

## Dance as a means of preventing diseases of civilization

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### Summary

The aim of this study was to determine whether under the influence of dance classes favourable changes in the lives of people affected by diseases of civilization occur. The study group consisted of 56 middle-aged people, leading passive lifestyle (until they undertook activity in the form of dance). There were individuals having such health issues as: diabetes, coronary heart disease, cancer, problems with the spine as well as those being overweight and obese or living under high stress among them. The results show that dance activities cause many beneficial physiological changes in the body. They may reduce the risk of developing many diseases, which almost everyone is exposed to nowadays. Many also points out that the inclusion of dance exercises greatly improves their therapy's efficiency.

**Key words** diabetes, heart disease, cancer, spine, stress (cukrzyca, choroby serca, rak, kręgosłup, stress)

### Introduction

It is commonly known that physical activity has a positive influence on a person's health and general fitness. The ancient Greeks, starting with Hippocrates, recommended exercises for preventive and therapeutic purposes. The beneficial impact of physical activity is also recognised today. Unfortunately, although sport is becoming more and more fashionable, most people still remain passive. As the results of the study conducted by Survey and Living Condition Department of Statistics Poland show, 45,9% of Poles participated in sports and physical recreation activities in 2012, however only 20,3% of them did it regularly [GUS 2012]. It is a sedentary lifestyle that is the cause most diseases of civilisation. To avoid the consequences of such existence, energy balance should be maintained. 'According to present guidelines regarding physical activity, leading centres (including ADA – American Diabetes Association) recommend

at least 150 minutes of moderate-intensity aerobic physical exercise (60-85% of maximum heart rate (HR<sub>max</sub>)) throughout a week so that the weekly energy expenditure stays at the level of 1000 -2000 kcal” [Grochowska & Jarzyna 2014, Colberg et al. 2010]. In contemporary world an average person consuming 2100 kcal from meals per day, uses only 300 kcal for physical activity, whereas primitive man consuming about 3000 kcal, expended 1000. Therefore, the energy balance nowadays is 1:3 while in the past it was 1:7. The impairment of energy balance results in overweightness, obesity, high blood pressure, insulin resistance and type 2 diabetes mellitus. At the biochemical level it leads to dyslipidemia (triglyceride and LDL concentration increase and HDL decrease in serum) as well as hyperglycaemia. These are high risk factors for the development of vascular diseases [Grochowska and Jarzyna 2014, Brownlee 2001, Cornier et al. 2008, Libby et al. 2009] and one of them - the coronary heart disease - is exactly the most common causes of death in the world. The second leading cause of death globally is cancer.

The occurrence of chronic diseases has a tremendous impact on health self assessment. The Public Opinion Research Centre demonstrated what people’s convictions about the factors contributing to health improvement are. It was believed that diet has the greatest impact (50%) as well as regular medical examinations (34%), lack of stress (29%) or regular physical activity (25%). According to Osiński, ‘fight and physical exercise forcing the body to activity and energy expenditure, and generally a certain type of adversities, are necessary to proper development and functioning of the body’ [Osiński 2013, p.41]. It was expressed already in the 16<sup>th</sup> century by doctor Wojciech Oczko, a court physician to Polish kings. He promoted physical exercise practice: ‘exercise replace almost every medicine, whereas no medicine can substitute exercise’ and recommended - among other activities - dance lessons.

The aim of this study was to verify if under the influence of dance classes favourable changes in the lives of people affected by diseases of the 21<sup>st</sup> century occur. The objective was also to demonstrate the suitability of conducting such classes as a prophylactic in order to prevent diseases of civilisation.

