Cardiac Rehabilitation

Definition of Cardiac Rehabilitation

"The sum of activities required to ensure patients the best possible physical, mental and social conditions so that they may resume and maintain as normal a place as possible in the community".

World Health Organisation

Goal of rehabilitation

- Return to independent living situation
- Nursing home patients generally return to that environment

Rehabilitation in general

- Comprehensive
- Multidisciplinary
- Long term
- Medical evaluation
- Prescribed exercise
- Risk factor modification
- Counseling/Education

Cardiac rehab outcomes

- Improved psychosocial well-being
- Mortality reduction of approximately 25% at three years (similar to B-blockers and ACEI Rx)
- No increase in morbidity or mortality

Cardiol J. 2008; 15(5): 481-7

Cardiac rehab outcomes (2)

- Improved exercise tolerance for CAD and CHF
- Decreased symptoms in CAD and CHF
- Multi-factorial interventions improve lipids
- Multi-factorial rehab reduces cigarette smoking (16-26% will quit)

AHRQ Technical Reviews and Summaries, AHRQ Supported Clinical Practice Guidelines, Chapter 17. Cardiac rehabilitation

Cardiac Rehabilitation Saves Lives!

- No treatment in cardiac disease has stronger scientific evidence or a significantly greater impact on survival.
- The scientific evidence has been reviewed by many scientific and expert bodies over the last 30 years.

  Every review has come to the same conclusion that cardiac rehabilitation is an essential treatment.
- CR is only form of chronic disease management with an evidence base.

The Evidence

Comprehensive help with lifestyle modification involving education and psychological input as well as exercise training can reduce mortality by 20-25% over 3 years.

Oldridge et al 1988;
O'Connor et al 1989

Cost of Cardiac Rehabilitation

- The average cost per patient in 2006-7 was £413
- Single day in a CCU (coronary care unit) costs £1,400
- Angioplasty (does not reduce mortality) costs £3,000
- Bypass surgery costs £8,000.

Who Makes Up The Cardiac Rehabilitation Team

- Physician (Cardiologist)
- Physical Therapist
- Physiotherapist
- The nurse
- The occupational Therapist
- Psychologist
- The Dietician or Nutritionist
- The Exercise Physiologist

Who should be involved?

Social Services

Exercise instructor

Physiotherapy

GP

District Nurses

Consultant

Secondary care

Psychologist

Patient

Dietician

Practice nurses

Smoking cessation advisor

Nurse

Pharmacist

Health Visitor

Target Groups

Coronary heart disease (CHD)

- Exertional angina .
- ACS (unstable angina or NSTEMI or STEMI) following medical/surgical management.
- Revascularisation
- Stable heart failure and cardiomyopathy

Those at high risk of developing CVD: total CVD risk > 20% over 10 years or diabetes mellitus.

Contraindications to therapeutic rehabilitation

- Unstable angina, left main coronary dz
- End stage CHF or systemic disease
- Unstable arrhythmias
- Malignant hypertension
- Expanding aortic aneurysm

Contraindications to therapeutic rehabilitation (2)

- Cerebral aneurysm or intracranial bleed
- Recent eye surgery or retinal hemorrhage
- Acute/unstable musculoskeletal injury
- Acute systemic illness (pneumonia, pyelonephritis)
- Severe dementia/behavioral disturbance

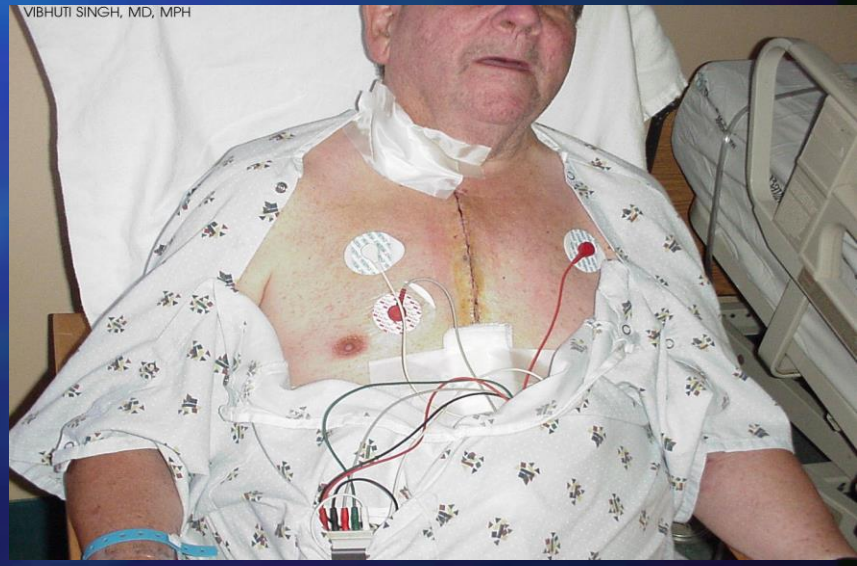
Structure of Cardiac Rehabilitation

- Phase 1: In-patient (1st contact)
- Phase 2: Immediate post discharge
- Phase 3: 2-4 weeks post discharge
- Phase 4: Long-term, on-going

Phase I Cardiac Rehabilitation

What do we do

with these very sick people ?



