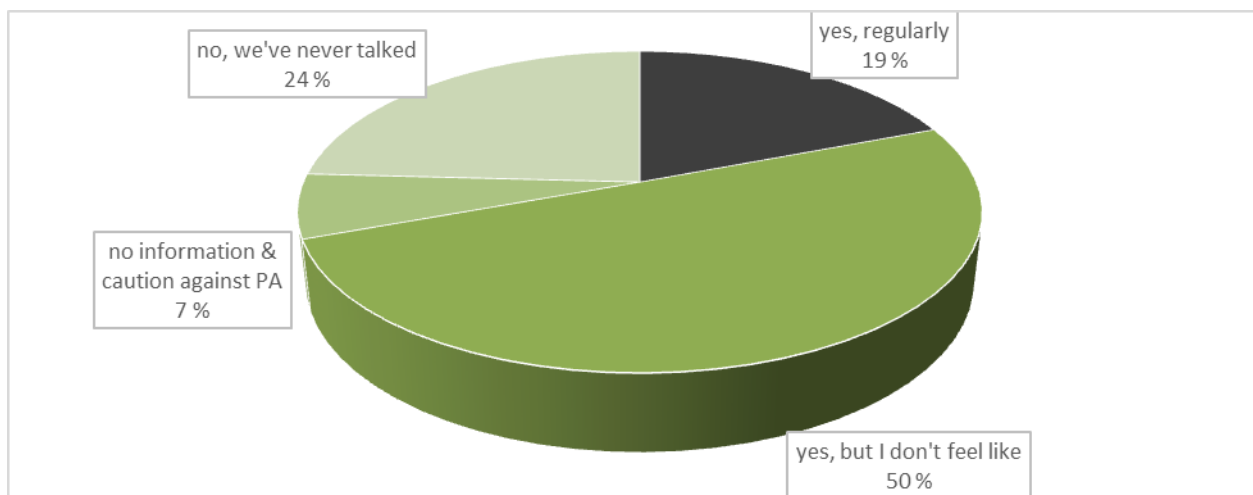
Almost one third of the patients involved in the study were informed in detail about the importance of PA by doctors or nursing staff (28 %; fig. 2). However, the majority of patients (49 %) were only informed in general. Nearly 23 % of patients either did not think about it or were not informed by their physicians about the importance of PA in the treatment of their disease. Frequency match testing found statistically significant differences in all items, except for comparing results between: yes, but info is not important: no, but I use other sources, and between items: no, but I am interested in info: I do not want information.



**Fig. 2.** Information on the importance of PA in Prevention and Treatment Provided by Doctor

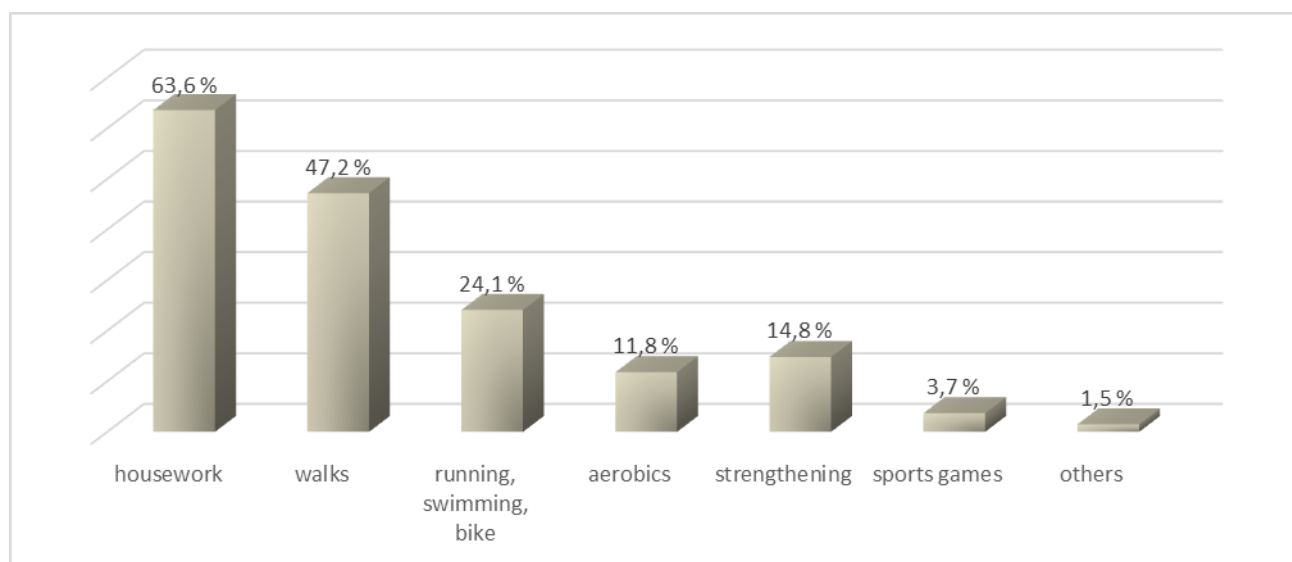
From the perspective of the doctor-patient relationship, we investigated if doctors recommended a specific PA and if the patients implemented the PA in their treatment. Within the group of informed patients, only 28 %

acted according these recommendations. 50 % admitted being informed, but their passivity resulted in the inability to perform any of the PA. One fourth never obtained any PA-related information from their doctor. And surprisingly, nearly 7 % of patients reported that they had been warned of a potential risk of the physical load in relation to their diagnosis. The significance match test revealed significant differences comparing all responses to each other ( $p \leq 0,05$ ).



