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PREVENTION & REHABILITATION — SELF-MANAGEMENT: PATIENT SECTION

The lateral squat☆

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Introduction

Movement in daily life, and particularly in sport, is multi-directional. In sports, such as football and basketball, athletes frequently change directions and perform repeated side-to-side accelerations and decelerations using sliding, shuffling and cutting movements. Many training approaches focus almost exclusively on the front to back motions that occur in what is called the sagittal plane. This plane is important for posture, but stability and power involve stopping and starting actions that often occur in the side-to-side, or frontal plane. The lateral squat provides a foundation for these side-to-side motions to bridge the gap to sport specific skills.

Two key factors in side-to-side movement are powerful push off with outside leg and staying low (Shimokochi et al., 2013). The outside leg, in particular the powerful posterior chain muscles (i.e. gluteal hip extensors), generate most of the power to push yourself sideways in stepping, sliding, shuffling or explosive jumping maneuvers. Staying low allows these posterior chain muscles to be effective and creates an optimal push off angle to produce force to create side-to-side motion. Many athletes get hurt because they pull or reach too much with their inside leg, resulting in adductor or hamstring strains. Enhancing movement literacy during either decelerating or accelerating frontal plane movements is a fundamental pillar of both performance enhancement and injury prevention (Hewett and Myer, 2011).

The lateral squat is an excellent way to facilitate the movement pattern of pushing from the outside leg (Sato and Shimokochi, 2014). In order to push yourself to the side you must begin with an athletic stance. A goblet style squat is effective to facilitate hip hinging and depth of squat in an athletic posture (see Fig. 1) (John and Liebenson, 2013). As the base is widened the spine is automatically maintained away from the outside foot to maintain an ideal preparatory push off angle for the lateral squat (see Fig. 2). If the spine gets too close to the outside foot, the push off angle becomes too vertical and less effective for side-to-side motion.

The exercise can be performed without any resistance at all for movement preparation purposes. Laterally directed resistance can also be added manually or with a Rotational Training Strap (from Physical Industries. Facebook.com/physicalindustries). This provides a better feel for push-off in lateral or side-to-side motions, in order to produce a more stable and athletic lateral displacement of the body's center-of-mass.

Exercise (see Fig. 3)

- Stand with a wide stance
- Flex the right ankle, knee and hip into lateral squat until a left groin stretch is felt
  - ○ Avoid shifting the spine over the push-off leg (right)
- Your right leg should be flexed as if in a squat position

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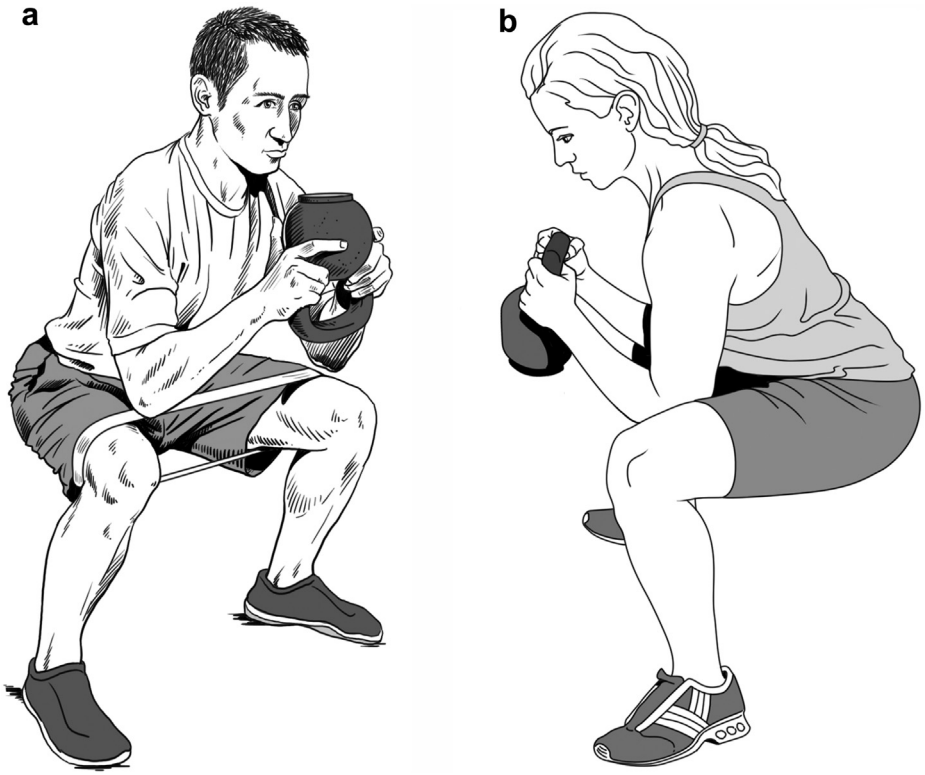

Figure 1 Goblet style squat with kettlebell in the athletic stance a) Bottoms up with band resistance b) Elbows between knees.