Phase 1

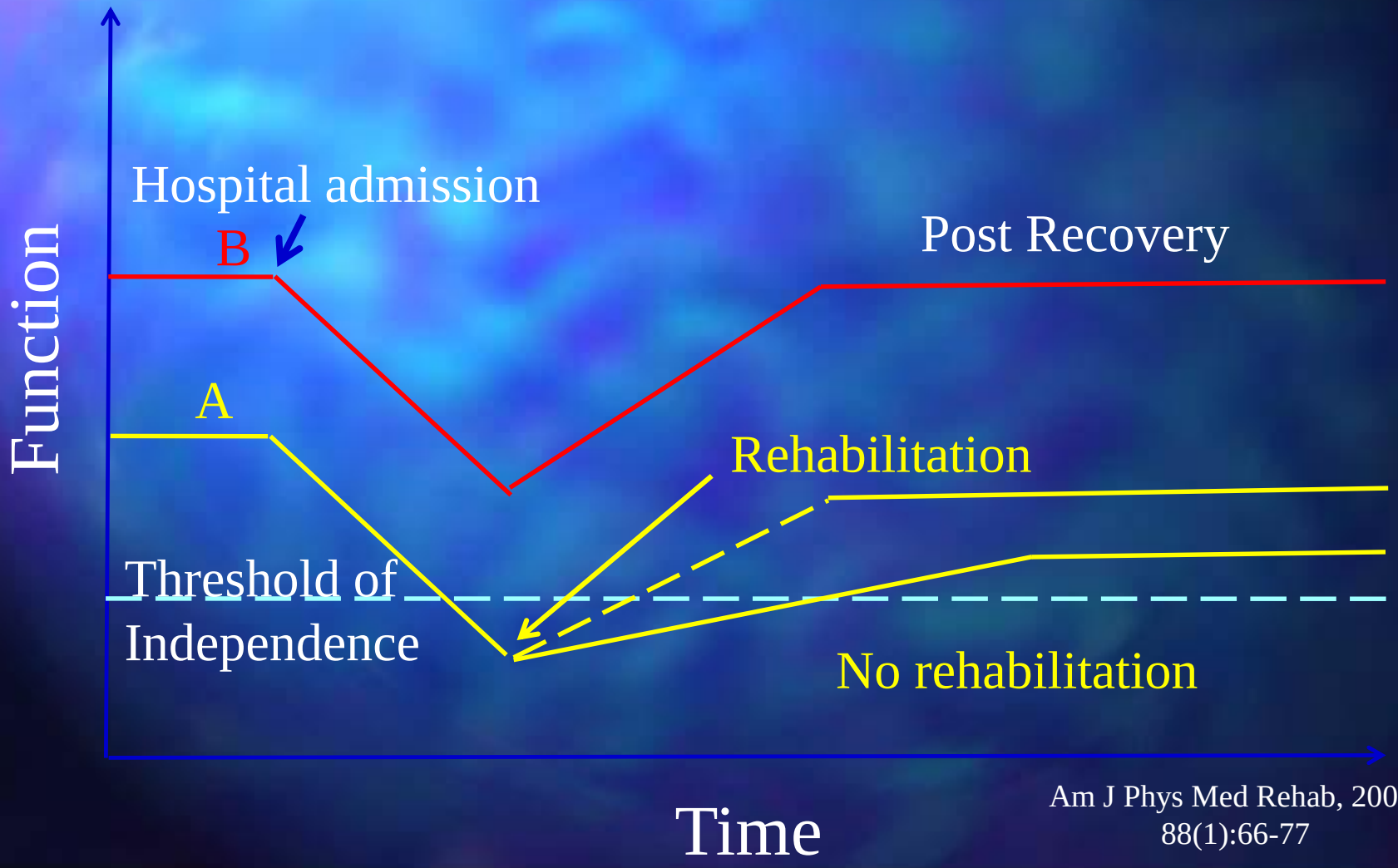
- Understanding of condition
- Information & education
- Risk factor assessment
- Personalised health plan
- Psychological assessment/support
- Referral
- Drug therapy

Outcomes

Diagnosis	Functional Capacity	QOL	Morbidity	Mortality
AMI	+++	+++	++	+++
CABG	+++	+++	++	++
Stable angina	+++	+++	+	+
PCI	+++	++	+	?
CHF	+++	++	+	+
Cardiac Transplant	+++	++	?	?
Valve replacement	+++	++	?	?

