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SETMA's Exercise Prescription Part II

By: James L. Holly, MD

Two weeks ago, we gave the first half of SETMA's "exercise prescription." Today's column is the second half of the prescription. The numbers are for a 60 year old male. Next week, we will begin an analysis of this exercise prescription, similar to the discussion which is had with each patient to whom we give this exercise prescription.

Remember the quote at the top of the 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)

Continuation of SETMA's Exercise Prescription

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.

Heart Rate Zones

Zone 1 (50 - 60% of MHR) - The lowest level you can exercise in and still increase fitness levels. For beginners or people who have not exercised for a long period of time. This zone can be for just improving your overall health. It can also be a good recovery zone for people who are over-training and need to take a break. This mode is also good for people who want to lose weight as the main source of fuel used by the body is fat stores.

Zone 2 (60 - 70% of MHR) - This is the zone where the heart begins to benefit. Training in this zone will begin improve your hearts ability to pump blood and improve the muscle cells ability to utilize oxygen. In this zone stored body fat is the primary source of energy utilized hence this zone is referred to as the weight management zone. This is a good zone for long slow distance exercise as the body becomes more efficient at feeding the working muscles more efficiently especially with fat as the main fuel source.

Zone 3 (70 - 80% of MHR) - This zone is the most effective for overall cardiovascular fitness and is often called the "aerobic zone" or "target heart rate zone". This is the optimal zone to workout in to increase your cardio-respiratory capacity or the body's ability to transport oxygenated blood to the muscle cells and carbon dioxide away from the cells. After a while you will be able to cover more distance during workouts in less time. Your body will burn less glucose and more stored fat as fuel thereby working more efficiently. This zone is also effective for increasing overall muscle strength.

Zone 4 (80 - 90% of MHR) (85-90%= Anaerobic Threshold) - this level is where you cross over from aerobic training to anaerobic training which is called the anaerobic threshold or AT. This is the point where the body cannot effectively remove lactic Acid from the working muscles quickly enough. Lactic Acid is a by product of glycogen consumption by the working muscles. This zone is primarily for people who want to increase their performance levels. You would characterize this zone as hard. During this zone your muscles are tired, your breathing is heavy and you fatigue. The benefit of training in this zone is you can increase your body's ability to tolerate and deal with lactic acid for a longer period of time as the enzymes in your muscles responsible for anaerobic metabolism are increased. For competitors it is good to know your anaerobic threshold as many fit athletes can compete at or about their anaerobic threshold.

Zone 5 (90 - 100% of MHR) (VO2 Max) - You will only be able to train in this zone for short periods of time. You should not train at this level unless you are very fit. In this zone lactic acid develops very quickly as you are operating with oxygen debt to the muscles. The value of training in this zone is you can increase your fast twitch muscle fibers which increase speed. You will not be able to stay at this level very long and should be used in intervals or sprinting work at the track.

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 are 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, and 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.

Number of Steps Walked per Day – a new way of “getting your exercise” is really very old. It is in counting and increasing the number of steps you take every day in your ordinary living. A pedometer counts the steps you take a day. With the average person taking 2,000 steps per mile, it is ideal that you walk five miles in a day.

Pedometer (steps per day) _____
Pedometer (optimal) 10,000

Increasing your steps per day:

Evaluate current steps and increase by 10% every two weeks until you are optimal

How to increase your steps per day

1. Park further away from buildings
2. Take the stairs
3. Walk to the store
4. Take the long way to where you are going
5. Mow your yard with a mower that you walk behind rather than ride
6. Find excuses to go up and down the stairs at home rather than looking for ways to avoid those steps
7. Walk the golf course rather than ride
8. Walk around to a colleague's office rather than calling
9. Get out and walk into the post office rather than using the drive up window
10. Schedule time each day for a 30-60 minute walk

Remember, the more you walk, the healthier you will be. And, if you decrease your calorie intake by 100 calories per day (that's an apple a day less intake) and increase your steps by 10% every two weeks, you will lose 20 pounds in a year without trying.

And, also remember, it is your life and it is your health.