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Thesis title: The influence of the physical activity on high blood pressure in patients with obesity or metabolic syndrome

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ABSTRACT

Nowadays the metabolic syndrome belongs worldwide to the most widespread diseases. The joint occurrence of diabetes, obesity and hypertension has been known for a long time. Also nowadays many doctors consider obesity a typical risk factor for diabetes or hypertension. Generally it is true: the higher BMI the higher likelihood of hypertension occurrence.

Hypertension is a risk factor for atherosclerosis which is a cardiovascular disease.

Nowadays the high blood pressure belongs to the most common health disorders of populations in both developing and advanced industrialized countries. The complications of hypertension are an important cause of sickness rate, invalidity and death.

The occurrence of high blood pressure increases with age and is also dependent on the gender. The average levels of systolic pressure increase with age. On the other hand, the average levels of diastolic pressure slightly decrease with age.

Nowadays there is a high absence of physical activities, which results in the occurrence of metabolic syndrome and the elevation of high blood pressure.

Movement activities act as both a preventive means for symptoms of metabolic syndrome and a very effective way of their therapy.

The aim of this thesis is to evaluate the influence of physical activities on high blood pressure in a group of patients who have been treated for hypertension and in most cases for type 2 diabetes as well. These patients take part in the treatment programme in the health rehabilitation centre.

A group of 31 female-subjects treated for high blood pressure was chosen. They underwent a 3-month programme of guided physical activities ran by experienced instructors of the health rehabilitation centre VŠTJ MEDICINA Praha, o.s. The blood pressure of the subjects was monitored for 24 hours, the basic biochemical examinations were carried out, as well as the examination of the body composition by Bodystat and spiroergometry test, on the basis of which the guided training was organised. The requirement for the participation in the study was previous physical activity performed at least once a week and the patients had to attend the guided training at least twice a week and also carry out home training once or twice a week. The excluding factor was the administration of drugs affecting the heart rate. No intervention concerning the diet was made.

A total of 26 female subjects were evaluated (5 women did not finish the programme or were not evaluated for failing the procedure – injury, work-related reasons causing break in the programme for more than two weeks, etc.) 26 obese women aged $51,5 \pm 8,6$ years, with body mass index $34,4 \pm 5,7$ kg/m², weight $95,6 \pm 16,0$ kg, waist circumference $103,0 \pm 11,9$ cm and percentage of body of fat $43,2 \pm 39,1$ %.

After a three-month programme there appeared significant changes in weight, waist circumference and percentage of body fat. The average heart rate during 24 hours was reduced significantly, including a significant reduction of heart rate during the day and no major changes of heart rate during the night. There were also improvements concerning other parameters of blood pressure and heart rate during spiroergometry. The parameter of efficiency VO₂ peak increased and decrease of heart rate after 3 minutes with unchanged heart rate was positively affected too.