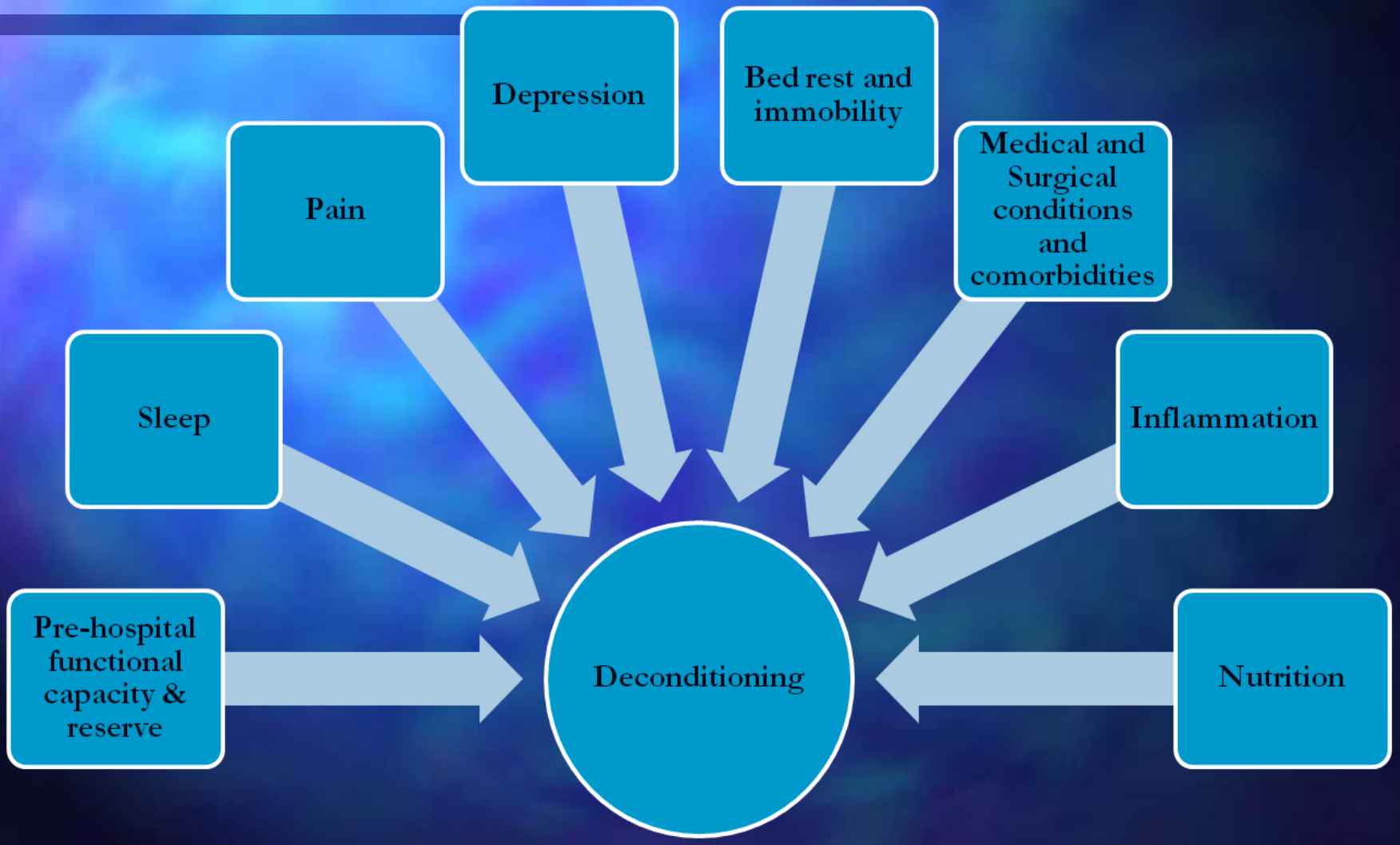
Am Heart J. 2006; 152: 835-41

Functional decline during hospitalization

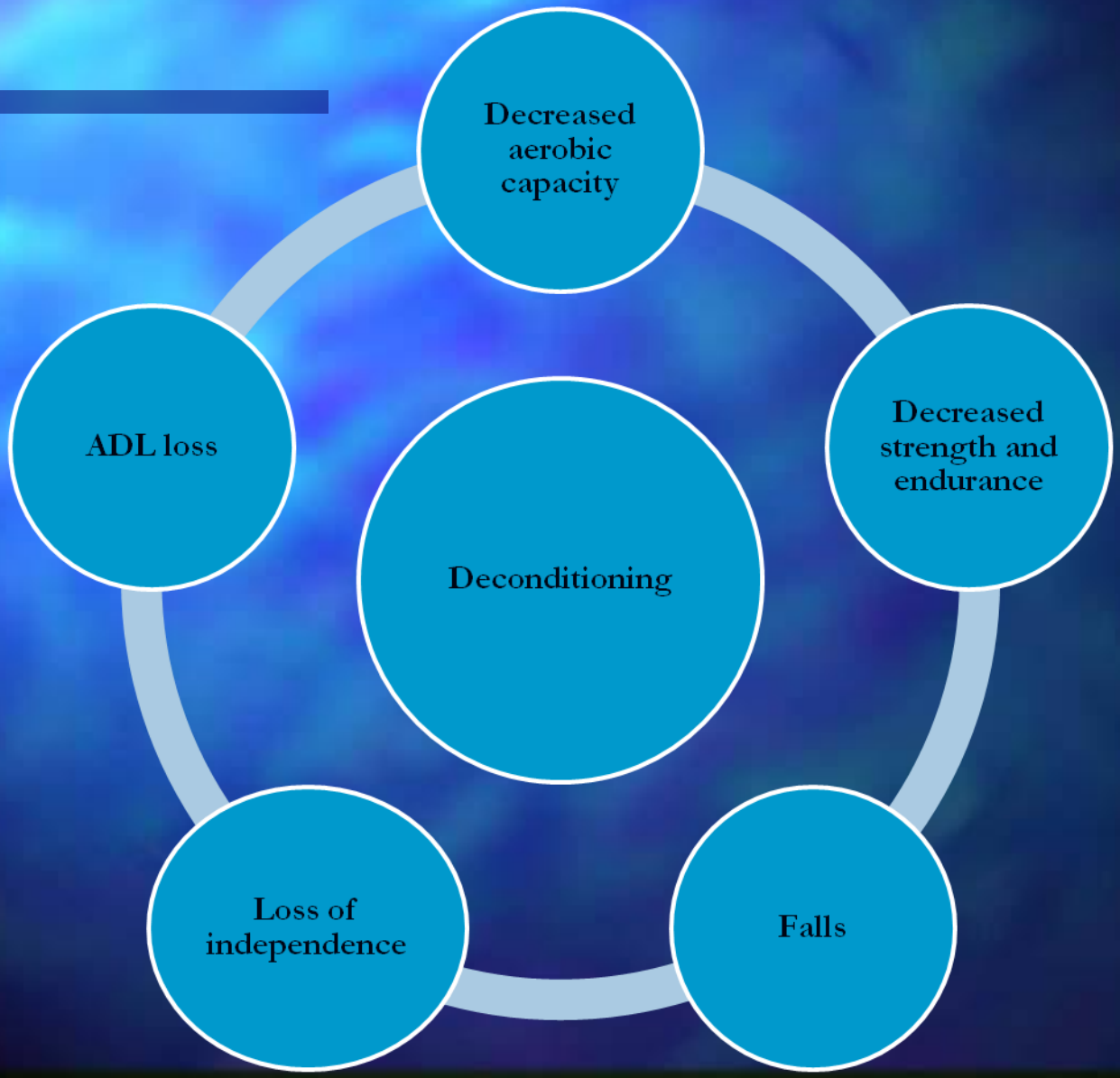


Am J Phys Med Rehab, 2009, 88(1):66-77

Etiology of deconditioning



Consequences of deconditioning



Strength and Functional Status

Established Populations for Epidemiologic Studies of the Elderly (EPESE) . J Gerontology, 1994;49(3):M109-15

v. 1994;49(3):M109-15

Objectives of Phase I Cardiac Rehabilitation

I .Patient & Family Education

II. Prevent Deleterious Effects Of Bedrest

III. Provide A Safe Discharge To Home

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Objectives of Phase I Cardiac Rehabilitation (I-I)

I. Patient & Family Education

- Modification of risk factor profile
  - treatment of hyperlipidemia
  - smoking cessation
  - treatment of hypertension
  - control of diabetes
  - regular exercise
  - dietary changes

Education


Information and Resources
Support
Learn how to make lifestyle changes
Improved health and satisfaction
Be a partner in your healthcare

Challenges for the Pt and Family

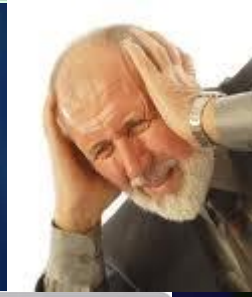
- Frightening, life threatening event (MI, major surgery)
- A chronic illness, reduced life expectancy, symptoms
- Altered identity - an invalid, walking time bomb
- Fears for family and partner being left alone
- Threat to employment and financial status
- Medication side effects (lethargy, impotence)
- Being treated differently by other people
- Neurological impairement (esp. cardiac arrest pats.)
- Making lifestyle changes, smoking, diet, activity

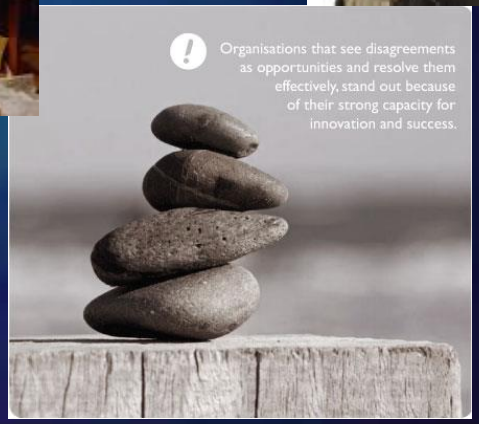
Education

- CHD as a disease
- Treatment including medication
- Recovery process
- CHD risk factors
- Symptom management
- Living with CHD

Objectives of Phase I Cardiac Rehabilitation (I- II)

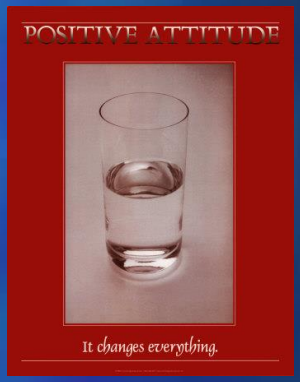
- Behavior modification
  - stress management at home
  - stress management at work
  - creation of hobbies - time out
  - conflict resolution skills

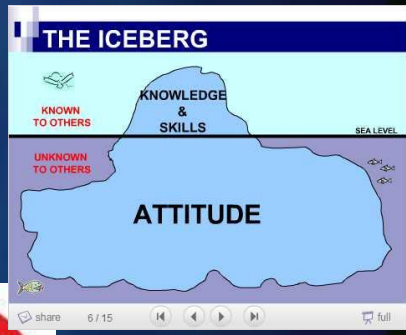




Psychosocial Care

- Reduce fear and anxiety
- Assist with adjustment
- Promote positive attitude
- Facilitate behaviour change
- Identify need for further support





Objectives of Phase I Cardiac Rehabilitation (I-III)

- Involve the children
  - They don't have pathology yet but they have all of the same stresses
  - They also should know how to help at home

Objectives of Phase I Cardiac Rehabilitation

I .Patient & Family Education

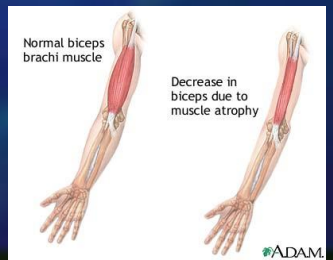
II. Prevent Deleterious Effects Of Bedrest

III. Provide A Safe Discharge To Home

Objectives of Phase I Cardiac Rehabilitation

II. Prevent Deleterious Effects Of Bedrest

- Mobilize the patient soon
  - Prevent muscle atrophy
  - Prevent blood clot formation
  - Prevent pneumonia
  - Prevent lethargy



Objectives of Phase I Cardiac Rehabilitation

I . Patient & Family Education

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Objectives of Phase I Cardiac Rehabilitation

III. Provide A Safe Discharge To Home

- Phase I is meant to be preventative
  - To have the patient operate within safe limits - not too little exercise and not too much (Provide enough physical stamina to go home and perform ADL's)
  - The patient must know what activities are safe and okay
  - Reduce fear

Patient Assessment

Patient Assessment

- In order for a patient to enter Phase I Cardiac Rehab, they must be medically stable.

