

# **James L. Holly, M.D.**

## **SETMA's Exercise Prescription By: James L. Holly, MD**

The following is an exact replica of an exercise prescription which is regularly given to SETMA's patients who are participating in anyone of a number of specialty clinics: Cholesterol, Diabetes, Weight Management, Hypertension, Congestive Heart Failure, or those who just want to get healthy and stay health. The exercise prescription is specific to the individual patient. The numbers give below are for a relatively healthy, sixty-year old male.

Due to its length, the discussion of the elements of the Exercise Prescription will take place next week at which time, we will examine the important of:

- Stretching
- Strengthening
- Striking

We'll discuss the importance of exercising for:

- Health
- Fitness
- Performance

We'll learn about:

- How to calculate and/or determine your maximum heart rate?
- Why is it important?
- How to determine your heart rate reserve and what it means?
- Why heart rate is important to the conditioning effect of your exercise efforts?
- What the Borg's Rating of Perceived Exertion is and why is it important?
- Among other things.

Read the below exercise prescription and next week we'll learn how it can apply to you.

## SETMA's Exercise Prescription

*"Those who think they have not time for bodily exercise will sooner or later have to find time for illness." - Edward Stanley, Earl of Derby  
(from Conduct of Life, address to Liverpool College, 20 December, 1873)*

### Recommendations for Weekly Aerobic Units

Fitness Classification	Men	Women
Very Poor	less than 10	less than 8
Poor	10 - 20	8 - 15
Fair	21 - 31	16 - 26
Good	32 - 50	27 - 40
Excellent	51 - 74	41 - 64
Superior	75+	65+

#### Your exercise should include:

**Strengthening of your muscles** (upper and lower body) -- use weights that are a comfortable size for you and do multiple repetitions rather than one or two liftings of weights you can barely move. The object is to tone and strengthen your muscles, increasing your lean body mass, improving your basal metabolism rate, rather than building big muscles. For weight control, this is the most important part of your exercise regimen. Strengthening exercises should be done four to six days a week, rotating from upper to lower body muscles from day to day. Repeating lifting to fatigue without injury is the best way to gain lean body mass and muscle strength.

**Stretching of your muscles** -- nothing will contribute more to the decrease of injury than stretching. You should not stretch to the point of injury, but you will stretch to the point of discomfort. Once your muscle is stretched out do not stress it by bouncing against it or trying to go further. Hold the muscle in the stretched position for sixty seconds. Stretching should be an everyday exercise. It does not require any equipment, except possibly for an elastic band.

**Striking of your muscles** (jogging, walking, running, cycling, swimming, etc) -- this is where the capacity of your muscles, and particularly the heart muscle, to use oxygen is increased. This is called aerobic capacity. If you are contemplating a conditioning program, SETMA's cardiopulmonary physiology test is an excellent way to establish your baseline and to determine how you are progressing. Ask about it. Aerobic activities should be done at least three days a week and preferably five.

#### Your current activity level is as follows:

Walking/Jogging/Running

Your present level of activity is that you walk/run/jog 7.0 miles in 81.0 minutes 3 times per week. This level of activity gives 28.3 aerobic units per session and 84.9 aerobic units per week. This places you in a "superior" aerobic conditioning category. You should maintain your current aerobic conditioning activity.

### **Recommended Minimum Exercise**

Walking/Jogging/Running  
Distance: 3.0 miles  
Duration per Session: 45.0 minutes  
Aerobic Units per Session: 8.0 units

This recommended amount of exercise 4 times per week will give you a total of 32.0 aerobic units each week. This will place you in a "good" aerobic conditioning category.

### **Target Heart Rate**

Your Maximum Heart Rate is 160 beats per minute.  
Your Resting Heart Rate is 50 beats per minute.  
Your Heart Rate Reserve is 110 beats per minute.

Your **Target Heart Rate Range** is 105 to 143 beats per minute.

