

Secrets to Developing Rotational Strength



Straightforward advice on how to develop this important athletic quality

BY **KIM GOSS**

Over the past decade there has been a trend in the strength coaching profession to distract athletes from getting stronger. I'm not talking about training that is augmented with complicated periodization programs that require a slide rule or at least a basic knowledge of Excel 2007 but about training regimes that require athletes to spend a lot of time on worthless exercises. Our gyms are full of kettle bells, elastic tubing, medicine balls with ropes – tools that are supposedly the best way to develop the athletic quality known as rotational strength.

The problem is that many coaches mistakenly believe that basic multi-joint movements such as squats and power cleans will not improve rotational strength. After all, most exercises occur in the vertical and horizontal planes, but in sports, as Chubby Checker would say, "There's a whole lot of twisting goin' on!" As such, some coaches think that traditional weight training workouts

are simply not good enough and that special functional exercises that work those important "core" muscles must be included in every serious athlete's workout. Nice try.

Much of what is being preached about core training, especially about the topic of developing rotational strength, is nonsense. Most of these exercises don't do what their proponents claim they can do, and don't even make sense from an anatomical standpoint. The result is that athletes often spend a lot of time on inferior exercises and even on exercises that place the spine at a high risk of injury.

To discuss this subject in greater detail, I contacted Paul Gagné, a posturologist and elite strength coach who conducts advanced seminars on abdominal training. In this exclusive interview, Gagné discusses the facts, and fallacies, of developing rotational strength.

BFS: Does poor posture affect rotational strength?

Gagné: Absolutely. Trunk stability is a major player in rotation. If an athlete is able to stabilize the trunk when they encounter impact during sports, whether it's hitting a baseball or swinging a tennis racket, they will produce more force. Also, most strength or sport coaches don't consider the effect of the feet on rotation. Let's say an athlete has disharmonic feet, which means one foot is in *valgus* and the other *varus* [Figure 1]. This athlete will be carrying more weight on one leg, and this shift in balance will affect their ability to generate force in a rotational direction. Also, the pelvis will be out of alignment, making the athlete more susceptible to injury, especially when they encounter the high forces that occur in sports.

BFS: How do you define rotational strength?

Gagné: The problem with answering that question is that there are two basic types of rotation. First, there is

rotation coupled with extension, which is technically referred to as *negative torsion*. Then there is rotation coupled with flexion, which is *positive torsion*. When golfers go into their backswing, this is negative torsion, and when they bring the club in the downswing, this is positive torsion [Figure 2].

BFS: *But don't you have horizontal-plane movements in sports, such as in tennis?*

Gagné: In tennis, you are swinging the racket from down to up in a swing – negative torsion – or from up to down, as with a serve, which is positive torsion. Try throwing a discus with your arm directly out to the side – you will not be able to generate much power, as the obliques cannot function most effectively. Then hold the disc low to the hip and throw it in an upward movement – negative torsion – and see the difference in how much power you can generate.

BFS: *What are the most important muscles for producing rotation?*

Gagné: Regardless of the type of rotation being performed, there is no single muscle that causes rotation, which is why focusing on isolation exercises for muscles such as the obliques tends not to transfer well to most athletic movements. Some strength coaches favor the “wood chop” exercises to develop rotational strength and believe these are isolating the obliques, but this is not the case. You cannot perform this exercise without also involving the lats.

BFS: *There are many machines that fixate the spine into one type of rotation. For example, there is one machine at which you sit down, grasp handles in front of you, and then twist to each side. Is this a valuable exercise to isolate the obliques?*

Gagné: Not necessarily. What many coaches don't understand is that the reason these muscles are called obliques is that they have oblique fibers, but the fact is that there are few oblique fibers that are transverse to the trunk – most oblique fibers are arranged in a vertical alignment that are suited to

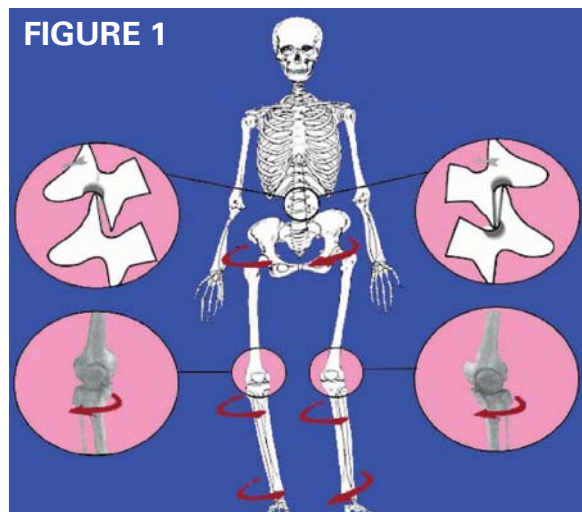
produce positive and negative torsion [Figure 3]. Consider the biceps, which has fibers arranged longitudinally. You would not work the biceps by pulling your arm across your body.