Patient Assessment (2)

Who Should Be Enrolled In Phase I Cardiac Rehab ?

- Stable myocardial infarcts
- CABG patients
- Patients who have had angioplasty
- Patients who have had cardiac transplantation
- Patient with Other cardiac patients
- Patient with noncardiac diseases and have several risk factors

Patient Assessment (3)

Who Should Not Do Phase I ?

- Patients with unstable angina
- Patients with acute CHF
- Patient's with uncontrolled rhythms
- Patients with a systolic BP >200 mm Hg

Patient Assessment (4)

Who Should Not Do Phase I ?

- Patients with acute pericarditis
- Patients with recent emboli or clots
- Patients with severe cardiomyopathies
- Patients with uncontrolled DM
- Patients with severe AS
- Patient with third degree AV Block

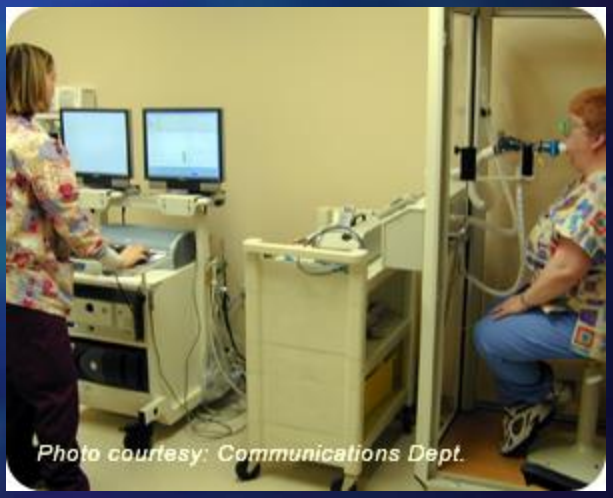
Evaluation

Goals Of The Evaluation

- Clear the patient for any musculoskeletal problems - loss of ROM, pectus excavatum, pectus carinatum, scoliosis, joint pain & swelling, muscle strength

Goals Of The Evaluation (2)

- Clear the patient of any pulmonary problems -
  - auscultate the lungs
  - PFT results
  - observe breathing patterns
  - look for scars & restrictions in thoracic movement.



Goals Of The Evaluation (3)

- Return the patient home & prepared to go back to work - no home-bound invalids.
- Help the patient to know the upper limits of physical capabilities.

Goals Of The Evaluation (4)

- Increase the patient's physical work capacity
- Help the patient to feel in charge of modifying coronary risk profile

Goals Of The Evaluation (5)

- Give helpful information back to the cardiac rehab team: the MD, nurse, exercise physiologist, psychologist, & dietician

Process of Evaluation

- Medical Chart Review
- Patient, Family Interview
- Patient Examination
- Patient's Tolerance For Exercise

Process of Evaluation

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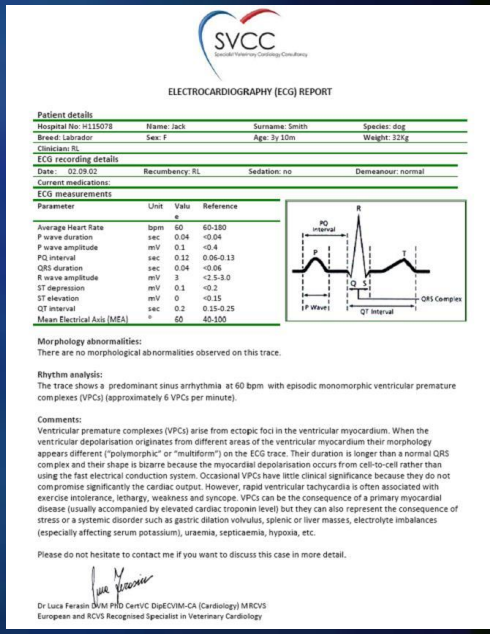
Medical Chart Review

- Determine the patient's diagnosis - MI, CABG, PTCA ?
- Was the patient defribillated ?
- What does the ECG report say ?
- Use of TPA or Streptokinase ?



SVCC

ELECTROCARDIOGRAPHY (ECG) REPORT

Patient details

Hospital No: H115078	Name: Jack	Surname: Smith	Species: dog
Breed: Labrador	Sex: F	Age: 3y 10m	Weight: 32kg
Clinician: RL			

ECG recording details

Date: 02.09.02	Recumbency: RL	Sedation: no	Demeanour: normal
Current medications:			

ECG measurements

Parameter	Unit	Value	Reference
Average Heart Rate	bpm	60	60-180
P wave duration	sec	0.04	<0.04
P wave amplitude	mV	0.1	<0.4
PQ interval	sec	0.12	0.06-0.13
QRS duration	sec	0.04	<0.06
R wave amplitude	mV	3	<2.5-3.0
ST depression	mV	0.1	<0.2
ST elevation	mV	0	<0.15
QT interval	sec	0.2	0.15-0.25
Mean Electrical Axis (MEA)	°	60	40-100

Morphology abnormalities:
There are no morphological abnormalities observed on this trace.

Rhythm analysis:
The trace shows a predominant sinus arrhythmia at 60 bpm with episodic monomorphic ventricular premature complexes (VPCs) (approximately 6 VPCs per minute).