To achieve a training effect, i.e., to improve your aerobic capacity, you should exercise so as to have your heart rate between the two values given above. You should not exceed the maximum heart rate without having had a thorough cardiac evaluation. In order to raise your heart rate, you will need to begin your exercise slowly and then gradually increase your speed and/or distance in order to achieve your "target heart rate range." Obviously, there is some incremental training effect the higher your heart rate, but the greatest benefit is achieved by going from a sedentary life style to a regular exercise program within the "target heart rate range" even if it is at the lower end.

As you exercise within your "target heart rate range," you will be strengthening your heart, your muscles and improving your breathing capacity. Your goal should be to exercise for 30-60 minutes 3-5 times a week with your heart rate in your "target heart rate range."

The aerobic points which you achieve each week will help you judge your distance and speed. Your "target heart rate range" will help you judge the benefit your cardiovascular system is realizing from your effort.

I would also like for you to report how "stressful" your exercise is by the following scale.

During the exercise you are to rate your perception of exertion. Use this scale where 6 means no exertion at all and 20 means a totally maximum effort. The 13 on the scale is a somewhat heavy exercise but capable of being performed at steady state (i.e., anaerobic

threshold). When at a level of 17 the effort level requires you to push yourself hard even though it is possible to continue for some time. For many people 19 is about as strenuous as exercise becomes because they often reserve a small amount of possible extra effort.

Try to appraise the feeling of exertion as honestly as possible. Do not underestimate nor overestimate it. It is of no value to underestimate the level to produce an impression of being "brave" or "tough". Your own feeling of effort and exertion is all that is of interest. Look at the scale and wordings and decide on the word that best describes your effort level and the number alternative associated with that description.

### **Borg's Ratings of Perceived Exertion (RPE)**

6	No exertion at all
7-8	Extremely light (very, very light)
9-10	Very light (warm-up/recovery)
11	Light
12-13	Moderate
14-15	Hard (400 m swimming pace)
16-17	Very hard (200 m swimming pace]
18-19	Extremely hard (very, very hard, 25-50 m pace)
20	Maximum all-out effort with absolutely nothing being held in reserve

Remember, it is important not only to stress your heart and leg muscles but also your tendons and ligaments by stretching and all of your muscles by targeted exercise for each muscle group. There is no "pill," "prescription," or "procedure" which can be given to you which will do you as much good as exercise. Get started and keep going. Good luck."

### **Wellness Continuum of Conditioning**

The wellness continuum consists of three areas of physical well-being

- health,
- fitness, and
- performance.

We need to keep in mind that we're not all going to have our goals in the same areas. This is why your friend, who's a veteran marathoner, might complain about what kind of "shape" he or she is in, while you would kill to look the way they do and be so fit and healthy. The health area covers those training zones that promote health but don't primarily improve physical fitness and certainly not performance.

- To measure improvements in health, we seek positive changes in blood pressure, body fat, cholesterol, etc.
- To measure improvements in fitness, however, it's positive changes in oxygen utilization, lactate concentrations and heart rate points we're looking for.

- To measure improvements in performance, positive changes in completion times, accuracy of movement skill, mental attitude, and other indices are used.

Using the knowledge above, we can establish zones of exercise which will either improve our health, fitness or performance. There are five zones.

### The Wellness Continuum and the Five Heart Zones

<u>Zone Name</u>	<u>Perceived Exertion Difficulty</u>	<u>Heart Rate Range</u>	<u>Fitness Area</u>
(see Borg's scale above)			
Zone 1	Healthy Heart	Perceived Exertion is 10-11	80 to 96 Health Zone
Zone 2	Temperate	Perceived Exertion is 12-13	97 to 112
Zone 3	Aerobic	Perceived Exertion is 14-15	113 to 128 Fitness Zone
Zone 4	Threshold	Perceived Exercise is 16-17	129 to 144
Zone 5	Redline	Perceived Exertion is 18-20	145 to 160 Performance Zone

Zones use time, not distance, as their measurement tool. That is, the amount of time you spend in the zone is the way you measure your workout, not in miles run, or the number of strokes per minute cycled or rowed. This measurement is called "time in zone" and is measured in the minutes that you spend in each zone. For example, one day you decide to run for 30 minutes in the Aerobic zone; the following day you might choose to walk for 50 minutes in your Fat Burning zone. Varying your workouts, both in activity and zone, allows you to get multiple benefits from your training.

