

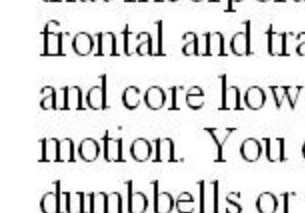
Power Hitting and Pitching: It's All in the Hips

Part II

- In part one of this article, I highlighted the importance of rotational velocity in enhancing one's rotational power. Specifically, we addressed the importance of mobility, ground reaction forces, muscle coordination and teaching the hips to load and store more energy then explosively release that energy.
- So, what movements do we include in a training program to facilitate the development of rotational power? Rather than comprising a comprehensive training program by themselves, the following movements are just the tip of the iceberg and are an extension of an overall training regimen. That said, they cover the spectrum of physical qualities that we're trying to improve in training. Specifically, we're training to:
 - Improve mobility of the hips and thoracic spine
 - Increase ground reaction forces and the storage of kinetic energy in the body
 - Increase the capacity of the hips to load (i.e., store kinetic energy) and explode (i.e., create rotational velocity)
 - Increase the ability to transfer high rotational velocities by enhancing the coordination between the hips, torso, arms and the implement held

Movement Training

The following movements represent a sampling of how we would train a baseball athlete to accomplish the goals outlined above. It's important to note, however, that these exercises are just an appetizer, per se. That is, they only represent a portion of a baseball athlete's overall performance training program, which is modified to meet the needs of the particular athlete and his limiting factors. That said, this selection is an excellent start to achieving greater rotational power. [Note: The exercises performed using a cable/pulley machine at our facility utilize the state-of-the-art Keiser Infinity Series, which provides constant resistance via its free moving pneumatic technology. I will do my best to provide alternative explanations for those that don't have access to such equipment. For example, we can substitute medicine balls, core balls (which are medicine balls with handles), and resistance bands for the movements pictured with the Keiser equipment.]



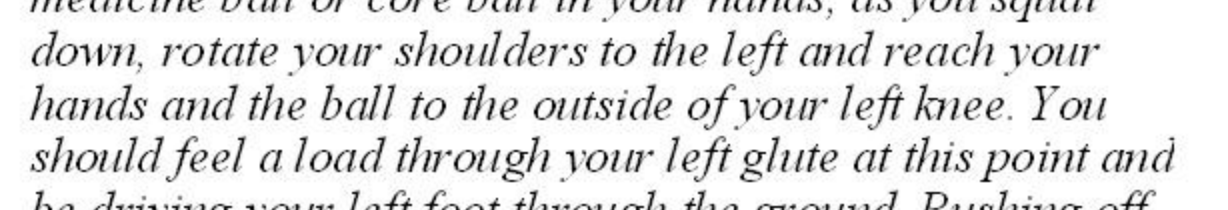
- Pec Mob:** This movement is designed to increase the flexibility in the pectoral musculature and increase the mobility of the thoracic spine. Doing so certainly increases the amount of energy we can store in both throwing and swinging.
- Grab a cable handle with one hand with your back to the pulley system. The foot of the same side that is holding the handle should be forward. Drive the stretch in your pec by turning your hips and pushing the front foot through the ground. Hold each stretched position for two seconds and repeat ten times.
- This movement can be performed using a resistance band in lieu of the Keiser. Alternatively, you may use a wall or a door. However, the resistance from the cable or the band is certainly of benefit in teaching the core how to load as well as teaching you how to use the floor and create ground reaction forces.*

Posterior Lunge Matrix: This is another mobility series that incorporates all three planes of motion (i.e., sagittal, frontal and transverse). These movements teach the hips and core how to load and store energy in all planes of motion. You can amplify the load by holding onto dumbbells or a medicine ball.

Sagittal Plane: Begin by taking a step backwards, going into a lunge position where the back leg is lengthened completely. While squeezing the glute on the back leg, reach both hands up overhead. It's important to focus on arching through the hips for extension as opposed to arching through your lower back. Hold each stretch for a second and explode back to the starting position by driving off the front foot. Alternate sides. Repeat for three reps on each side.