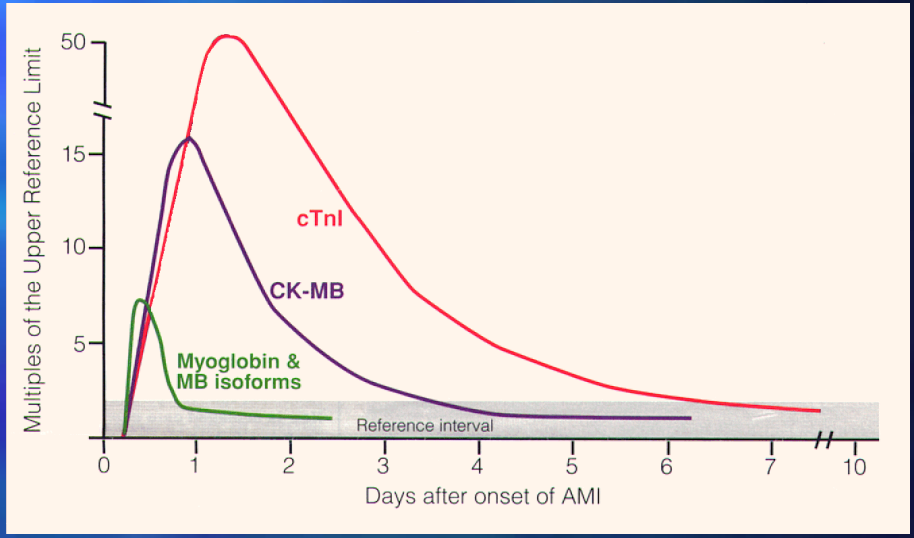
Comments:
Ventricular premature complexes (VPCs) arise from ectopic foci in the ventricular myocardium. When the ventricular depolarisation originates from different areas of the ventricular myocardium their morphology appears different ("polymorphic" or "multiform") on the ECG trace. Their duration is longer than a normal QRS complex and their shape is bizarre because the myocardial depolarisation occurs from cell-to-cell rather than using the fast electrical conduction system. Occasional VPCs have little clinical significance because they do not compromise significantly the cardiac output. However, rapid ventricular tachycardia is often associated with exercise intolerance, lethargy, weakness and syncope. VPCs can be the consequence of a primary myocardial disease (usually accompanied by elevated cardiac troponin level) but they can also represent the consequence of stress or a systemic disorder such as gastric dilation volvulus, splenic or liver masses, electrolyte imbalances (especially affecting serum potassium), uraemia, septicaemia, hypoxia, etc.

Please do not hesitate to contact me if you want to discuss this case in more detail.

Dr Luca Ferasin DVM PhD CertVC DipECVIM-CA (Cardiology) MRCVS
European and RCVS Recognised Specialist in Veterinary Cardiology

Medical Chart Review (2)

- What do the cardiac enzymes say about the MI ?



Cardiac marker	Initial Rise	Rise To Peak	Back To Baseline
CK	4-6 h	24-36 h	3-4 d
CKMB	3-12 h	24 h	2-3 d
Troponin I	3-12 h	12-48 h	5-10 d

Medical Chart Review (3)

- Look at lipid panels - HDL, TGs, LDL, VLDL, Cholesterol
- Look at ECHO report
  - wall motion - hypokinesis
  - ejection fraction
  - wall thickness

Medical Chart Review (4)

- Catheterization lab report - what percentage of vessels blocked
- Read the PFT report

Medical Chart Review (5)

- **Patient's medications ?**
  - beta blockers
  - calcium channel blockers
  - nitrates
  - antiarrhythmics
  - diuretics

Process of Evaluation

- Medical Chart Review
- Patient, Family Interview
- Patient Examination
- Patient's Tolerance For Exercise

Patient & Family Interview

- Does the patient understand what has happened to them ?

Patient & Family Interview (2)

- Did they have chest pressure or pain or anginal equivalents ?
- Did the patient have any predisposing risk factors - DM, HTN, PVD, hyperlipidemia, family hx. ?

Patient & Family Interview (3)

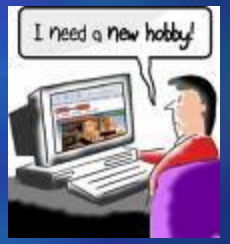
- Did the patient smoke ?
- How long ago did they stop smoking - @ the emergency room's doors or 10 yrs. ago !

Patient & Family Interview (4)

- Is this the first admission ?
- Is there a supportive family network ?
- Is the patient willing to return to work ?

Patient & Family Interview (5)

- Will the patient need to be vocationally retrained ?
- Does the patient have hobbies ?



Patient & Family Interview (5)

- Is the patient in denial as to what has happened to them ?
- Does the patient need psychiatric help ?

Process of Evaluation

- Medical Chart Review
- Patient, Family Interview
- Patient Examination
- Patient's Tolerance For Exercise

The Patient Evaluation
Physical Examination

- ROM eval. - passive & active
- Gross muscle strength
- Skin - normal color ?
- Pulse check
  - pedal, femoral, popliteal, carotid

The Patient Evaluation
Physical Examination (2)

- Surgical sites ?
- Tender points on palpation of thorax ?
- Breathing patterns - do the ribs flare, does the thorax rise appropriately ?

The Patient Evaluation
Physical Examination (3)

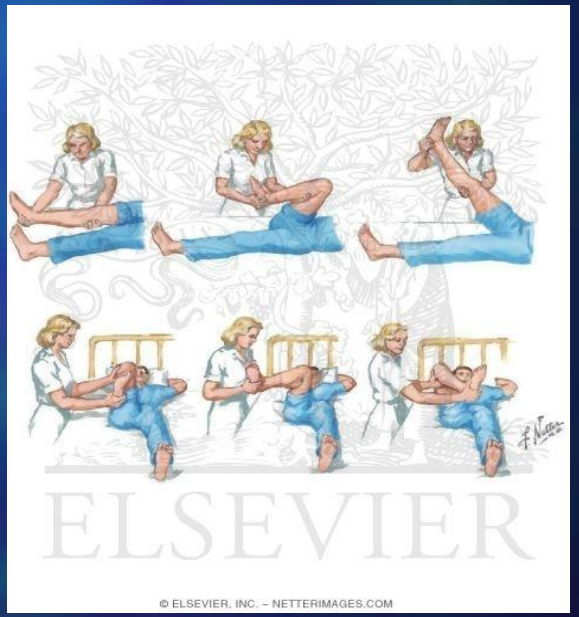
- Auscultate the lungs
- Blood pressure on right & left arms in supine, sitting & standing - bilaterally equal ?
- Observe the ECG monitor when sitting and standing

Process of Evaluation

- Medical Chart Review
- Patient, Family Interview
- Patient Examination
- Patient's Tolerance For Exercise

Self Care Evaluation

- Can the patient do the following things first in supine, next in sitting and finally in standing ?
  - Through a total arm and leg ROM actively and passively - positional perturbations



Self Care Evaluation (2)

- comb hair, brush teeth, shave, perform a limited bed bath, wash the underarms and genital regions, wash the ankles and feet, etc.
- can the patient dress - pants, shirt, socks

Self Care Evaluation (3)

- Can the patient do all of these things while being monitored on the telemetry unit in the critical care unit for : BP, EKG changes, HR.
- What about the patient's subjective symptoms ?

