

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 Metrics

One of the more trying, and yet rewarding components of personal training is assisting clients with successful long-term weight loss. And with 100,000,000 obese individuals in the United States this clientele and specific goal is not going to go away. The old adage of calories-in versus calories-out seems like a logical approach, but is not quite as simple as the statement itself. Most professionals realize that weight management dynamics are more complicated than a basic in and out equation and that the type of activities, albeit movement based or tension based, play a role in both metabolic and endocrine responses, as do the foods and drinks an individual consumes. This being said, the first step to successfully engaging and guiding clients to goal oriented outcomes is to establish tracking metrics. Metrics are quantifiable measures that provide useful information in gauging treatment effectiveness and monitoring changes. For example, to implement the calories in, calories out equation it becomes relevant to be able to measure the factors of thermodynamics - how much energy was put into the body (metric 1) and how much energy was expended by the body (metric 2).

Researchers will tell you a major part of the challenge is that physical activity, resting metabolism, and accurate body composition are quite difficult to assess in field-based environments. In the laboratory, variables can be controlled and the equipment/techniques employed are very accurate. This is great for research, but how do we establish a successful model for the field, so practitioners can monitor, measure and track progress in weight management? The traditional method involved teaching a client about serving sizes, how to use food logs to collect serving and food data, and input this information into dietary software to determine the “calories in.” The next step was to

compare that value (average daily intake) to an average expenditure, most often calculated using relative factors in a predictive equation (modified Harris-Benedict, Molnar, or Cunningham formula) combined with an activity multiplier based on a mix of subjective/objective data.

Although the “calories in” approach is still consistent, the “calories out” concept has evolved. Two common methods now used for caloric expenditure are the MET log and the use of accelerometers to predict caloric expenditure. The MET log is based on indirect calorimetry, where known values are applied to MET calculations (like those found on aerobic machines) for planned activity and an average MET value for free living (validated by a pedometer or accelerometer). Pedometers and accelerometers provide feedback about movement. A pedometer is fine for a relatively inactive person or one who does not engage in varied movement exercise as it simply measures the physics of body motion. As a person walks, leg action causes the body’s core to accelerate and decelerate vertically. The foot strike causes a sharp change in motion allowing the device to detect a quantifiable movement. An accelerometer on the other hand, measures the amount of acceleration force by magnitude and direction. An accelerometer is better for active people as it can determine speed and incline and provide better feedback about different types of activity than a pedometer is capable of providing.

Due to their versatility, accelerometers have become the prominent strategy for assessing physical activity under free living conditions. This said, researchers suggest more work is needed to overcome several limiting challenges for optimal validity. This is

particularly true for special populations, which include monitoring the physical activity of children. For children, the complexities associated with the more sporadic and intermittent physical activity patterns cause issues with accurate assessment, as does the inherent variability associated with growth and maturation. These factors, among others, present difficulties in isolating variables in research, particularly for varied stage pubescence, making the creation of general algorithms for the population a challenging task.

Recent developments in assessing energy utilization have included adding measurements of heat to the activity markers in the accelerometers to better predict total energy expenditure in adults. The use of heat sensors and movement pattern-recognition monitors provide added data to the assessment. The SenseWear Pro Armband® (SWA) and SenseWear Mini® produced by BodyMedia integrate motion sensor data, along with heat sensors to predict the energy cost of exercise and free living activity. The addition of the heat sensors provide interpretive information that cannot be obtained from the movement sensors. The combination of sensors enables the device to predict energy utilization from different contributing factors such as complex or loaded movements. Another advantage over a traditional accelerometer is that SenseWear monitors report actual wear time and calculate accordingly, which makes these devices a better choice over uniaxial accelerometers for assessing physical activity in the field.

