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## **Cardiovascular Disease Risk Factors**

### **Part II Sedentary Life Style**

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**Your Life Your Health *The***

***Examiner***

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Without regard to whether you are well, at-risk for chronic disease, or have a chronic disease, there are three life-style changes which will improve your health and decrease your risk of losing your health. They are:

- **Lose weight**
- **Exercise**
- **Stop Smoking and/or being exposed to the smoke from others**

Whether you have diabetes, heart failure, high blood pressure, high cholesterol, asthma, emphysema or cancer, these are the three things which will improve your health. This is why SETMA began the **LESS Initiative**. Every patient seen by a SETMA primary-care provider has these three concerns addressed. Every patient is given a weight management assessment, an exercise prescription and are encouraged to stop smoking and/or to avoid second-hand or environmental smoke. The reality is that if a patient changes his/her lifestyle, diabetes, hypertension and heart disease can often be avoided.

### **Burden of Sedentary Living - An Inactive Lifestyle**

Two American researchers have attempted to quantify the burden of sedentary living. Their method relies on the documented strength of relationships between physical inactivity and various diseases. The strength of such relationships is usually expressed as a relative risk. Relative risks are calculated by dividing the rate of a specific disease among the sedentary population by the rate of the disease among active people. For instance, sedentary persons are known to have about twice the risk of developing heart disease as active persons. The relative risk is therefore 2.

To assess the public health burden of sedentary living, researchers combine the relative risk with the absolute frequency of physical inactivity in the population. The result is referred to as "population attributable risk" (PAR).

An estimated 32% of premature deaths were attributable to physical inactivity in Canada in 1981. By 1995, this had declined by 13 percentage points - a 41% reduction in the level of premature deaths attributable to physical inactivity. Although impressive, this decrease is not enough. The majority of Canadians are still not active enough to lower their risk of premature death.

### **The American Heart Association makes the following statement:**

"Physical inactivity - Lack of physical activity is a risk factor for coronary heart disease. Regular aerobic exercise plays a significant role in preventing heart and blood vessel disease. Even modest levels of low-intensity physical activity are beneficial if done regularly and long term. Exercise can help control blood

cholesterol, diabetes and obesity as well as help to lower blood pressure."

## **Reducing the Risk of CHD**

In a recent review of 43 studies, physical activity was found to reduce the risk of cardiovascular disease (CHD). The relative risk for CHD associated with physical inactivity is approximately 1.9 times the average person. This means that physical inactivity doubles your chance of developing heart disease. This is slightly lower than the relative risks associated with increased systolic blood pressure which is 2.1, cigarette smoking which is 2.5, and elevated serum cholesterol levels which is 2.4. If you don't smoke, do exercise, control your blood pressure and cholesterol, you will dramatically decrease your risk of developing heart disease.

Several studies indicate that endurance exercise training among patients with documented CHD is associated with both reduced morbidity and mortality and that physical activity might improve the likelihood of survival from a myocardial infarction (i.e., heart attack). In addition, there is an association between regular, moderate-intensity physical activity and the lowering of several other risk factors for CVD, including blood lipid levels, resting blood pressure among persons with borderline hypertension, body composition and overweight, and glucose tolerance and insulin sensitivity.

## **Stages of Change in Physical Activity**

Behavior change is difficult. We all know how challenging it can be to quit smoking, lose weight or exercise regularly. Recently, health care professionals have studied how people successfully change from an unhealthy to a healthier lifestyle. We realize that achieving permanent behavior change is a long and challenging process. People rarely change over night, but move through a stepwise progression toward change. The Transtheoretical Model of behavior modification, which SETMA uses in its weight management program, can be applied to exercise as well.

### **The Stages of Change**

According to the model, individuals cycle through five common stages as they move toward the adoption of a regular exercise program:

**Precontemplation:** Precontemplators are not seriously considering changing their activity pattern in the next 6 months. They are very resistant to change and are often unaware that being sedentary is a problem. "I currently do not exercise and do not intend to start in the next 6 months."

