

ICSC Upper Extremity Module 6

Section 1.5_Shoulder

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Video Lesson: 13:50

One of the things that I consider as an alternative to strengthening the internal rotators and glenohumeral joint adductors when performing this exercise is when she pushes off the wall and it is an even steady push, she uses both hands. Let us say it's the right shoulder that needs more strengthening, in that case, what I would do is lessen the push with the left hand, and maybe even consider pulling the left hand out and slowly lowering her, in other words, focusing on that eccentric contraction with the right side only: the injured side only. Pushing with both hands and in a more advanced exercise focusing only on the injured shoulder during the eccentric return.

I found these push-ups, the subscapular push-ups to be effective. I find that when I have done second opinions for other clinicians in my area and looking at chronic shoulder complaints that just aren't responding to care, oftentimes the clinicians, it does not matter the profession, medical physicians, chiropractic physicians, osteopathic, et cetera, they tend to not look at the subscapularis. They don't test it for muscular strength. They don't test it for neuromotor control. They don't take their fingers in that axillary or palpate the subscapularis and try to identify hypertonicity, hypotonicity, fascia lesions, et cetera. Do not forget to look at the subscapularis when you have these acute and chronic shoulder complaints.

As we continue discussing strengthening exercises, tier 4 exercises for the shoulder, this is where we start considering some of your more traditional rotary types of strengthening exercises. Now, this first set of exercises Section A here or Set A, I guess from all here and things from that. In this picture on the left-hand side where the arrow is, you can see that she is hanging off of a table, and then she is horizontally extending with a little bit of external rotation. She should be retracting her scapula as well. You can imagine what muscles are involved here: the rhomboids, middle, or upper middle to upper trapezius, and put some of the humerus external rotators such as teres minor and infraspinatus.

The next pictures or the ones in the middle are here. Here, this is typical of rotary types of exercises. You can see that she is doing an external rotation strengthening exercise and lying prone. Her elbow was flexed in here, you might not be able to see that clearly in the picture, but our elbow was flexed in that top picture and she has a bit of weight and it can be a thera-band, it can be a milk jug, but she is externally rotating. Keep in mind that she is firing in a single plane against the resistance, and therefore she is mostly firing the external rotators of the glenohumeral joint and through reciprocal inhibition, there is a fair degree of inhibition of the internal rotators. Again, firing against resistance with the external rotators is appropriate and by definition a strengthening exercise. Unfortunately, we are getting a degree of internal rotation inhibition. Therefore, we are losing that neuromotor control for centration to some degree in. That is why I emphasized in tiers, two and three, to focus on co-contraction and centration of the glenohumeral joint and the scapula-thoracic joint because when we start doing these types of strengthening exercises, we are almost diminishing the neuromotor control, the training, and the habit or the engram of centricity or of centration.

Then, in the far right-hand picture, you can see that she is doing a little bit more of a straight Pierre horizontal extension again with probably a rhomboid, scapular retraction contracting those rhomboids, and some of the horizontal extensors of the glenohumeral joint.

When I am teaching strengthening and strength conditioning; whether it is speed work or power work, we cannot ignore principles that are oftentimes taught, and sometimes it's not taught in the Chiropractic program. I want to make sure that we at least cover this principle which has been around for a long time. It is called the said principle-specific adaptations to imposed demands. If we think back to what we were discussing with centration exercises, trying to establish our neuromotor control for centering the humeral head into the glenoid fossa for example, or centering the scapula to the thoracic cage for stability so that we can move the

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glenohumeral joint on the scapula. However, the shoulder complex is going to make specific adaptations to how we train it. Based upon this principle, if we are training only with strengthening types of exercises, based on our definition of firing against the resistance in a single plane, such as using a thera-band, or a dumbbell, that is how the shoulders going to learn how to function. Similar to this last slide that we just discussed with external rotation against and using a dumbbell and firing into external rotation only, if we continually train the external rotators to fire without the internal rotators firing as well to create that centration to some degree, we are probably going to establish some sort of aberrant centration and establish an E-centration of the shoulder complex which may result to subacromial impingement sometime down the road, et cetera. We want to really make sure that we are focusing on tiers, two and three initially, making sure that we have good habits and good engrams established before moving on to our strengthening exercises.

