



Cardio Program Design

Daily physical exercise is extremely important—most people agree with the Surgeon General on that. 30 minutes of moderate intensity exercise a day seem to be the recommendation. But what does that mean?

Most of the time cardiovascular exercise is not laid out in a nice neat format like a strength training routine (with sets, reps, weights, etc.) Most folks are content to whip out the newspaper and pedal, step, etc. at a leisurely pace day in and day out. Later they wonder why they are not getting in better shape.

Most cardio exercise is performed because weight loss is the goal. Properly performed cardiovascular exercise not only helps you burn calories, but it improves the function of your heart and lungs and builds endurance.



Forget about the “fat burning zone” and most of what you are used to for cardio exercise. Low intensity cardio actually can condition your body to conserve fat (yikes!). Focus on improving your workout performance and keeping your body working hard enough (for you) to actually stimulate some sort of adaptation (fitness). To do this, we are going to rotate through different workouts and monitor how hard your working.

Heart Rate Monitor.

The heart rate monitor is a great tool for monitoring your work intensity. First we need to know what your maximum heart rate is. There a number of ways to do this, some are more accurate and intense than others. To make it easy, use the traditional $220 - \text{your age}$ formula if you're a beginner or not very active (for now). If you are more active and have been exercising for a while, use the $205 - \frac{1}{2} \text{ your age}$. If you're very fit, talk to a member of the staff about testing yourself for a max heart rate. If not, the formulas will get you close enough for now.

We are going to be focusing on three different energy systems during your workouts:

- **Aerobic** (70-75% of your max HR) – a level of work you can continue for an extended period of time (more than 3 minutes) and using oxygen to help provide the calorie/fat burn for energy.
- **Anaerobic** (80-85% of your max HR) – a level of work where lactic acid builds up faster than your body can remove it. You use more stored glycogen than fat at this intensity—but you also burn more calories overall than the aerobic energy system. This level of work keeps your body burning more calories after exercise is done as well (post exercise calorie burn—PECB).
- **Alactate Power** (90-100% max HR) – You can only manage this level of exercise for periods of up to 12 seconds. Burns a lot of calories and also has high PECB.

The Workouts

As I alluded to earlier, working out at the same intensity day in and day out causes your body to settle in and get comfortable. It figures—this stressor (which is what exercise is) hasn't killed me yet, so why adapt (get more fit)? It is called accommodation in exercise physiology—a “rut” in other words. Things only need to be changed a little in order to keep your body on its toes and constantly trying to adapt. This is where interval training comes in.

Properly performed interval training:

- improves speed and performance
- burns more calories than conventional cardio
- keeps your metabolism elevated longer after your workout (PECB)

- can be done in briefer time periods.

Notice that the first workout example below is your old stand by—the boring but comfortable “steady state” session. It has a place in our program. Notice in the example, after a brief warm-up for 5-10 minutes you increase your pace until you get your heart rate to at least 75% of your max. Try to keep it within 5 beats of whatever that number is.

Your next 2 workout examples are “interval” sessions. You will vary periods of higher intensity work with periods of lower intensity recovery. The work to recovery ratio is an inverse relationship. The higher the intensity, the shorter the work period and longer the recovery period you need. For example, in the “interval workout” example—the work intensity is a 85% HR for a period of 2 minutes followed by a recovery period of 2 minutes with a work intensity of 70% HR. That is a 1 to 1 (1/1) work to recovery ratio.

As the intensity level goes up, like in the “sprint interval” workout—95% HR intensity for 10 seconds, followed by 50 seconds of recovery, trying to bring the HR down to 70-75%. That is a 1/5 work to recovery ratio.

The **recovery HR** is usually at 70-75% of your max HR. This way you will be working aerobically and anaerobically in each interval session. The better shape you get in, the faster your body will be able to switch gears—work/rest. Try to go slow enough to bring your HR down during recovery. In fact, the bigger difference between work and recovery intensities, the better.

To make things even simpler—you only really need to focus on your recovery HR during intervals. If you are going as hard as you can for the work part, HR will take care of itself. Just back off to a low enough intensity to bring your HR down as much as possible.

Note: When I mention increasing your intensity on and exercise to get your HR up, I mean going faster, increasing the incline, increasing the resistance etc.

1 minute Recovery Heart Rate:

Keep track of your 1-minute recovery heart rate after your last workload. A study in the *New England Journal of Medicine* showed that one of the best tests to predict your risk for having a heart attack is your Recovery Heart Rate. Folks whose heart rates did not drop at least 12 beats the first minute after vigorous exercise were at increased risk for heart attack. A drop of 30 or more is good, the higher, the better.

As you get in better shape, it will improve.

Reality Check.

As good as heart rate monitors are, don't get too serious about the HR #'s. For example, at the beginning of a workout it may be hard to get you HR into your work zone. On the flip side, it may be hard at the end of a workout to get your heart rate into the recovery zone. Varying your work intensity is the goal—remember the HR monitor is only there to help you. Give yourself some slack. Don't forget as well, different activities may have different perceived exertion to HR intensities. In other words running may feel easier than using the step mill but your HR seems so much higher.

Picking A Workout.

Take a look at some of the [cardio templates](#) and choose one that is right for you. For beginners or those at the lower end of fitness, the Basic and Endurance programs have lower intensity work periods and longer recovery periods and shorter initial workout durations. The Competitive Endurance and Speed workouts have higher intensity work periods and shorter recovery periods and longer workout durations.

You can also make your own and progress yourself at your own pace. You can also have a member of the Wellness Center staff help you design a program. Just remember, do not do more than 2 hard (all out effort) workouts per week (at first).

“Kicking it up a notch”

Play around with work/rest ratios as you get in better shape. Shorter insufficient rest intervals really bump up the intensity. In the 2 min on/2 min off workout, sandwich in a few rounds of 1 minute recoveries. This will push your bodies' ability to recover even more (you work harder and get more fit). It will be difficult to bring your heart rate down into the 70% range—just do your best. Once you're warmed up, the workout may look something like this:

2 min on/ 2 min off
2 min on/ 2 min off
2 min on/ 1 min off
2 min on/ 1 min off
2 min on/ 1 min off
2 min on/ 2 min off
2 min on/ 2 min off
2 min on/ 2 min off

That is a fun, sweaty workout!

Intervals don't have to be fancy in order to work. Keep workouts simple (1 min on/1 min off, 30 sec on/90 sec off, 30 sec on/30 sec off, etc.).

The end result of all of this is hopefully you get in better shape, improve performance and get lean and mean—now pick an activity and get movin'!

