



ROTATION, ROTATION, ROTATION

PART 1-ROTATIONAL STABILITY

By Natasha Lothery



St. Vincent
Sports Performance Center

Gymnasts train and perform in multiple planes of movement. Flexion, extension, side bending and rotation are all forms of the complex movement patterns that you will see take place during gymnastics training sessions and competitions. Since gymnastics is also a sport characterized by explosive movements requiring high amounts of strength and excessive amounts of flexibility, it is vital that gymnasts train their core, the area around which the majority of these movements take place, in order to prevent injury. What we consider the athlete's "core" is basically the musculoskeletal segment of the body comprising the trunk and mid-thigh. This includes all of the muscles on the front, sides, and back of the body in this region. Again, this area of the body is the epicenter or the origin upon which many gymnastics movements occur. Therefore, this is one of the main areas of the body that has been susceptible to injury. Coaches and instructors have attempted to offset injuries to the abdominal region, and particularly the low back and hips by adding core and abdominal exercises to their training sessions. Exercises that strengthen the flexors of the trunk and hips (rectus abdominis and iliopsoas, respectively) are often utilized in training sessions through variations of sit-ups, crunches, planks, and knee raises. However, there has been a noted lack of strength and stability in the rotational core muscles of many gymnasts, suggesting that exercises that strengthen the internal and external obliques are often forgotten or ineffective. Part One of the Rotation, Rotation, Rotation article series will address why rotational stability is especially important to the gymnast, and which exercises your gymnasts can perform in order to enhance this strength attribute.

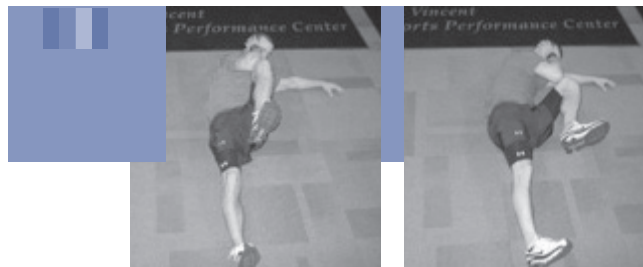
Rotational Stability

Stability involves the ability of various musculoskeletal tissues to provide resistance to detrimental and excessive ranges of motion that may occur at a joint or segment of the body. Before an athlete can get stronger in any general area of the body, it is best to be able to control that body segment first. Trying to gain strength without first establishing a quality base of stability is similar to building a brick house on a plot of quick sand or balancing a bowling ball on a broken finger. Optimal core stability strength in every athlete is vital, as the limbs (arms and legs) tend to respond better to what they are attached to--a strong and stable core. As an example, can your athlete maintain core stability (maintain

muscular control of a neutral torso) while performing an "Arabian," (an exercise involving powerful hip extension with rotation)? A weakness in rotational stability and strength, due to a lack of planned training specifically for the internal and external obliques, is one of the culprits linked to the source of low back pain, in addition to less than optimal performance.

Here are a few exercises to challenge the development of your athlete's rotary stability. These exercises are good for males and females.

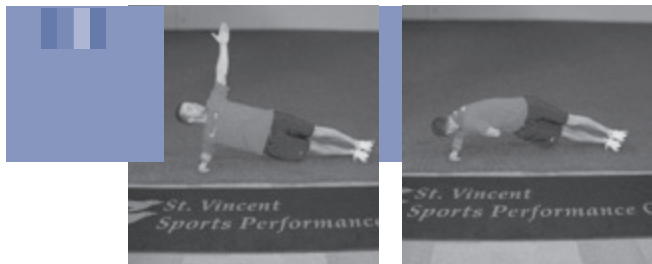
1. Rolling. Have your athlete lay on her back, stretch her left arm out to the side, and place her right hand on the side of her head. Next, have her bring her right elbow and left knee together (keep the left leg straight). Now have her roll to the left, all the way down towards her right arm, and roll right back up to the starting position. She must try to perform this rolling up and down movement without letting her elbow and knee come apart. Stability is challenged in this exercise due to the athlete trying to maintain a flexed position while changing the orientation of her body.