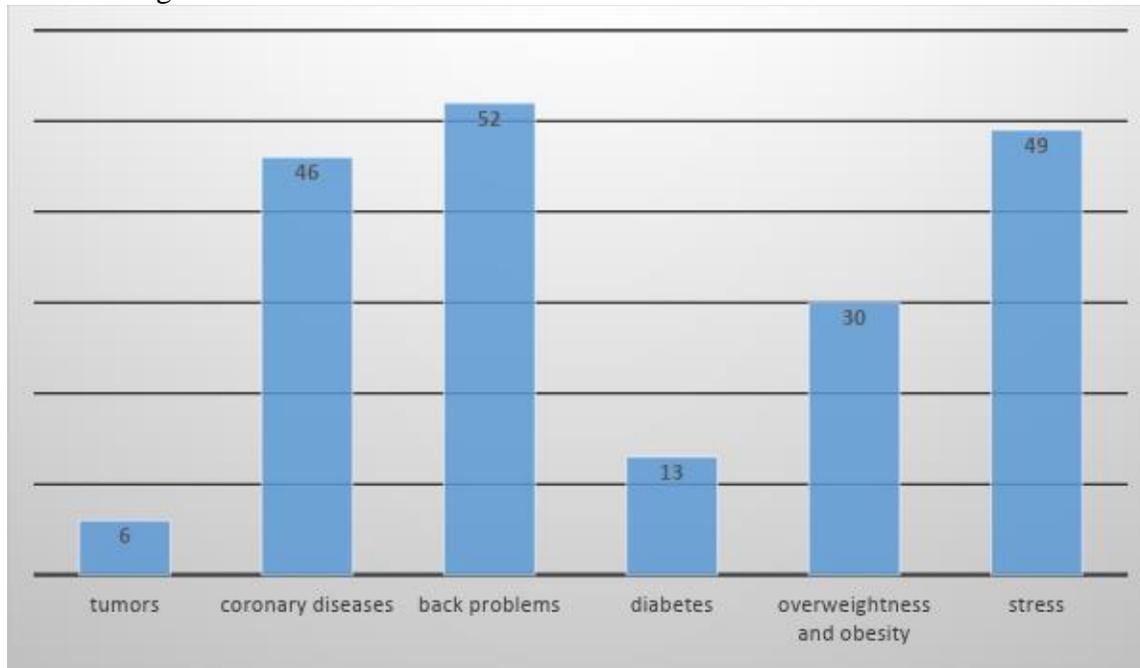
## **Material and methods**

To solve the formulated research problem various methods were utilised, including literature review, observation as well as intuitive, comparative and axiological methods. A diagnostic survey based on the questionnaires containing both open and closed ended questions was also employed. It was aimed at depicting how has dance, according to respondents, influenced their lives.

The study group consisted of 56 middle-aged people, leading passive lifestyle (until they undertook activity in the form of dance). There were individuals having such health issues as: diabetes, coronary heart disease, cancer, problems with the spine as well as those being overweight and obese or living under high stress among them. Dance classes were incorporated into their treatments in the hope of producing improvement in their results. They took part in lessons regularly – twice a week, with each session lasting from 1 – 1,5 hours. All research participants had been attending the course for more than a year before the interview took place. All this time they had been precisely monitoring their health records and gathering tests results. All the data were later collected and analysed. The summary of the analysis is presented in this paper.

## **Results**

Among all 56 study participants 6 groups of diseases of civilisation were recognised (fig.1). It is very significant that most study subjects belong to several groups simultaneously, for instance a considerable percentage of obese people suffer from diabetes, high blood pressure and back pains, cancer patients live under enormous stress and some of them also complain of back pain or are overweight.



*Fig.1. Diseases of civilisation among the study participants.*

The impact of the dance therapy on physiological parameters of the course participants was impressive. In every group the improvements in both health results and mental condition were recorded (table.1).

