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4-2011

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#### Repository Citation

Fischer, Kim, "Exercise Technique: Reverse Lunge into a Step-Up" (2011). *Health and Sport Sciences Faculty Scholarship*. 24.

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The Exercise Technique Column provides detailed explanations of proper exercise technique to optimize performance and safety.

COLUMN EDITOR: John F. Graham, MS, CSCS\*D, FNCSA

# Exercise Technique: Reverse Lunge Into a Step-Up

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## SUMMARY

THE TECHNIQUE OF A REVERSE LUNGE INTO A STEP-UP IS DESCRIBED AND DEMONSTRATED THROUGH THE USE OF PHOTOGRAPHS IN THIS COLUMN. AN EXERCISE PRESCRIPTION IS GIVEN.

## TYPE OF EXERCISE

This exercise can be used to improve an individual's force production and challenge their velocity of movement using a complex movement.

## MUSCLES INVOLVED

Vertebral column stabilizers (external and internal obliques, transverse and rectus abdominis, erector spinae muscles, and quadratus lumborum), hip flexors (iliopsoas, rectus femoris, sartorius, and tensor fasciae latae), hip extensors (hamstrings and gluteus maximus), knee flexors (hamstrings and gastrocnemius), and knee extensors (rectus femoris, vastus



Figure 1. Starting position.

intermedius, vastus lateralis, and vastus medialis).

This lower-body complex exercise challenges the mobility and stability of the entire body. Used to enhance an individual's force production and ability to perform complex movements at high velocities, it also challenges an individual's balance and stability during a unilateral movement task.

### EXERCISE TECHNIQUE

- Start in a standing position with a barbell resting across the shoulders (Note: Body weight is an appropriate load for an athlete until a biomechanically competent lunge pattern with control and balance at good speed can be executed) (Figure 1).
  - The feet should be hip to shoulder width apart in the stance. A stance too narrow can cause balance issues from the start of the lunge. The feet should be aligned with the shoulders throughout the execution of the exercise.
- In a controlled movement, extend the right hip, reaching back with the right leg and foot, while flexing the front hip and knee (Figure 2).
  - The gluteus maximus of the left hip will be activated eccentrically to control the knee alignment as the right foot touches the floor during this backward movement.
  - With descent into the reverse lunge position, both hips are kept in alignment with the knees so that the knees do not medially or laterally deviate or collapse.
  - At the end of the reverse lunge, the trunk is erect and directly in line with the hips. If the athlete overstrides or steps back too far, a position of lumbar extension can occur especially if hip mobility is lacking. This end position should be avoided.
  - In the final reverse lunge position, both the knees should be flexed to approximately a 90° angle, the left knee even with, but not in front of, the toes of the left foot.
  - The right thigh should be about perpendicular with the floor, and the



Figure 2. Reverse lunge.



Figure 3. Step up on a box.



Figure 4. Hip flexion on a box.

left thigh should be parallel to the floor.

- The toes of each foot point straight ahead.
- Pause momentarily in this reverse lunge position.
- Continue the exercise by extending the right hip and knee to propel the body up and forward.
- Without taking a middle step, bring the right hip and knee into flexion and step onto a box that has been placed just in front of the left foot (Figure 3).

- Box height should be adjusted according to the individual athlete with a height that requires no more than 90° of knee flexion when the foot is placed on the box.

- Stand up on the box on the right foot by extending the right hip and knee.
- Flex the left hip and knee to approximately 90° while standing on the right foot on the box (Figure 4).
- Finally, extend the left hip and knee so the end position is standing with both feet, shoulder width apart, on the box.

- Step off the box with the right foot and assume the initial starting position in front of the box with the barbell resting on the shoulders in preparation for another repetition.

### SETS/REPETITIONS/REST

- Beginners, 1–2 sets of 5–10 repetitions (reps) per leg with 35–40 seconds of rest between sets.
- Intermediates, 2–4 sets of 5 reps per leg with 1-minute rest between sets.
- Advanced, 4–5 sets of 3 reps per leg with 2-minute rest between sets.

### LOAD

- Beginners, body weight as initial load.
- Intermediates/Advanced, if the athlete can perform a biomechanically competent lunge pattern with control and balance at a good speed using body weight, then an external load can be added.

Note: Proper exercise execution is paramount, and technique should not be sacrificed in lieu of load. Therefore, some decision making on the part of the strength and conditioning professional and/or personal trainer and athlete must be used to determine the proper initial and subsequent loads.

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