

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.

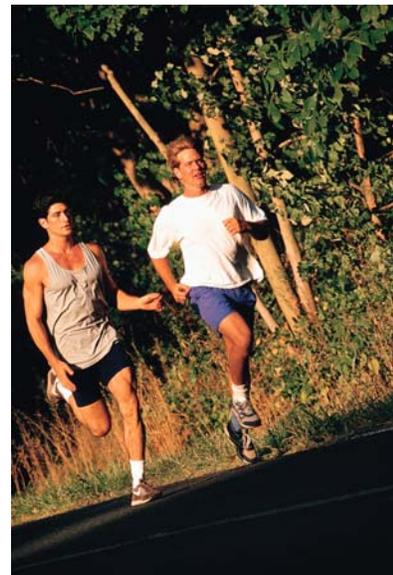
Cross-Training for Runners

Adding an alternative mode of exercise training can be a great way to increase aerobic capacity and running performance. Cross training is a concept that allows for higher volumes of training without overtraining specific tissues of the body. Repeatedly performing the same movement increases one's risk for overtraining and developing muscular imbalances. Cross training can assist in significantly boosting running performance by reducing running injuries, increasing running efficiency, increasing caloric expenditure, and even improving the body's ability to regulate temperature during training and racing. In contrast, if cross training is not executed properly, it may hurt performance or the runner themselves by increasing their vulnerability to injury or infection.

It has been shown that endurance activities, such as swimming or cycling, can increase training volume without increasing the recovery (duration) requirements of the muscles involved in running mechanics. These activities will strengthen the heart and improve endurance while the specific leg muscles used in running can rest and preserve glycogen stores (energy stores) for bouts of running. The cardiovascular exercise, regardless of the mode (e.g. cycling, swimming, aerobic class) will continue to train the heart and make beneficial adaptations without the increased risk of musculoskeletal injuries commonly seen with increased mileage.

Adaptations to the heart in response to endurance training cause an increase in the left ventricular chamber size

allowing the heart to pump more blood per beat (increased stroke volume). This increases the runner's capacity to deliver oxygen to all the body's cells including those cells involved with running. It will also lower the runner's resting and training heart rates. Changes in 5k running performance have been observed in (n = 10) runners who added intense interval cycling workouts three times per week to their running regiments. The results of the study revealed significant running improvements in just six weeks, with the average 5k time for the group improving from 18:16 to 17:48.



The greater volume of endurance training also results in a larger volume of plasma retained in the blood. This increased blood volume further enhances the capacity to deliver oxygen to working muscles. Additionally, the increased extracellular fluid associated with larger plasma volume can be used to help regulate body temperature during intense training by increasing the body's



evaporative cooling potential. The increased blood volume will also help preserve hydration during training and racing.

In addition to a runner's existing program, an extra couple workouts each week will burn additional calories if body fat is a consideration. When a runner lowers their body weight, running times will improve as long as the body fat levels are still within healthy levels. For example, a female runner who trims her body fat from 17.5% to 16% can reduce her 5k time by as much as one minute without any cardiovascular or biomechanical improvements as the total weight being moved is a factor of work.

An alternative form of cross training is weight training. When performed properly, lifting weights can improve muscle strength in the tissues used in running. This can make the runner more economic because they will be able to produce more force with reduced fiber

recruitment. Additionally, higher power output capabilities translate into faster paces for individuals with similar VO_2 capacities.

Proper strength training can also reduce the risk of injury by focusing on muscles that are at risk of becoming imbalanced. For example, some runners have strong plantar flexors (gastrocnemius) and weak dorsi flexor muscles, which can lead to shin splints or an overuse-induced stress fracture. Strengthening the tibialis anterior by doing toe raises (dorsi-flexion) may counteract this strength imbalance, improve range of motion and reduce the risk of shin-splints. Similarly, weak quadricep muscles can lead to runner's-knee due to a misalignment of the knee cap on the femur causing irritation and pain while running. Other common weaknesses in runners can be found in the abductor muscles (e.g. tensor fascia lata, and gluteals) which may cause iliotibial band syndrome (ITBS); a

syndrome which is associated with severe knee or hip pain along the lateral thigh. Strength training and stretching these muscles can be useful to prevent these common running injuries.

In contrast to the benefits of cross training, deleterious effects can also occur if not applied appropriately. It is interesting that the nature of cross training is a contradiction to one of the principles of exercise training – specificity. The Principle of Specificity simply states that for the body to improve in managing a particular stress it must be exposed to the specific stress (above what it is accustomed to). This suggests that one must perform exercise using the same mode, energy system (intensity), and movement pattern (muscles, joints, and velocity) as their sport. In this regard, cross training has proven detrimental in the past among some specialized athletes. For example, after winning the Tour De France, American cyclist Greg LeMond took up cross-country skiing in the off-season to rest his cycling muscles. Ultimately, he blamed this training on his lack of success on the next tour because he felt that the cross-country skiing made his upper body too large, less aerodynamic, and the excess muscular weight affected his hill climbing. This suggests that cross training is used as a complement to one's primary training mode, but should not dominate or replace it.

Other adverse events from cross training, particularly in runners, have been observed when added to a high-mileage or intense running program. The additional training reduces energy stores (glycogen) and recovery time leading to overtraining. Additionally, if a runner applies the same intensity and duration

as they are accustomed to with running to their cross training exercise without appropriate acclimation an injury may result due to overuse. For example, runners who perform their run training on the road during the winter months and switch to beach running in the summer run the risk of injury if they use the same distances and intensity without an acclimation process. This is analogous to any change in training mode where the runner attempts to cross over their running fitness into the new form of exercise.