Frontal Plane: Begin with the same posterior lunge. This time, with both hands overhead, bend toward the side of the front leg. Again, hold the stretch for a second then explode out of the lunge by driving off the front foot. Alternate sides and repeat three times on each side.

Transverse Plane: Begin with a posterior lunge. Rotate your shoulders toward the side of the front leg and reach both hands up and across. [Note: If you're using dumbbells, just reach the opposite hand up and across] Drive out of the lunge position by pushing off the front foot. Alternate sides and repeat three times on each side.



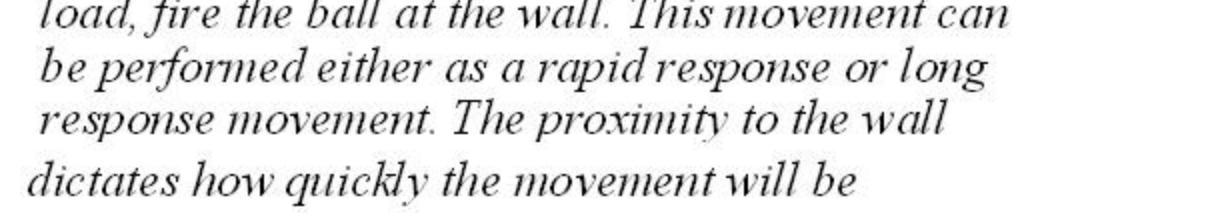
Base Stance Cable Lift: This movement will teach you how to apply greater ground reaction forces; store more energy in your hips; and coordinate the transfer of energy from your hips through your torso and shoulders.

We typically use a stick or two handles for this movement. Unfortunately, with a standard cable stack this movement is more difficult to load and explode out of because of the inconsistent level of resistance.

Begin the movement by facing perpendicular to the pulley system and holding on to the stick/handles. Rotate your shoulders toward the pulley while driving your inside foot into the ground. At this point, you should feel a load through the hip nearest the pulley (in this picture, that would be my left glute). Initiate the counter movement by pushing through the ground and rapidly rotating the hips away from the pulley. Simultaneously, rotate your shoulders away and reach up and across. In the final position, you should be squeezing the glute on the inside. Repeat for six times before switching sides.

This movement can be performed using a resistance band in lieu of the Keiser. Alternatively, you may use a wall or a door. However, the resistance from the cable or the band is certainly of benefit in teaching the core how to load as well as teaching you how to use the floor and create ground reaction forces.

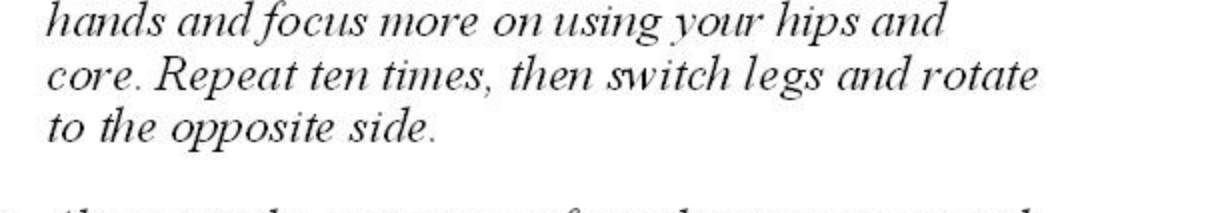
In the absence of the Keiser equipment, or similar resistance band or pulley apparatus, you could use a medicine ball to simulate this movement. Holding the medicine ball or core ball in your hands, as you squat down, rotate your shoulders to the left and reach your hands and the ball to the outside of your left knee. You should feel a load through your left glute at this point and be driving your left foot through the ground. Pushing off the ground with your left foot, explosively rotate your hips and shoulders to the right and reach your arms up and across to the right.