Table.1 Changes in each study group

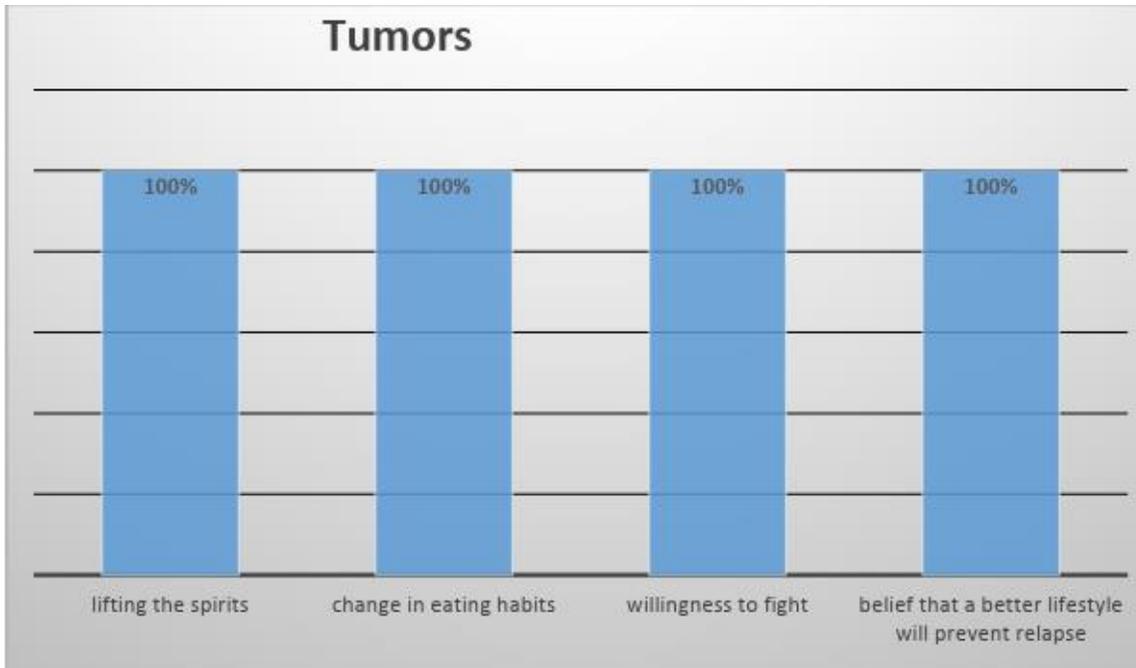
tumors	coronary disease	back problems	diabetes	overweightness and obesity	stress
Lifting the spirits	Lifting the spirits	Lifting the spirits	Lifting the spirits	Lifting the spirits	Lifting the spirits
Change in eating habits	Change in eating habits		Change in eating habits	Change in eating habits	
Willingness to fight				Willingness to fight	
	Quitting smoking				Quitting smoking
	Blood pressure normalisation			Blood pressure normalisation	
	Increased efficiency			Increased efficiency	
		Weight loss		Weight loss	
Belief that a better lifestyle will prevent relapse		Decreased pain	Improvement of insulin signalling pathway activity	maintaining normal blood sugar level	Better sleep
	Widening of the blood vessels	Overextensions decrease	Blood sugar normalisation	Decrease in body fat percentage	
	LDL decrease	Joint mobility increase	Lipid profile improvement	Increased metabolism	
	HDL increase	Stabilizer muscles strengthening	CRP concentration normalisation	Muscle nutrition	
		Body posture correction			

Source: Own elaboration

The research participants agreed that dance classes significantly lifted their spirits. Despite being afflicted with diseases, they feel more cheerful and happy. It is undoubtedly the effect of endorphins, often called ‘happy hormones’, being released while dancing. Besides, respondents meet other people affected by diseases and it is easier for them to face their problems. They are no longer alone with them. Participating in dance lessons influences them like a group therapy. Thus, some changes occurring in several groups simultaneously were recorded.

It was observed that by undertaking this type of physical activity the study participants diagnosed with cancer, coronary diseases, diabetes, overweightness or obesity changed their eating habits.

