Overtraining the Rectus Abdominis Can Make You Less Efficient in Weightlifting

Ellyn M. Robinson, DPE, CSCS*D
Bridgewater State University, Plymouth Street Tinsley Center, Bridgewater, Massachusetts

SUMMARY
EFFICIENT TRUNK FLEXION AND EXTENSION TRAINING IS PARAMOUNT TO STABILIZE HEAVY WEIGHTS LIFTED OVERHEAD IN WEIGHTLIFTING. A STRONG AND BALANCED TRUNK, WHICH INCLUDES SEVERAL MUSCLE GROUPS (NOT JUST THOSE SUPERFICIAL MUSCLES THAT CAN BE SEEN BUT PERHAPS EVEN MORE IMPORTANTLY THE DEEP ONES THAT HOLD MOST OF THE LOAD), IS NECESSARY FOR SUCCESS. THIS ARTICLE WILL DISCUSS THE IMPORTANCE OF BALANCE BETWEEN FLEXION AND EXTENSION EXERCISES OF THE TRUNK, STABILIZATION MOVEMENTS OF THE TRUNK, AND SPECIFIC EXERCISES THAT CAN BE USED IN A WEIGHTLIFTING TRAINING PROGRAM TO MOST EFFECTIVELY TRAIN FOR STABILIZATION OF THE WEIGHT OVERHEAD.

A balanced program for weightlifters includes exercises that will enhance performance. In striving to lift maximum weights, it is of primary concern for every weightlifter not only to successfully execute the best technique of the actual snatch and clean and jerk but also to include in their training exercises that can enhance their performance. When looking at the various complex movements involved in the weightlifting, one of the major considerations is stabilization of the weight overhead. An athlete can have textbook form pulling from the floor and catching the weight in the squat position, but if the athlete cannot maintain the weight overhead in a controlled manner, it could be missed in front or behind the athlete. For example, many jerks are properly accelerated and driven straight through the legs and caught in the split position—only to find the weight out in front of the athlete because of slight trunk flexion. This can be seen in athletes who do far more flexion (abdominal work) than extension (low back work) training, more specifically training the rectus abdominis for aesthetic purposes as opposed to training the transverse abdominis for functional compression purposes. Two of the major factors that enable the athlete to maintain the weight in the proper position overhead are (a) trunk balance and stability between the flexors and extensors and (b) effective deceleration throughout the anterior chain trunk muscles. This will allow the athlete to stop or "stick" the weight in the proper position over the area of base or the space within the foot stance. In an effort to best enhance the athlete’s ability to maintain the weight overhead, stabilization of the trunk becomes paramount. An unbalanced program will render the athlete more vulnerable to a higher incidence of injury and increase the frequency of missed lifts. A strong and balanced trunk, which includes several muscle groups (not just those superficial muscles that can be seen but perhaps even more importantly the deep ones that hold most of the load), is necessary for success.

Effective weightlifting coaches design their annual program focused on the need to make the athlete better in the specific competition lifts and also to prescribe exercise programs that incorporate balanced work for the entire body. To better understand how to create a balanced program for trunk stabilization, the coach needs to understand the major contributing muscles for (a) trunk flexion, (b) trunk extension, and (c) trunk stabilization.

LOWER TRUNK FLEXORS
Rectus abdominis, external and internal obliques, and psoas (hip flexion).

LOWER TRUNK EXTENSORS
Erector spinae (iliocostalis, longissimus, spinalis), multifidus, rotators, and interspinales.

TRUNK STABILIZERS
Global: Quadratus lumborum, erector spinae, external obliques, and psoas.

KEY WORDS: stabilization; trunk flexion; deceleration; trunk flexors/extensors
Local: Multifidus, internal obliques, and transverse abdominis.