BFS: *So you would not recommend this type of exercise machine?*

Gagné: No, because rotating the spine on a single axis is not a natural movement pattern, and this type of movement, especially when performed seated, creates large shearing forces on the spine that can easily damage the disks. And it's worse when performed with resistance.

BFS: *What do you think about performing twisting exercises with a stick to warm up the muscles of the spine?*

Gagné: Again, this is not a natural movement pattern and is hard on the disks, and often this type of warm-up is performed at high speeds, another factor that increases the shearing forces on the spine. A long time ago you would see bodybuilders trying to get a better



This illustration shows how the condition of disharmonic feet causes a faulty weight distribution and postural changes in the spine that will affect rotation strength and increase the risk of ankle, knee, groin and back injuries. Using Posturology methods, this before-and-after sequence of a high school athlete shows how quickly disharmonic feet can be corrected.



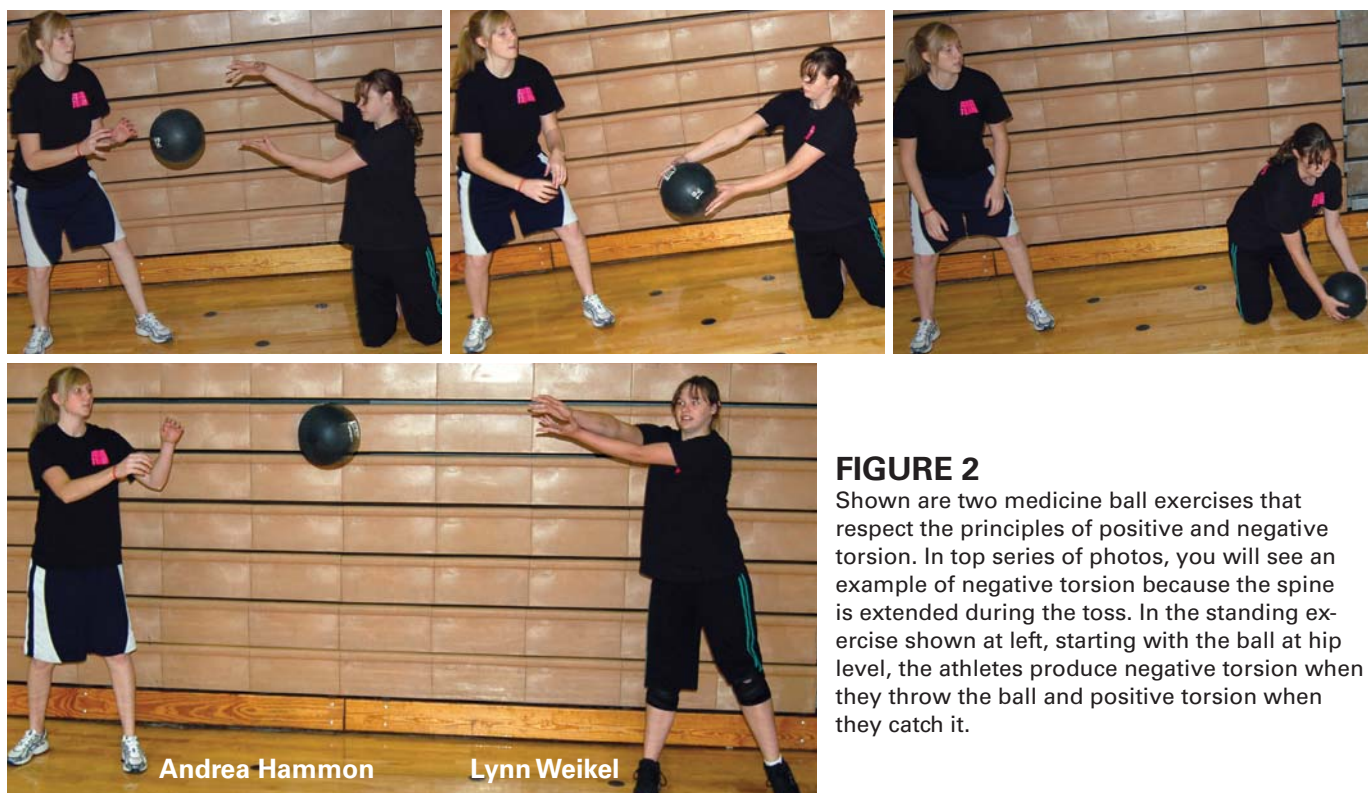


FIGURE 2

Shown are two medicine ball exercises that respect the principles of positive and negative torsion. In top series of photos, you will see an example of negative torsion because the spine is extended during the toss. In the standing exercise shown at left, starting with the ball at hip level, the athletes produce negative torsion when they throw the ball and positive torsion when they catch it.