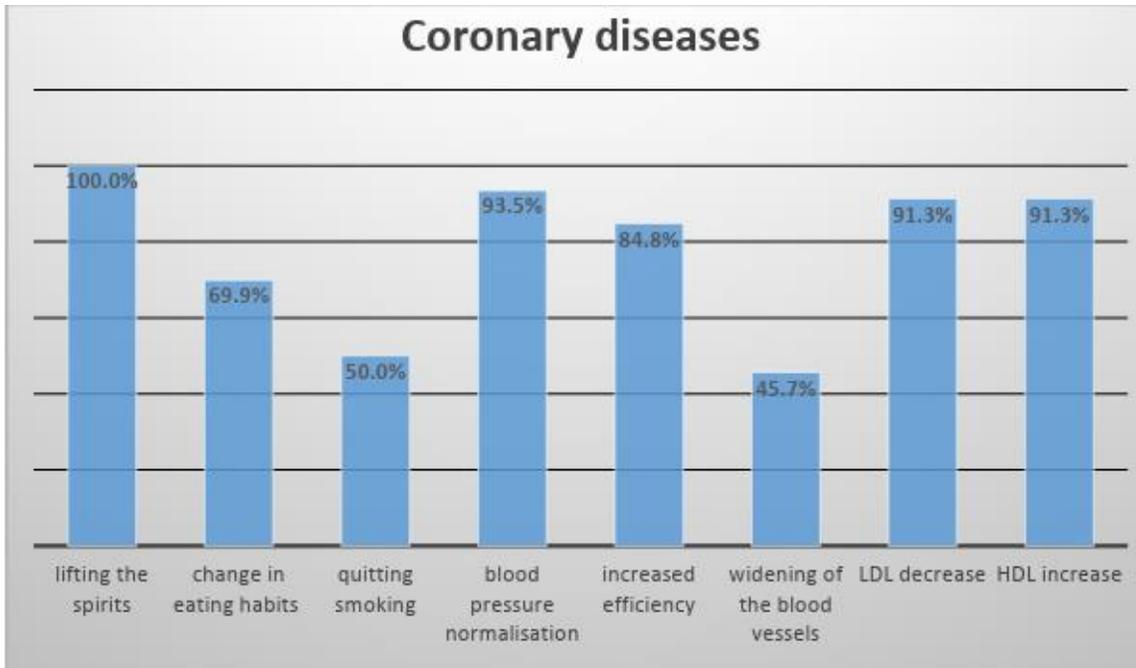
Subjects struggling with cancer as well as those overweight and obese declared the increased willingness to fight with their disease. It is the result of the first effects dance activity exerted on them. Moreover, in cancer patients, the belief that a better life style will prevent disease relapse also strengthened (fig.2).



*Fig. 2. Changes that have occurred in a group of people diagnosed with tumors*

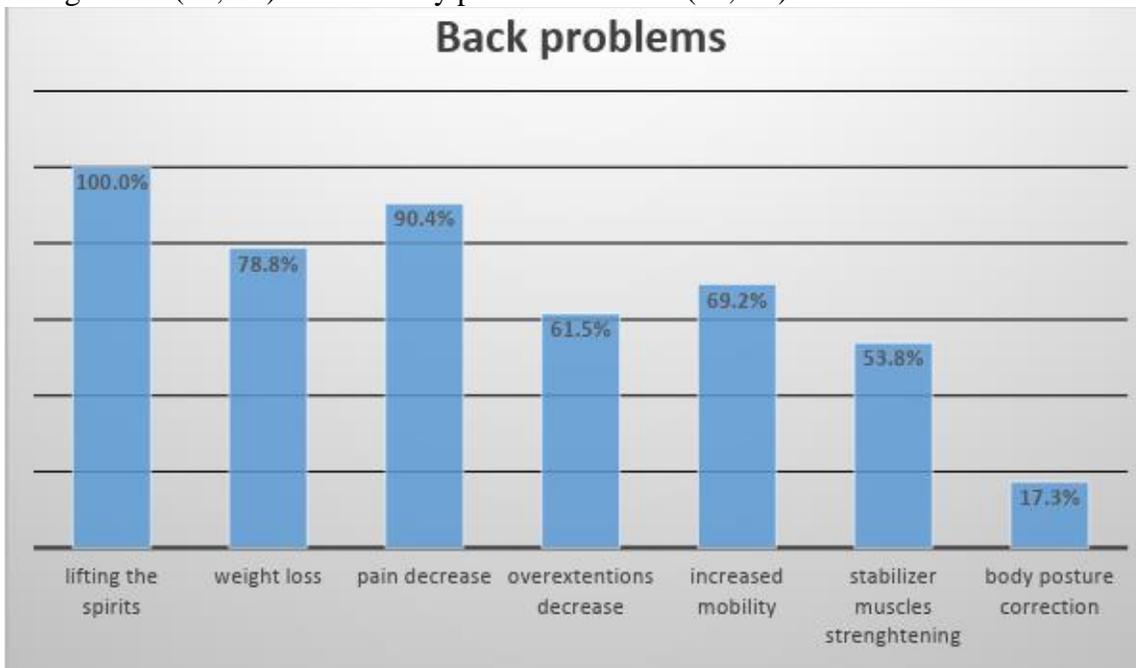
There were 15 smokers in the study group. Physical activity in the form of dance motivated 8 people experiencing anxiety related problems (53,3%) and 6 people suffering from cardiovascular diseases (50%) to quit the addiction. Thus, it is obvious that in most of the subjects with the coronary heart disease (84,8%) efficiency increase was reported. Also overweight and obese individuals (100%) observed a positive change in this regard. This group amicably confirmed their body weight reduced (100%). The same changes were noticed by those suffering from back pains (78,8%). Furthermore, people affected by coronary heart disease (93,5%) pointed out that their blood pressure normalised, similarly to respondents with overweightness and obesity (80%). In the latter group also the blood sugar normalised. This was observed among diabetes as well (76,9%).

