

# 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.

## Weight Loss and Resistance Training

Weight loss is a factor of caloric balance, or more easily stated, energy-in, versus energy-out. The seemingly simplistic equation suggests that if a person consumes less energy than they expend per day they will lose weight. This in fact is true, but the weight that is lost does not always offer the benefit that is expected. The ideal weight loss scenario is the reduction of fat mass with the maintenance of lean mass. When caloric restriction plays the primary role in creating the negative energy balance it is often to the detriment of lean mass. It has been well documented that the utilization of dietary restriction particularly very-low-calorie diets (VLCD) for weight loss results in loss of lean body weight and a decrease in resting metabolic rate. In many cases the acute and often dramatic adjustment to caloric intake cause chemoreceptor stimulated endocrine changes that lead to the loss of the protein sparing mechanism and metabolic shifts that catabolize protein rather than stimulate lipolytic activity. This is particularly true with partial fasts and meal skipping attempts at weight loss. Dietary adjustments used as the sole strategy for weight loss have a very poor long term success rate. Successful weight loss includes several factors, in particular the inclusion of exercise in addition to caloric control.

Reducing caloric intake and adding aerobic training is possibly the most popular exercise/dietary strategy used for weight loss. The combination of continuous movement increases caloric expenditure and when added to dietary restraint often leads to a negative caloric balance. This sounds like the ideal scenario, but clinical trials suggest differently. Aerobic training in conjunction with reduced calorie diet certainly lead to weight loss, but similarly to a stand alone diet strategy, body composition is not always positively affected. Aerobic training does not independently, or when acting jointly with diet promote the maintenance of lean mass. In fact, consistent evidence suggests that restrictive diets and endurance training may cause notable losses in lean tissue. Research



trials analyzing weight loss with the maintenance of fat-free mass consistently show the importance of adding resistance training to dietary modification and aerobic training. Although resistance training does not independently cause weight loss it does elevate resting metabolic rate and promote fat free mass. Additionally, intense resistance exercise increases post-exercise oxygen consumption and shifts substrate oxidation toward a greater reliance on fat oxidation.

Resistance training contributes to successful weight loss but should not be considered the only intervention. When 26 weeks of resistance training was analyzed for effectiveness on resting energy expenditure (REE), total free-living energy expenditure (TEE), and activity-related energy expenditure (AEE), in older adults, strength (36%) and fat-free mass (2 kg) significantly increased, but body weight did not change. Resting energy expenditure increased 6.8%, whereas resting respiration quotient decreased from 0.86 to 0.83 identifying greater reliance on lipid metabolism. Total energy expenditure increased significantly (12%), and activity related energy expenditure increased (30%), but again body composition was modified, not body weight. When overweight sedentary women (N=44) completed a 20 week randomized intervention that included various diet and diet plus exercise programs they lost between 3.7-5.4 kg. The group that included resistance training in addition to the diet and

aerobic training was the only group to significantly lower body fat percentage. These findings are consistent with other studies that demonstrate the significant effect resistance training has on the maintenance of lean mass above aerobic training alone.

Due to the fact that resistance training maintains lean mass and positively affects metabolism, it does not yield significant contributions to fat loss when performed independently. Even though aerobic training positively affects fat loss when combined with dietary adjustments it should be clear that the combination of all three activities is valuable in a successful weight loss program. Additionally, further benefits can be attained by elevating the exercise intensity of both the aerobic and anaerobic exercise activities. Elevations in exercise intensity can favorably impact energy expenditure. Higher intensity resistance training is more positively associated with increases in muscle mass above lower intensity participation. Added muscle mass increases resting energy expenditure by about 10-15 kcal per day per pound, which may not sound like a significant increase, but certainly contributes to a negative balance. Adding one pound of muscle can equate to over a pound of fat energy lost per year in a resting state. When combined with aerobic training the addition of



the lean mass yields an added effect, particularly when the intensities are elevated. Aerobic exercise performed at intensities greater than 70%  $VO_2$ max increases resting energy expenditure separate from any change in muscle mass. Adding lean mass increases the total energy expenditure during the activity. High-intensity exercise training has the added benefit of improving fitness, thus making low-intensity exercise less stressful and more easily tolerated. Many individuals have difficulty with continuous, intense steady-state aerobic exercise for extended periods of time, but intense interval exercise can be tolerated and certainly boosts caloric expenditure.

The combination of strength exercise with interval training is a very effective means for exercise aimed at weight loss and can easily be programmed into personal training exercise sessions. Focusing on caloric expenditure allows for numerous exercise scenarios. Working within the capabilities of the client and considering his or her relative exercise tolerance are two key considerations for successful programming when attempting to raise exercise intensities in a workout. In most cases shorter intermittent activities are better tolerated both psychologically and physiologically for many clients. Consider the following two scenarios.

