

## High Intensity Interval Training (HIIT)

Taken from AQUATICS: The Complete Reference Guide for Aquatic Fitness Professionals by Ruth Sova

### Definition

Interval training is an exertive exercise program usually reserved for well-conditioned athletes. The program can, however, be modified for less-conditioned populations. Interval training simply means a workout that combines high-intensity portions with moderate- or low-intensity segments.

During continuous aerobic training, the exercise program is organized so the workout intensity remains in the target zone during the entire workout. The intensity begins at the low end of the target zone and gradually increases to moderate and high intensity before tapering back down to the low end. Interval training is unique in that it is based on short bouts of intense exercise, during which the workout intensity is at the top end of the target zone. These high-intensity bouts are separated by recovery periods, during which the workout intensity is at the low to moderate portions of the target zone. This technique trains the athlete to maintain near-maximum heartrate for a longer total time than would be possible with continuous training. This type of training uses the anaerobic metabolic pathway. The primary fuel is intramuscular glycogen.

### Format

Intervals are usually done as the aerobics portion of a workout. The format for a cardiorespiratory workout is followed with a thermal warm-up, pre-stretch, and cardiorespiratory warm-up. The aerobics portion usually begins with three minutes of aerobics at low or moderate intensity. Approximately 75 seconds are allotted for the high-intensity interval before returning to moderate or low intensity for three more minutes. Five to seven cycles are done during the aerobics part of the program before cooling down, toning, and stretching.

A cycle is the combination of one low- (or moderate-) and one high-intensity set. The low- to moderate-intensity portion is usually at 60% to 75% of the target heart-rate. The high-intensity part of the cycle is usually at 75% to 80% of the target heartrate zone and is designed to move at least to and often beyond the anaerobic threshold.

The work-to-recovery ratio is how long the high intensity (work) lasts in comparison to the moderate or low intensity (recovery). Most interval-training programs use a 1 to 3 or a 1.5 to 3 work-to-recovery ratio. This means 60 to 75 seconds of high intensity (anaerobic) followed by three minutes of low to moderate intensity (aerobic) for each cycle. Some programs use a 1 to 2 ratio and others a 1 to 1 ratio. The most common is a 1 to 3 work-to-recovery ratio.

### Equipment

Equipment is generally not used in interval training, unless it is part of a regular program for the recovery portion of intervals. For example, if gloves are usually used in the three-minute portion of the cycle, they can be left on during the high-intensity portion. In order to achieve the intensity required, aquatic equipment can be used if it can be added to the workout without interrupting or stopping it.

### Water Depth

Water depth for interval training can vary, depending on the type of training being done. Since the concept of intervals can be used in deep-water running, water walking, or water aerobics, all different levels can be used. The depth commonly used for the regular program (water walking, aerobics, deep-water running) is the depth that should be used when intervals are added.

### Comparison to Land Workout

Interval training can be achieved more safely and effectively in water than on land. Working against the resistance of the water allows the exerciser to move into a high-intensity workout without the stress received in land-based interval-training programs.

#### Purpose/Benefits

The goal of interval training is to improve the cardiorespiratory system; thus, benefits will be seen not only in the fitness component of cardiorespiratory fitness but also in body composition because of the caloric consumption. Muscular endurance can also be improved during the program; and muscular strength can be improved during the strength or toning portion of the class. Flexibility can be improved through the use of full range of motion and the final stretch.

#### Common Errors

Instructors leading interval-training classes need to be aware that increasing the speed of the movements might elevate the heartrate and perceived exertion level but may compromise the joints and connective tissues. Too many times, instructors try to increase the intensity by only increasing the speed of the movements. Also, “levels of intensity are often confused with levels of impact.” Using equipment, increasing frontal resistance, increasing acceleration, and using long levers can all increase the workout’s intensity. Moving through the water will also increase the energy requirements.

Interval training, like all fitness programs, should work toward improving participants’ muscle balance. All major muscle groups should be worked and stretched during the workout.

Modifications can be made to the program to allow less-conditioned individuals to participate. The 3-minute moderate-intensity portion can be followed by a 75-second low-intensity portion, while other participants are doing 75 seconds of high intensity. The 75-second part of the cycle can be the recovery for less-conditioned participants.