Cardiac Rehabilitation: A Rewiew

by

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Extensive research and experience has already been accumulated by various countries on the subject of cardiac rehabilitation. A summary of conclusions and more or less non-controversial recommendations are reflected here. The need for rehabilitation of patients with Coronary Heart Disease (C.H.D.) has been internationally recognised (notably by the International Society of Cardiology and WHO).

Differences of opinion exist in the criteria of selection and the time of acquisition of CHD patient by Cardiac Rehabilitation Centres. A high percentage (above 80% of CHD patients of all categories) and a time of acquisition from immediately after, to 3 months after, acute onset is generally acceptable by most cardiac rehabilitation centres. The significance of the variations lies in ethnic differences in patient-doctor attitudes, goals envisioned and potential benefits versus hazards.

Cardiac Rehabilitation

Cardiac rehabilitation should be initiated during the early phases of any coronary event and actually begins at the patient's bedside, especially in uncomplicated cases.

Benefits of Early Mobilization:

Prevents: Venous Thrombosis
Pulmonary Embolism
Muscular Catabolism
Orthostatic Intolerance Resulting from Prolonged bed Rest

Gives: Psychological Boost
Controlled Physical Reconditioning.

Contra Indications:

Signs of Cardiac failure
Recurrent Anginal Pain
Arrhythmias
Increased Temperature.

The Three Phases of Cardiac Rehabilitation Following Acute-Heart Attack

PHASE—I (Acute)

Phase IA Mobilization and Psychological Motivation Guidance/Persuasion

a. Breathing exercises.

b. Light limb movements.

c. Frequent transfer to arm-chair.

d. Ambulation for vital functions.

e. Eating and shaving (preferably electric razor).

Phase IB Preliminary Physical Conditioning

In that order:

a. Walking in the room.

b. Walking in the corridor.

c. Walking outdoors (just before leaving hospital)

Phase IC Increased Physical Activity

A gradual increase in activity should be allowed only if:—

a. The pulse rate does not increase by more than 20 beats/min or decrease by more than 10 beats/min (from the resting levels).

b. No anginal pain appears.

c. There is no decrease in blood pressure.

d. There is no complaint of breathlessness.

The appearance of an arrythmia must be positive contraindication for implementing further rehabilitation based on physical activities.

Phase II Convalescence

May last up to 8 weeks. Lasts until the patient is out of bed, able to walk (and climb stairs), and capable of managing basic needs without assistance. Maximum period of return to work (and gradually to other activities) 2 months. The periods mentioned are not rigid. A patient may return to work earlier or later depending on his physical condition and pychological attitude.

Phase III Post Convalescence and Maintenance

a. After 8 to 12 weeks.

b. Lasts the rest of his life.

c. Only the uncomplicated and the moderately incapacitated should attempt this phase.

d. Consists primarily of a physical reconditioning programme.

Physical Re-conditioning Programme is conducted.

a. Before meals (always)

b. Once a day (at least), and consists of

c. Walking and calesthenics.

d. Gradual increase from 10 to 45 mins.

e. No activity which increases heart rate above 120 beats/min.

Warning

1. Findings in studies during 3 to 8 weeks after an uncomplicated myocardial infarction showed abnormalities of left ventricular function amongst patients who were apparently recovering satisfactarily (the findings being increased left ventricular end-diastolic pressures at rest).

2. Before initiating full rehabilition programme (intending to restore full function), patient's functional cardio circulatory and respiratory capacity *must* be evaluated, to include an assessment of work performance and a thorough clinical evaluation.

3. Only the uncomplicated and the moderately incapacitated patient should attempt Phase III and restoration to full functional capacity and normal pre-attack activity.

Substitute Phase III

For the significantly impaired patient we would recommend:

a. Breathing exercises.

b. Slow walking/light calisthenics.

c. Occupational therapy.

Assessment of Physical Working Capacity (PWC)

The Test Recommended: (*Sub-Maximal*) *Spiro §Ergometric Exercise Test* (*With a Mechanically Braked Ergometer*).

To whom should the tests be given?

The patient should have:

a. No signs of acute cardiac insufficiency.

b. Diastolic B.P. NOT above 115 mm Hg.

c. No intractable angina pectoris.

No Phase III cardiac rehabilitation should even be visualised before all facilities for PWC and related other tests are available *and in position*.

The aim of PWC:

a. Objective assessment necessary before a final decision to commence rehabilitation.

b. Stress-testing necessary to determine accurately whether a return to pre M.I. occupation or change is indicated.

c. Functional evaluation to corroborate clinical evaluation.

d. Serves as a base line.

Parameters recorded during the test:

Pulse Rate.

Blood Pressure

Oxygen Consumption

Minute Ventilation

Electro-cardiagram

Rehabilitation Programme

1. **Daily session of**
   a. 10 mins in the morning) gradually increase to 45 mins.
   b. 10 mins in the evening)
2. Gradually increasing work hours/day—(up to 4 to 5 hours/per day)
3. Occupational Therapy.
4. Gymnastics course.
5. Uncompetitive sports.

Preliminary experience in other countries indicates that the programme of rehabilitation must continue supervised the rest of the patients' lives (subject to the patient's clinical and functional condition).

This means that when a Cardiac Rehabilitation Centre is launched it would need a regular cardiac rehabilitation out-patients clinic, as an essential integral part of the Centre.

Some results of Cardiac Rehabilitation, which included physical reconditioning:

Physical

a. Exercise tolerance improved.
b. Systolic B.P. decreased.
c. Heart Rate decreased.
d. Myocardial oxygen demand decreased.
e. Stroke volume increased.
f. Blood lactate decreased.
g. Muscular blood flow decreased.

Psychological

a. Marked increase in emotional stability.
b. Elevated self-esteem/self respect.
c. More self-confidence.
d. Less confused and contradictive.

e. Less conflict with self perception.
f. Decreased anxiety.
g. Decreased frustation.
h. Decreased depression.
i. Subjective feeling of well-being.

Overall Effect

Subjective feeling of well-being affecting the patient's life at work and home, increase in self confidence, decrease in drug-dependency decrease in his absence from work and a proven capability (to him) of leading an active productive life.

Studies indicate that best results were obtained in continued supervised rehabilitation for at least 30 to 70 months. However, we must note that supervised rehabilitation (besides physical reconditioning) involves other risk factors modification namely:

a. Weight Control.
b. Treatment of hyperlipemia.
c. Change of smoking habits.
d. Close clinical follow-up.

Cardiac Rehabilitation (Suggested Reading).

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