**Fig. 3.** Doctor's Recommendations and Their Implementation

Almost 36 % of patients are involved in aerobic activities (aerobics, running, swimming, and running and cycling) beneficial to patients with metabolic disease. The most frequently performed activities are housework (almost 64 %) and walks (47 %). Almost 15 % of patients are engaged in strengthening activities (fig. 4). Between the first two answers compared to the others, we found a statistically significant difference at the level of  $\alpha = 0,05$ , except for the difference between the 2<sup>nd</sup> and 3<sup>rd</sup> most frequent answers (walks, running, swimming, biking).



**Fig. 4.** Type of PA

Up to one third of patients with MD are not engaged in physical activity on a regular basis and almost 10 % do not even engage in any activity (fig. 5), among which we also consider housework - routine interior and exterior work. When we combine groups of patients who perform PA regularly 3 times or more per week, it makes up less than one third of the patients (27 %). Except for comparisons of PA frequencies 5x and 4x weekly, 4x: 1x weekly and 3x: 1x weekly, the differences in PA participation frequencies were all significant ( $p \leq 0,05$ ).

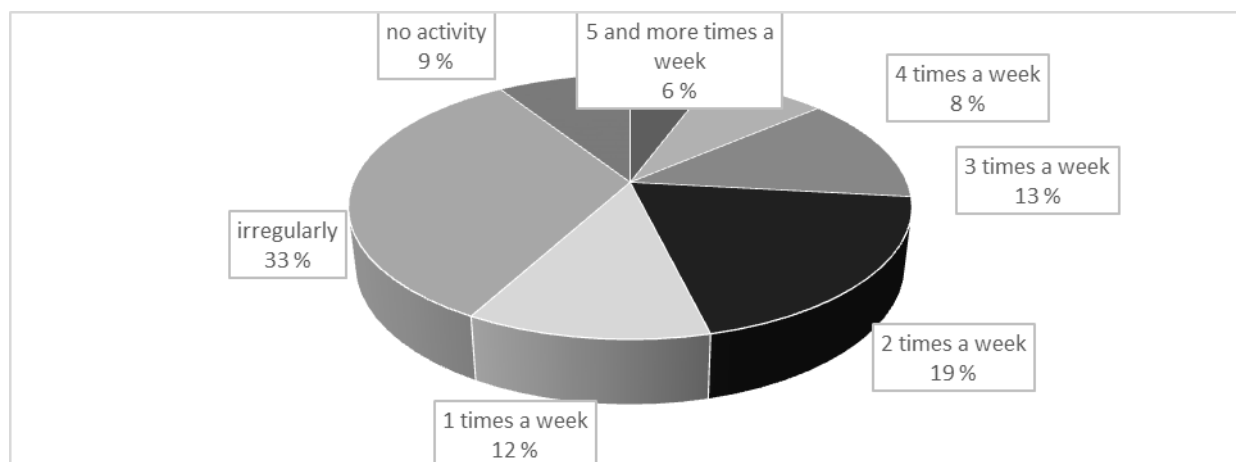


Fig. 5. Frequency of PA

Patients who are physically active reported on average 12,5 min. duration of physical activity. One fourth of them perform PA for 45 to 60 min., and 11 % are engaged in PA less than 10 min. daily. Another 20 % are physically active for more than 60 min. a day. In most cases, the frequency match test revealed a difference between the variables ( $p \leq 0,05$ ). In five cases difference was not found (10–20 min.: 60–90 min.; 20–30 min.: 45–60 min.; 20–30 min.: 60–90 min.; 30–45 min.: 60–90 min.; 90–120 min.: >120 min.).