Anyone who adds cross training or any alternative forms of training to their running program should be aware of the signs of overtraining listed below:

- Leg muscle or joint pain, soreness and aches
- Inability to maintain mileage or running pace
- Weight loss
- Loss of appetite
- Insomnia
- Headaches
- Restlessness
- Frequent thirst
- Increased susceptibility to colds and infections
- Rise in resting heart rate

If any of these symptoms exist, the athlete should decrease training volume and intensity and be sure to assist the body in recovery by: 1) getting sufficient sleep or taking naps, 2) eating frequent meals with higher amount of complex carbohydrates, 3) maintaining appropriate hydration status with water or glucose-electrolyte solutions, and 4) selecting foods that are nutrient dense, for example fruits and vegetables bright in color which contain antioxidants

which assist with tissue repair and boosting the immune system.

Exercise prescriptions should be analyzed for areas that may cause problems. This is particularly true when similar muscle groups are employed on a routine basis. Cross training, although designed to manage increased training volume may inadvertently cause overuse injuries. This is most common when similar muscles are used and similar intensities are employed without recovery balance. Likewise, new stimulus to already trained tissue may still cause overuse due to a poor acclimation process. Generally 7-12 doses of stress are required for the body to better manage the new stimulus. It does not necessarily have to be a new exercise as acclimation is important

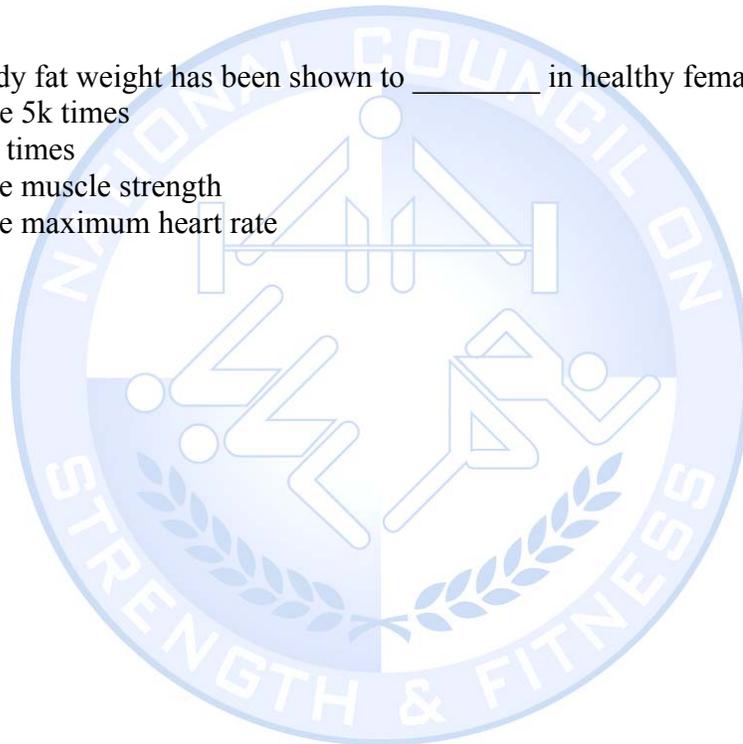
whether that stress is a new force requirement, altitude, heat, cold or other.

In summary, cross training can be both effective and detrimental for runners. Keeping in mind the described precautions can help the runner avoid overtraining and injury while reaping the reported benefits associated with cross training. In addition to preventative strength training, cycling, basketball, soccer, swimming, stair climbing, and deep water running have all been shown as effective modes of cross training. If a runner selects one of these activities, starts slow, and progresses in the sport while maintaining or tapering their running mileage, they should see improvements in running and enjoy the change from their traditional routine.

QUIZ

1. Which of the following is not a common symptom of overtraining?
 - a. weight loss
 - b. elevated heart rate
 - c. elevated mood and arousal
 - d. restlessness
2. Increased training volume with cross training can further improve endurance by increasing the _____ of the heart.
 - a. pulse rate
 - b. stroke volume
 - c. afterload
 - d. ventricular mass
3. Adding cross training to an existing program can _____ which is a beneficial adaptation resulting from increased blood volume.
 - a. increase protein catabolism
 - b. cause lipogenesis
 - c. increase evaporative cooling
 - d. cause dehydration
4. It is important to _____ when experiencing signs of overtraining.
 - a. rest
 - b. hydrate
 - c. eat frequent meals of complex carbohydrates and nutrient dense foods
 - d. all of the above
5. An alternative form of endurance training can preserve _____ for subsequent bouts of running.
 - a. glycogen stores
 - b. fat stores
 - c. amino acids
 - d. calcium
6. Resistance training and stretching of the tibialis anterior may help prevent _____.
 - a. ITBS
 - b. IBS
 - c. shin splints
 - d. quadriceps strain
7. Stronger running muscles in response to resistance training can _____.
 - a. reduce running economy
 - b. increase running economy
 - c. improve muscle lipolysis
 - d. increase muscle fiber numbers

8. A problem with cross training is that it may conflict with the appropriate application of the Principle of _____.
- a. Overload
 - b. Periodization
 - c. Specificity
 - d. Frequency
9. Acclimation to new stress generally requires _____ doses.
- a. 1-2
 - b. 3-6
 - c. 7-12
 - d. 13-18
10. Decreasing body fat weight has been shown to _____ in healthy female runners.
- a. improve 5k times
 - b. hurt 5k times
 - c. improve muscle strength
 - d. improve maximum heart rate



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