

Therapeutic Exercise for Lower Crossed Syndrome

Tommy Ho

University of Guelph Humber

KIN 1410

Fabian Rayne

March 26, 2014.

Background History and Assessment

I shadowed an Athletic Therapist who had a female patient that is 39 years of age and has an occupation as a dentist. She has been complaining about tightness in her lower back, some radiating pain in her lower abdominals while she is sitting for a prolonged period, and extreme tightness in her right shoulder. This has been going on for a few months now and the magnitude of pain have seem to increased recently due to her sporadic hours during the Christmas holidays.

The session began with background check such as family history, diseases, medication, and injuries. Next postural assessments was performed on the client to determine the alignment of body parts and its relationship to other surrounding structures (Johnson, 2012). By performing a postural assessment it can help acknowledged the cause of musculoskeletal pain, immobilization of joints and structural discomforts (Johnson, 2012). The athletic therapist checked the alignment of the scapular in relationship with the spine to see any misalignments. The curvature of the spine was also checked from the saggital and frontal plane for scoliosis. Next he checked the anterior /posterior tilt of the pelvis through the landmarks of the anterior superior iliac spine in relations to the posterior superior iliac spine. He also checked the left posterior superior iliac spine in comparison with the right posterior super iliac spine.

After performing postural assessment he performed a global assessment which is a full body functional movement analysis. He asked the patient to perform a few certain exercise and gait movements. The first movements were different variations of squats, next he performed the Thomas test. Both of these movements helped identify the inhibition of certain specific structures. Finally he performed a general gait analysis where he asked the patient to walk back and forth across the room. The result of the assessment by the athletic therapist diagnosed the patient with lower cross syndrome due to the nature of her occupation.

Patients Current Rehabilitation Plan

The athletic therapists primary goal is to improve mobilization and range of motion of tight structure of the patient. She is asked to lengthen and mobilize the hip flexors and rectus femoris through various stretch exercises such as the horizontal squat stretch, kneeling hip flexor stretch and the deep squat hip stretch. Next she is asked to stretch the lower back muscles through the cat stretch and her chest muscles through the wall stretch. She is asked to hold each stretch for 15-20 seconds without pain and discomfort with 2-3 sets each body part.

Her secondary goal was to improve strength in her gluteals such as the gluteus maximus, minimus and medius muscles. She is asked to begin with Swiss ball wall squats and walking lunges. She is also asked to perform horizontal and lateral planks. Another major area to strengthen was her back muscles she was asked to do external rotations and dumbbell bent over rows. All these exercises were performed with 8-10 repetitions, with sets of two.

Critical Analysis of Patient's Current Rehabilitation Plan

In summary, the patient is asked to mobilize the hips and lengthen tight muscles and relax shorten muscles. Barger (2006), states that in lower cross syndrome, structures that are involved includes; tight facilitated lumbar erector spinae muscles, tight facilitated hip flexors (rectus femoris and Illiopsoas), weak inhibited abdominal muscles and weak inhibited gluteal muscles (maximus, medius, and minimus). The athletic therapist has address these in his workout plan since these are the key areas of improvement that the patient needs. Without treatment these symptoms can lead to serious implications such as degeneration of structures of the spine and hip (Physiopedia, n.d.). By stretching, it is an acute short term treatment that is primary focusing on restoration of mobility in the hip and lower back. By doing large gross movement patterns such as the squat it will help improve glute activation.

Chart 1: Workout Plan Beginning Phase

Beginning Phase	Date	Clients Ceiling Heart rate: (220-age) x (55% - 65%)			
Cardiovascular Warm - up Exercises	Time (min)	Intensity RPE (out of 10)	Target HR (55-65% HR max)		
Airdyne	5	6			
Exercises	Sets	Reps	Rest	Weight lifted	Tempo
Deep Diaphragm Breathing	2	5 shallow breathes	30 seconds	0	
Single Heel Slide	1	4-5 repetitions	60 seconds	0	2 020
Deadbug	1	4-5 repetitions	60 seconds	0	2 020
Bridge	1	Hold 20 seconds	60 seconds	0	2020
Squats	1	6-8 repetitions	60 seconds	Body	2020
Clams	1	6-8 repetitions	60 seconds	External force	2020
External rotation	1	6-8 repetitions	60 seconds	Yellow thera-band	2010
Stretches	Static	contraction	relax	Sets	Reptition
PNF Hip flexor stretch (supine)	10 seconds	6 seconds	2 seconds	2	3
Thomas Stretch	20 seconds	0	0	2	2
Piriformis PNFstretch	10 seconds	6 seconds	2 seconds	2	3
Hamstring PNF strech	10 seconds	6 seconds	2 seconds	2	3

This workout plan is for the client who just started their therapeutic exercise plan.