Split Stance Overhead Abdominal Matrix: This series of movements teaches the core how to load and store more energy then subsequently how to explode and release that energy.

Sagittal Plane: Begin by taking a split stance and holding on to two pulley handles with your back facing the system. Lift your chest up and reach your hands up and back. Take a deep breath in and squeeze your shoulder blades together as you reach. The goal is to extend through the hip and thoracic spine (not the lower, lumbar spine) to produce a great stretch through the core. Using the stretch, explode out of the load, driving your hips back and torso forward. Repeat ten times then switch your legs.

We can simulate this movement using a medicine ball, and I would actually suggest doing so, even for those who have access to the appropriate equipment. Take a split stance, as pictured, holding the medicine ball with both hands. While squeezing the glute on the back leg, reach both arms up and back overhead. You should feel a stretch/load through the abdominals. Using that load, fire the ball at the wall. This movement can be performed either as a rapid response or long response movement. The proximity to the wall dictates how quickly the movement will be performed. Standing close to the wall, you would want to fire the ball at the wall continuously without sacrificing the range. The rapid succession and the force of the ball coming off the wall actually adds to the load stored in the abdominals.



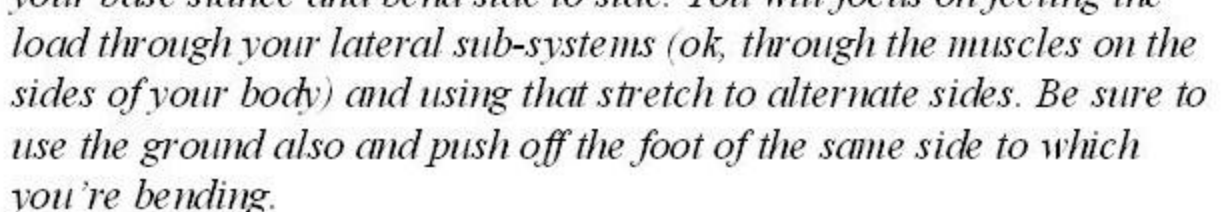
Transverse Plane: Start again with a split stance and both hands in front of your face. Rotate your shoulders toward the side of the front leg and reach your hands up and back. You will be creating a large load across the core from the hip of the back leg to through the anterior oblique of the opposite side. Using that stretch, explosively rotate your shoulders back to the starting position. Avoid pulling the handles with your arms and hands and focus more on using your hips and core. Repeat ten times, then switch legs and rotate to the opposite side.

Alternatively, you can perform this movement with a medicine ball. Assuming the same stance, you can either throw or simply "chop" the medicine ball. Both methods are acceptable, but I would recommend the former. Again, the throw can be performed in either as a rapid response movement or long response movement. Both have their benefits and should both be performed. For example, the rapid response movement will help teach your core how to decelerate the load coming off the wall while the long response movement will allow you a greater range of motion (and subsequent load) as well as teach you to decelerate the end range.

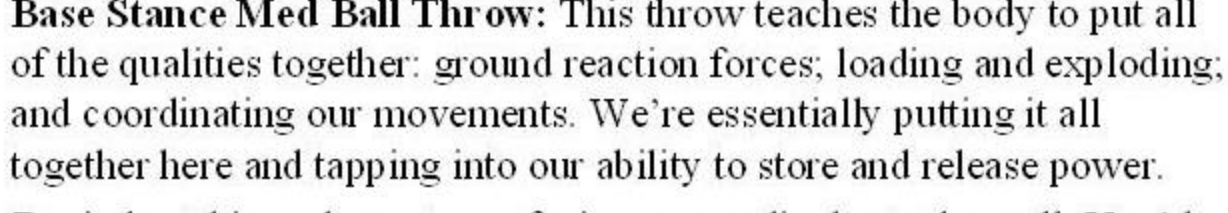


Frontal Plane: Taking a base stance and facing perpendicular to the pulley system, grab a single handle and reach both arms straight up overhead. Bend sideways toward the pulley, keeping the same distance between your arms and head the entire time. As you bend, you'll transfer your weight to the inside foot as well as create a load through the core on the side of your body facing away from the pulley (my right side in the picture). Initiate the movement by driving off the inside foot, using the stretch on your side and driving your hips toward the pulley system. Repeat ten times then switch sides.

