LEVEL OF PHYSICAL ACTIVITY IN VARIOUS AGE GROUPS AND THE OCCURRENCE OF RESPIRATORY DISEASES

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Key words:
- physical activity,
- respiratory diseases.

Abstract:
Background: One of the most negative occurrences, which have a great importance for the assessment of the risk of respiratory diseases is continuously decreasing physical activity in both children and adults.
Objective: The aim of this study was to answer the question whether the age or dwelling-place of the surveyed population plays a significant role in the assessment of the level of physical efficiency, and whether this will affect on the type of problems of the respiratory system
Methods: Examination was carried out on the group of 60 youth and adult persons aged from 15 to 69 years. The study group included patients from two allergy clinics in Nowy Sącz. In order to assess the level of physical activity of respondents have been used The International Physical Activity Questionnaire (IPAQ).
Results: It was found that the majority of respondents who have a chronic, incurable respiratory disease, do not take appropriate physical activity. Age and place of residence of respondents, significantly differentiate the level of undertaken physical activity. It also found that older people with respiratory ailments undertake physical activity in a suitable dimension. The analysis of the survey showed that the average level of physical activity of people living in urban areas is higher than in those originating in rural area.
Conclusions: In the context of relatively low physical activity among people with respiratory ailments, it becomes urgent to create health-promoting behaviors, as a kind of method of forming desired habits.

INTRODUCTION

Healthy lifestyle, which includes the: physical activity, proper nutrition, avoiding alcohol, nicotine and stimulants and avoiding the psycho-emotional overloads has a great influence on our health. It is estimated that these factors by 50% are involved in maintaining health. In 1995, global organizations such as the WHO (World Health Organization), FIMS (International Federation of Sports Medicine), CDDS (Sport Development Committee) or UNESCO, concerned about the enormous losses incurred by societies as a result of the growing hypokinesia and low physical fitness condition of citizens, called to the promotion of health-enhancing physical activity as a fundamental goal of modern public health strategies [15]. "Active and efficient society" is also a main strategic objective for the development of sport in Poland, based on the program documents of the government, as well as assumptions of the "Global Strategy for Diet, Physical Activity and Health" [13]. Currently increasingly

it's taken into account the conception of Health-Related Fitness in the interpretation of the physical fitness term [7]. This new approach to physical fitness refers to those of its factors which are associated with health condition [3].

Underestimation of the importance of motion and its ensuing lack of actions promoting it, causes many difficult to estimate losses, especially placed within our health. Sedentary lifestyle is one of the most important risk factors for respiratory diseases, related especially with the reduction of efficiency of this system, and consequently capacity and volume of lungs [5]. One of the most negative occurrences, which have a great importance for the assessment of the risk of respiratory diseases is continuously decreasing physical activity in both children and adults [4]. In recent years, this problem is growing due to changes in lifestyle and consequently result in systemic reduction of the level of fitness, exercise capacity and worsening of health condition of this generation [8].

The level of physical activity is a positive indicator of health. Proper assessment of physical activity of various society groups, determining the factors and causes of it diversity is not only important, but indispensable.

OBJECTIVE

The aim of the work is, the assessment of physical activity of young people and adults aged 15 - 69 years, and attempt to answer the question - whether the age or place of residence of the surveyed population plays an important role in assessing the level of physical efficiency, and whether this has an impact on the kind of ailments from respiratory system.

The aim of study is also to evaluate the relationship between the incidence of respiratory diseases and the level of physical activity.

THE MATERIAL

The study was conducted on a group of 60 randomly selected people aged 15 - 69 years. The study group included patients from two allergological clinics in Nowy Sacz. Among the respondents were 36 females and 24 males. Table No. 1 shows the distribution of people according to gender and age category.

Table 1. Distribution of the respondents with regard to the age and gender

Age	Gender		**TOTAL**
	Male	Female	
15	2	6	**8**
16 - 23	12	16	**28**
24 - 40	6	4	**10**
41 - 60	4	10	**14**
TOTAL	**24**	**36**	**60**

The subjects almost equally came from urban and rural areas. On the figure below, the study group was characterized depending on the place of residence. 53% of the respondents come from the city, and 47% of were rural residents.

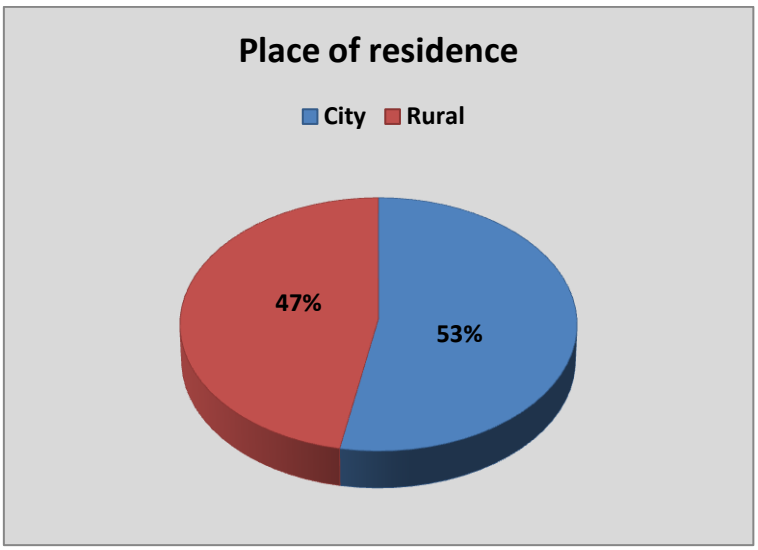

Figure 1. Respondents place of residence

METHODS

To assess the level of physical activity of respondents it was used The International Physical Activity Questionnaire (IPAQ). This survey is designed for people aged 15-69 years and was filled personally by the respondents. The IPAQ contains 4 independent parts for detailed information about physical activities associated with professional work, with the locomotion, domestic work (overall cleaning works and work connected with taking care about family), recreation, sport, physical activity and length of time spent sitting.

