

# 7. Cardiac Rehab and Exercise Therapy

## General Health Primary Prevention

- 60% of Americans do not engage in the recommended amount of regular exercise
- Inactivity major health risk in the USA

## Mechanisms of Benefit for Exercise:

- Improved blood pressure
- Increased electrical stability of myocardium
- Decreased sympathetic tone
  
- Lipids: Lower triglyceride and increase HDL
- Reduced risk of developing type II diabetes
- Improved glucose tolerance achieved in type II diabetic in one week
- Decreased adiposity
  
- Decreased platelet aggregation
- Decreased fibrinogen
  
- Reverse physical frailty
- Acute mood elevation even with a single sessions of exercise.
- Improved "Immunomodulation"?

## How much exercise for a patient (or a Doctor)?

Centers for Disease Control and Prevention and the American College of Sports Medicine have issued a recommendation for physical activity to achieve health promotion and disease prevention. The recommendation signals a shift in the exercise-fitness paradigm to emphasize the relationship between physical activity and health.

Recommendations:

- Aerobic exercise x15-60 min per session
- Or, 2-3 10-min sessions/day (unrealistic)
- 3-5 nonconsecutive times a week
- Intensity: 60-90% of max heart rate (220-age)
- Modest weight lifting even as infrequently as x 2/wk helps promote lean body mass, metabolically active tissue, and aids in improving aerobic capacity.

Options:

- Brisk walk/jog 10-15 mi/wk-Depends on age
- Outdoor cycling 10-15 miles/week
- Swimming 3-5 miles/week
- For cardiac patients, the health goals can be obtained via brisk walking (3 hours/week.)

## Safety of exercise in 'healthy adults':

- 1 in 20 cardiac deaths associated with exertion
- Regular exercise decreases Relative Risk ~80%
- Unaccustomed exertion raises the immediate risk of ischemic heart disease clinical event

## Phase I (Inpatient): (MAMC SOP)

- Early activity, education, CRF reduction
- Bed Rest: Discontinue 12 hrs after pain free
- Reasonable goal for discharge in 3-5 METS (1MET = energy expended @ rest)
- The 10 day formal cardiac rehab is no longer done since the mid 1980's

## MAMC Protocol-(monitored activity)

Level 1: 1-1.5 METS. Active ROM, Incentive spirometry, bedrest to BSC, assisted bath.

Level 2: 2-3 METS. Walk in room/up to chair. Walk 'short course' (150-200 feet) on 2 South, sitting self-bath/shower

Level 3: 2.5-3.0 METS. 'Long course' (300-400 feet) on 2 South x2-3/day. Sitting bath or shower.

Level 4: 4-5 METS. Essentially 'ad lib' activity on ward. Planned/monitored walking x2-3/day. Full bath or shower.

Current short hospitalizations do not require formal cardiac rehab.

## Phase II (outpatient):

- Typically 12 weeks (3months/36 sessions)
- Structured/monitored exercise as well as continued CRF reduction.
- Civilian programs are available
- Best candidates (i.e. high risk patients):
- -Poor LV function (EF  $\leq$  30%)
- -Ischemia/angina at low levels of effort
- -Complex dysrhythmias
- -Hemodynamic problems with exercise (e.g.
  - falling BP)

**Safety:** Cardiac arrest/death ~ 1 in 60,000 person-hrs of activity. 1 death every 4 yrs for patients exercise