



# PHASE 2: AEROBIC-EFFICIENCY TRAINING



**Phase 2 of the cardiorespiratory training component of the ACE Integrated Fitness Training® (ACE IFT®) Model helps the fitness professional in further progressing clients toward their personal goals. This phase, titled aerobic-efficiency training, is geared toward improving the client's overall cardiorespiratory conditioning by increasing the frequency, intensity, and duration of exercise.**

This course focuses on phase 2, with a specific concentration on using the talk test to assess clients' fitness levels and plan exercise routines. Although many clients may remain in this phase for years, it is important to keep the program interesting and progressive to allow for higher program adherence and injury prevention. With the function–health–fitness–performance continuum coinciding with all aspects of the ACE IFT Model, phase 2 can be interpreted as a progression from function to health.

Clients who are able to do up to 30 minutes of continuous cardiorespiratory exercise at a rating of perceived exertion (RPE) of 4 or greater should progress to phase 2 of the cardiorespiratory component. Goals within this phase will differ with each client. It should be the fitness professional's objective to help the client achieve these goals by progressing his or her cardiorespiratory conditioning. Following the increase in frequency, intensity, and duration that took place during phase 1 of the cardiorespiratory component, many clients will likely stay in phase 2 for years because they are able to maintain their cardiorespiratory health and have little interest in higher-level training, such as training for an endurance event. By introducing new challenges, such as aerobic intervals, the trainer will keep the client engaged in the program. Choosing new patterns of rest and work, incline, intensity, and overall duration keeps the training program interesting and progressively challenging for a client who is interested in maintaining his or her health. To allow the fitness professional to safely program for increases in these program parameters, phase 2 of the cardiorespiratory component includes the use of a submaximal test to identify training zones. By using this submaximal test,

deemed the talk test, the trainer can safely and easily identify at what intensity the client should be working to continue to improve his or her health.

Within phase 2, the client will be asked to work harder, longer, and more often to continue to improve his or her cardiorespiratory health. To establish a safe intensity for this progression in training, the fitness professional must identify what is known as the first ventilatory threshold 1 (VT1). This can be done using the talk test. In a research study conducted at the University of Wisconsin-La Crosse, the talk test was evaluated for its use as an exercise monitoring tool (Foster & Porcari, 2010). The researchers set out to determine whether the talk test accurately measured the point at which an exerciser reaches his or her VT1. Remember, VT1 is the point during an exercise bout, depending on time and intensity, at which a person's body shifts from using mainly fat for fuel to using more than 50% carbohydrates. This is an important marker to understand due to its effect on exercise metabolism. Because the talk test is easy to administer and VT1 is known to be reached at an RPE of approximately 4 or 5 (on a scale of 0 to 10), this test is the only cardiorespiratory evaluation necessary for a client in phase 2 in the ACE IFT Model. An RPE of 5 is the goal intensity for the intervals introduced during phase 2. The results of the talk test will allow the trainer to identify at what heart rate this RPE is reached, which allows for a safe method of monitoring exercise. By implementing intervals at an RPE of 5, the fitness professional can help a client achieve health and fitness goals related to his or her aerobic endurance. By working at VT1, the client will also, over time, improve the body's ability to use fat for fuel.

So why does ACE use the talk test? In an article presenting ACE-sponsored research, Carl Foster, Ph.D., and John Porcari, Ph.D., discuss several scientific studies that validate the use of the talk test to measure metabolic responses to exercise (Foster & Porcari,



2010). These studies varied in terms of the types of individuals included as well as different measurement systems, but all found validity in using the talk test to equate the measured internal shifts with an exerciser's ability to talk. Under the instruction of an Oxford University professor, the talk test was first used by mountaineers who were instructed to "climb no faster than you can talk." Although the talk test was included in notable exercise publications in the 1990s, it was never backed by scientific research and therefore overshadowed by the well-known heart-rate equations such as the Karvonen Method and  $\dot{V}O_2$  max protocol. It was not until the late 1990s that doctors at the University of Toronto and Henry Ford Hospital in Detroit began using this method of exercise intensity in their studies and with their patients. During the first calculated look into the validity of the talk test, Foster and Porcari (2010) gathered data from study participants on two different days. On day 1 of the study, the talk test was performed. On day 2, gas exchange measures of actual VT1 were used to see how closely the talk test was able to estimate VT1. Along with a simple "yes" or "no" question-and-answer system, the studies at the University of Wisconsin, La Crosse also used the recitation of the Pledge of Allegiance to perform the talk test. With the addition of new research assistants to the Foster and Porcari team came a variety of methods and different types of subjects to test using varying protocols. In the end, with each new testing procedure, the Foster and Porcari team found similarities between the results of the talk test protocol and VT1 when using actual blood and gas measures.

