

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.

Lift Correctly – Optimize Gains (Volume II: The Lunge)

In this second segment of the “lift correctly – optimize gains” series we will cover aspects related to proper technique during the forward lunge. Lunging exercises of all types are very popular among fitness enthusiasts and offer variety to training the hip and knee. Since most people are not properly instructed on the movement techniques, the actions are commonly performed with movement errors or in a way that creates an elevated risk for connective tissue irritation or acute overuse injury at the knee joint. This is quite unfortunate as the lunge is a very programmatically-useful, closed-chain exercise; activating a number of muscle groups in the lower body and trunk. An added advantage of the lunge movement is the muscle activation and ROM can vary based on the direction of the action and the position of external load. Adjustments allow for improvements in strength and flexibility at the hip, knee and ankle joints when performed correctly. Another relevant aspect of the movement is related to the split stance position used during forward and backward lunging. The exercise action enhances pelvic stability by preventing undesirable tilts of the pelvis during the movement.

Many people commonly perform the lunge using the forward direction only. However, it is

important to note that the reverse and lateral aspects can provide greater activation in the hip musculature when mixed into the program. The joint actions involved during the concentric phase of all lunges employ hip and knee extension which suggest the glutes and quadriceps must be active at some level; that being said, the movement direction changes the prime mover and will increase or decrease the activity of other contributing movers and stabilizers including the iliopsoas, sartorius, soleus, gastrocnemius. Likewise, the abductors and adductors play a varied role depending on the direction and may be primary to movement in the frontal plane or function as assistive movers or segment stabilizers in the sagittal plane. The lunge is an exceptionally versatile action as numerous types of external resistance can be used and movements can be added to create a countless number of activities. The lunge is often used as part of exercise combinations due to the very wide variety of actions it can be combined with to increase total kinetic chain connectively or movement complexity (e.g., lunge with plate rotation, reverse lunge to overhead press, lateral lunge with frontal raise).

Comparing Lunge Variations

Forward lunge (single anchor) – prime mover emphasis: Quadriceps

ROM emphasis: Hip Flexors

Reverse lunge (single anchor) – prime mover emphasis: Gluteals

ROM emphasis: Gluteals

Lateral Lunge (single anchor) – prime mover emphasis: Hip Abductors

ROM emphasis: Long Hip Adductors

Walking lunge (change anchors) – prime mover emphasis: (Movement Cycle) – Gluteals, Hamstrings and Quadriceps

ROM emphasis: Hip Flexors

Basic Progressions

Many trainers make the mistake of assuming that a novice client should be able to perform a “traditional” lift such as a lunge with little difficulty when it is introduced. Proper exercise movements are certainly not innate in humans, and the body does not naturally gravitate toward perfect biomechanics.

Therefore, the first step when introducing any exercise is the skill acquisition phase. This period is related to the development of proprioceptive and kinesthetic awareness, balance and neuromuscular coordination – qualities that must be synergistically integrated during the lunge activity. Additionally, proper progressions must be employed on a client-to-client basis. The diagram to the right could be used as a progression schematic (based on mastery of each component) leading to eventual performance of a walking lunge. The common rule is to master the skill, before loading the skill, before challenging the skill. A skill that has not been mastered will demonstrate movement inefficiency or fault when loaded.

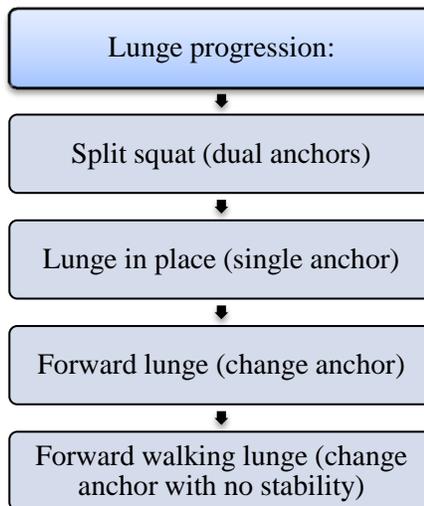
Teaching Cues

There are many effective teaching cues that can be used to ensure a client performs the lunge correctly. The static lunge or split squat should be mastered first to ensure competent and efficient movement without undue lateral sway