The first part includes questions on physical effort associated with professional work, work in agriculture, science, social work, and any others unpaid work that is done outside the home. The second part concerns the communication activity, the way of movement from place to place (including transport for work, shopping, entertainment, etc.). It takes into account time spent in vehicles for communication purposes. The third part refers to certain types of physical effort, performed at house and around the house (e.g. housework, garden cultivation and general cleanup work and taking care about family members). Fourth part concerns the time spent sitting down at work, at home, in school, and during leisure time (eg at a desk, visiting friends, while reading, watching TV, in lying or sitting possition). It does not take into account the time spent sitting in vehicles.

The questionnaire takes into account only the activities lasting at least 10 minutes (without break). All examined persons answered the questions, regardless of whether or not someone considered himself a person physically active or not [2]. The energy expenditure was expressed in MET min/week. Calculating the level of physical activity assume the following levels:

1. Insufficient - the total lack of physical activity or activity under 600 MET min/week
2. Sufficient - the fulfillment of any from the following three criteria:
   - 3 or more days with intensive physical efforts at least 20 minutes per day
   - 5 or more days of moderate efforts or walking at least 30 minutes per day
   - 5 or more days of any combination of physical activity (walking, moderate or intense efforts) exceeding 600 MET min/week
3. High - fulfillment of any from the following two criteria:
   - 3 or more days with intensive physical efforts, including at least 1500 MET min/week
   - 7 days of any combination of physical activity (walking, moderate or intense efforts) exceeding 3000 MET min/week [1].

Analysis of the frequency of respiratory diseases was based on the questions added to the questionnaire. The goal was to determine the types of respiratory diseases and the number of cases of particular disease. Respondents marked boxes next to the disease or symptom that has been diagnosed to them. Among the options were: bronchial asthma, rhinitis (runny nose), sinusitis, angina, laryngitis, allergy, inflammation of the mucous membrane of the nasal and throat cavity, chronic obstructive pulmonary disease (COPD), pulmonary tuberculosis, emphysema, allergic rhinitis, urticaria, and asthmatic condition. In case of other symptoms, the respondents named themselves its type.

RESULTS

The level of physical activity is an acknowledged indicator of health and well-being. Used in this study the International Physical Activity Questionnaire is one of the best methods for measuring the level of physical activity. But still the use of IPAQ is very challenging due to difficulties in correct estimation of physical activity. The causes of this phenomena are seen among others, in the type of studies, used terminology, seasonality of activity assessment, the intensity and the fields of physical activity [1].

In the figure 2 is presented the level of physical activity of surveyed group in occupational work, work in agriculture, science, social work, and any other unpaid work that was done outside the home. Taking into account the age of respondents it turns out that the highest level of physical activity (average 13444 MET/week) at work shows people in middle age (40-60 years). The remaining age groups characterized significantly lower physical activity level (between 3500 and 3761 MET/week).

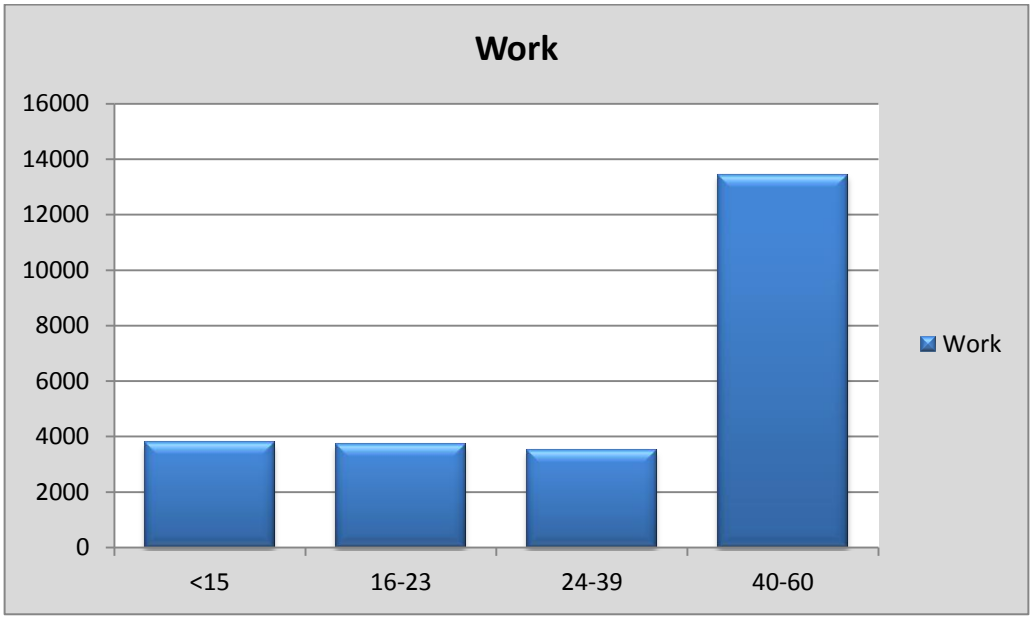

Figure 2. Level of physical activity at work, depending on the age of the respondents

The second considered category was physical activity level, which results from the way of movement from place to another including the time spent in vehicles for communication purposes. Figure 3 presents average level of physical activity in the transport according to the age of the respondents. It shows that people aged 40-60 took the highest physical activities, amounting average 5297 MET/week. Slightly lower physical activity in this aspect presented the youngest group of respondents (5263 MET/week). Significantly lower physical activities, constituting in 2926 MET/week showed people at the age of maturity. Adolescent

respondents undertook the lowest physical activities associated with the transport amounting 1395 MET/week.