Then, tier 5. Tier 5, the Rehabilitation pyramid is looking specifically at tasks that our athletes will likely be returning to; if they are speed athletes; if they are agility athletes, or if they are power athletes. We want to make sure that this athlete has the stability and the strength to add speed, agility, and power to their basis of function. Then we start working on speed work and agility, we can power work, making sure that we can return them safely to the sports that they need to perform.

One of the studies that I wanted to touch on before we bring to a close this presentation is a study from 2005 and again, this just plays on the point of needing to focus on the primary function of particular muscle groups. For example, the rotator cuff muscles play a significant role in the centration of the glenohumeral joint and other muscles with the scapula-thoracic joint. These muscles, even though the centration in the glenohumeral joint, and then secondarily involved with movement: external rotation, internal rotation, et cetera, you want to keep in mind that the primary role of the stabilizer muscles to centrate, play a role even into the end ranges of motion. When we are training, the rotator cuff muscles, for example, we want to make sure that we are training them to centrate the glenohumeral joint, through the full end ranges of motion. That's why you saw us earlier with the body blade and the sloss bars to take that in tier 3, to take the body blade and take the sloss bars, et cetera, through a full range of motion.

In this study, what it noted was if there is less rotator cuff muscle contraction and I would even say co-contraction and more mobilizer contractions which are larger superficial muscles such as the pectoralis muscles and the deltoid muscles. When we get more mobilizer contractions versus the stabilizer contractions, we result in less joint centration and if we have fewer joint centration, we could probably theorize that there is less joint stability.

I want to close by talking about a case. This is an Australian floorball athlete and she presented to me with bilateral shoulder pain and weakness, mostly with her slapshot. She was only a few weeks out from going to what I believe is the World Championship in another country. I think was from China at the time and she noticed that her performance, especially when taking a slapshot was significantly influenced. Her productivity was going down and of course, the coach was noticing that.

This is the slapshot and you will notice that she has her stick in hand. I wanted to understand what her motions specifically were; what her shoulders are doing; what our core is doing; what our hips and lower extremities are doing during the motion. I had a pretty good understanding of specifically what that activity was and what device was in her hand. Then, I took the device out of her hand and I had her go through those same motions. I wanted to understand what her arms, shoulders, core, hips, and all that uppers are doing without the device in her hands so that I could imagine placing body blades or slossed bars or medicine balls or whatever I might need to try to mimic the motion.

In the end, applying the said principle-specific adaptations to imposed demands. These are the actions that she wants to be able to perform in a matter of a few weeks and we needed to try to sort out this bilateral pain in her shoulders when she was doing her slapshot. What we did then is we started introducing tier 3 stabilizing exercises. We took body blades and we had to try to mimic that same motion. Through oscillatory stabilization,

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oscillating and bouncing these body blades, we were able to establish and elevate co-contraction of not just her shoulder complex, but her entire core, her hips, and her knees. When she was initially doing this exercise, we had her go slow and really focus on co-contracting. Through the oscillatory stabilization input, it was easier for her to understand what co-contraction is and we were able to go through this motion. We spent a few days aggressively because our timeline or window for returning her back to her sport was short. She was highly compliant. It was great. She responded well.

What we were able to do was progress her quickly through this body blade component of her rehab. We were able to progress her through this tier 3 aggressively, and she felt pretty good already. We were doing some other soft tissue interventions with instrument assistance and the soft tissue mobilization and some joint manipulation of her full spine and shoulder complex, of course. Then we progress to more tier 5 types of power activities because we wanted to try to mimic the power of her slapshot. I wasn't always around to bounce a medicine ball to her. We use this rebounder to try to mimic some of her shoulder functions and her trunk rotation or hip motion.

We need to do forehand and backhand types of motions. She progressed well. We can resolve almost completely her symptoms, allowing her to go to her world competition and perform the way she needed to. This is a rather quick progression of a case of how we took a patient, with symptoms of course, in a very short timeline and progress her through tier 2. We did not move her through a range of motion as you would probably know going back to the slides here. We had her just body blade and particular motions where she was more symptomatic, which was on, I believe the follow-through is where she was mostly symptomatic. We mostly work with body blades in that position, initially with tier 2.

Then as you saw in the video, tier 3 was taken through the entire slapshot, and then finished with these power exercises. We did not really do much first-tier 4 strengthening exercise because she was a high-performance athlete. She was very strong when we muscle tested her. She did not really need strengthening exercises. She needed neuromotor control. Then, we needed to add the power movements to this neuromotor control.

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