Also some changes typical of each group were recorded. According to the coronary heart disease patients' results (fig.3), the level of their LDL lowered and simultaneously their level of HDL increased (91,3%). In addition, doctors noticed that the diameter of their blood vessels, which had earlier narrowed due to atherosclerosis, widened (45,7%).



*Fig.3. Changes that have occurred in people diagnosed with coronary diseases*

Most people complaining of back problems (fig.4) admit that owing to regular classes the pain considerably decreased (90,4%). There are multiple reasons for that: weight loss resulted in overextensions decrease (61,5%), the joint range of motion improved (69,%) , stabilizer muscles strengthened (53,8%) and the body posture corrected (17,3%).



*Fig.4. Changes that have occurred among people with back problems*

In more than half of the diabetes participating (fig.5) in the study (61,5%), the remission was recorded. Moreover, the concentration of CPR stabilised (53,8%) and also the insulin signalling pathway activity (38,5%) as well as lipid profile (30,8%) improved.

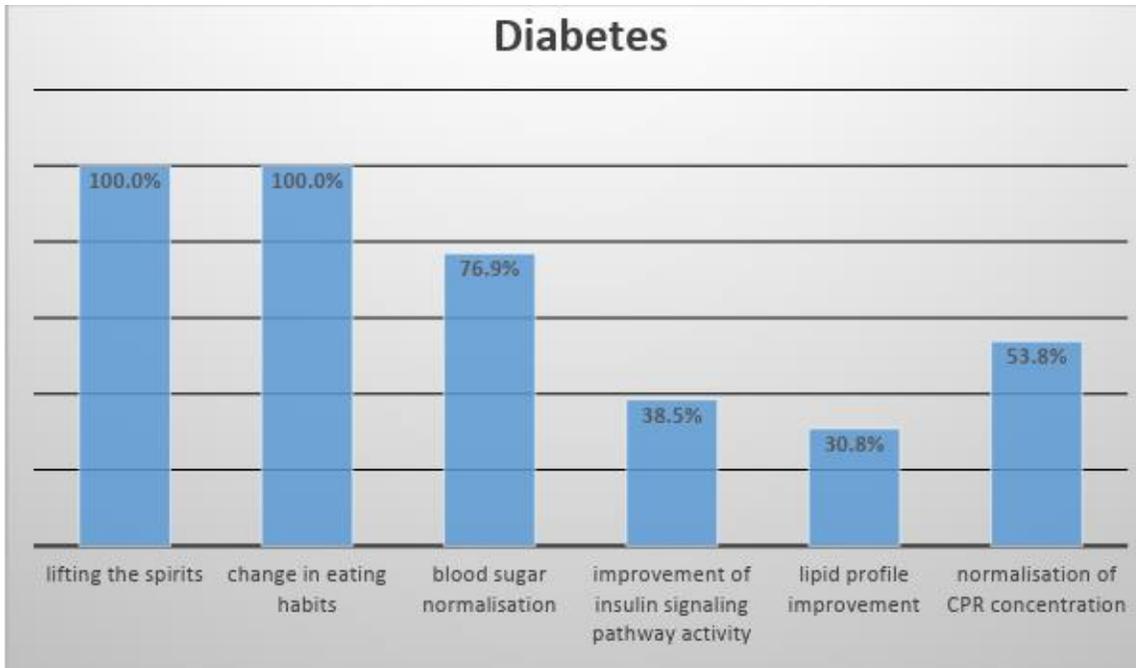


Fig.5. Changes that have occurred among diabetes

In case of overweight and obese research participants (fig.6), the reduction of body fat percentage (90%), increased metabolism (86,7%) and muscle nutrition (16,7%) were recorded.