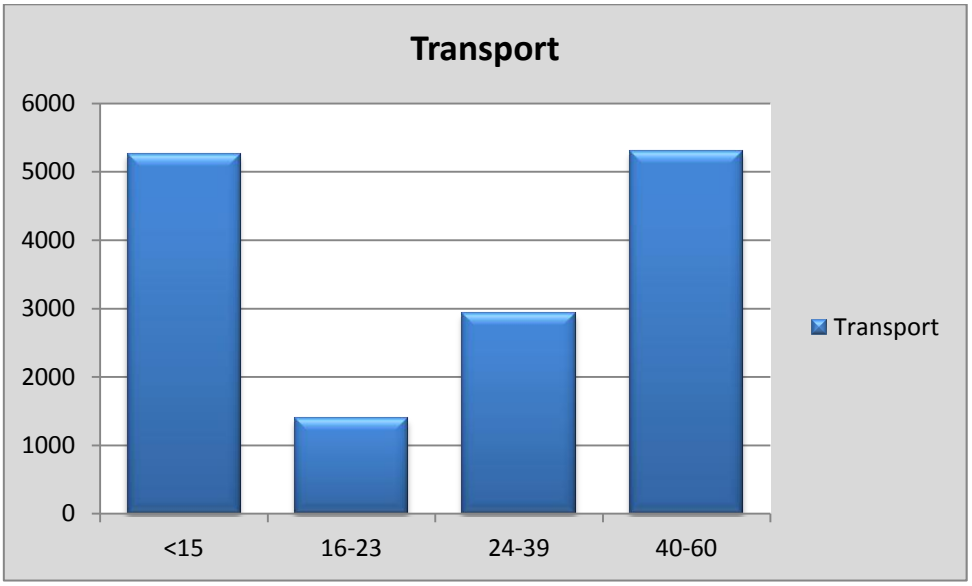

Figure 3. Level of physical activity in the transport according to the age of the respondents

Another considered category is physical activity level reached during the work in house and work done around the house. Definitely the highest physical activity level in this area constituting 8865 MET / week undertook people in middle age (40-60 years). Respondents from other age groups undertook activities in the field of domestic work and work around the house at a much lower level of respectively: 2094 MET / week people at the age of maturity, 1719 MET / week in subjects during adolescence and 1613 MET / week for respondents less than 15 years (Fig. 4)

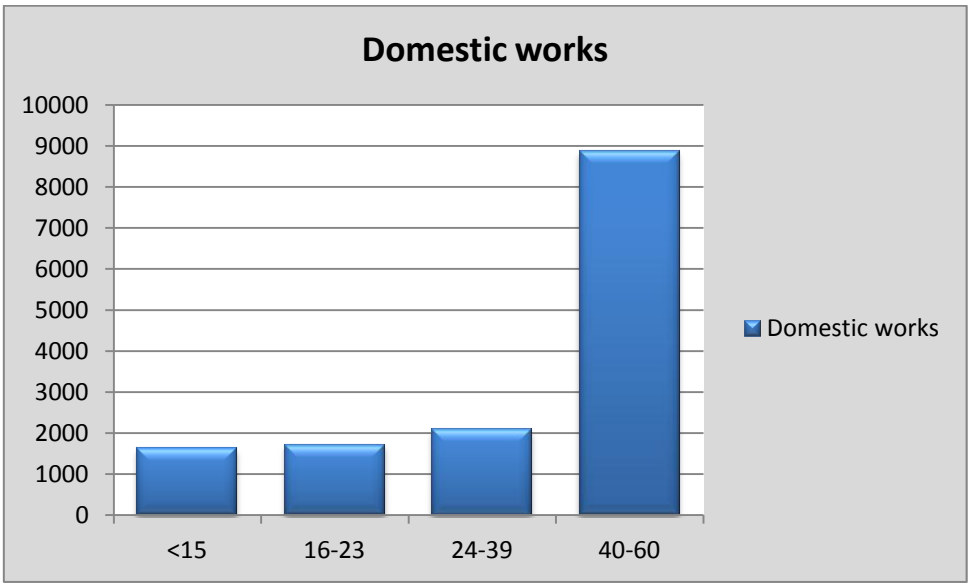

Figure 4. Level of physical activity during domestic works and work around the house according to the age of the respondents

The last analyzed category of physical activity level is time spent sitting at work, at home, during learning, and leisure time. From the data shown in Figure 5 comes the conclusion that the people below 15 years spend their free time the most actively (3326 MET/week). Adolescent respondents took significantly lower level of activity amounting 1795 MET/week, people in middle age show even lower activity in this field - 1110 MET/week. The lowest level of activity (614 MET/week) was characteristic for the respondents in the age of maturity.