**FLEXION VERSUS EXTENSION**

When performing traditional abdominal work, the rectus abdominis, or the muscle responsible for the ever envied and strived for “6 pack,” is the muscle that is used when performing crunches. As a result of this strong flexion and lack of compression or tightening the abdomen without flexing (one of the 2 actions of the rectus abdominis: flexion and compression), the rectus abdominis is stronger than the transverse abdominis and the spinal erectors. While trying to brace the torso, an athlete with an overdeveloped rectus abdominis will produce trunk flexion and ultimately can lose the weight out to the front. This causes not only a missed lift, but eventually the athlete can expect to feel more frequent back pain (especially lower) because the intervertebral disks are left in a far more vulnerable position as the back is pulled out of its protective arched position. In the long term, this can result in bulging or ruptured disks or strained back muscles. To provide the most solid position for a weight that is being lifted, a strong base of support between the abdominals and the low back muscles should be a priority for long-term success and health of the athlete.

Quantifying the volume of flexion versus extension work by looking at

**Table**

<table>
<thead>
<tr>
<th>Core exercises for OH stability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monday</strong></td>
</tr>
<tr>
<td>Week 1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Week 2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Week 3</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Week 4</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

---

Figure 1. Anterior stabilizers. Copyright Primal Pictures Ltd.

---

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.
the total number of sets and repetitions that are done in a balanced program is a powerful tool for a coach. For example, athletes often do abdominal work on a daily basis, but only perform low back work once or twice a week. This imbalance over time can lead to a pelvis that tends to tilt posterior because of stronger abdominals. Altering the orientation of the pelvis at rest or during sport can potentially affect all the originating and inserting musculature on the pelvis. For example, the latissimus dorsi’s origin on the iliac crest can be pulled out of alignment if the pelvis’ musculature is not balanced. The athlete who suffers this imbalance may complain of shoulder pain. If the pelvis is out of balance, it can alter the origin of the latissimus dorsi and, thus, also alter the insertion on the humerus, creating a changed torque pattern on the action of the shoulder. The Table is an example of progressive exercises involving the stabilizers.

**STABILIZATION**

Traditionally, when given the task of training the “core,” it is often the muscles that can be “seen” rather than those responsible for strength and stabilization that are more frequently trained (3). To stabilize heavy overhead lifts, athletes need equality of both the global and local stabilizers of the trunk (1,2). It is important to first consider the muscular anatomy of the abdominals and those that are used in stabilization. The muscles responsible for true stabilizing work include the transverse abdominis, erector spinae, quadratus lumborum, multifidus, and rotatores (4) (Figures 1, 2).

Instead of focusing on exercises using flexion, exercises that use the transverse abdominis and mimic the isometric contraction that takes place at the completion of the snatch and the jerk should be incorporated into the program (2,4). These exercises include movements that use compression and isometrics, for example, lever abdominals (Figure 3), medicine ball seated twists (Figure 4), bridge (Figure 5), marching bridge (Figure 6), dumbbell farmer’s walk (Figure 7), supine weighted extended hold (Figure 8), hyperextensions with arms out straight (Figure 9), hyperextension to row with weight (medicine ball or plate) (Figure 10), hyperextension with weight (plate or medicine ball) (Figure 11), and barbell over head circle walks (Figure 12).

**CONCLUSIONS**

It has become common for athletes to train the abdominal musculature for eye appeal only. Perhaps, through functional anatomy education and more specific programming from coaches, we can teach our athletes the benefit of proper abdominal training for their sport. Athletes will be both pleased and relieved to learn that when they change their exercise choices for trunk flexion and extension, their rectus abdominis will still be just as developed. Identifying specific
exercises within the program design that will strengthen the entire trunk (anterior and posterior planes) in a balanced fashion is paramount to the success of weightlifters.

ACKNOWLEDGMENTS
The author thanks Ginny Robinson for her editing time and expertise and the weightlifter for volunteering for the photographs.

Dr. Ellyn M. Robinson is a professor in the Movement Arts, Health Promotions, and Leisure Studies Program at Bridgewater State University, where she is the graduate strength and conditioning program coordinator and the head coach for the weightlifting team.

REFERENCES
Figure 7. Dumbbell farmer’s walk.

Figure 8. Supine weighted extended hold.

Figure 9. Hyperextensions with arms out straight.
Overtraining the Rectus Abdominis

Figure 10. Hyperextension to row with weight (medicine ball or plate).

Figure 11. Hyperextension with weight (plate or medicine ball).

Figure 12. Barbell over head circle walks.