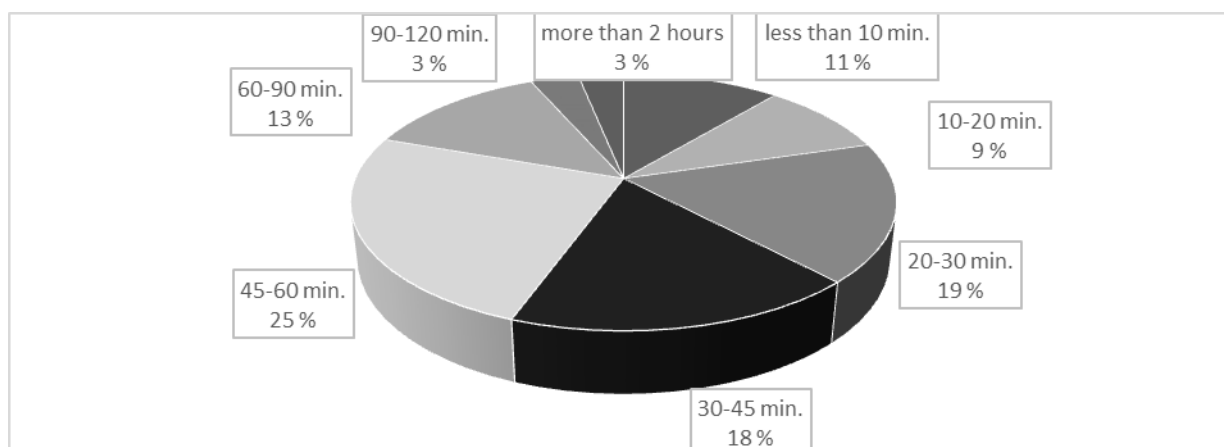


Fig. 6 Duration of PA

**Discussion.** According to Phillips et al. [15], people who undergo regular medical check-ups, maintain optimum BMI, are non-smokers, do regular physical activity and meet intake recommendations for vegetable and fruits are found healthier than those who are not engaged in conducting healthy lifestyle. In support of this premise, the participants of our survey referred to healthy nutrition and diet and regular medical check-up as the two major factors of healthy lifestyle. Physical activity was ranked third in the treatment and prevention of metabolic diseases, scoring significantly lower than the two preceding factors.

People suffering from various diseases tend to trust doctors in providing correct treatment of their condition. Nonetheless, doctors should try to improve the health conditions not only by prescribing medicaments. They should counsel their patients with the most suitable measures, while at the same time suggest appropriate physical activity including details on frequency, intensity, and duration in order to trigger desirable changes. In our study, nearly half of the sample was given only general information, whereas close to a third of the patients in the sample were provided with detailed information on the importance of PA by their doctors or nursing staff. Rising awareness on the topic of importance of PA, as one of the modifiable factors that can improve patient's health, is considered having great importance. For instance, in Slovakia, physical inactivity has been reaching epidemic levels. Furthermore, it is one of the main causes of several diseases of affluence including metabolic diseases. Since most of the respondents involved in the study are in productive age, this fact in the context of Kruk's [12] statement, can have, among other aspects, a significant influence on the development and economy of the society.

In Frontera et al. [5], housework was described as the most common physical activity in general, not only for older adults but also for people suffering from any of the diseases of affluence. The results in our study further support this finding. The second most common physical activity was walking. People experiencing chronic diseases including metabolic diseases should be therefore engaged in aerobic activities such as jogging, swimming, cycling, skating etc. [14]. These activities involve large muscle groups which have significant influence on the circulatory and respiratory systems, and eventually improve metabolism of lipids. We observed that more than one third of our respondents perform these types of activities (running, swimming, cycling and aerobics).

Patients with various metabolic problems face a serious challenge in respect to the frequency of recommended exercises. Almost 30 % of the participants in our study mentioned that they do PA 3 and more times a week. PA conducted with a frequency of once or twice per week was considered to be insufficient, leading to unsatisfactory adaptation changes. Such approach prevailed until about this decade. However, research carried out over the past 10 years has suggested that even such low frequency can maintain or improve health [2]. Furthermore, we found out that nearly one third of participants of the survey fell within the once or twice per week category. In addition, we found out that another third performed PA irregularly and about 10% carried out no physical activity. We find these statistics worrying when taking into account that walking and routine housework were also included as physical activities.

**Conclusion.** A vast majority of the MD patients in our survey consider nutrition and eating habits to be the key component in prevention and treatment of their health problems, with physical activity ranking third. Most patients have been informed on the importance of PA in treating their disease by the doctor, but only one third implement those recommendations. The most common type of activities of our patients are housework and walks; however, one third of the surveyed participants do not engage in these activities regularly.

The collected data indicate that a specific MD patients group do not perform regular physical activity, there are further patients who have never been informed on the importance of PA in treating their disease, and we have identified individuals who are not interested in any PA related information.

presented convincing arguments and knowledge on the worldwide prevalence of metabolic disorders. Nevertheless, we believe that the importance of PA remains neglected and is not getting proper attention. Our main goal was to point at this element and widen knowledge on the importance of PA as a means of chronic diseases prevention [10; 1; 19].

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**Ethics Approval and Consent to Participate.** The protocol was approved by the Human Research Ethics Committee of Pavol Jozef Šafárik University in Košice (approval No. PJSU-0825/17-1).

**Competing Interests.** The authors declare that they have no competing interests.

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