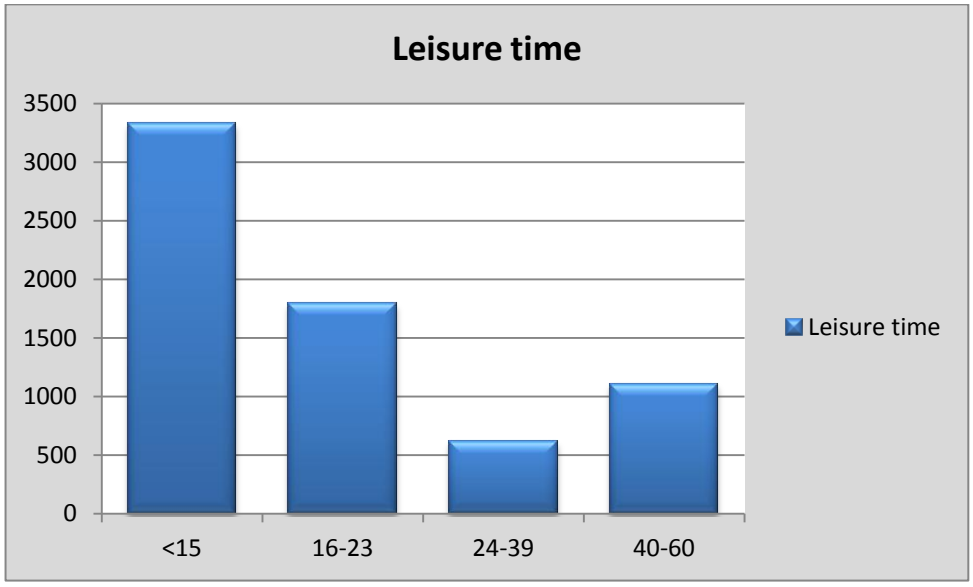

Figure 5. Level of physical activity during leisure time according to the age of the respondents

Figure 6 summarizes all above described categories of physical activity undertaken in the various activities made by respondents in the past week. Taking into account all categories of exercise, it clearly shows that the highest activity showed respondents in middle age (40-60 years). People under 15 years , most actively spend their free time and the time associated with transport. The lowest level of activity in all the categories mentioned above together, is characteristic for the respondents in the age of maturity and adolescence.

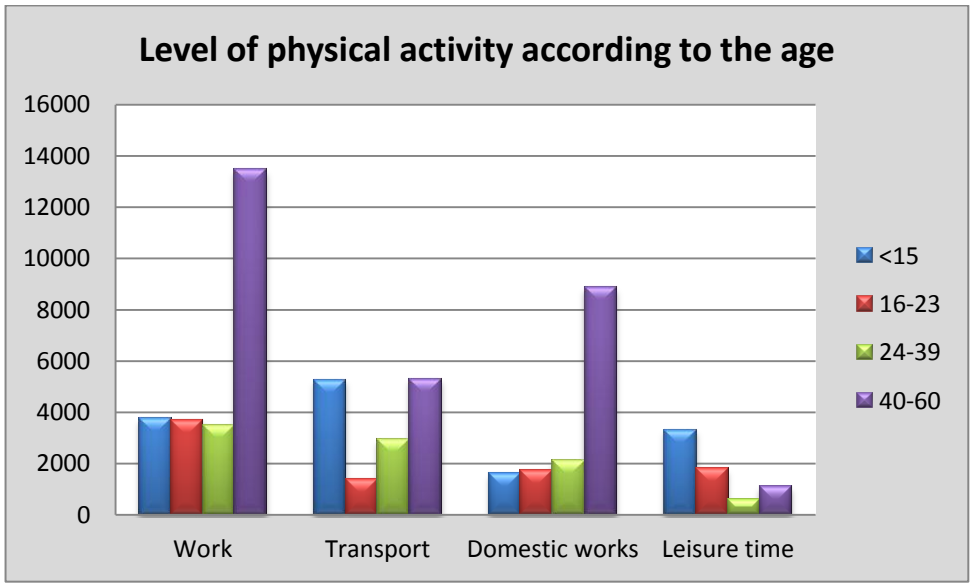

Figure 6. Level of physical activity in all categories according to the age of the respondents

Figure 7 summarizes all of the above categories of physical activities performed by the subjects living in the cities, during the past week. Respondents at the age of maturity (24-40 years old) took the highest level of physical activity associated transport and domestic work. On the other hand middle-aged respondents (40-60 years) from urban territories are most active at work. People under 15 years old coming from the city show the highest level of physical activity during leisure time. The weakest tested group living in the city in terms of physical activity undertaken during the last week were persons at the age of youth (16-23 years).

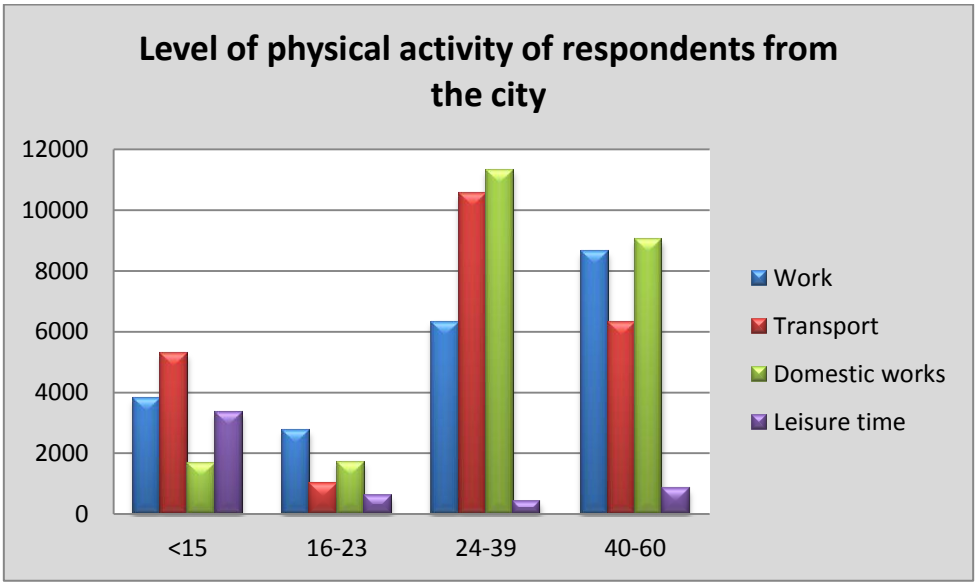

Figure 7. Level of physical activity in all categories according to the place of residence of respondents – cities

