

Quiz Policies

Eligibility

The NCSF online quizzes are open to any currently certified fitness professional, 18 years or older.

Deadlines

Course completion deadlines correspond with the NCSF Certified Professionals certification expiration date. Students can obtain their expiration dates by reviewing either their certification diploma or certification ID card.

Cancellation/Refund

All NCSF continued education course studies are non-refundable.

General Quiz Rules

- You may not have your quiz back after sending it in.
- Individuals can only take a specific quiz once for continued education units.
- Impersonation of another candidate will result in disqualification from the program without refund.

Disqualification

If disqualified for any of the above-mentioned reasons you may appeal the decision in writing within two weeks of the disqualification date.

Reporting Policy

You will receive your scores within 4 weeks following the quiz. If you do not receive the results after 4 weeks please contact the NCSF Certifying Agency.

Re-testing Procedure

Students who do not successfully pass an online quiz have the option of re-taking. The fees associated with this procedure total \$15 (U.S) per request. There are no limits as to the number of times a student may re-test.

Special Needs

If special needs are required to take the quiz please contact the NCSF so that appropriate measures can be taken for your consideration.

Quiz Rules

What Do I Mail Back to the NCSF?

Students are required to submit the quiz answer form.

What do I Need to Score on the Quiz?

In order to gain the .5 NCSF continued education units students need to score 80% (8 out of 10) or greater on the CEU quiz.

Where Do I Mail My Quiz Answer Form?

You will mail your completed answer form to:

NCSF

Attn: Dept. of Continuing Education

5915 Ponce de Leon Blvd., Suite 60

Coral Gables, FL 33146

How Many CEUs Will I Gain?

Professionals who successfully complete the any continuing education quiz will gain .5 NCSF CEUs per quiz.

How Much does each quiz cost?

Each quiz costs the student \$15.00.

What Will I Receive When The Course Is Completed?

Students who successfully pass any of the NCSF online quizzes will receive their exam scores, and a confirmation letter.

How Many Times Can I Take The Quizzes For CEUs?

Individuals can take each NCSF quiz once for continuing education credits.

Benefits of Sprint Training vs. Traditional Aerobic Training

A common issue facing many personal trainers on a day-to-day basis relates to program management and limited client contact time. The majority of personal trainers will typically train a client two or three times per week for approximately 60 minutes per session. In order for the results that most clients are looking for to be achieved, trainers must employ specific training strategies to maximize the training time. Two common requests made by clients are weight loss and increased muscle mass. The difficulty of programming for successful attainment of these goals lies in the fact that they require concurrent training for aerobic and anaerobic adaptations. This suggests resistance training for improvements in lean mass and cardiovascular training to enhance caloric expenditure. The conflict between these systems presents a conundrum. Aerobic training is time consuming and negatively affects muscle mass and resistance training does not burn many calories.

The question lies in how to create a negative caloric balance using exercise while emphasizing mass gains. From an adaptation standpoint, the human body cannot maximally adapt both aerobically and anaerobically due to the internal battle within the muscle between aerobic and anaerobic adaptations. While aerobic training has long been the primary training modality for increasing $VO_2\text{max}$ and increasing caloric expenditure, it reduces maximal strength, power output, and lean mass gained from resistance training. The improvements in $VO_2\text{max}$ occur in response to elevations in stroke volume, resulting in more blood being pumped out of the heart per beat, and by increasing the oxygen extraction capabilities at the muscular level through increased capillary and mitochondrial density, and higher concentrations of aerobic enzymes in the mitochondria. In addition, neural efficiency changes cause preferential recruitment



patterns to improve aerobic performance and the muscle fiber types adjust to the oxygen demands to become more efficient in the aerobic pathways.

While beneficial from an aerobic capacity standpoint, these changes can be detrimental for an individual who wants to maximize lean mass. Even when heavy resistance training is used with aerobic training, the predominant adaptations favor improved oxidative capacity. This is the reason why bodybuilders do not engage in endurance training, as it is detrimental to their goal. Secondary to this conflict is time management within the training session. Resistance training for hypertrophy requires high volume and therefore requires a significant time contribution, particularly when these adaptations are to occur with a three day a week training schedule.

Sprint training may provide some solution to both of these problems. Analysis of an Olympic sprinter identifies the effect the activity has on the active tissue. The muscle mass of the sprinter's lower body does not suggest atrophy from training. Endurance training leads to increase adrenal hormone release which catabolizes tissue. Anaerobic sprint training, due to the intensity and duration of time the stress is applied, does not cause the same ill-effects on muscle mass and power. It causes significant caloric expenditure, yields positively for excess post exercise oxygen consumption and provide

some enhancement to the cardiovascular system.

During sprint training, the heart works very hard to meet the energy demands necessary for the success of the exercise bout. The heart, like any muscle, responds to the stress with an appropriate adaptation response, namely an increase of left ventricular contractility. The ability of the left ventricle to contract directly relates to the amount of blood that gets pumped out of the heart per beat to the working muscles of the body – stroke volume. By utilizing short duration, sprint-type

activities, the strength of the heart will improve. However, at the muscular level, the individual will not experience the same adaptations normally associated with aerobic training, specifically an in fiber migration, mitochondrial density, and the increased presence of aerobic enzymes. In this way, an individual can improve their VO_2 by way of an increased stroke volume without sacrificing lean mass.

When examining caloric expenditure, sprint training has two benefits. The training is calorically demanding and the physiological disruption leads to greater increased oxygen uptake after exercise, when compared to steady-state aerobic training. Excess post-exercise oxygen consumption (EPOC) is one of the primary ways in which high intensity, sprint training will lead to an increase amount of calories being utilized by the body.