**Contemplation:** Contemplators are aware that physical inactivity is a problem. They are seriously thinking about becoming more active but have not yet made a commitment to take action. "I currently do not exercise but I am thinking about starting to exercise in the near future."

**Preparation:** In the preparation stage, some behavioral change catches up with intention. Individuals want to take action in the next month and have successfully taken action in the last year. "I currently exercise some, but not regularly."

**Action:** The greatest observable change occurs in the action stage. People reach a level of exercise deemed to reduce health risk e.g. being active for a minimum of 20 minutes, three times a week. "I currently exercise

regularly, but have only begun doing so in the last 6 months."

**Maintenance:** In the maintenance stage, people have sustained their exercise behavior for at least 6 months. "I currently exercise regularly, and have been doing so for more than 6 months."

Relapse occurs when people move back to a previous stage e.g. a person stops following his home exercise program, but intends to resume soon (action to preparation). Relapse is very common especially with in the first year of starting a regular exercise program. The key is to help people return to their exercise program (action stage) without becoming demoralized.

Termination of this process of change occurs when a person has exercised regularly for 5 years and is no longer tempted by relapse.

### **Congestive Heart Failure and Inactivity**

If exercise helps prevent heart disease can it help someone who already has heart disease? Simply, the answer is, "Yes," The incidence and mortality rate of congestive heart failure (CHF) have been steadily increasing over the past 10 years. Approximately 4.6 million individuals in the United States have a diagnosis of CHF, with 400,000 new cases occurring and 43,000 individuals dying annually. Hospitalizations from CHF increased from 377,000 in 1979 to 870,000 in 1996.

Lack of physical activity is considered an independent risk factor for the development of CHF. In addition, other primary risk factors for the development of CHF include obesity, hypertension, and diabetes. Physical inactivity can account for 9.2% of all cases of CHF, whereas hypertension can account for 10.2%, diabetes for 3.2%, and obesity for 8.0%. This means that a sedentary life style is a great risk factor for developing CHF than is diabetes. Furthermore, even patients already diagnosed with CHF benefit greatly from participating in exercise-training programs.

For example, exercise training of patients with moderate to severe CHF lowered all-cause mortality by 63% and reduced hospital readmission for heart failure by 71%. Therefore, physical inactivity can directly or indirectly account for the development of a significant percentage of cases of CHF and also worsen conditions associated with previously diagnosed CHF patients.

Physical inactivity also increases the risk of other chronic health conditions that can lead to CHF. Therefore, it is likely that many of the mechanisms that contribute to the development of these diseases during physical inactivity may also contribute to the development of CHF. Bed rest and exercise restriction lead to deconditioning and increased morbidity in patients with symptomatic heart failure.

### **Am I doing enough exercise?**

Researchers working in this area suggest that a way to evaluate whether your exercise program is sufficient to bring about health changes is to measure the number of "Calories" that you burn in one week. This reflects exercise "volume" rather than simply intensity, and allows for flexibility of frequency, intensity and duration.

Optimal physical activity The American College of Sports Medicine recommends minimal thresholds of approximately 150 kcal/day - equivalent to roughly 1000 kcal per week. To achieve optimal physical activity

levels, you should set a higher goal of 2000 kcal per week. Further increases in physical activity will lead to additional health benefits, i.e., a dose-response relationship. So for those persons who already meet the minimal recommendations, you can expect generally to benefit more by increasing your level of physical activity.

So, what do I really need to do? Does it matter if I accumulate the 30 minute recommendation of physical activity in several short bouts throughout the day? Or should I plan for one 30 minute, uninterrupted exercise session?" Basically the choice is yours and may depend on several factors. Certainly, if you cannot find the time to exercise for 30 continuous minutes, then it is recommended that you accumulate the activity in moderate intensity bouts throughout the day versus remaining sedentary. The intermittent bouts will provide you with more benefit than no activity at all.

The options for mild to moderate intensity activities are almost limitless: walking, biking, swimming, hiking, rollerblading, golf, etc. Lower intensity exercise has the added benefits of less risk of overuse injuries and a greater likelihood that you will stick with your exercise program for the long-term. Those who perform lower intensity activities should, however, do them more frequently, or, for a greater length of time, or both.