Figure 8 shows the physical activities of respondents originating in rural areas. It shows that the highest level of physical activity undertaken at work, are characterized by respondents aged 40 - 60 years. These people also present the highest rates MET/week in terms of physical activity undertaken during leisure time (as opposed to the people on the same age from the city) and during the domestic works. In the case of physical activity associated with the movement and transport, most of the time for this kind of activity devotes group of respondents under 15 years old. Given the results of respondents living in the cities, it should be noted that the level of physical activity associated with the movement and domestic work is on much lower level in the rural residents. On the other hand, physical activity in leisure time taken by the people from rural location is on a higher level than in people originating in city.

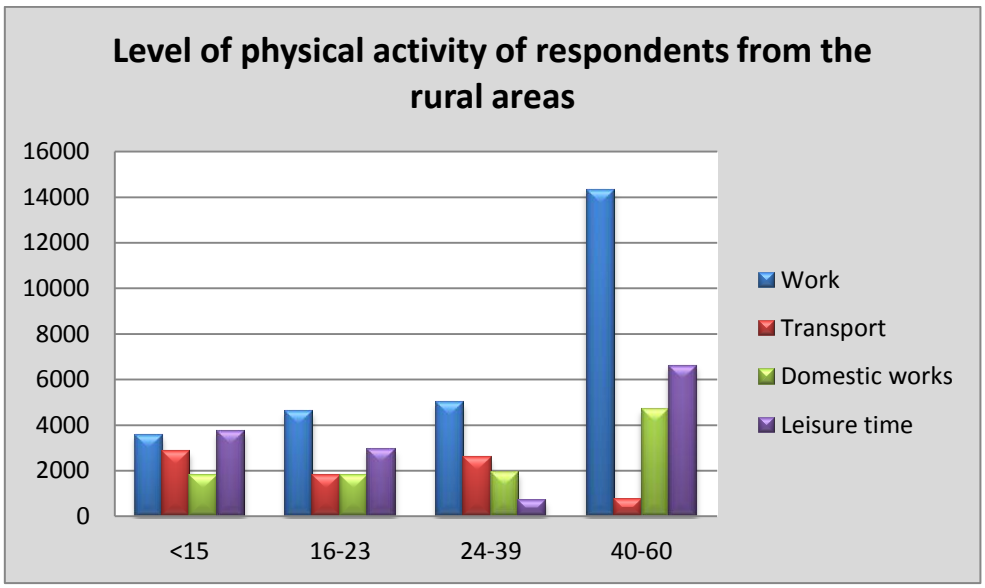

Figure 8. Level of physical activity in all categories according to the place of residence of respondents – rural areas.

Figure 9 presents average level of physical activity of respondents based on gender. Significantly higher level of physical activity showed a group of woman. amounted to 12 871 MET / week. Men during the last week took up an average physical activity at the level 8824 MET / week.

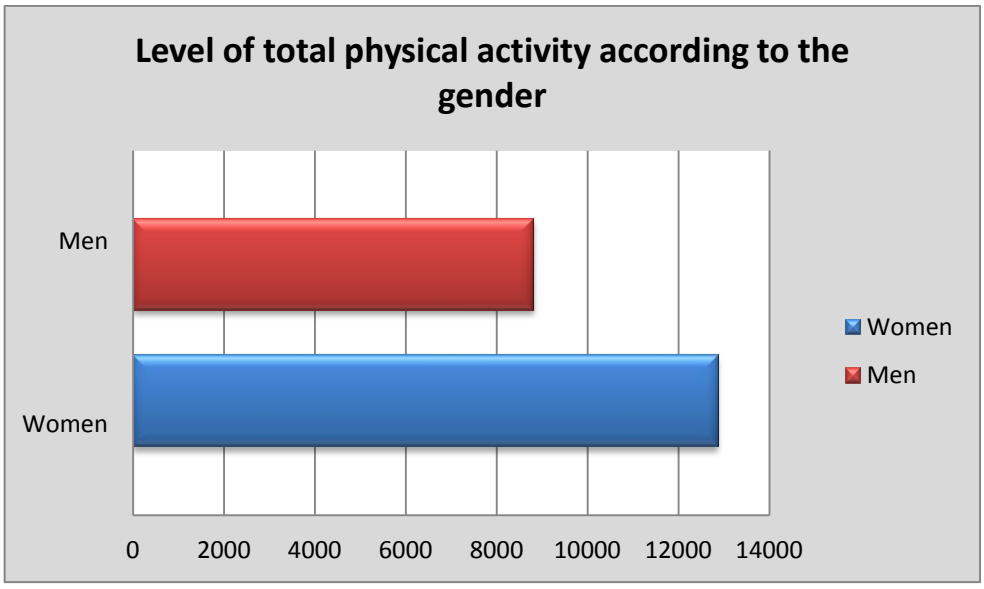

Figure 9. The average level of physical activity of respondents according to gender.