**Warm-up**

- 5 exercise lower body resistance circuit
- 10 minute interval biking
- 5 exercise upper body resistance circuit
- 10 minutes interval stepping
- 4 exercise core circuit
- 10 minute interval biking
- Cool down and stretch

Programming for weight loss should emphasize chronic behavior change rather than acute behavior adjustments. This suggests applying a gradual acclimation that re-enforces permanent changes. The goal

**Warm-up**

- 3 exercise lower body resistance superset
- 2 minutes jump rope
- 3 exercise upper body resistance superset
- 3 minutes biking
- 2 exercise core resistance superset
- 10 minute interval stepping
- 6 exercise total body circuit
- Cool down and stretch

should emphasize continuous activity. A common error in personal training is excessive rest within an exercise bout. The rest interval is the limiting factor in resistance training for weight loss. The

application of progressive overload should be systematically programmed pushing for greater volume and reduced rest intervals. Avoid dramatic adjustments and overly aggressive progressions as they often lead to

less successful outcomes. Consistent, prudent modifications to diet and exercise will lead to weight loss and improvements in body composition.

## Brief Research Review

- [Hunter GR,](#)
- [Weinsier RL,](#)
- [Bamman MM,](#)
- [Larson DE.](#)

[Int J Obes Relat Metab Disord.](#) 1998 Jun;22(6):489-93

Suggest that although resistance training may elevate resting metabolic rate, it does not substantially enhance daily energy expenditure in free-living individuals. Several studies indicate that intense resistance exercise increases postexercise oxygen consumption and shifts substrate oxidation toward a greater reliance on fat oxidation. Preliminary evidence suggests that although resistance training increases muscular strength and endurance, its effects on energy balance and regulation of body weight appear to be primarily mediated by its effects on body composition (e.g., increasing fat-free mass) rather than by the direct energy costs of the resistance exercise.

- [Poehlman ET,](#)
- [Melby C](#)

[Int J Sport Nutr.](#) 1998 Jun;8(2):143-59

The purpose of this study was to determine what effects 26 wk of resistance training have on resting energy expenditure (REE), total free-living energy expenditure (TEE), activity-related energy expenditure (AEE), engagement in free-living physical activity as measured by the activity-related time equivalent (ARTE) index, and respiratory exchange ratio (RER) in 61- to 77-yr-old men (n = 8) and women (n = 7). Before and after training, body composition (four-compartment model), strength, REE, TEE (doubly labeled water), AEE (TEE - REE + thermic response to meals), and ARTE (AEE adjusted for energy cost of standard activities) were evaluated. Strength (36%) and fat-free mass (2 kg) significantly increased, but body weight did not change. REE increased 6.8%, whereas resting RER decreased from 0.86 to 0.83. TEE (12%) and ARTE (38%) increased significantly, and AEE (30%) approached significance (P = 0.06). The TEE increase remained significant even after adjustment for the energy expenditure of the resistance training. In response to resistance training, TEE increased and RER decreased. The increase in TEE occurred as a result of increases in both REE and physical activity. These results suggest that resistance training may have value in increasing energy expenditure and lipid oxidation rates in older adults, thereby improving their metabolic profiles.

- [Hunter GR,](#)
- [Wetzstein CJ,](#)
- [Fields DA,](#)
- [Brown A,](#)
- [Bamman MM.](#)

[J Appl Physiol.](#) 2000 Sep;89(3):977-84.

OBJECTIVE: Utilization of very-low-calorie diets (VLCD) for weight loss results in loss of lean body weight (LBW) and a decrease in resting metabolic rate (RMR). The addition of aerobic exercise does not prevent this. The purpose of this study was to examine the effect of intensive, high volume resistance training combined with a VLCD on these parameters. METHODS: Twenty subjects (17 women, three men), mean age 38 years, were randomly assigned to either standard treatment control plus diet (C+D), n = 10, or resistance exercise plus diet (R+D), n = 10. Both groups consumed 800 kcal/day liquid formula diets for 12 weeks. The C+D group exercised 1 hour four times/week by walking, biking or stair climbing. The R+D group performed resistance training 3 days/week at 10 stations increasing from two sets of 8 to 15 repetitions to four sets of 8 to 15 repetitions by 12 weeks. Groups were similar at baseline with respect to weight, body composition, aerobic capacity, and resting metabolic rate. RESULTS: Maximum oxygen consumption (Max VO<sub>2</sub>) increased significantly (p<0.05) but equally in both groups. Body weight decreased significantly more (p<0.01) in C+D than R+D. The C+D group lost a significant (p<0.05) amount of LBW (51 to 47 kg). No decrease in LBW was observed in R+D. In addition, R+D had an increase (p<0.05) in RMR O<sub>2</sub> ml/kg/min (2.6 to 3.1). The 24 hour RMR decreased (p<0.05) in the C+D group. CONCLUSION: The addition of an intensive, high volume resistance training program resulted in preservation of LBW and RMR during weight loss with a VLCD.