- Wiggle your toes on the right
- Next, repeat the same steps as you shift your weight to the left
- Perform from 4 to 12 reps as a dynamic "warm-up" or movement preparation

What you should see

- Knee should be slightly inside of ankle
- Feet are parallel or slightly turned out
- Foot and thigh pointing same direction

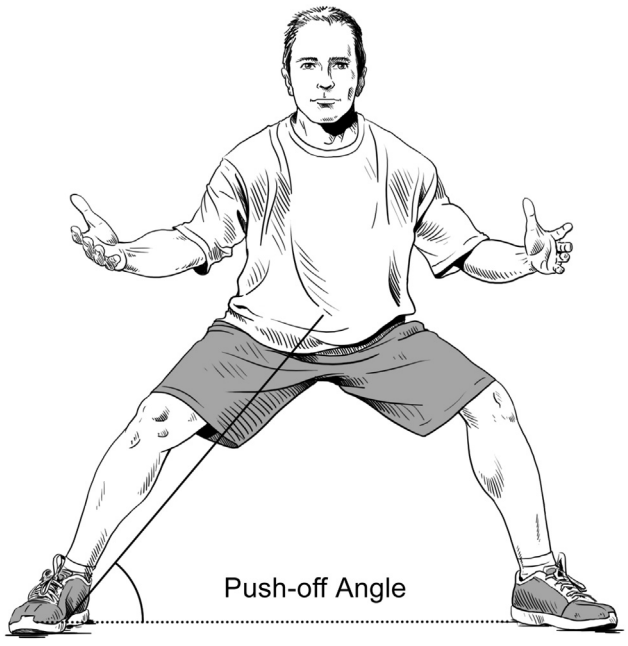

Figure 2 Wide base for ideal push-off angle.

Figure 3 Lateral squat.

- Knee should be pointing straight ahead or be only slightly turned out
- Shoulders should be square (i.e. level)

Common Mistake — Lateral trunk tilt noticed when the spine is tilted all the way over the support, or push-off leg resulting in loss of push-off angle for side-to-side movement (see Fig. 4).

Adding resistance (see Fig. 5)

- Place the strap around your left shoulder
- Walk forward, then turn to the right so the strap is on your back
- The shoulder strap or manual resistance at the shoulder reactively facilitates trunk stability

Progression — Perform sliding/shuffling against resistance by repeating the lateral push at various speeds.

A few things to avoid in the lateral squat and their corrections are:

Sign of Faulty Movement Pattern	Corrective Training
Forward slumped posture	Hip hinge re-education
Lateral trunk tilt	Manual or shoulder strap resistance
Weight too far forward on push leg	"Hot coals" under the toes, tap your toes

Figure 4 Lateral trunk tilt (a common mistake).

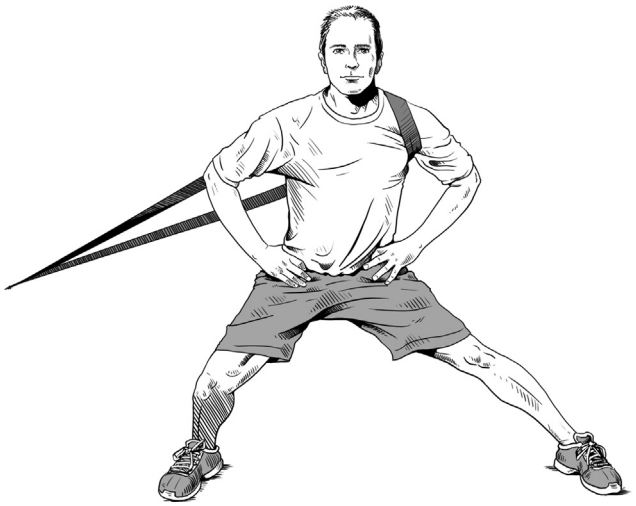

Figure 5 Lateral squat with resistance.

Sample alternatives

- Kettlebell carry (Liebenson, 2011a)
- Lateral band walk (Liebenson, 2011b)
- Single leg deadlift (Weingroff, 2014)
- The hip airplane (Liebenson, 2013, McGill, 2004).

Conclusion

The lateral squat helps build crucial push-off power and multidirectional agility in sports with frequent changes of direction and acceleration—deceleration requirements. Use it both as movement prep and a way to generate power.

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