waist by sitting on a bench with a stick on their shoulders and twisting, often performing the exercise for hundreds of repetitions. Because the appearance of the waist is related to bodyfat, and this exercise does little to burn calories, it was pretty much a waste of time. Unfortunately, many throwers in track and field would take this exercise a step further by holding a barbell across their shoulders with resistance. So now you have an unnatural movement pattern, performed seated, with resistance and at high speeds – it would be hard to devise a better way to blow out a disk.

BFS: *Is there a specific sequence of exercises you use in performing workouts to develop rotation?*

Gagné: Ideally, you would start with exercises in the sagittal plane, followed by the frontal plane and then the transverse plane.

BFS: *What do you think about side bends?*

Gagné: This will work the obliques in the frontal plane. Unfortunately, most athletes who perform side bends don't stay in the frontal plane – they will rotate forward or backward. Also, I found performing standing side bends with a dumbbell rather useless – I would prefer it be performed on a glute-ham bench.

BFS: *What about the concept of adding extra weights on one side of a barbell to work the obliques?*

Gagné: Squatting with extra weights on one side certainly strengthens the obliques and will make you sore, but I can't recommend it because it creates too much shearing force on the spine. I understand it was performed with light weights by Russian weightlifters, but this was more for body awareness than for developing strength.

BFS: *What about PNF exercises? Are these valuable for developing rotational strength?*

Gagné: Yes, but you need a partner

to do them and you are limited by the strength of your partner. However, the principles of PNF respect the principles of movement such as creating positive and negative torsion during rotation.

BFS: *What about exercises such as Russian twists, which are popular with throwers?*

Gagné: You need to have a good base of segmental strength in the abdominals and lumbar spine. We do a lot of subumbilical (below bellybutton) movements, which have been described in my previous articles in *BFS* about developing abdominal strength. Again, it's a process. For example, you would have an athlete become comfortable with overhead squats before having them do full snatches – and it's unlikely they could even perform a full snatch without performing an overhead squat first.

BFS: *What is your opinion of medicine ball exercises?*

Gagné: These are good, as long as

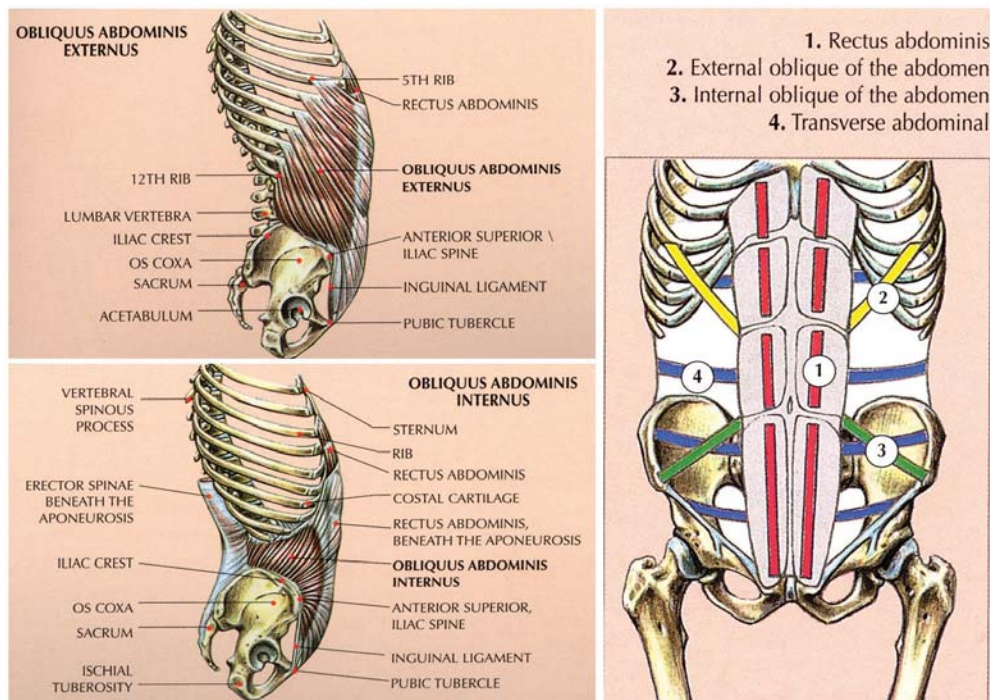


FIGURE 3

Most of the oblique fibers of the abdominals are aligned vertically to the trunk, and as such are not effective in twisting the trunk in a strictly horizontal manner.

