

**IMPLICATION OF PHYSICAL THERAPY REGARDING
CARDIOVASCULAR AND METABOLIC PARAMETERS
IMPROVING FOR PATIENTS WITH CHRONIC CORONARY
HEART DISEASE**

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Keywords: coronary heart disease, atherosclerosis, hypertension, physical exercise.

Abstract: Cardiovascular disease represents the main cause of deaths which were registered in our modern society among adult population. This disease represented the cause of over 50% of deaths, cases making more victims than other serious disease, like cancer.

Heart disease is interested by miocardic arteries, and they are caused and got worse by environmental conditions (stress, sedentarism, nourishment), some different vices (alcohol, tobacco, drugs), and also by some intern particularities (diabetes, hypertension).

Physical exercise has a healthy influence on miocard muscle, it contributes to regulate the cardiac functions, it relieves its activity, leading to the increasing of life quality and the independence of daily life.

Introduction

Contemporary pathology is characterized by frequency of diseases. Their pathogenesis are largely conditioned by the human life stile, such as degenerative cardiovascular diseases, metabolic diseases or functional degeneration of the nervous system.

The heart, our body vital organ functions as a pump which releases in circulation during a person lifetime more than 250 million liters of blood.

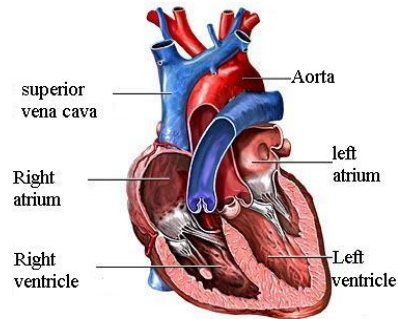


Image 1. Representation of harts chambers

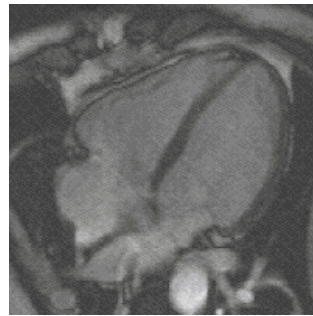


Image 2. Representation of harts chambers by magnetic resonance imaging

Coronary heart disease are affecting the arteries that feed the heart - coronary arteries - which reduces their size, with the result decreasing the amount of blood that supplies heart muscle - the myocardium - so made it impossible to meet the needs of oxygen, fatty acids, glucose.

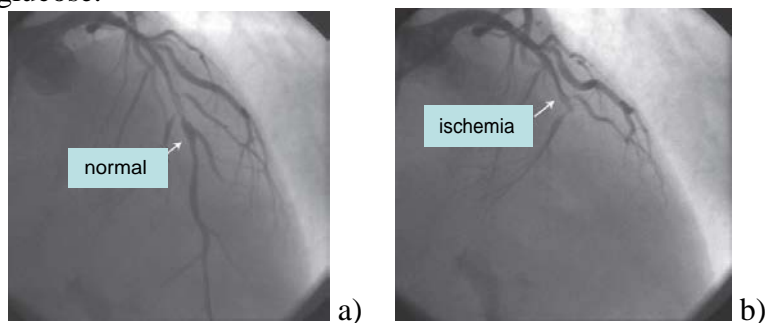


Image 3. a), b) Representation of hart arteries by coronary angiography method

The reducing blood flow through coronary arteries phenomenon was called in medical language with the term of *ischemia*. The changes caused by cardiac ischemia are described as coronary heart disease.

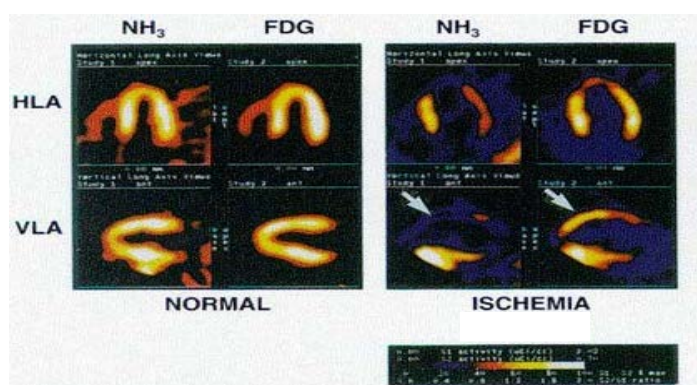


Image 4. Positron emission tomography which indicates heart perfusion and metabolism.