Research has validated the energy expenditure estimates produced by the SWA. Several clinical trials support an accuracy of ~90% for adults based on comparisons of both indirect calorimetry (oxygen use) and doubly labeled water (measurement of elimination

rates). Although more work is necessary to improve the ability of these monitors to accurately measure high levels of work, when compared to traditional accelerometers, the multi-sensor devices have demonstrated advantages in accurate measures. In fact, a study published in the *Journal of Medicine and Science in Sports and Exercise* (April 2010), demonstrated considerable accuracy for a device of this nature, as doubly labeled water and the SWA showed agreement over a broad range of total energy expenditure. This being said, it seems there are still some limitations to the devices which may be curable through adjustments in the algorithms. This may also enhance the accuracy of SWA for physically active youths, as results of validation studies within this population have been somewhat equivocal. Studies, although somewhat limited, have suggested both significantly underestimation for energy expenditure for a variety of standardized physical activities as well as consistent overestimation in similar population sample sizes. According to a recent report, also published in the *Journal of Medicine and Science in Sports and Exercise* (June 2010), the SWA together with Innerview Professional software 5.1 (not SenseWear Professional 6.0) increased measurement accuracy in obese children measured over a two week period. This suggests that even the difficulties of measuring special populations may be overcome by the use of additional data.

Regardless of the true validity of the aforementioned devices, the more important factors associated with their measurement may be the aspects of quantification and reliability. Having a number to strive for is likely to motivate an exerciser to work harder to reach a particular objective and also creates accountability. The consistency of the measure allows for a daily assignment of calories expended or steps taken, so that both the trainer and client understand the contribution of activity

to measured changes in weight or body composition. For successful weight management it is extremely important that clients have measurable objectives on a daily basis that are premeditated, quantifiable, monitored and tracked. This takes the guess work out of physical activity and caloric expenditure. For instance, walking 7,000 or more steps is very easy to measure using a pedometer and is very quantifiable; so a client either accomplished that objective or did not. Likewise, an objective of 2,300 kcal expenditure or more per day is easy to determine using an accelerometer or SWA. The device objectively tells you whether it has been completed or not.

The fact based concept does not require absolute validity but rather a consistent measure; something that can be tracked on a day-to-day basis. If a goal value is being reached and weight loss is not occurring there is a simple

solution - increase activity objectives to a point that is tolerated and attainable and manage intakes accordingly. This should be the obvious course if the current assigned value is being reached and is not significant enough to make a change. From this point, add other controllable daily variables to the strategy matrix. Use resistance training, select foods that add to thermic dynamics (TEF), avoid processed foods, spread daily intakes over smaller portions and greater frequency to stabilize blood glucose levels, etc... All these activities will contribute, but again a daily energy expenditure objective should be the foundation of any weight management plan. Simply assign the work and make sure it is done each and every day. Physical homework is necessary in the same way scholarly homework is necessary, if it wasn't everyone would already be lean and well educated.

Weight Loss Metrics

CEU Quiz

1. Which population provides added challenges to measuring caloric expenditure?
 - a. Children
 - b. Adult males
 - c. Adult females
 - d. All can be measured equally
2. True or False. Accelerometers measure the amount of acceleration force by magnitude and direction.
 - a. True
 - b. False
3. Which of the following measurements are difficult to accurately assess in field-based environments compared to clinical environments?
 - a. Physical activity
 - b. Resting metabolism
 - c. True body composition
 - d. All of the above
4. Which of the following indices was added to the accelerometer to increase the accuracy?
 - a. Oxygen sensor
 - b. Carbon dioxide sensor
 - c. Heat sensor
 - d. Bicarbonate sensor
5. What is the published accuracy of the SenseWear Pro Armband for adults?
 - a. ~50%
 - b. ~70%
 - c. ~90%
 - d. 100%

6. Aerobic machines predict energy expenditure based upon _____?
- Measured oxygen consumption
 - MET calculations
 - Gender and size
 - All the above
7. Which of the following devices would best serve an exerciser attempting to track caloric expenditure in the field?
- Pedometer
 - SenseWear Armband
 - Uniaxial accelerometer
 - Heart rate monitor
8. Why is reliability an important consideration when using movement tracking devices?
- It allows for accurate measures
 - It provides consistency to activity tracking
 - It allows for valid assessment
 - All of the above
9. Which of the following is a valid strategy when promoting weight management?
- Resistance training
 - Eating smaller meals more frequently
 - Eating complex food sources for increased TEF
 - All of the above
10. True or False. Predictive metabolic equations using activity multiplier are a better choice than SenseWear Armband for assessing daily energy expenditure.
- True
 - False

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