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Training the hip: A progressive approach[☆]

Craig Liebenson, D.C.

L.A. Sports & Spine, 10474 Santa Monica Blvd, #304, Los Angeles, CA 90025, USA

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Summary In this article a progressive series of exercises to enhance motor control or movement competency of the hip are described. The training begins with control of center of mass during forward leaning by the muscles of the sole of the foot. This progresses to a novel lunge exercise emphasizing eccentric quadriceps control the knee. Then gluteal training is shown in a modern variation on Tai Chi along with a hip stability exercise during trunk rolling movements.
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Hip problems are common, and typically the response is after the fact when dysfunction has settled in for some time. Ideally, preemptive screening will look for signs of weakness, and a progressive program will be instituted to restore movement competency.

What follows is a progression that focuses on restoring function to this key area beginning from the “ground up”.

Vele’s forward lean “Pantomine in the wind”

This exercise developed by the Czech Physiologist Pr. Vele is designed to activate the muscles of the sole of the foot (Liebenson, 2005, 2006).

In particular, it targets the muscles of the transverse arch that are used for gripping. This exercise is the beginning point of training a sprinter in the acceleration phase of gaining a good start (Liebenson, 2009). It requires excellent core control to maintain the plank position.

- Stand tall and slowly lean forward until you feel your toes gripping the floor (Fig. 1a,b).
 - Be sure to keep your heels on the floor (ideally train in bare feet).
- Go back and forth maintaining your upright posture (or plank): “re-setting” the activity in the sole of your feet

Janda’s forward lunge

This exercise developed by the Czech Neurologist Pr. Janda is an excellent way to train eccentric quadriceps control of the patello-femoral joint (Janda et al., 2006).

- Stand tall and slowly lean forward until you feel your toes gripping the floor as in Fig. 1a,b
 - Be sure to keep your heels on the floor.
- Go back and forth maintaining your upright posture (or plank) “re-setting” the activity in the sole of your feet
- On the next repetition lean forward a little further and when you feel your heels raise up, step forward into a lunge (Fig. 2)

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E-mail address: craigliebenson@gmail.com.



Figure 1 a, b Vele's forward lean. The Janda Lunge (See Figure 1a,b Vele's forward lean).

- As the front foot lands attempt to quickly stabilize the body so no further forward movement occurs.
- Watch that you maintain a straight line from your rear ankle to your ear so that your entire body is leaning forward.
- Watch also that your front knee does not pass in front of your toes.
- Repeat 3–4 times.



Figure 2 Forward lunge in a plank.



Figure 3 Common mistake.

- **Common Mistake:** losing the plank position of the back (Fig. 3)

The Janda Lunge with rotation

This exercise is a modification of Janda's lunge and an ancient Tai Chi exercise called Kua (Yang, 2003; Helme-Guizon, 2010). It is also very similar to one taught by modern Czech rehab expert Dr. Pavel Kolar (unpublished). What is novel about this particular exercise is that one body part (the front leg) is kept fixed while the rest of the body



Figure 4 The Janda Lunge with rotation.

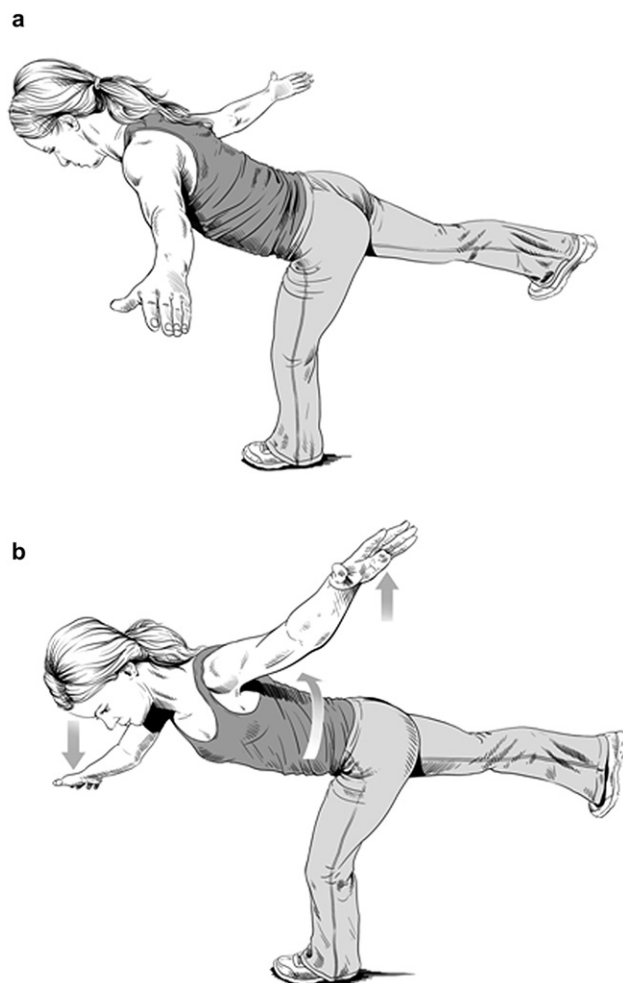


Figure 5 The hip airplane.

(especially the core) mobilizes against it. In this case the front leg is referred to as a punctum fixum, while the core is referred to as the punctum mobilum.

- Perform the Janda lunge and then maintain the forward leaning final lunge position (Fig. 4a)
- Lock your front leg and then slowly turn your torso & rear leg against the front leg (Fig. 4b)
- You should feel a stretch in the front of your back thigh and also most importantly in the buttock of your front leg.
- Perform this rotation up to 8–10 times.

Note: Avoid twisting your shoulders against your hips. The goal is turn the entire torso (trunk and pelvis) against the front hip which stays immobile.

The hip airplane (after McGill)

Developed by Pr. McGill this exercise is designed to activate the gluteal muscles on the stance leg while developing motor control or movement competency during trunk rolling challenges (McGill, 2004).

- With your arms spread out balance on one leg and then raise your other leg and lean your trunk forward until you are in a plank
- Level your hips so that the buttocks on the elevated leg is not higher than on the stance leg (Fig. 5a)
- Push the heel on your elevated leg back until your body shifts backwards and you feel you are sticking your buttocks out on your stance leg
- The knee on your stance leg should be only slightly bent and stacked over your ankle
- You should feel your weight going back towards your stance leg's heel so that it is tricky to balance
- Finally, attempt to rotate towards the stance leg (Fig. 5b)
- Perform 3–4 repetitions
- You should primarily “feel” activation in your stance leg's buttocks

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