To perform the talk test, the client should be wearing a heart-rate monitor to allow for continuous tracking. Be sure to measure the pre-exercise heart rate and begin by taking the client through a warm-up on the chosen piece of equipment. It is important to monitor the heart rate and be sure that it does not exceed 120 bpm during the warm-up phase. Because it is so important that an accurate VT1 be found before it is exceeded,

the increments of intensity change will be very small, ideally increasing the steady state heart rate by no more than 5 bpm during each stage. Because it is important to keep these increases in heart rate low, the fitness professional must find increments for change that will yield the 5 bpm change in the client's heart rate. This may be an increase of 0.5 mph on the treadmill, or an increase of 1% on the incline, or a level or two increase of resistance on a stationary bike/elliptical trainer. After these appropriate increments have been found with the client through trial and error during the warm-up phase, the length of each stage should be established as well. This can also be done through trial and error with the client, as each phase should last between 60 and 120 seconds to allow the exerciser to regain steady state after each incremental increase in heart rate.

When the intensity changes and length of each stage have been established, the submaximal talk test may begin. The goal of this evaluation is to find the heart rate at which the client reaches VT1 by monitoring for changes in his or her breathing. This is accomplished by having the client recite a passage of text during each stage of the test and self-evaluate his or her own breathing to establish VT1. The changes in breathing pattern, which are typically a result of a metabolic shift in the client's body during activity, are assessed by using the Pledge of Allegiance, ABCs, or lyrics to a favorite song. Toward the end of each stage, have the client recite his or her chosen text and evaluate if the effort in speaking is easy or mildly uncomfortable. Once the client reaches an intensity where talking while breathing is slightly uncomfortable, record the heart rate. This point—where the client's ability to talk at a continuous pace has become compromised—is his or her VT1. This point reflects an increase in tidal volume, and further increasing the intensity of exercise after this point is not necessary for evaluating clients in phase 2; the test should therefore be terminated. The entire test should take no more than eight to 16 minutes. Ideally, this test would be done on multiple occasions to ensure reliability as well as to measure improvements in cardiorespiratory health. Keep in mind that results will vary depending on the equipment used, so be sure to use the same exercise modality and stage lengths each time the test is performed, and always complete the talk test prior to other cardiorespiratory workouts and before strength training.



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Not only does the talk test use a simple protocol, it can also be used in a variety of settings, with various pieces of equipment, and with different types of clients. Similarly, using the talk test to find proper exercise training intensity does not require the use of expensive equipment to which most fitness professionals do not have access. It is for these reasons that the American Council on Exercise advises all of its certified professionals to utilize this method.

As the talk test is able to identify when the shift in fuel being used to power activity takes place (i.e., VT1), a fitness professional can use the results from this type of evaluation to establish a program that will help many

types of clients reach their health and fitness goals. By using this assessment method during phase 2 of the cardiorespiratory training component, the fitness professional will be able to safely establish training heart rates for the increase in exercise intensity that takes place in the progression from phase 1. ●

## References

- American Council on Exercise (2014). *ACE Personal Trainer Manual* (5th ed.). San Diego: American Council on Exercise.
- Foster, C. & Porcari, J.P. (2010). Validating the Talk Test as a Measure of Exercise Intensity. [www.acefitness.org/certifiednewsarticle/888/ace-sponsored-research-validating-the-talk-test-as/](http://www.acefitness.org/certifiednewsarticle/888/ace-sponsored-research-validating-the-talk-test-as/)