Next….Move Out Of Bed

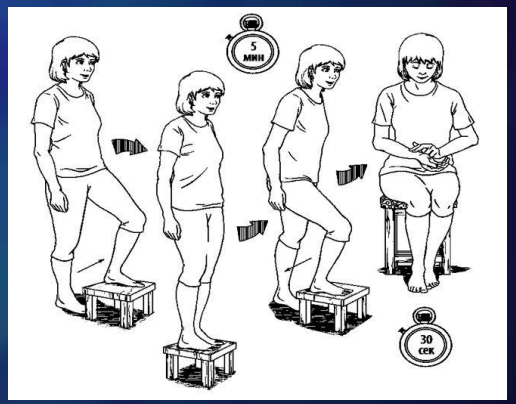
- **While monitoring the patient for ECG changes, BP & HR :**
  - **come to oob & come to standing**
  - **can the patient support their own body weight without assist ?**
  - **can the patient walk in place ?**

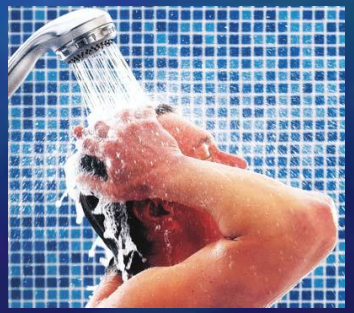
Next….Move Out Of Bed (2)

- Can the patient do a SPT into a bedside chair or commode ?
- Can the patient walk in place or in the room ?
- Can the patient sit 15 - 30 minutes at a time ?

Next….Move Out Of The Room

- While the patient is being monitored continuously by ECG telemetry, for BP & HR :
  - walk 25 feet & rest - do it again
  - progress overtime as able with ECG, BP & HR unremarkable





Metabolic equivalent of energy expenditure for varying levels of activity

Activity	Metabolic equivalent of energy expenditure (MET) (1 MET ≈ 3.5 mL O_2/kg per minute)
Sitting quietly in chair	1
Walking at ground level	2
Walking at 3 mph	3
Sexual activity pre-orgasm	2-3
Sexual activity during orgasm	3-4
Vigorous sexual activity	5-6
Cycling at 10 mph	6-7
Walking to stage 4 of a Bruce protocol on the treadmill	13

Detailes and stages of mobilization of the patient should be documented.

Program for:..... Date commenced:...../...../.....

This mobilisation program is to help patients return to an activity level that allows them to be independent. Ward staff will regularly review and guide progress through stages 1-6. These stages do not necessarily correspond to days. In some situations, stages may be notional and mobilisation may be achieved in a single day. Individual assessment of progress should occur on a regular basis.
When doing any of these activities, symptoms such as chest pain, shortness of breath, fast heart rate and feeling dizzy or unwell should be reported to a nurse immediately.

Stage	Physical Activity	Date Achieved	Comment
1	To the shower in a wheelchair. The nurse will shower patient while they remain seated. Go out to the toilet in the wheelchair. Sit out in a chair for meals. Do arm and leg exercises as shown.		
2	To the shower in a wheelchair. The nurse will shower patient while patient remains seated. Go out to the toilet in the wheelchair. Sit out in a chair for meals. Do arm and leg exercises as shown. Walk slowly for 1-2 minutes twice a day.		
3	Patient to shower on their own while seated on the wheelchair. Walk to the toilet as necessary. Sit out in the chair as often as patient wishes. Walk slowly for 2-3 minutes twice a day.		
4	Shower. Walk at an easy pace for 3-4 minutes twice a day. In addition, patient may walk around room as much as they like.		
5	Shower. Walk for 4-5 minutes twice a day. Climb one flight of stairs with the supervision of the nurse or physiotherapist.		
6	Shower. Walk for up to ten minutes twice a day. Climb two flights of stairs with the supervision of the nurse or physiotherapist.		

Detailes of patient education should be documented in the patient medical records.

Program for:..... Date commenced:...../...../.....

Details of patient education should be documented in the patient's medical records. It is recommended that the health (medical) professional responsible for addressing a particular topic sign for that topic when completed. If a topic is not applicable this point should be recorded. For short stay patients (1-2 days) the emphasis will be on discharge planning and follow-up.

Topic	Discussed	Resources provided	Action/comment required	Sign/Date
Explanation of the cardiac condition, treatment, procedures and recovery Psychological and social implications of the illness including: return to work driving social support affect on mood, e.g. depression, anxiety Explanation of the Inpatient Mobilisation Program Management of symptoms in hospital				
Medications (stressing the importance of ongoing concordance with prescribed medications)				
Risk factor modification: smoking Nutrition goals: blood cholesterol weight management targets alcohol consumption guidelines Physical activity goals: establishing a pattern of regular activity resumption of lifestyle activities resumption of sexual activity Blood pressure goals				
Wound care (where applicable)				
Management of chest pain or discomfort post discharge Outpatient Cardiac Rehabilitation discussed and referral made				

Other comments:

On discharge the patient to sign:

I..... have participated in discussion of the topics as outlined above

Signature:.....Date:...../...../.....

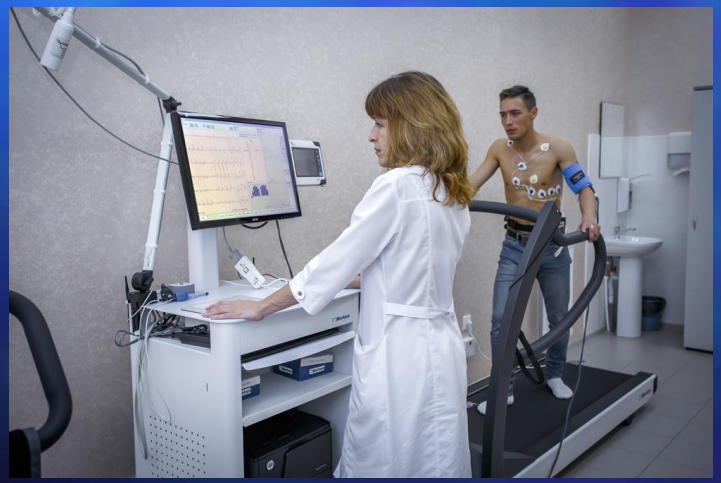
Patient comments:

Graduation

- Uncomplicated MI's go home in 5-10 days
- Graduate from Phase I Cardiac Rehab having either :
  - Low Level GXT
  - Full GXT later

Graduation

- If the patient doesn't get a LLGXT in the hospital before discharge, then usually they go to their physician's office 1-2 weeks later for a modified Bruce protocol



Modified Bruce Exercise Test Protocole

Stage	Speed	Grade	Time	METs
One	1.7 mph	0%	3 min	2.3
Two	1.7 mph	5%	3 min	3.5
Three	1.7 mph	10%	3 min	4.6
Four	2.5 mph	12%	3 min	6.8

Discharge Plan

Discharge/follow-up plan that reflects progress toward goals and guides long-term secondary prevention plans. Interactively, communicate the treatment and follow-up plans with the patient and appropriate family members/domestic partners in collaboration with the primary healthcare provider

Discharge Plan

Documented discharge plan summarizing long-term goals and strategies for success.

Cardiac Rehabilitation Phase II - IV

Phase II

- Phase II is the next stage in cardiac rehabilitation for the patient

- It begins after discharge from the hospital.
- It usually occurs in a hospital setting where the patient can be constantly monitored.