at the knees or hips or tibial translation at the patella. When the exercise becomes more dynamic instructors must be cognizant of limb length and movement mechanics. During the forward and reverse lunges, the movement distance of the hips must be greater than the femoral length or the knee will cross the toe. Essentially, the participant should take a large

step using the back knee to guide the hips. Regardless of the direction in the sagittal plane, the back leg is always the controlling mechanism of the pelvis. Ideally and under control, the movement will accommodate 90° hip and knee flexion (forward thigh parallel, rear thigh perpendicular with the floor) in both of the lower extremities. Greater range may be attained dynamically if used for ROM purposes, but excessive knee flexion under load is undesirable due to hyaline cartilage friction.

During the forward lunge the participant will push back using a flat foot (balls of the feet to the heels) to the starting position. Lateral sway is usually due to kinetic chain instability whereas tibial translation is usually the result of taking too short of a forward step or not lowering the pelvis in conjunction with anterior movement of the center of mass. When the pelvis remains elevated it prompts excessive dorsi flexion at the forward ankle. Translatory forces placed upon the connective tissues of the knee joint from a sagittal-plane deviation of the tibia can cause microtrauma in the knee. The weight and forward accelerative force of the thick, heavy tibia bone pulls on the connective tissues that



help maintain patellar position and knee stability. To ensure this does not occur, the forward foot must be flat on the floor and the rear ankle should be dorsiflexed with the weight balanced on the ball of the foot. A quick test of load location is to ask the client to “tap their toes” of the front foot to ensure they have the weight toward the heel instead of the distal aspects of the foot (toes), which increases knee stress. During the forward extension phase the client must maintain balance with an upright torso while producing the majority of the force (~70%) with the knee and hip extensors.

The reverse lunge is more difficult from a proprioceptive standpoint, making it relatively difficult for those who lack adequate kinesthetic awareness. From a biomechanical standpoint, the risk for tibial translation will be lower due to the backward movement. This rearward transition of the hips and pelvis forces a greater relative activation of the posterior chain musculature, including the hamstrings and gluteals. However, lateral sway and loss of balance is more prominent during the reverse lunge when compared to a forward lunge. It takes a greater degree of neuromuscular coordination to move backward for most people as it is an unfamiliar movement action and lacks

the afferent data of sight. During the reverse lunge, the participant engages in the same lunging action as the forward direction, attaining the 90/90 position at the bottom of the eccentric phase, but must then push the body back to the starting position primarily via activation of the posterior-chain musculature in the anchoring leg.

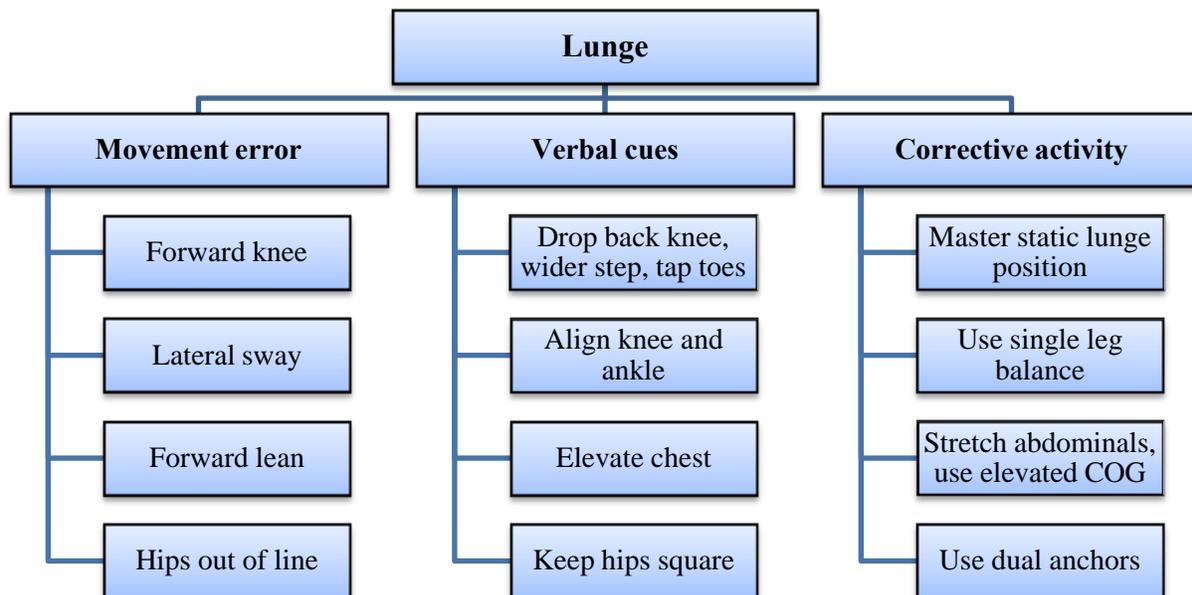
The lateral lunge is likewise challenging for novice clients due to coordination and ROM requirements. As mentioned earlier, the hip adductors will be stretched to a significant degree, especially the long adductors such as the gracilis during single knee flexion. The lateral lunge variation is valuable to many programs as most clients spend a great deal of their lower-body training time in the sagittal plane, but little in the frontal plane. Lack of frontal plane lower body movement can lead to strength imbalance within the gluteals and hip abductors/adductors; especially the gluteus medius, gluteus minimus and tensor fascia latae. During performance of the lateral lunge the participant takes a broad step in the frontal plane abducting both hips to about 45° relative to the midline. As the step foot makes contact with the ground the participant should drop the hip back and downward so that the ipsilateral (opposite) knee