At the lower zones--or "cruise" zones as they are sometimes called--you can train in zone for longer periods of time. But, as you move up to higher intensity zones, you need to decrease the amount of time that you spend in that zone, particularly in the top two, the Anaerobic and Redline zones. This simply makes sense--you can walk farther than you can sprint, and overdoing it is nearly a guarantee of injuries or burnout.

Your five heart rate zones are specific to your maximum heart rate, not anybody else's. The numbers given above are for you, not someone else. With two runners, each maintaining a heart rate of 160 bpm, one might well be in their Threshold Zone and the other may be in their Temperate Zone. It's all relative.

Each heart zone burns a different number of calories per minute based on how fit you are.

Zone 5	20+ calories per minute
Zone 4	17-20 calories per minute
Zone 3	12-17 calories per minute
Zone 2	7-12 calories per minute
Zone 1	3-7 calories per minute

You'll burn a different ratio of fat to carbohydrates in each of the heart zones.

One of the foundation principles of heart zone training is that we need to train in different heart zones to get different benefits. There is no one "training zone". There is no one "target zone". Those are old training concepts that have been shown not to fit with the way the body really trains. In fact, there are multiple zones that provide multiple and varied benefits. Train in the zones that most fit your goals: health, fitness or performance.

### **Deciding Where to Start and How**

If you are a beginner with the goal of improving overall fitness, losing weight or reducing stress, exercise at 50-60 percent of your maximum heart rate.

1. If you already exercise regularly but are aiming to lose body fat, exercise at 60-70 percent of maximum heart rate. Build up to a work out of an hour's continuous exercise.
2. If your goal is to improve aerobic capacity or athletic performance, exercise at 70-80 percent of your maximum heart rate.
3. Competitive athletes may need to add interval training sessions during the week by training at 80-90 percent of maximum heart rate. This high intensity exercise helps train muscles to handle lactic acid.

Train sparingly at higher heart rates. Exercising regularly at a heart rate intensity that is too high does not produce additional aerobic benefits and increases the possibility of an athletic injury. Interval training and anaerobic threshold workouts require a high degree of fitness, and is not necessary for general fitness training.

Once you determine your individual training zones, you can easily program them into your heart rate monitor. Your monitor will notify you with a beep if you are exercising above or below the pre-programmed zones. Many heart monitor models record time spent in your heart rate target zone. You can then evaluate your exercise after each session and adjust your intensity if needed. Recording heart rate also allows you to monitor your fitness improvements over time.

### **Tips on Effective Training**

**Warm up & cool down.** Always do a slow warm up of 5-10 minutes, followed by some gentle stretching. Then gradually climb into the target range you have set. End every workout with a 5-10 minute cool down, again followed by some gentle stretching. The importance of this can not be over emphasized. Studies have shown that people who warm up and cool down adequately have fewer athletic injuries.

**Type of Exercise.** Choose activities that use large muscle groups and which are continuous in nature. Some good examples are walking, swimming, running, aerobic dance, stair climbing machines, ski machines, treadmills, cycling or exercise bikes. Feel free to include more than one activity - cycle one day, swim the next, and do aerobics on the third. This is called Cross Training and helps exercise all muscle groups, reduces boredom and keeps motivation high.

**Frequency of exercise.** Exercise in the target range that you have set at least 3-5 times per week, with no more than 48 hours between sessions. Even on 'rest days' gentle exercise such as a leisurely walk can be beneficial.

**Intensity of exercise.** Select an exercise intensity zone that is both within your capability and in which you can achieve consistency. Studies show that people who exercise at too high an intensity, especially in the initial stages of their program, drop out sooner, have more injuries, and tend to develop a negative impression towards exercise in general. If necessary start in a low exercise intensity zone and build up.

**Time exercising.** Aim for 20-60 minutes of continuous exercise in your target zone each session. If you are unable to exercise for 20 minutes initially, slow down and gradually build up to this.

Before you begin your exercise program, get an assessment of your overall fitness level. You must get clearance from your doctor that it is safe for you to exercise.