Figure 10 summarizes the data on the weekly physical activity of respondents in all categories of undertaken actions in relation to the place of residence. The higher values of average level of physical activity noted residents of the city reaching 11,702 MET / week. Residents of rural areas engage in physical activities at the level 10 859 MET / week.

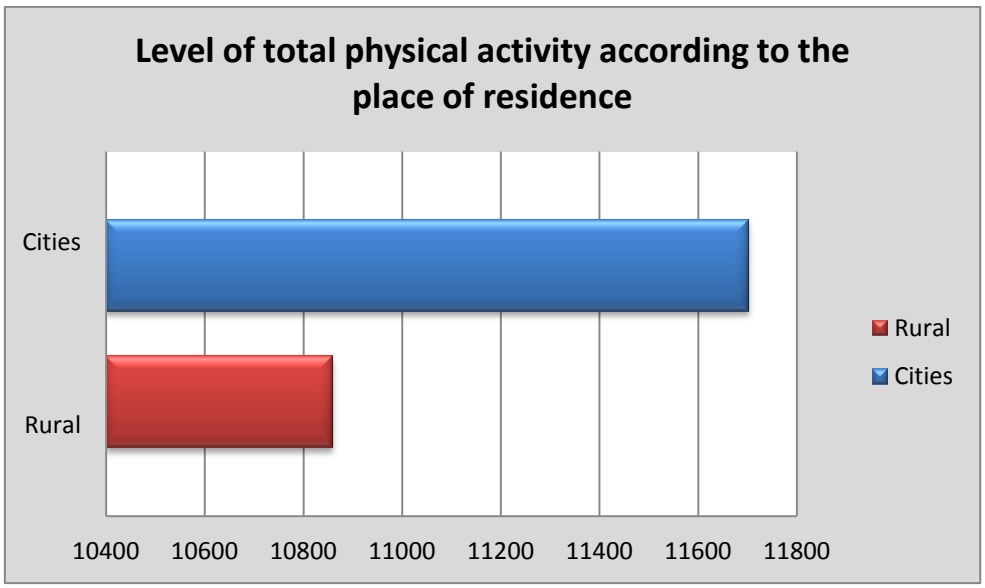

Figure 10. The average level of physical activity according to the place of residence

Respondents also answered questions about symptoms from respiratory system. For the 60 subjects, 46 manifested respiratory ailments and the remaining 14 did not complained of any respiratory diseases. The following are types of respiratory disease that respondents indicate. The largest group of respondents have indicated allergy rhinitis - 18 persons, 10 persons had bronchial asthma, 8 inflammation of the lining of the nasal and throat cavity , 6 persons complained of rhinitis (runny nose), 3 persons indicated recurrent angina and one person selected asthmatic condition.

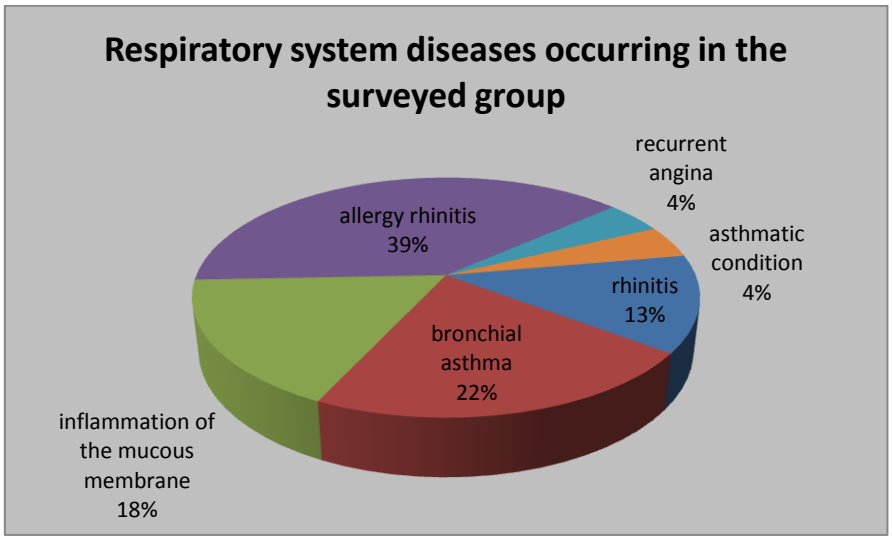

Figure 11. Respiratory system diseases occurred in the surveyed group

Figure 12 shows respiratory system diseases in relation to the age of respondents. In subjects under 15 years old there was such problems like runny nose, bronchial asthma and inflammation of the mucous membrane of the nasal and throat cavity. At the adolescent respondents the most abundant occur: allergy rhinitis, bronchial asthma, inflammation of the mucous membrane of the nasal and throat cavity and runny nose. Person in the age of maturity suffered from: bronchial asthma, allergic rhinitis and asthmatic condition not

mentioned earlier. Respondents between 40 and 60 years old least of all complained about respiratory ailments they ticked only: allergy rhinitis and recurrent angina.