Goals Of Phase II Cardiac Rehab

- **Give the patient a safe, monitored environment in which to exercise**

- Increase the patient's work capacity through exercise conditioning

- Teach the patient to monitor their own responses to exercise - monitor HR and learn to use subjective feelings to assess work intensity - use of the Borg Scale

- Relieve anxiety and fear : reassure the patient that they can live a more normal life

- Phase II continues to be a time for patient education - seminars on food preparation, medications, smoking cessation, sexual activity, cardiopulmonary anatomy, risk factor modification and what to do when symptoms return

- The patient is monitored during Phase II with :
  - blood pressure
  - heart rate
  - telemetry ECG
  - anginal scale
  - dyspnea scale
  - Borg scale

- Blood pressure at rest should be less than 160 mm Hg at rest.
- Heart rate at rest should be less than 140 bpm.

- ECG rhythms that prevent exercise in Phase II :
  - atrial flutter
  - atrial fibrillation
  - supraventricular tachycardia
  - Mobitz Type II 2nd AV block

- 3rd degree AV block
- couplets
- triplets
- sick sinus syndrome

Anginal Scale

1+ : faint pain is present - patient can continue

2+ : pain clearly present - patient can continue

3+ : pain is very bad - patient must stop exercise soon

4+ : Pain is the worse ever - exercise must stop now !

Dyspnea Scale

1+ : slight breathlessness - patient can continue

2+ : moderate breathlessness - patient can continue

3+ : moderately severe breathlessness - patient must stop exercise soon

4+ : severe breathlessness - exercise must stop now !

Borg Scale

Table A1*

15-Grade Scale		10-Grade Scale	
6		0	Nothing
7	Very, very light	0.5	Very, very weak (just noticeable)
8		1	Very weak
9	Very light	2	Weak (light)
10		3	Moderate
11	Fairly light	4	Somewhat strong
12		5	Strong (heavy)
13	Somewhat hard	6	
14		7	Very strong
15	Hard	8	
16		9	
17	Very hard	10	Very, very strong (almost maximum)
18			
19	Very, very hard		Maximum
20			

*From Borg GA. *Med Sci Sports Exerc.* 1982;14:377–381. Reproduced with permission.

The Exercise Program

- **Mode**
  - **Determined by the patient's pathology - stationary bike, treadmill, Nu-Step Bike, UBE or an UE Monarch bike**

- Mode is also determined by the intensity or level of monitoring required for the patient's well being.

- Frequency
  - Usually 3 times per week for 12 weeks - insurance will pay for Phase II

- **Duration Of Exercise Bout**
  - **minimum of 15-20 minutes**
  - **10-15 minute warm-up period**
  - **10-15 minute cool-down period**

- Cool-down periods are important
  - allows for heart to decelerate
  - lactic acid disposal
  - heat dissipation
  - re-uptake of catecholamines

- When cool-downs are too short or non-existent, cardiac events are more likely to happen at the end of vigorous aerobic exercise.

- Intensity
  - Intensity is calculated from the GXT data that the patient's doctor generated at the end of phase I cardiac rehab

GXT Data

- GXT data is comprised of :
  - Resting HR
  - Resting blood pressure
  - Maximum exercise heart rate
  - Maximum exercise blood pressure
  - Maximimum MET's achieved.

- **Rate of Progression**
  - **Rate of progression is determined by the patient's starting fitness level, progression of disease, and time since diagnosis.**

Using The GXT Data

- **Intensity is the crucial element in any exercise prescription. It is key to be able to determine the proper intensity from the GXT data that was given to you.**

Example GXT Data

- **Mrs Springer's data :**
  - **Resting HR = 80 bpm**
  - **Resting BP = 128/60**
  - **Maximal Ex. HR = 172 bpm**
  - **Maximal Ex. BP = 190/88**
  - **Max MET's obtained = 9 METs**

Karvonen's Formula

- **(Max HR-Rest HR) x (A.F.) + Rest HR**

- **(Max HR-Rest HR) x (.4 -.7)+ Rest HR**

With Mrs. Springer's Data...

Tr HR = [(172-80) x .6] + 80

Tr HR = [(92) x .6] + 80

Tr HR = 135 bpm

- Mrs. Springer's exercise intensity will be no greater than 135 bpm for the first 1-2 weeks of Phase II cardiac rehab.

- As she develops more aerobic capacity, stronger and more endurant musculature, then the intensity can be gradually increased.

A Reasonable Rate Of Progression

- **Week 1-2 : treadmill @ 0% x 3.5 mph**
  HR @ 135 x 20 min
- **Week 2-4 : treadmill @ 0% x 3.8 mph**
  HR @ 140 x 30 min
- **Week 4-6 : treadmill @ 2% grade x 3.8 mph**
  HR @ 140 x 40 min
- **Week 6-8 : treadmill @ 4% grade x 3.8 mph**
- **HR @ 140 x 45 min**

After 12-Weeks Of Phase II, What Next ?

- **Once Mrs. Springer has graduated from 12-weeks of Phase II cardiac rehab, she will enter Phase III cardiac rehab.**

Phase III Cardiac Rehab

- Phase III is an exercise program that is usually held at a athletic club or the YMCA
- It is characterized by a much lower level of monitoring.

- Personnel present in a Phase III program are the exercise leader and a nurse with a crash cart

- Monitoring may involve :
  - An initial BP taken before warm-up exercises or...
  - An initial defibrillator paddle look at the heart - analysis of the resting ECG

- Fifteen minutes of stretching and light exercises will begin the exercise session
- Patients will then exercise for 30-60 minutes doing walk-jog, easy basketball, or whatever exercise routine they have planned out - rowing, biking, rebounding, etc.

- Cool-down is a much lower level of exercise activity decelerating to a slow, ambling walk and followed by a few minutes of stretching exercises.

- In Phase III, the patient is largely responsible for self monitoring HR, subjective feelings and symptomatology.

- Currently, re-imbursement from insurance is variable. Many times the patient must sustain the cost.

Phase IV Cardiac Rehab

- Phase IV is a lifelong commitment to regular exercise. It is generally run as a club experience.

- Ray Blessey, PT runs a biking club where his Phase IV cardiac patients get together on Saturdays and ride 100 miles together…. a social event mixed with exercise.

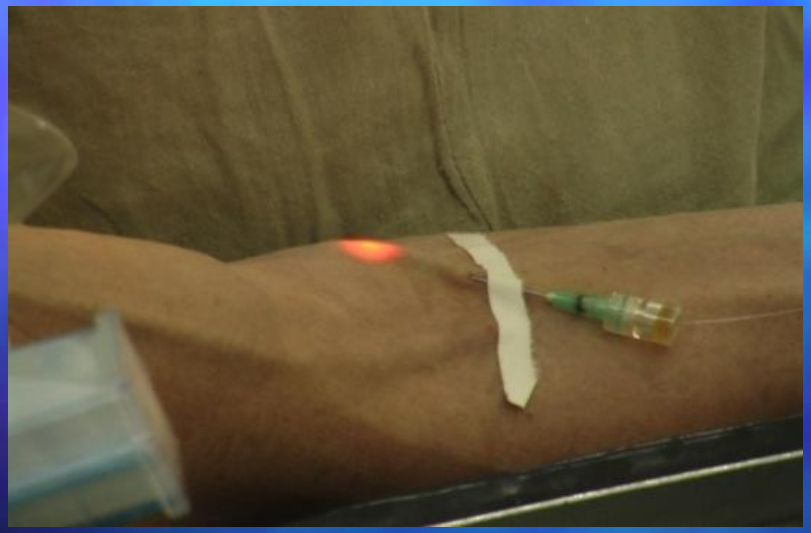
- The Phase IV club experiences could involve swimming, badminton, tennis, walk-jog, biking, hiking, Tai-Chi in the park, etc.

