



ACSM Information On...

Selecting and Effectively Using a Heart Rate Monitor

Heart rate can be used to monitor how hard you are working during an activity (i.e. exercise intensity) and to track changes in fitness level. The heart rate monitor (HRM) provides a convenient method for measuring and recording heart rate during exercise.

A COMPLETE PHYSICAL ACTIVITY PROGRAM

A well-rounded physical activity program includes aerobic exercise and strength training exercise, but not necessarily in the same session. This blend helps maintain or improve cardiorespiratory and muscular fitness and overall health and function. Regular physical activity will provide more health benefits than sporadic, high intensity workouts, so choose exercises you are likely to enjoy and that you can incorporate into your schedule.

ACSM's physical activity recommendations for healthy adults, updated in 2011, recommend at least 30 minutes of moderate-intensity physical activity (working hard enough to break a sweat, but still able to carry on a conversation) five days per week, or 20 minutes of more vigorous activity three days per week. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation.

Examples of typical aerobic exercises are:

- Walking
- Running
- Stair climbing
- Cycling
- Rowing
- Cross country skiing
- Swimming.

In addition, strength training should be performed a minimum of two days each week, with 8-12 repetitions of 8-10 different exercises that target all major muscle groups. This type of training can be accomplished using body weight, resistance bands, free weights, medicine balls or weight machines.

The first HRM was introduced in the early 1980s, and many improvements have been made since then, including:

- Coded transmission processes (from chest strap to watch) to reduce interference with other HRMs;
- Ability to store heart rate data and download stored data onto a computer for analysis using special software;
- Integration of GPS (speed, distance and elevation) with heart rate data; and
- Functions to aid in training.

The use of a HRM to determine exercise intensity is based on the following physiological principal: as exercise intensity increases, oxygen consumption (VO_2) and heart rate increase in a linear relationship. Heart rate is easier to measure than VO_2 , and the relationship between them has been established.

FACTORS AFFECTING HEART RATE

Many factors can alter your heart rate:

- Stress
- Illness
- Overtraining and fatigue
- Medications
- Time of day



- Food and drink (i.e. caffeine)
- Nutritional status
- Altitude
- Body temperature
- Hydration levels
- Weather conditions and ambient temperature



There are many features available in a variety of monitors, which also determine the price differences. Some features and options include:

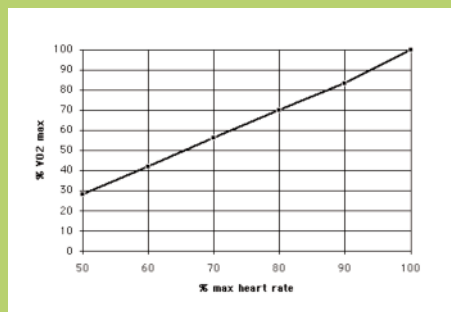
- Watch
- Target training zone
- Stopwatch
- Lap timer/splits
- GPS
- Alarm
- Memory
- Recovery rate
- Calories burned
- Backlight
- Computer link
- Prediction of maximal aerobic capacity (VO_{2max})
- Prediction of maximal heart rate

- Cardiac drift, which is the increase in heart rate seen over time while exercising at a constant workload. Some studies have found that your heart rate can increase by as much as 5-20 beats per minute (bpm) during exercise lasting 20-60 minutes even when the intensity does not change.

CHOOSING HEART RATE MONITORS

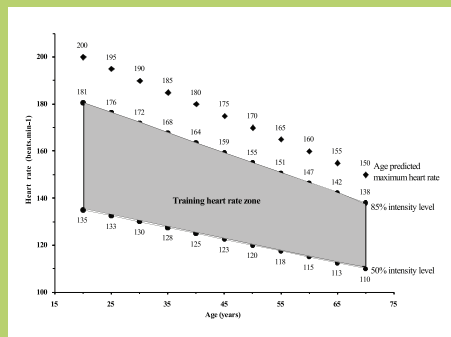
Questions to consider when choosing a heart rate monitor (HRM):

- **What does a HRM consist of?** A HRM comprises a watch that is worn on your wrist and a transmitter that you wear against around your chest against your skin. The electrodes in the transmitter pick up signals from your heart and send them wirelessly to the watch. These signals are continuously displayed.
- **What types of activities can I participate in while wearing a HRM?** A HRM can be worn while participating in almost any physical activity, whether for work or recreation – yard work, indoor/outdoor walking and running, skating, biking (indoor/outdoor), rowing, etc. Most models are waterproof enough for swimming, though are not made for diving.
- **Which HRM features do I need for my fitness program?** The features and options you require for your personal fitness or exercise program depend on the activities in which you participate.



HOW DO I INTEGRATE A HRM INTO MY EXERCISE PROGRAM?

- Determine your maximum heart rate. A quick way to estimate heart rate is by taking 220 and subtracting your age (220-age). Some HRMs have a feature to predict your maximal heart rate based on additional information.
- Find the specific target training zone that will help to guide you to exercise at the right intensity. A target training zone is a high and low heart rate range based on a percentage of your maximum heart rate.



STAYING ACTIVE PAYS OFF!

Those who are physically active tend to live longer, healthier lives. Research shows that moderate physical activity – such as 30 minutes a day of brisk walking – significantly contributes to longevity. Even a person with risk factors like high blood pressure, diabetes or even a smoking habit can gain real benefits from incorporating regular physical activity into their daily life.

As many dieters have found, exercise can help you stay on a diet and lose weight. What's more – regular exercise can help lower blood pressure, control blood sugar, improve cholesterol levels and build stronger, denser bones.

THE FIRST STEP

Before you begin an exercise program, take a fitness test, or substantially increase your level of activity, make sure to answer the following questions. This physical activity readiness questionnaire (PAR-Q) will help determine if you're ready to begin an exercise routine or program.

- Has your doctor ever said that you have a heart condition or that you should participate in physical activity only as recommended by a doctor?
- Do you feel pain in your chest during physical activity?
- In the past month, have you had chest pain when you were not doing physical activity?
- Do you lose your balance from dizziness? Do you ever lose consciousness?
- Do you have a bone or joint problem that could be made worse by a change in your physical activity?
- Is your doctor currently prescribing drugs for your blood pressure or a heart condition?
- Do you know of any reason you should not participate in physical activity?

If you answered yes to one or more questions, if you are over 40 years of age and have recently been inactive, or if you are concerned about your health, consult a physician before taking a fitness test or substantially increasing your physical activity. If you answered no to each question, then it's likely that you can safely begin exercising.

PRIOR TO EXERCISE

Prior to beginning any exercise program, including the activities depicted in this brochure, individuals should seek medical evaluation and clearance to engage in activity. Not all exercise programs are suitable for everyone, and some programs may result in injury. Activities should be carried out at a pace that is comfortable for the user. Users should discontinue participation in any exercise activity that causes pain or discomfort. In such event, medical consultation should be immediately obtained.



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