Exercise Description: Athlete holds opposite elbow and knee together while rolling down towards outstretched arm, and back to facing up. The goal is to not let the elbow and knee separate until the exercise set is completed. 1-3 sets of 10-15 rolls.

2. Lateral Plank and Lateral Plank with rotation. The athlete should lay on her side in a straight line with her elbow positioned directly under her shoulder and feet aligned straight ahead. Next, the athlete should lift her body off the ground--focusing on guiding the hips directly up. If the athlete is wearing shoes, instruct her to use the outside edge of the shoe as a platform; if she is not wearing shoes she should focus on using the side edge of her foot as a platform. The athlete's ankle should not be touching the ground. Have the athlete hold this "bridged" position for time.

Another variation involves adding rotation to the lateral plank by having the athlete reach under her body and back up with her free hand. Instruct the athlete to keep her eyes on the moving hand, and execute the rotation without dropping her hips.



Exercise Description: Athlete position himself on his side with elbow lined up underneath his shoulder. Lift hips up towards the ceiling. Perform 1-3 sets of 20-40 seconds

3. Rocking Chairs. Have the athlete sit on the floor with knees bent. Place hands on the side of the head and place elbows on the knees. The goal is to keep the elbows and knees connected as the gymnast is rocked back and forth from the ankles by a coach or another athlete. A more difficult variation would include having the athlete keep one elbow and the opposite knee together while being rocked back and forth. Yet a more difficult version would be to have the athlete perform either variation of the rocking chair exercise while sitting on top of a Bosu ball.



Exercise Description: Athlete has to keep elbows and knees touching while being rocked back and forth. Perform 1-3 sets of 10-20 rocks. Alternate rocking chair with Bosu ball >>

4. Vice grips. The athlete will lay on his back with his knees bent at about a 90-degree angle, and hands on the sides of his head. Place a physioball in-between his elbows and on top of his thighs. The athlete will then flex to squeeze and hold the ball between his elbows and thighs. Have a coach or another athlete attempt to get the ball away from the athlete performing the exercise by pulling, twisting, and

turning the ball. The goal for the working athlete is to not let the ball get taken away.



Exercise Description: Athlete has to keep the ball locked in-between his elbows and thighs, and not let it get pulled away. Perform 1-3 sets of 20-30 second holds.

5. Half kneeling arm-lock. The athlete will get in a kneeling stance with one leg down and the other flexed at approximately 90-degrees. With an upright, tall posture, have the athlete hold both arms completely extended out in front of the chest. Have a coach or another athlete gently push inward on either hand, attempting to make the athlete's arms or body move. The goal of the athlete performing this exercise is to remain completely still while his is being pushed inward from each direction. A more challenging variation would be to alternate pressing in different directions multiple times.



Exercise Description: Athlete has to contract abdominal wall in order to not get pushed over or let arms bend. Pressure should be applied from both sides of his body. Perform 1-3 sets of 10-30 second holds on each bent leg

Conclusion: The artistic movements of the gymnast necessitates a strong core. Not only are the core muscles used to initiate these movements but they must transfer force from the ground and up through the body; they must slow down excessive ranges of motion that will compromise the integrity of ligaments and joints; and they must serve as a stable platform upon which the limbs of the body can support and successfully execute all of the dynamic acts of a gymnast. A lack of core stability places the athlete in jeopardy of not being able to successfully disperse the compressive and shearing forces of the powerful and complex movements the gymnasts' body is exposed to on a routine basis-thus it could be an injury waiting to happen. Special attention to strengthening the gymnast from the core out should be an area of focus for all coaches and trainers.

Exercises contributed from author, Darrell Barnes, MS, LAT, ATC, CSCS, and Aaron Feldman, BS ✕