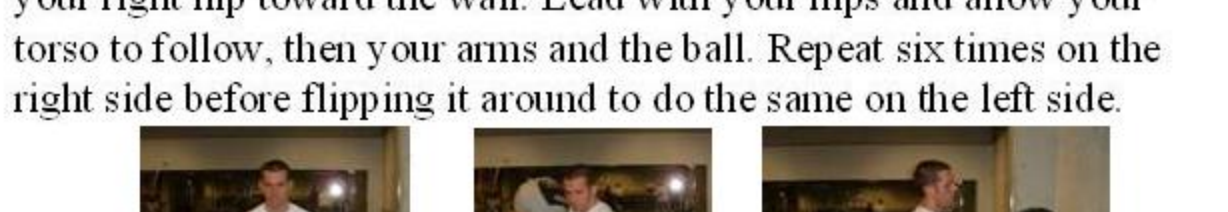
This movement again can be performed in the absence of a cable system with the use of a medicine ball. This one is slightly more challenging and limited in its options, but nonetheless, we can get the job done. Your best bet is to simply hold the medicine ball overhead in your base stance and bend side to side. You will focus on feeling the load through your lateral sub-systems (ok, through the muscles on the sides of your body) and using that stretch to alternate sides. Be sure to use the ground also and push off the foot of the same side to which you're bending.



Base Stance Med Ball Throw: This throw teaches the body to put all of the qualities together: ground reaction forces; loading and exploding; and coordinating our movements. We're essentially putting it all together here and tapping into our ability to store and release power. Begin by taking a base stance facing perpendicular to the wall. You'd be wise to throw into a concrete reinforced wall and most likely not your bedroom wall. With all the power you'll soon be harnessing, you will have no problem blowing through the drywall in a hurry. Rotate your shoulders to the right (as pictured), reaching your hands and the medicine ball back. Drive your right foot into the ground as you reach back and you'll start to feel a large load in your right glute and across your hip. Initiate the explosive portion of the movement by rotating your right hip toward the wall. Lead with your hips and allow your torso to follow, then your arms and the ball. Repeat six times on the right side before flipping it around to do the same on the left side.



Base Stance Med Ball Throw with Lateral Step: We'll use the same technique as above in this movement with the slight adjustment of adding a lateral step. Start out with a stance slightly wider than shoulder width. As you rotate your shoulders to the right, step in with your left foot. This step will create a greater weight transfer to the right side of your body and will more closely mimic your swing/throw as a baseball player. Repeat for six times on the right side then do the same on the left.



Coaching It Up

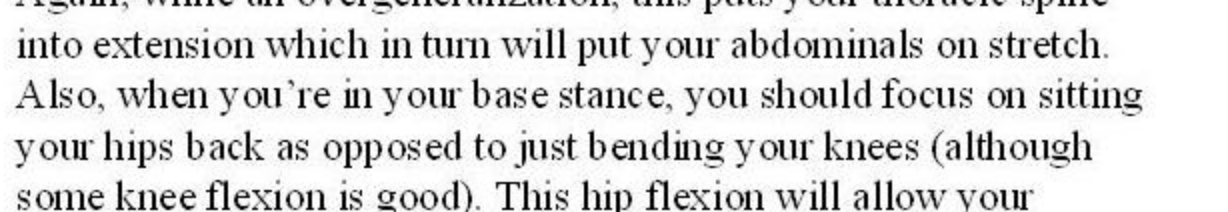
One of the biggest concerns with putting together an article like this and providing it for the public is the lack of specific coaching that I can provide. There are different coaching cues that I might provide for each individual athlete based on his limiting factors and his understanding of the movement being produced. That said, there are some general things to keep in mind when performing these movements, especially the rotational ones:

Posture: Posture – although a gross reference – is arguably the most important thing to consider when performing these or any movements. What's neat about these movements is that there's a very good chance that they will correct and improve your posture should you have any existing issues. That said, posture refers to the joint positions and relationships throughout our body during any given movement. To keep it simple, you should be primarily concerned with keeping your chest up during these movements. Again, while an overgeneralization, this puts your thoracic spine into extension which in turn will put your abdominals on stretch. Also, when you're in your base stance, you should focus on sitting your hips back as opposed to just bending your knees (although some knee flexion is good). This hip flexion will allow your powerful glutes to go through a tri-planar load. Don't be confused when I say to keep your chest up. This doesn't mean, necessarily, that your torso should be perpendicular to the ground. As a matter of fact, if you're sitting your hips back as suggested, your torso will be at an angle to the ground. It's the spine angle with which we're concerned.

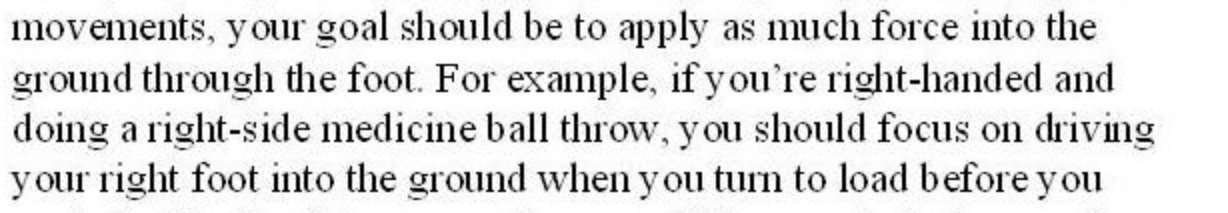
Ground Reaction: The entire chain reaction starts with how much force you can put into the ground. So when you're performing these movements, your goal should be to apply as much force into the ground through the foot. For example, if you're right-handed and doing a right-side medicine ball throw, you should focus on driving your right foot into the ground when you turn to load before you explode. Ideally, this same pattern would be repeated when you're swinging or throwing.

Rotate the Hips: When you initiate these movements, you should attempt to do so with your hips. What this does is increase your rotational velocity. That is, if you rotate the center of the body first (i.e., the hips), the end of the chain will have an even greater velocity when it comes around and ultimately produce more power. Additionally, as you explosively rotate your hips and keep your shoulders back, you create a great separation between your hips and torso. This separation – and the faster its created the more powerful – puts a huge stretch on the abdominals that acts like a rubberband in powerfully bringing through the torso and the implement held in the hands.

Putting Training into Practice



In these two pictures of Johan Santana – the Minnesota Twins pitcher who exhibits great power with great change of speed and location – you can see the massive load stored through his core created by separation of his hips and shoulders. By rotating his hips first, Santana creates a huge load through his core that forces his torso to rotate at an even higher velocity.



As Travis Hafner prepares to go yard again, he shifts his weight to his back foot by lifting his front foot. By doing this, he creates greater ground reaction forces and a greater load in the left hip. In conjunction, he makes a slight counter-rotation with his shoulders to further load his hips and core. This huge load created from the ground up results in great power production.

In concluding this piece, I'd like to thank Jon for the opportunity to put some of our thoughts and theories on to his website. The opportunity to share our philosophy with great athletes and coaches is exciting. The prospects of helping baseball players and coaches get better at what they do is what drives us to do what we do. Likewise, the exposure to great baseball people will no doubt help us refine and perfect what we. As you can see, it is certainly a circle of fruition. As you may be able to predict, this is just the tip of the iceberg as far as how we can become better and more powerful athletes and baseball players as well as staying injury free so we can play the games we love for a long time.