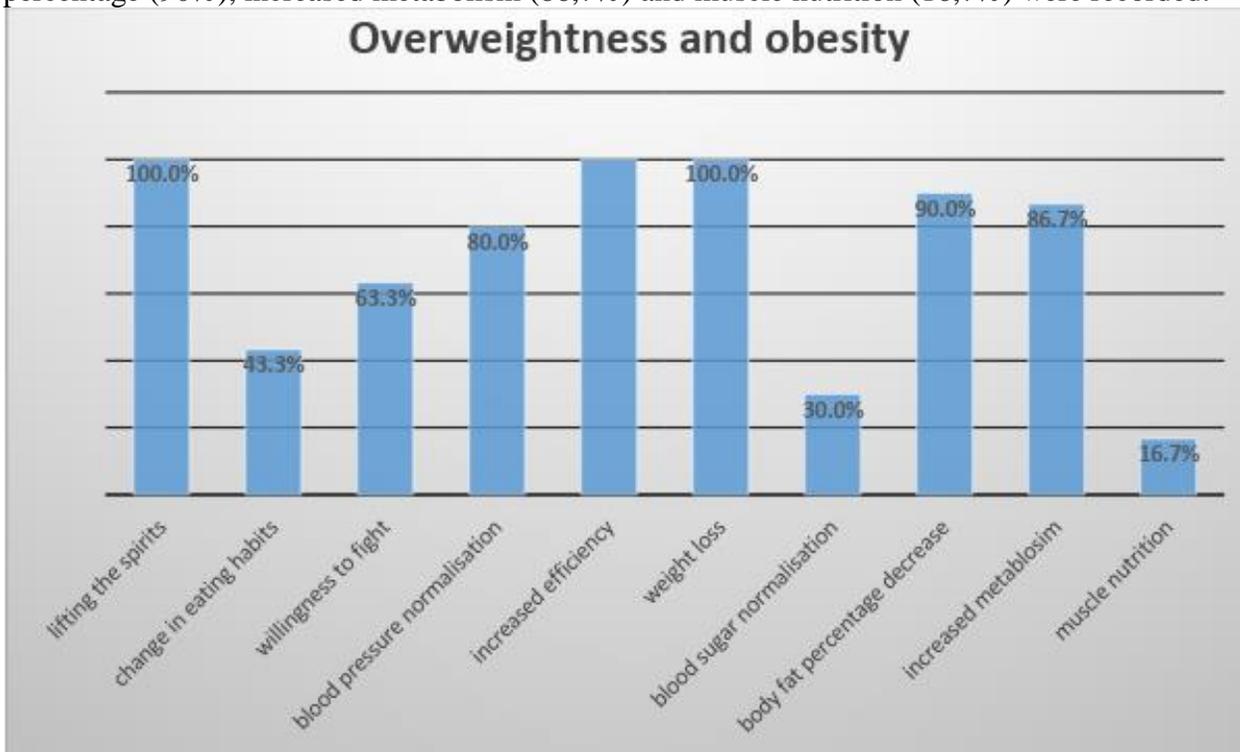
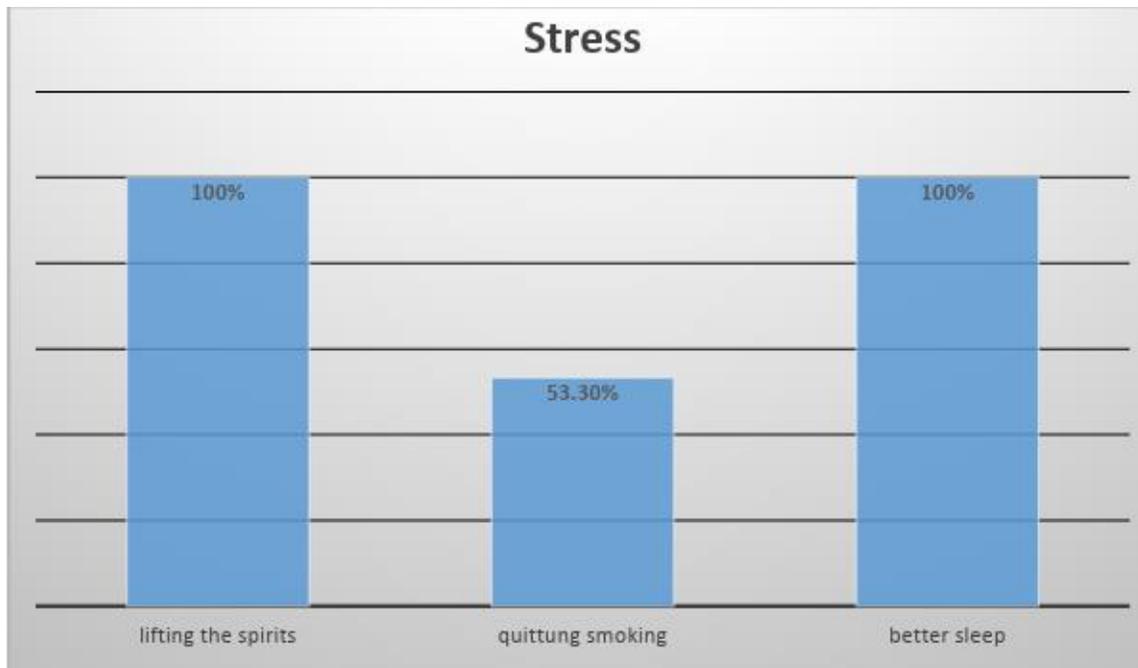