flexes to 90 degrees. The knee should not cross the toes nor continue to progress in a lateral fashion in the direction of the lunge. The anchoring foot should remain flat on the ground with the knee fully extended to maximize adductor ROM and allow for an efficient hip movement back to the starting position.

Corrective Strategies

Spotting during lunges should be primarily managed with tactile and verbal cues. The following diagram summarizes major movement errors seen during the forward lunge with verbal and physical methods for addressing the issues.



Lift Correctly – Optimize Gains (Volume II: The Lunge)

CEU Quiz

1. Which of the following muscles are considered a prime mover during a forward lunge?
 - a. Hamstrings
 - b. Adductors
 - c. Quadriceps
 - d. Sartorius
2. Which of the following should be mastered before progressing the lunge exercise?
 - a. Lunge in place
 - b. Reverse lunge
 - c. Single leg squat
 - d. Lateral lunge
3. True or False? At the bottom position of the lunge the participant should be able to tap the toes of the lead leg to signify they are directing the majority of the weight through the heel.
 - a. True
 - b. False
4. The length of a client's forward step is dictated in part by the length of their _____.
 - a. Tibia
 - b. Femur
 - c. Trunk
 - d. Fibula
5. Why does chronic, repetitive tibial translation during forward lunges place the knee at an increased risk for injury?
 - a. It reduces ankle flexibility
 - b. It forces the ankle to undergo excessive plantar flexion
 - c. It creates repetitive microtrauma in the ilipsoas
 - d. None of the above

6. Which of the following would be the best method for dealing with lateral sway at the knees and hips during performance of a forward lunge?
- Tell the client to elevate their chest
 - Stretch the latissimus dorsi and pectoralis major
 - Improve function of the femoral stabilizers
 - Stretch the abdominals or use an elevated COG
7. Which of the following describes the proper technique for spotting during a walking forward lunge?
- Physically assist the movement at the hips as necessary
 - Use tactile and verbal cues
 - Physically assist the movement at the trunk as necessary
 - All of the above can be employed as dictated by the situation
8. During the concentric phase of the walking forward lunge, about _____ of the force will be produced by leading quadriceps and gluteals.
- 60%
 - 70%
 - 85%
 - 95%
9. If a client persistently performs the walking forward lunge with an excessive forward lean in the trunk, which of the following activities may be useful for alleviating the issue?
- Have the client perform single leg squats
 - Stretch the abdominals
 - Perform the lunge with the load held overhead
 - Both B and C are correct
10. Which of the following exercises may be useful for stretching the adductors?
- Reverse lunge
 - High knee lunge
 - Lateral lunge
 - Walking lunge

Quiz Answer Form

FIRST NAME _____ LAST NAME _____ M.I. _____

TITLE _____

ADDRESS _____ APT. _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

COUNTRY _____ POSTAL CODE _____

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

Quiz Name	Member Price	Total
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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