- [Bryner RW,](#)
- [Ullrich IH,](#)
- [Sauers J,](#)
- [Donley D,](#)
- [Hornsby G,](#)
- [Kolar M,](#)
- [Yeater R.](#)

[J Am Coll Nutr.](#) 1999 Apr;18(2):115-21

Effects of large (LA; 400 min/wk) and moderate (MA; 200 min/wk) amounts of endurance exercise in combination with weight training (3 d/wk) were compared with the effects of no exercise (C) in 23 obese females after a 12-wk, 3360-kJ/d very-low-energy diet (VLED). The LA group lost 6.5 kg more weight, mainly as fat (6.4 kg), than the C group (P < 0.05). No measurable differences were found among groups for decreases in resting metabolic rate (-729 to -1233 kJ/d; NS) or fat-free mass (-2.9 to -3.9 kg; NS). No improvements in aerobic capacity were achieved with the addition of exercise to a VLED (-0.079 to -0.037 L/min; NS). Strength indexes were improved (+16 to +5 kg; P < 0.05) or maintained with exercise (-3 kg; NS) whereas a loss (-9.3 kg; P < 0.05) or maintenance

(+4.5 kg; NS) was found for VLED alone. Large amounts of endurance exercise in combination with weight training added to a VLED appear to improve weight and fat loss compared with a VLED alone.

- [Whatley JE](#),
- [Gillespie WJ](#),
- [Honig J](#),
- [Walsh MJ](#),
- [Blackburn AL](#),
- [Blackburn GL](#)

[Am J Clin Nutr](#). 1994 May;59(5):1088-92

Weight-loss programs usually result in fat-free mass (FFM) loss along with body-fat (BF) loss. This study examined which combination of diet + exercise would maintain FFM. Forty-four overweight, inactive women completed 20 wk of a randomized intervention: control (C, N = 6), diet only (D, N = 10), diet + cycling (DC, N = 8), diet + resistance training (DR, N = 11), or diet + resistance training + cycling (DRC, N = 9) group. FFM and %BF were determined from hydrostatic weighting. Exercise sessions were attended 3 d.wk<sup>-1</sup>, with a mean duration of 30 min per session. Caloric intake was reduced 628 kcal.d<sup>-1</sup> (+/- 59). Chi squares and ANOVA showed no baseline differences between groups for socioeconomic status, age, body composition, aerobic capacity, or strength. One-way ANOVA of change with Student-Newman Keul multiple range post-hoc tests ( $P < 0.05$ ) were used to analyze pre to post differences for %BF, body mass (BM), FFM, VO<sub>2</sub>max, and strength. D, DC, DR, and DRC lost significant BM (-3.7 to -5.4 kg) in comparison with C (+ 1.5 kg). All groups maintained FFM but only DRC significantly lowered %BF (-4.7%) in comparison with C. DRC and DC significantly increased VO<sub>2</sub>max. Strength 1RM (triceps extension, arm curl, leg extension, chest press) increased significantly for both DR and DRC. Results suggest that moderate levels of caloric restriction, aerobic cycle exercise, and/or resistance training are equally effective in maintaining FFM while encouraging body mass loss.

## QUIZ

- 1) Reducing your caloric intake and adding resistance training to your weight loss program is the most efficient way of reducing body weight.
  - a) True
  - b) False
  
- 2) What is the possible disadvantage of a weight loss program that focus solely on caloric restriction?
  - a) decline in lean body mass
  - b) decline in resting metabolism
  - c) loss of protein sparing mechanism
  - d) all of the above
  
- 3) What is a benefit of adding aerobic exercise to a weight loss program?
  - a) Increased muscle mass
  - b) Increased caloric expenditure
  - c) Maintenance of lean muscle mass
  - d) All of the above
  
- 4) Performing aerobic and anaerobic activities at high intensities without any restriction in caloric intake will result in optimal body composition adjustments?
  - a) True
  - b) False
  
- 5) Why is it important to include resistance training in a weight loss program?
  - a) To increase muscle and bone strength
  - b) To increase resting energy expenditure
  - c) To increase resting respiration quotient
  - d) A and B are correct
  - e) All of the above
  
- 6) With each pound of muscle that a person gains, their energy expenditure increases by about \_\_\_\_\_?
  - a) 35-30 Kcal per day
  - b) 15-20 Kcal per day
  - c) 22-30 Kcal per day
  - d) 10-15 Kcal per day

- 7) Which of the following are important considerations when raising the exercise intensities in a workout?
- a) Working within the client's capabilities
  - b) Are their health considerations
  - c) Considering the persons relative exercise tolerance
  - d) All of the above
- 8) True or False? Programming for weight loss should emphasize aggressive, but acute behavior adjustment?
- a) True
  - b) False
- 9) A common error in personal training is:
- a) Inadequate intensities to stimulate adaptation
  - b) Beginning a client with too high of an intensity
  - c) Excessive rest in between sets
  - d) All of the above
- 10) Due to the difficulty that some individuals have with continuous, intense steady-state aerobic exercise, a trainer may acclimate a client in a program by using \_\_\_\_\_?
- a) High intensity resistance training
  - b) Short sprint training
  - c) Client appropriate interval training
  - d) all of the above

# 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