Coronary heart disease is the main cause of mortality in the world making more victims each year than other diseases such as cancer. Every 26 seconds someone suffers a heart attack and one man dies every minute of it. In Romania there are over one million people suffering from coronary heart disease and each year are newly diagnosed 33,000 other sick people.

Materials and methods

In this study were included two subjects, aged 54 and 56 years old, diagnosed with chronic coronary heart disease, accidental or from investigations for other conditions.

Discomfort manifested by fatigue, bouts of breathlessness to medium physical effort intensity, headache, dizziness, palpitations and sleep disturbances were some of the symptoms that subject accused.

Subjects made several investigations (electrocardiogram, coronary angiography, magnetic resonance tomography) which revealed the presence of this disease.

The study was conducted in Physical Therapy Complex and the material used in this study included:

- physiotherapy room: mattress, trellises, ergometer bicycle, treadmill, massage table, etc.
- swimming pool: handrail, stairways, mobile devices (rafts, balls, etc.)

For the recovery of subjects with chronic coronary heart disease following hypotheses were proposed to demonstrate:

- to what extent the proposed regimen is well tolerated by patients and clinical symptoms cardiovascular subjects improves;
- whether the programs recovery application can be achieved the improvement of cardiovascular and metabolic parameters;
- if the integration into an organized system of movement therapy may combat the effects of coronary heart disease on subjects quality of life.

The recovery period of those two subjects with chronic coronary heart disease lasted seven weeks, during this period the exercise were staggered by principles that take account of load applied, the difficulty and complexity of their execution, degree of fatigue of the subject, etc.

The recovery program includes the following objectives:

- progressive exercise training that increases exercise capacity;
- neuropsychic relaxation and anxiety and panic fighting;
- achieve the economy function of locomotor system;
- effective socio-professional integration of the subjects.

Proposed means for achieving the objectives are:

- hydrophysicaltherapy;
- physicaltherapy: body postures; treadmill walking and ergometer bicycle pedaling;
- neuropsychic relaxation methods.

Treatments: Before the actual start of the meeting of functional recovery, the subject will continue for 5 minutes supine position with trunk flexed 45 °, after which it will keep for three minutes sitting position than walking for three minutes associated with breathing exercises.

1. Introductory sequence represents the body preparation for exercise and it consist in repetition of some active mobilization of the limbs during 8 minutes.

2. Fundamental sequence.

The ergometer bicycle training. The subject will perform a half pedaling for 12 minutes at cicloergometru with the difficulty level 2, with a frequency of about 40 rpm. It is necessary to increase the frequency of rotation to 60 rpm. During the training on ergometer bicycle performance it will be necessary to monitor the cardio - respirator parameters.

3. Terminating sequence

a) Walking exercises around the room with breath control and pulmonary ventilation stimulation by making simultaneous abduction of the arm to 90 ° during five minutes.

Between those two sections of the end sequence will be a break of five minutes during which the patient will remain seated.

b) Neuropsychic relaxation techniques.

To reveal the functional deficit caused by this disease the two subjects made a series of tests and measurements in the initial stage and final stage before and after physical effort, the data collected were processed and interpreted, then graphically represented. We evaluated the parameters blood pressure, heart rate, blood glucose, cholesterol and triglycerides.

Table 1.

