ACSM Information On…

HIGH-INTENSITY INTERVAL TRAINING

The popularity of high intensity interval training is on the rise. High intensity interval training sessions are commonly called HIIT workouts. This type of training involves repeated bouts of high intensity effort followed by varied recovery times.

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 intense work periods may range from 5 seconds to 8 minutes long, and are performed at 80% to 95% of a person's estimated maximal heart rate, the maximum number of times your heart will beat in a minute without overexerting yourself. The recovery periods may last equally as long as the work periods and are usually performed at 40% to 50% of a person's estimated maximal heart rate. The workout continues with the alternating work and relief periods totaling 20 to 60 minutes.

What are the benefits of HIIT?

HIIT training has been shown to improve:
- aerobic and anaerobic fitness
- blood pressure
- cardiovascular health
- insulin sensitivity (which helps the exercising muscles more readily use glucose for fuel to make energy)
- cholesterol profiles
- abdominal fat and body weight while maintaining muscle mass.

Why is HIIT Training so Popular?

HIIT training can easily be modified for people of all fitness levels and special conditions, such as overweight and diabetes. HIIT workouts can be performed on all exercise modes, including cycling, walking, swimming, aqua training, elliptical cross-training, and in many group exercise classes. HIIT workouts provide similar fitness benefits as continuous endurance workouts, but in shorter periods of time. This is because HIIT workouts tend to burn more calories than traditional workouts, especially after the workout. The post-exercise period is called "EPOC", which stands for excess postexercise oxygen consumption. This is generally about a 2-hour period after an exercise bout where the body is restoring itself to pre-exercise levels, and thus using more energy. Because of the vigorous contractile nature of HIIT workouts, the EPOC generally tends to be modestly greater, adding about 6 to 15% more calories to the overall workout energy expenditure.

How do You Develop a HIIT Exercise Program?

When developing a HIIT program, consider the duration, intensity, and frequency of the work intervals and the length of the recovery intervals. Intensity during the high intensity work interval should range ≥ 80% of your estimated maximal heart rate. As a good subjective indicator, the work interval should feel like you are exercising "hard" to "very hard". Using the talk test as your guide, it would be like carrying on a conversation, with difficulty. The intensity of the recovery interval should be 40-50% of your estimate maximal heart rate. This would be a physical activity that felt very comfortable, in order to help you recover and prepare for your next work interval.

The relationship of the work and recovery interval is important. Many studies use a specific ratio of exercise to recovery to improve the different energy systems of the body. For example, a ratio of 1:1 might be a 3-minute hard work (or high intensity) bout followed by a 3-minute recovery (or low intensity) bout. These 1:1 interval workouts often range about 3, 4, or 5 minutes followed by an equal time in recovery. Another popular HIIT training protocol is called the "spring interval training method". With this type of program the exerciser does about 30 seconds of 'sprint or near full-out effort', which is followed by 4 to 4.5 minutes of recovery. This combination of exercise can be repeated 3 to 5 times. These higher intensity work efforts are typically shorter bouts (30 seconds with sprint interval training).

What are the Safety Concerns with HIIT Training?

Persons who have been living rather sedentary lifestyles or periods of physical inactivity may have an increased coronary disease risk to high intensity exercise. Family history, cigarette smoking, hypertension, diabetes (or pre-diabetes), abnormal cholesterol levels and obesity will increase this risk. Medical clearance from a physician may be an appropriate safety measure for anyone with these conditions before staring HIIT or any exercise training. Prior to beginning HIIT training a person is encouraged to establish a foundational level of fitness. This foundation is sometimes referred to as a "base fitness level". A base fitness level is consistent aerobic training (3 to 5 times a week for 20 to 60 min per session at a somewhat hard intensity) for several weeks that produces muscular adaptations, which improve oxygen transport to the muscles. Establishing appropriate exercise form and muscle strength are important before engaging in regular HIIT to reduce the risk of musculoskeletal injury.

Regardless of age, gender and fitness level, one of the keys to safe participation of HIIT training is for all people to modify the intensity of the work interval to a preferred challenging level. Safety in participation should always be primary priority, and people should focus more on finding their own optimal training intensities as opposed to keeping up with other persons.

Brochure content provided by Len Kravitz, Ph.D.

How Many Times a Week Can You do a HIIT Workout?

HIIT workouts are more exhaustive then steady state endurance workouts. Therefore, a longer recovery period is often needed. Perhaps start with one HIIT training workout a week, with your other workouts being steady state workouts. As you feel ready for more challenge, add a second HIIT workout a week, making sure you spread the HIIT workouts throughout the week.

Final HIIT Message

Interval training has been an integral part of athletic training programs for many years because a variety of sport and recreational activities require short bursts of movement at high intensities. Interval training is becoming an increasingly recognized and well-liked method of training. The incorporation of interval training into a general conditioning program will optimize the development of cardiorespiratory fitness as well as numerous other health benefits. Give HIIT a try.

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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