The physical demand and oxygen deficits from surpassing VO_{2max} using the anaerobic system cause an endocrine response that increases fat utilization after

the workout is completed. Programming training sessions that utilize a high intensity, anaerobic protocol will lead to a greater EPOC, and thus a greater caloric expenditure than traditional aerobic training.

Sprint training is, in fact, difficult to perform. It is physiologically more demanding than riding an exercise bike and therefore is only appropriate for fit clients. Sprint training does not necessitate the long durations required of aerobic training. In most cases 10-12 minutes of sprint training is more than adequate for sufficient training

stress. To initiate a client in sprint training, running form should be properly instructed and practiced before any training takes place. As with any new stress acclimation is necessary for safe participation. Start off slow and gradually progress at the client's pace. Specific warm-ups

should be used to prevent muscle strains. Individuals with known quadriceps/hamstring imbalances should not perform sprint training due to susceptibility to hamstring strain. Several sprints at gradually increasing pace should be used before the training. Once the client is neuromuscularly prepared for the exercise segment they can perform repeated work sets at ability-specific pace and distance. It cannot be emphasized enough that too much too fast is detrimental. Likewise sprint training requires better exercise tolerance due to the demands on the anaerobic system. A 1:4-1:5 work to rest ratio (or as needed) should be used at the beginning with progressions leading to a 1:3 work to rest ratio once the acclimation period has been completed.



Sample Program

Form run	3 x 30 yds
Sprint 50% speed	3 x 30 yds
Sprint 50% to 75% to 50% speed	3 x 30 yds
Sprint 50% to 75% speed	3 x 30 yds
Sprint 75% to 100% speed	4 x 30 yds
Sprint 100%	4 x 30 yds
Distance shuttles controlled pace	4 x 30, 30, 30 yds
Cool down slow pace	3 minutes slow shuttles any distance non stop

It should be clear that sprint-type, anaerobic training can be extremely beneficial for a client who is looking to lose weight, improve VO₂, and maintain lean mass. In addition, due to the time constraints often experienced within personal training, this type of program can eliminate the pitfalls traditionally associated with concurrent training of both the aerobic and anaerobic systems. Changing running distances, directions and adding cone drills can all help to keep this type of training interesting, challenging and fun.

CEU QUIZ

1. Personal trainers use concurrent aerobic and anaerobic training to _____.
 - a. decrease lean mass and maintain body fat
 - b. improve lean mass and increase caloric output
 - c. improve lean mass and decrease caloric output
 - d. decrease lean mass and decrease caloric output
2. The competition between aerobic and anaerobic enzymes present as a result of training will _____.
 - a. not matter when related to strength gains
 - b. result in increased lean mass
 - c. negatively affect strength gains
 - d. none of the above are correct
3. Aerobic training leads to an increase in VO_2 max through which of the following adaptation responses?
 - a. increased stroke volume
 - b. increased oxygen extraction capabilities
 - c. increased mitochondrial density
 - d. all of the above are correct
4. Lean tissue may be broken down (catabolism) when an individual continually endurance trains, primarily due to _____.
 - a. an increase in stroke volume
 - b. less aerobic enzymes within the muscle
 - c. more anaerobic enzymes in the muscle
 - d. release of adrenal hormones
5. High-intensity, sprint training will result in _____, but will not have the same adaptation responses at the muscular level when compared with endurance training.
 - a. increased left ventricular contractility
 - b. more aerobic enzymes
 - c. increased mitochondrial density
 - d. decreased stroke volume
6. EPOC is beneficial from a caloric expenditure standpoint due to _____.
 - a. increases lean mass
 - b. decreases lean mass
 - c. post-exercise metabolism and therefore increased calories burned after exercise
 - d. decreases oxygen consumption and therefore decreases calories burned after exercise
7. Excess post-exercise oxygen consumption is best increased by what type of training?
 - a. high intensity, anaerobic protocols
 - b. moderate intensity, aerobic protocols
 - c. low intensity, anaerobic protocols
 - d. low intensity, aerobic protocols

8. For an average client, approximately _____ of sprint training will be sufficient to elicit the necessary training stress.
 - a. 10-12 minutes
 - b. 18-20 minutes
 - c. 30-35 minutes
 - d. 50-60 minutes

9. Muscle strains can be minimized with _____, however individuals with muscle imbalances in the _____ should not perform sprint training due to the likelihood of hamstring strains.
 - a. specific warm-ups; upper body
 - b. general warm-ups; pectorals and deltoids
 - c. general warm-ups; hamstrings and quadriceps
 - d. specific warm-ups; hamstrings and quadriceps

10. Sprint training can benefit a client in which of the following ways?
 - a. weight loss
 - b. improved VO_2
 - c. maintenance of lean mass
 - d. all of the above are correct

Quiz Answer Form

FIRST NAME _____ LAST NAME _____ M.I. _____

TITLE _____

ADDRESS _____ APT. _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

COUNTRY _____ POSTAL CODE _____

CERTIFICATION NO. _____ CERTIFICATION EXP. ____/____/____

MEMBERSHIP NO. _____ MEMBERSHIP EXP. ____/____/____

Quiz Name	Member Price	Total
	\$15	



Discover



Visa



Mastercard



Amex



Check/Money Order

Account No. _____

Exp. Date _____

Security Code _____

Signature _____

Date _____

Quiz Answers

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

Fill in each blank with the correct choice on the answer sheet. To receive 0.5 CEUs, you must answer 8 of the 10 questions correctly.

Please mail this Quiz answer form along with the proper enclosed payment to:

NCSF
5915 Ponce de Leon Blvd., Suite 60
Coral Gables, FL 33146

Questions? 800-772-NCSF