Initial and final values of hemodynamic and metabolic parameters of the two subjects

Initial testing					
	TA	CF	Cholesterol	Glycemia	Triglycerides
Rest	150/100 mmHg	78	300 mg/dl	100mg/dl	200mg/dl
After exercise	170/ 110 mm Hg	92			
Final test					
Rest	130/ 75 mm Hg	68	200 mg/dl	90 mg/dl	190 mg/dl
After exercise	150/ 85 mm Hg	78			

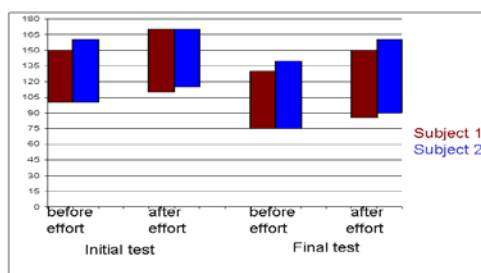


Diagram 1.

The evolution of blood pressure graphic

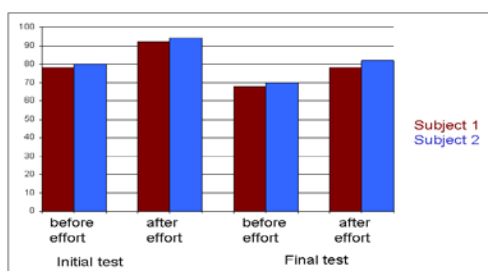


Diagram 2.
The evolution of hart rate graphic

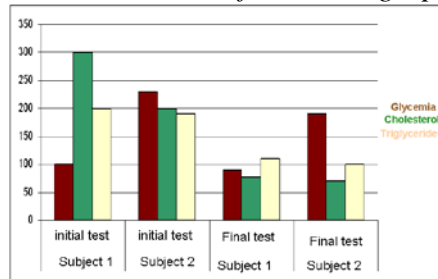


Diagram 3.
The evolution metabolic parameters graphic

Conclusion:

1. Following the study it was found that the methods applied in the rehabilitation program of patients with chronic coronary heart disease have influenced favorably the cardiovascular and metabolic parameters.

2. The effort capacity of those two patients improved, dyspnoea occurred after more effort.

3. Through the proposed exercises we were able to restore the normal value of blood pressure and heart rate, blood glucose, cholesterol and triglycerides. Physical Exercise contributed positively to normalize cardiovascular and metabolic parameters.

Therapeutic methods improves functional status of patients with coronary heart disease. Proposed assumptions were made through methods and means used, each one help to rehabilitate the patience with chronic coronary.

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Titlu: Implicațiile kinetoterapiei privind îmbunătățirea parametrilor cardio-vasculari și metabolici la pacienții cu cardiopatie ischemică cronică

Cuvinte cheie: cardiopatia ischemică, artero-scleroză, hipertensiune arterială, exercițiu fizic.

Rezumat: Bolile cardiovasculare reprezintă principala cauză a deceselor înregistrate în societatea modernă în rândul populației adulte. Această afecțiune a reprezentat cauza a peste 50% din decese, făcând mai multe victime decât alte afecțiuni grave, precum cancerul.

Coronaropatiile interesează arterele miocardului, fiind determinate și potențate de anumite condiții de mediu (stres, sedentarism, alimentație), diferite vicii (alcool, tutun, droguri) dar și de anumite particularități interne (diabet, hipertensiune arterială).

Kinetoterapia are o influență benefică asupra miocardului, contribuie la reglarea funcțiilor cordului, ușurează activitatea depusă de acesta, ducând la creșterea independenței și calității vieții.

Titre : L'implication de kinésithérapie d'améliorer les paramètres métaboliques et cardiovasculaires chez les patients présentant une maladie cardiaque coronaires chronique.

Mots - clé: les maladies coronariennes, l'athérosclérose, l'hypertension, l'exercice physique.

Résumé : Les maladies cardiovasculaires sont la principale cause de décès enregistrés dans la société moderne parmi la population adulte. Cette condition est due à plus de 50% des décès, faisant plus de victimes que d'autres maladies graves comme le cancer.

Coronaire du myocarde artères d'intérêt étant déterminé et renforcée par certaines conditions environnementales (stress, sédentarité, alimentation), diverses dépendances (alcool, tabac, drogues) mais aussi certaines caractéristiques internes (diabète, hypertension).

La kinésithérapie a une influence sur le myocarde, aide à réguler la fonction cardiaque, il facilite le travail menant à l'indépendance accrue et la qualité de vie.