You can accumulate extra caloric expenditure through short bouts of activity in addition to a longer uninterrupted exercise session. For example exercise is gained through walking up the stairs instead of taking the elevator, walking to the store instead of driving, gardening or raking leaves, playing actively with the children, or even dancing.

By using the MET table (see insert entitled Energy Cost of Activities) determine the metabolic cost of your daily activities, and your current body weight, you can calculate the caloric cost of your weekly energy expenditure. Evaluate whether or not you fall within the desired range of weekly physical activity needed to derive health benefits.

All people who are walking are alive! So, if you want to stay alive, keep walking. Remember, it is your life and it is your health.

### **Energy Cost of Activities of Daily Living**

<b><u>Activity</u></b>	<b><u>MET range</u></b>
Eating	1-2
Driving a car	1-2
Dressing	2-3
Tub bathing	2-3
Shower	3-4
Sexual intercourse	3-5

### **Energy Cost of Vocational Activities**

<b><u>Activity</u></b>	<b><u>MET range</u></b>
Desk work	1.5
Gardening - heavier	3-4
Cleaning windows	3-4
Cleaning floors	3-4

Washing window	3-5
Grass cutting - power mower	3-5
Carpentry - light	4-5
Carry 20-44 lbs	4-5
Painting	4-5
Wheelbarrow - 100-300 lbs	4-7
Carry 45-64 lbs	5-6
Shoveling - light	5-6
Grass cutting - hand mower	5-7
Shoveling 10/min 10 lbs	6-7
Chopping wood	7-8
Pushing heavy objects	7-8
Shoveling 10/min 14 lbs	7-9
Lifting 100 lbs	7-10
Shoveling 10/min 16 lbs	9-1

### **Energy Cost of Recreational Activities**

<b><u>Activity</u></b>	<b><u>MET range</u></b>
Golf (cart - riding)	2-3
Golf (cart - pulling)	3-4
Bowling	2-4
Horseback - walk	3-4
Horseback - gallop	8-9
Table tennis	3-5
Dancing	3-7
Baseball	4-6
Curling	4-6
Tennis (doubles - singles)	4-9
Squash	5-12
Hockey (field/ice)	7-8
Kayaking	7-11
Rope jumping (<80/min)	8-10
Racquetball	8-12

### ***Cycling (flat terrain)***

<b><u>Activity</u></b>	<b><u>MET range</u></b>
5 mph	2-3
6 mph	3-4
8 mph	4-5
10 mph	5-6
12 mph	7-8
13 mph	8-9

### ***Walking (flat terrain)***

<b><u>Activity</u></b>	<b><u>MET range</u></b>
1 mph (60 min/mi)	1-2
2 mph (30 min/mi)	2-3
3 mph (20 min/mi)	3-3.5
3.5 mph (17 min/mi)	3.5-4
4 mph (15 min/mi)	5-6

***Running (flat terrain)***

<b><u>Activity</u></b>	<b><u>MET range</u></b>
5 mph (12 min/mi)	8.75
5 mph (11 min/mi)	9.4
6 mph (10 min/mi)	10.2
6.5 mph (9 min/mi)	11.2
7.5 mph (8 min/mi)	12.5
8.5 mph (7 min/mi)	14.1
10 mph (6 min/mi)	16.3

***Swimming***

<b><u>Activity</u></b>	<b><u>MET range</u></b>
slow (20 yds/min)	4-5
Backstroke	7-8
Breaststroke	8-9
Crawl	9-10

***Skiing***

<b><u>Activity</u></b>	<b><u>MET range</u></b>
Downhill	5-9
downhill (4 mph)	8-9
downhill (5 mph)	9-10
cross-country (3 mph)	6-7

**Caution! The MET level of an activity will be increased in the following situations:**

- activities that require use of arms (especially if above the head)
- activities that require isometric muscle contraction (an isometric muscle contraction occurs when a muscle contraction is sustained without any change in muscle length)
- wind resistance