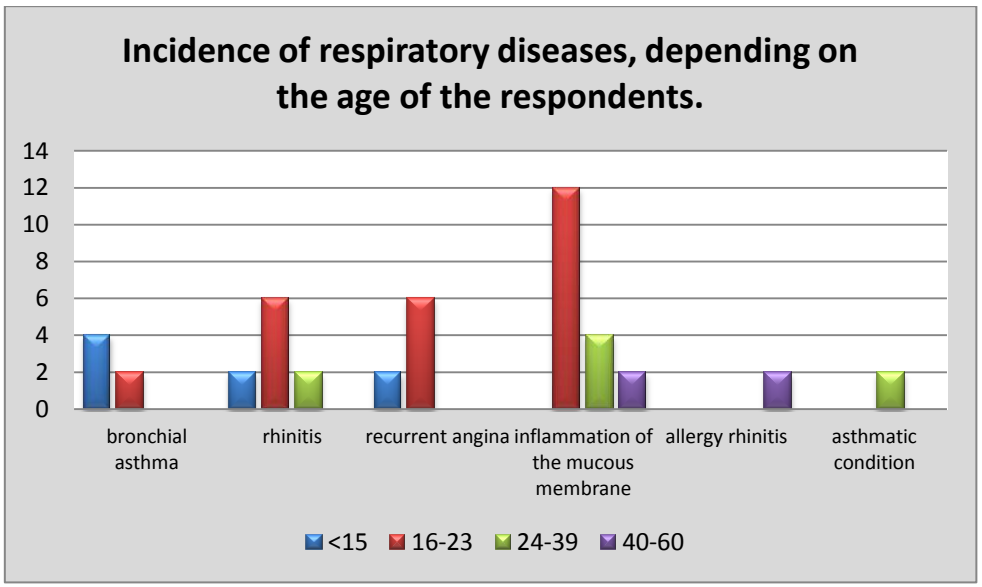

Figure 12. The incidence of respiratory diseases, depending on the age of the respondents.

A study shows that women much more often suffer from the respiratory diseases than men. Men more often than women suffer only due to inflammation of the mucous membrane of the nasal and throat cavity.

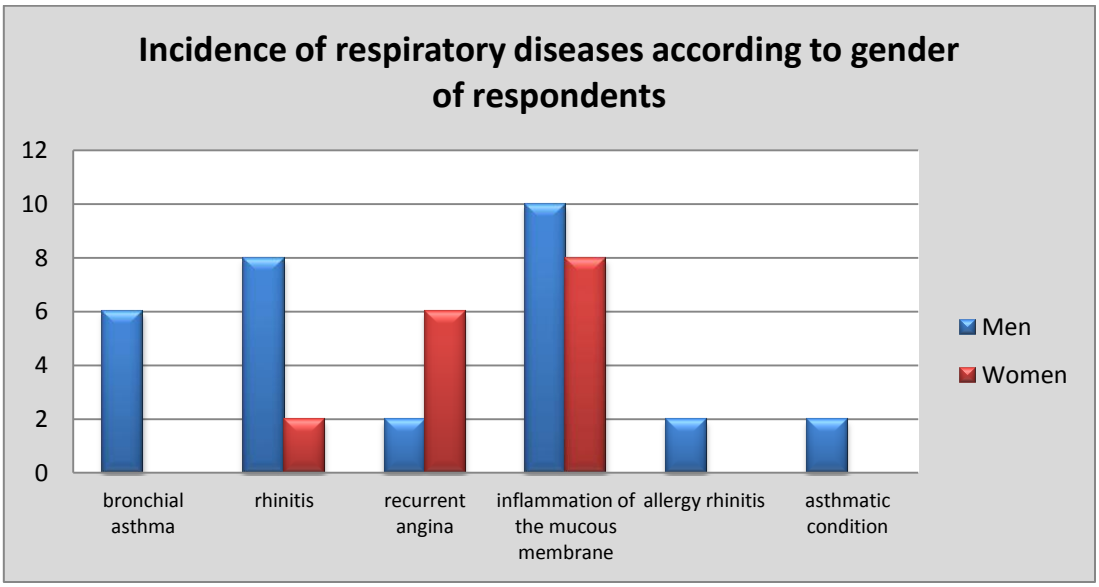

Figure 13. The incidence of respiratory diseases according to gender of respondents.

Figure 14 shows the incidence of respiratory diseases according to respondents place of residence. In urban area people more common suffer from diseases such as allergic rhinitis or recurrent angina. In turn rural areas has a higher incidence of asthma, rhinitis, inflammation of the mucous membrane of the nasal and throat cavity, and asthmatic condition.

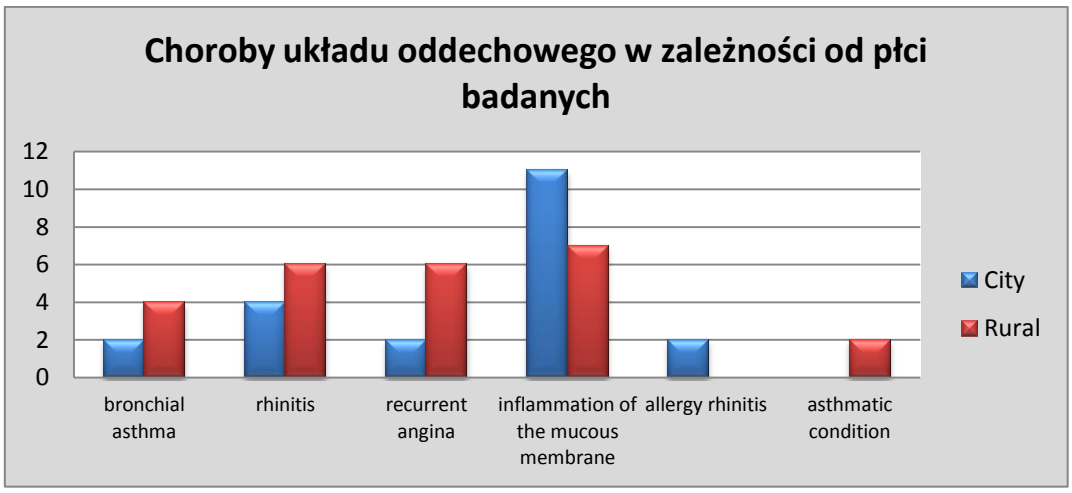

Figure 14. The incidence of respiratory diseases according to respondents place of residence.