Fig.6. Changes that have occurred among overweight and obese people

Respondents living under enormous stress and experiencing anxiety (fig.7) related problems admit that increased dance activity guarantees a better sleep (79,6%).



*Fig.7. Changes that have occurred among people under the influence of high stress*

### **Discussion and Conclusions**

The results of the study show that physical activity in the form of dance produces numerous advantageous physiological changes in the body. It may also reduce the risk of developing a variety of diseases, which nearly everyone is exposed to nowadays. Moreover, there are serious indications that incorporating dance exercises into the therapy will improve its effectiveness.

Numerous publications and reports inform about the irreplaceable influence of physical activity on our health. A great deal of people however do not undertake classic exercises as they associate them with overextending oneself, exhaustion and frequently, also with pain. Others use lack of time or aversion to sport as an excuse. Nevertheless, sometimes the excuses may be justifiable. This is the case with disability, the advanced stages of a disease, age-related biological changes as well as sociological circumstances, such as upbringing or negative experiences and also psychological circumstances like weak motivation or losing life balance [Ingram 2000]. A solution for these people are dance lessons, which mainly provide relaxation and entertainment and the outcomes are a kind of 'side effect' of joy. In dance the age or the level of fitness are of no importance, 'dance exercises to the best of one's ability bring the maximum effect [Banio 2014]. Dance lessons generate joy, satisfaction and most of all fun, leading to relaxation and consequently lifting the spirits. They integrate both body and mind, simultaneously regenerating them. Music and movement exercises are a very attractive form of physical activity among people of all ages. Such movements influence a number of physiological functions. Besides, they improve muscle structure due to engaging all the muscles and joints. Moreover, such movements performed with music are not as tiring as other physical exercises and motivate to increase the efforts. Numerous researchers state that the influence of music on physiological changes in the body is very evident [e.g.: Schwabe 1972; Młodzikowska i Tukiendorf 1985; Nowak 1995; Tomaszewski 1991; Stadnicka 1998; Metera 2002; Kronenberger 2003; Krzywoń 2008; Stachyra 2012]. Janiszewski notices that 'the emotional responses to a music stimulus reflected in the

activation of motor skills cause internal changes that can be revealed in the measurements of pulse, blood pressure, heart rate, galvanic skin response, respiratory parameters' [Tomaszewski 1991], and that 'music soothes fears and the symptoms associated with it, such as excessive heart rate increase, abnormal respiratory rate, sweating, decrease in pain tolerance thresholds, lowering immunity, stress hormone increase' [Wojtuń - Sikora 2006].

So far it is impossible to substitute physical activity with pharmaceuticals, which could imitate its positive effects.

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