Illustrations from *Women's Strength Training Anatomy* by Frédéric Delavier, Human Kinetics, humankinetics.com.

they are performed with good movement patterns. Also, they can be performed at high speeds, which is necessary to have a higher transfer to athletic performance.

BFS: *What about those med balls with a rope that have been become very popular among many strength coaches? What is your opinion of them?*

Gagné: It depends upon which exercises are performed. Stuart McGill, one of the foremost authorities on lower back pain, did research on this type of equipment. He found that if you perform the exercise in a horizontal movement pattern, bouncing it off a wall behind you, this can easily blow out a disk. Not only do you have a bad movement pattern, resistance and high speed of performance, but you also add to these factors the impact on the spine when the ball hits the wall.

BFS: *What are some of the best overall exercises for rotation?*

Gagné: Let me say this – performing only rotational movements to improve rotational strength is stupid! It's all connected. In fact,

Dr. Mel Siff told me about research showing that the snatch is the best way to work on rotation because to perform it you need a lot of counter rotation. Likewise, an overhead squat is another good exercise, as it involves a lot of counter rotation to maintain proper alignment [Figure 4].

BFS: *Can you elaborate on this concept of counter rotation?*

Gagné: J. P. Roll, the founder of Posturology, found that what occurs to

one side of the body will help neurologically “code” what can happen on the other side. As such, the ability to rotate in one direction is influenced by how well that individual can create rotation in the opposite direction. In other words, the body will only allow for a certain amount of disproportionate development of the muscles. In working with professional golfers, for example, we found that we can increase the ability of a right-handed golfer to generate club speed by having them work with a left-handed club.

FIGURE 4



The overhead squat requires counter rotation, which is important for maintaining trunk stability during rotational movements.

BFS: *Can you leave us with some final thoughts on the subject of developing rotational strength?*

Gagné: To have high levels of rotational strength you must first have good trunk stability. This means you need to address an athlete's posture, ensuring that their feet are structurally sound. Only then should you move on to the next step and focus on strength training exercises that are anatomically sound and that respect the principles of proper biomechanics. **BFS**



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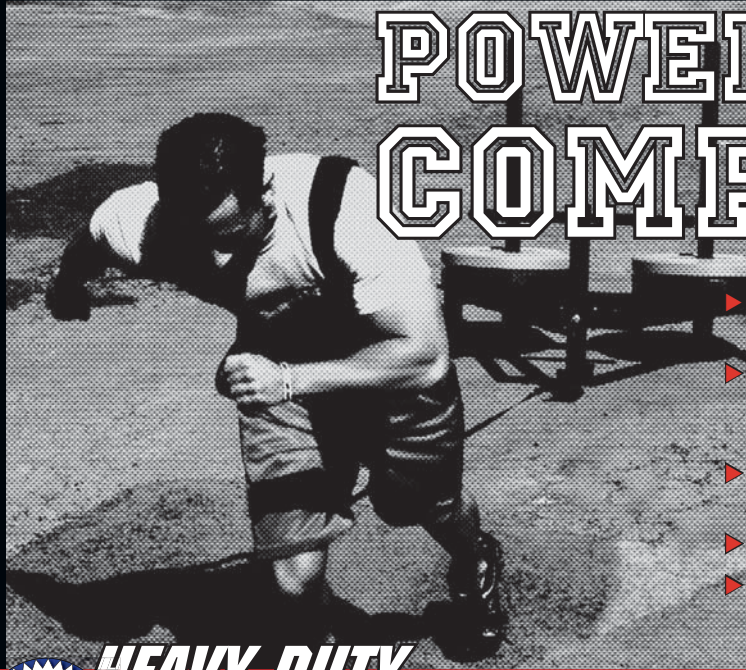
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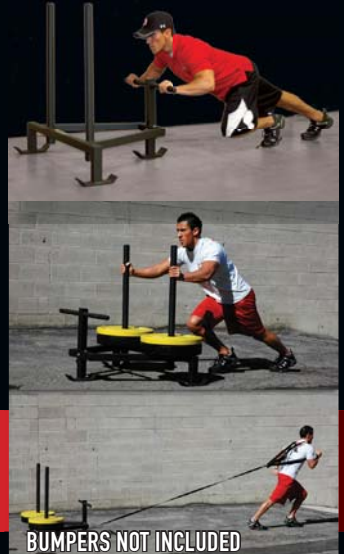
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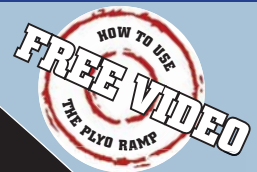
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