Figure 15 shows the relationship between the level of physical activity and the incidence of respiratory diseases. Respondents with respiratory system ailments like bronchial asthma, Angina or inflammation of the mucous membrane of the nasal and throat cavity much less often undertake the physical activity. Their average level of physical activity is less than 5000 MET / week. Respondents with rhinitis took up physical activities at low level (below 5000 MET / week) or high level (above 10001 MET / week). Allergic rhinitis, does not impede to undertake physical activity at the medium level (5001-10000 MET / week) or high level (above 10 001 MET / week).

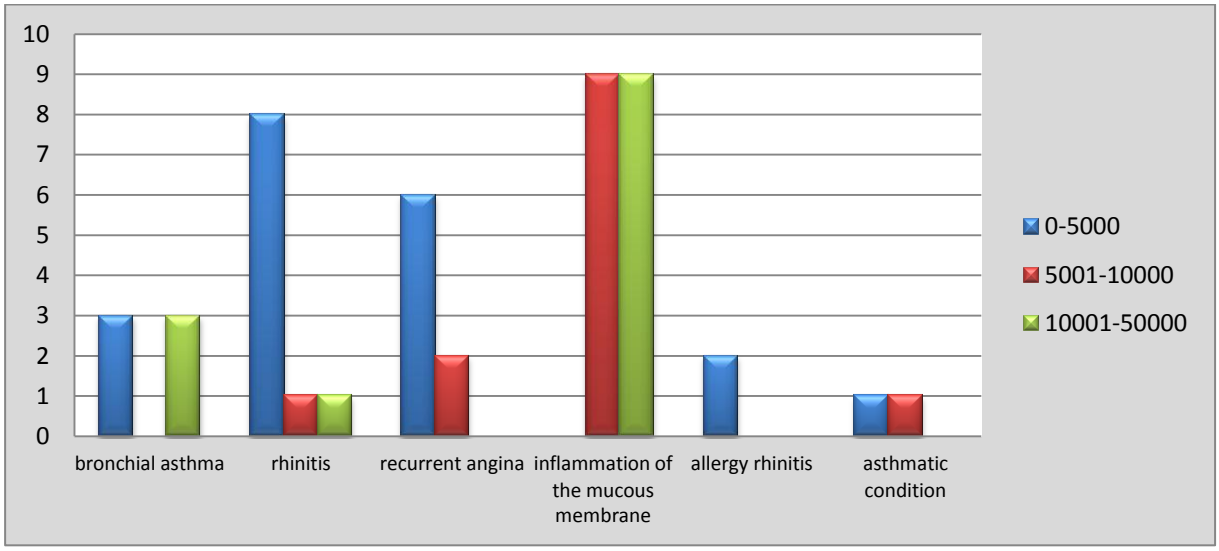

Figure 15. The average level of physical activity according to the incidence of respiratory diseases.

DISCUSSION

Based on the analysis of collected data can be seen clear correlation between the level of physical activity and the incidence of respiratory diseases. From the point of view of health promotion, it is necessary to aware patients about the great meaning of physical activity, which will provide a holistic approach to the treatment of respiratory diseases [6, 14]. This paper presents an attempt to estimate: the: level of motor skills of studied population, the prevalence of respiratory diseases, physical activity limitations in view of various respiratory diseases and the impact of the research area on the level of physical activity, and therefore,

the type of respiratory ailments. It has been found that the majority of respondents who had chronic respiratory diseases, do not take proper physical activity. Pitta and others also showed that patients with COPD had very low level of physical activity during and after treatment. [11,12] Age and place of residence of respondents also significantly differentiated the level of undertaken physical activity. It appeared that older people with respiratory ailments took physical activity an appropriate dimension. The survey showed that the average level of physical activity of people living in urban areas is higher than in those coming from rural areas. Parks and others also showed that rural residents were least likely to meet physical activity recommendations than urban residents [10]. The level of physical activity of respondents, was most influenced by: the type of respiratory diseases, place of residence and age of the respondents. Based on the collected data, it's possible to identify several health threats and potentially harmful behaviors in the studied population:

1. Research has shown persisting in group of respondents incorrect conviction that chronic respiratory diseases are a contraindication for physical activity.
2. Based on the answers of respondents was noted a strong need for health education in the field of physical activity importance in group of people with respiratory ailments.
3. In the surveyed population, especially among mature people coming from rural areas, preponderate model of passive resting. There is a necessity to promote active way of spending leisure time and to present the benefits of this.
4. Respondents with chronic, incurable respiratory diseases feeling fear and anxiety against taking exercise.

CONCLUSIONS

In the context of relatively low physical activity among people with respiratory ailments, it's urgent to create health-promoting behaviors, as a kind of methods forming the desired habits [9]. Health is a factor that has a strong influence on the creation of own career, it modifies, opportunities and achievements in life. The new style of work in our conditions and the associated new lifestyle - enforces health promoting behaviors. Therefore, special protection and attention of physical culture institutions, should be given to people with respiratory diseases, especially situated in phases the identification of disease, the choice of treatment and simultaneously during changing of social, family and professional roles. The introduction of programs based on sports training, regular physical activity, creating conditions friendly to them, may contribute to silencing and stabilization of the disease and to change the way of spending free time.

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