Chart 2: Workout Plan Advanced Phase

Beginning Phase	Date	Clients Ceiling Heart rate: (220-age) x (55% - 65%)			
Cardiovascular Warm - up Exercises	Time (min)	Intensity RPE (out of 10)	Target HR (55-65% HR max)		
Airdyne	5	6			
Exercises	Sets	Reps	Rest	Weight lifted	Tempo
Bird Dog	2	5 shallow breathes	30 seconds	0	
Modified Side Plank	2	4-5 repetitions	60 seconds	0	2 121
Transverse Abdominal Curl-ups	2	4-5 repetitions	60 seconds	0	2 121
One legged bridge	2	Hold 20 seconds	60 seconds	0	2121
Spine conserving squats	2	8-10repetitions	60 seconds	Body	2121
Goblet squats	2	8-10 repetitions	60 seconds	15kg	2121
External Rotation	2	6-8 repetitions	60 seconds	blue thera-band	2121
Stretches	Static	contraction	relax	Sets	Reptition
PNF Hip flexor stretch (supine)	10 seconds	6 seconds	2 seconds	2	3
Thomas Stretch	20 seconds	0	0	2	2
Piriformis PNFstretch	10 seconds	6 seconds	2 seconds	2	3
Hamstring PNF strech	10 seconds	6 seconds	2 seconds	2	3

This workout plan is for the client who had several weeks of therapeutic exercise training.

Critical Analysis of Therapeutic Workout Plan

In the initial beginning phase of the workout plan, several key exercises were selected to allow the foundation to be built on for future exercises. Exercise such as the deep diaphragm breathing is a very important exercise because this teaches the client to engage the transverse abdominal muscles, while utilizing expiratory muscles such as the diaphragm and intercostals during ventilation (Rayne, 2014). I believe this is a very important foundation to build around because as the clients technical skills improves the magnitude of exercise stimulus will also increase, and without proper engagements of the core muscles the primary objective would diminish. Single heel slide and dead bug are both started at the easiest variation (patients leg is flexed at 90 degrees) this is because the patient will most likely lose core contraction as the limbs are implemented in the exercise movement (Barger, 2006). These two exercises are very important because it requires the patient to engage the core throughout the exercise movement. The bridge, squat and clams are excellent exercises to strengthen the weak areas of the patient. All three of these exercise strengthens the hip extension and leg abduction movement by activating gluteal muscles that are weak which is shown as a symptom of lower cross syndrome (Rayne, 2014). External rotation exercise was also introduce in this therapeutic exercise program because the patient was identify was extreme tight chest muscles causing internal rotation of the humerus (Spigelman, 2006). It is important to address postural issues when correcting muscular imblanaces therefore external rotation was added into the program to strengthen the rotator cuff muscles; teres minor and infraspinatus. The final two therapeutic exercises are the PNF hip flexor (supine) and Thomas stretch. The Piriformis and Hamstring PNF stretch was also introduced because when a patient is diagnosed with lower crossed syndrome the piriformis and hamstrings are activated to compensate for the anterior pelvic tilt

and inhibition of gluteal muscles (Physiopedia, n.d.). By performing these stretches it will address the tight structures (hip flexor and rectus abdominals) which is cause of pain and discomfort (Rayne, 2014).

Therapeutic Workout Plan Progression and Long Term Projection

After the patient can perform the foundational movements they will advanced to more gross movement patterns. These exercises will still focus on the core engagement, functional movements and mobilization. The progression and difficulty can be seen from Chart 1 to Chart 2. Utilization of resistance was added to the squats to increase difficulty of squats, adjustment of arms was implemented to promote better posture with the spine conserving squats. Intensity of exercise was challenged by increasing resistance, sets and level of complexity of each exercise. Each repetition execution has become a bit more challenge due to the fact that it emphasizes on a 2121 tempo. This tempo has no magnify the difficulty of the movement by introducing a longer isometric contraction at the beginning and end range.

The ultimate goal is to eliminate pain and discomfort of the patient and introduce them to a pain free body. From there introduction of functional exercises and strength and conditioning programs may be implemented to prolong patients musculoskeletal health and reduce relapse of lower crossed syndrome.

In conclusion, it is very important to have corrective exercises in the therapeutic workout plan because it is very effective in treating lower cross syndromes. By addressing structural imbalances it is very useful to determine which exercises to incorporate into the workout plan. Proper technique should be a primary concern when performing these exercises and advancement of exercise complexity should be avoided if the patient is unable to perfect them. Lower cross syndrome is one of the most common cause of lower back pain and may need these

type of training programs to address muscles that are weak, tight and immobilized (Barger, 2006).

Treatment of lower cross syndrome may take up to several months because neuromuscular facilitation requires a lot of time to retrain muscles back in to corrective state (Barger, 2006).

Reference

- Barger, T. (2006). A literature review of the lower crossed syndrome. Retrieved from <http://www.logan.edu/mm/files/LRC/Senior-Research/2007-Apr-02.pdf>
- Johnson, J. (2012). Postural assessment . *Human Kinetics*. Retrieved from http://www.humankinetics.com/acucustom/sitename/dam/090/jane_johnson_postural_assessment.pdf
- Physiopedia. (n.d.) Lower crossed syndrome. Retrieved from: http://www.physiopedia.com/Lower_crossed_syndrome
- Rayne, F. (2014). Therapeutic Exercise for Musculoskeletal Disorders [Class handout]. University of Guelph Humber, Toronto, Ontario.
- Spigelman, T. (2006). Identifying and assessing glenohumeral internal-rotation deficit. *Clinical Evaluation and Testing*, University of Kentucky. Retrieved from https://www.mc.uky.edu/athletic_training/publications%20folder/spigelmanl.pdf