Physiotherapy

- Laserotherapy

Physiotherapy

- Laserotherapy



Physiotherapy

- Magnetotherapy

Physiotherapy

- Magnetotherapy

Physiotherapy

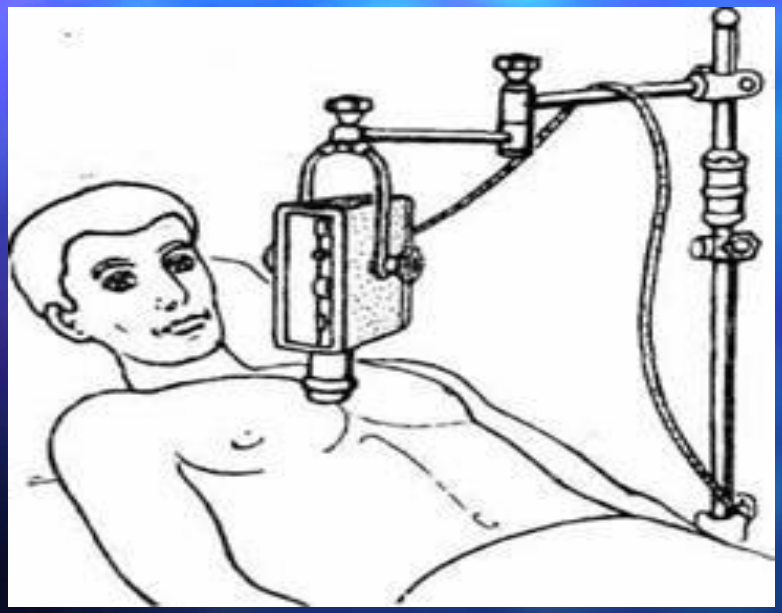
- Magnetotherapy

Physiotherapy

- Electroneurotherapy

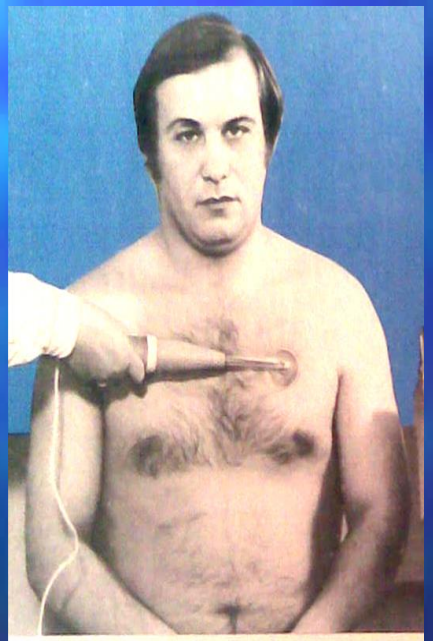
Physiotherapy

- Electroneurotherapy (bioresonance therapy)



Physiotherapy

- Electroneurotherapy (darsonvalization)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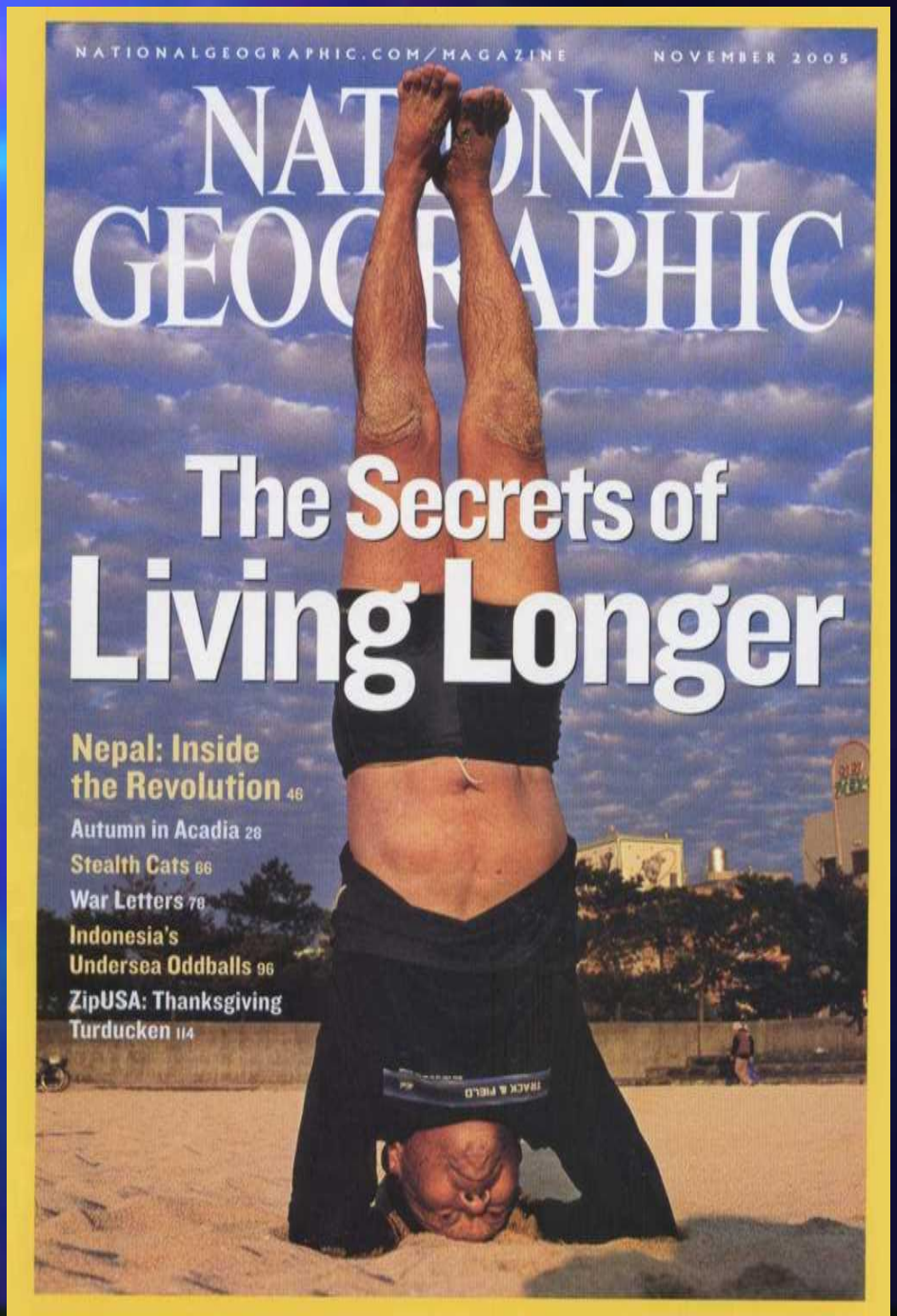
Physiotherapy

- balneotherapy

With

Thanks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