



Physical Activity: Circuit Training

What is Circuit Training?

Circuit Training is a type of resistance training system, using a series of exercises performed consecutively, with short periods of rest between each exercise. High-intensity circuit training (HICT) combines both cardio and resistance training in the same workout. These workouts alternate upper and lower body exercises along with high-intensity and lower-intensity exercises.

Brief History

R.E. Morgan and G.T. Anderson developed circuit training in 1953 at the University of Leeds in England. The original circuit format consisted of 9 to 12 stations, where participants completed the exercises at a moderate intensity of 40% to 60% of one-repetition maximum (1RM) for a stated number of repetitions or amount of time. [In weight training, 1RM is the maximum amount of weight that an individual can possibly lift for one repetition without causing injury.] After the participants completed the repetitions or the time ended, the participants moved to the next station with minimal rest. Morgan and Anderson observed improvements in muscle strength, muscle endurance, and cardiorespiratory fitness. Due to advances in selectorized and hydraulic weight equipment in the United States, the efficiency of this type of training became popular and expanded.

Type

Circuit training has now developed into including not only weight machines, but also hand-held weights, elastic resistance, body weight, or any combination.

Intensity

With increased intensity, by incorporating exercises that are known to raise the heart rate substantially and limiting rest time, researchers have learned that participants can experience even greater benefits in an even shorter period of time.

Benefits of Circuit Training

Research has proven that circuit weight training has physiological benefits, such as increased muscular strength from 7% to 32% and decreased percentage of fat from 0.8% to 2.9%. Moreover, when comparing a traditional steady state aerobic workout or traditional resistance training with adding high-intensity exercises to a resistance training program, HICT, which uses multiple large muscles with short rest periods between sets, participants can experience a fast,

efficient way to lose excess body weight and body fat. The key point is that resistance training plays a significant role in the amount of fat burned during a workout.

HICT may be one of the best methods to improve a person's VO_{2max} , which is an established indicator of cardiopulmonary health. Some other terms for VO_{2max} are maximal oxygen consumption and maximal oxygen uptake. VO_{2max} is the maximum amount of oxygen that the body can take in, deliver, and use in one minute of exercise. There are two (2) factors that can limit reaching VO_{2max} : the amount of oxygenated blood the lungs and circulatory system can process and the amount of oxygen the muscles can withdraw from the blood. Studies have shown that VO_{2max} decreases about 1% per year, which can be a critical sign of aging.

Laboratory results have shown that HICT procedures produce similar and sometimes greater improvements in VO_{2max} compared with traditional steady state procedures even with lower exercise volume.

Summary of Benefits:

1. It's a fast and efficient way to lose weight and burn body fat.
2. HICT also increases the afterburn - the number of calories burned after a workout. For some, this afterburn, or post-exercise oxygen consumption (EPOC), is considered to help boost metabolism, which may help with weight loss.
3. These types of workouts may also target more belly fat.
4. HICT workouts are shorter and more time efficient.
5. HICT workouts increase VO_{2max} as well as overall fitness.

Sample HICT Workout

Below is a sample workout with 12 exercises that uses bodyweight only, works all the muscles, and can be done nearly anywhere. Complete each exercise for 30 seconds, with a 10 second rest period between. Then, repeat one to three (or more) times.



1. Jumping Jacks
2. Wall Sit
3. Push-Up
4. Crunches
5. Step-Ups
6. Squats
7. Dips
8. Planks
9. High knees jogs
10. Lunges
11. Push-ups to side plank
12. Side plank

Cautions:

HICT is not recommended for individuals who are overweight/obese, detrained (an extended break from regular, vigorous fitness training) or those who with comorbidities (someone who has two or more diseases at the same time).

While HICT can be an “efficient means to improve health and decrease body fat,” it is not the preferred method for absolute strength and power, specific endurance, and other specific performance. Traditional programs maybe the better approach.

Be familiar with the proper form while participating in these fast-paced workouts. Not using proper form can lead to injury. Moreover, avoid too much of the high-intensity training because it can cause injury as well along with overtraining and burnout.

Sources:

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