Pilates for the Young Athletic Male: a Case Study on Upper Crossed Syndrome

Jessica Thomas
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ABSTRACT

“When all your muscles are properly developed you will, as a matter of course, perform your work with minimum effort and maximum pleasure” – Joseph Pilates, Return to Life

Pilates programs for young, male athletes will generally focus on the particular athlete and the habitual, movement patterns based on his sport. The muscle imbalances that come as a result of these movement patterns usually become one of the most important aspects of the program.

The male athlete, regardless of his chosen sport, generally experiences tight hamstrings, overused shoulders, a weak pelvic floor, and imbalances in the back to chest musculature – all of which create postural distortions. Pilates provides the comprehensive exercise regimen needed to concentrate on strengthening yet also lengthening muscles. It also provides greater flexibility to joints and, in turn, a greater range of motion to enhance neuromuscular efficiency.

For purposes of this paper I will focus on a young, male athlete who is a college basketball player and triathlete. I have decided to focus on his muscle imbalances and limited range of motion in the shoulder region, as he suffers from upper crossed syndrome.
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ANATOMICAL DESCRIPTION

In Vladimir Janda’s research on muscle imbalances, he called the distortion and imbalance of the back to chest musculature Upper Crossed Syndrome (UCS). UCS refers to tightness in the upper trapezius and levator scapula on the dorsal side which crosses with tightness of the pectoralis major and minor. Weakness of the deep cervical flexors also crosses with weakness of the middle and lower trapezius. These muscle imbalances can alter specific joint mechanics, like increased cervical extension and scapular protraction, or decreased shoulder extension and shoulder external rotation. All of these imbalances can cause chronic pain if not managed.

These distortions decrease glenohumeral stability (the ball and socket joint between the upper arm bone and shoulder blade) as the glenoid fossa becomes more vertical due to serratus anterior weakness - leading to abduction, rotation, and winging of the scapulae. This loss of stability then requires the levator scapula and upper trapezius to increase activation to maintain glenohumeral centration. (Janda, 1998) Again, this increased activation can lead to chronic shoulder tightness and pain.

UCS is a common postural distortion for athletes – particularly swimmers and basketball players. It is also common for those who engage in a lot of strength training, but do not focus enough on the back extensors and shoulder external rotation / scapular retraction and depression. Others who suffer from it are those who spend a lot of time at a computer with their shoulders rounded forward and head tilted forward.

**Upper Crossed Syndrome Muscle Imbalance Analysis**

<table>
<thead>
<tr>
<th>Upper Crossed Syndrome Summary</th>
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<tbody>
<tr>
<td><strong>Short Muscles</strong></td>
</tr>
<tr>
<td>Upper trapezius</td>
</tr>
<tr>
<td>Levator scapulae</td>
</tr>
<tr>
<td>Sternoceildomastoid</td>
</tr>
<tr>
<td>Scalenes</td>
</tr>
<tr>
<td>Latissimus dorsi</td>
</tr>
<tr>
<td>Teres major</td>
</tr>
<tr>
<td>Subscapularis</td>
</tr>
<tr>
<td>Pectoralis maior/minor</td>
</tr>
</tbody>
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*Upper Crossed Syndrome Summary, Table 6.11, NASM Essentials of Personal Fitness Training*
Muscles Crossing the Shoulder – Anterior View

Muscles Crossing the Shoulder – Posterior View

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Muscle Imbalance in the Shoulder and Back to Chest – Upper Crossed Syndrome

Janda's Upper Crossed Syndrome, Figure 1, International Journal of Sports Physical Therapy

The Glenohumeral Joint

Orthopedics and Sports Medicine, 2015
INTRODUCTION

My experience in finding Pilates truly inspired my need to help others like me – particularly athletic males. I’ve spent years teaching strength training, cycling, plyometrics, circuit training and Bootcamp, and the male athletic population has always interested me. Even before discovering Pilates I found myself wanting to help athletic males slow down, use less weight, really focus on their exercise execution, and develop a kinesthetic awareness of their bodies.

Over the past three months I have been privileged to work with a young college basketball player and triathlete. Josh kindly offered to conduct practice sessions with me for twelve weeks.

Josh was undeniably athletic. He not only spent brutal hours training for triathlons, but trained with his basketball team and lifted heavy weights regularly. He was educated and understood body mechanics - thus he had never suffered an injury. He was also a fan of yoga and stretching, and had been interested in trying Pilates. He was enthusiastic, strong and eager to try any of the exercises I taught him.

The following paper outlines my experience in working with a young, athletic male and the program I developed for him over the twelve week period and thereafter. My account primarily focuses on his limitations and imbalances in the shoulder region and back to chest musculature.
CASE STUDY

For purposes of this paper and the program I developed for him, I have not defined Josh as simply a “basketball player” or a “triathlete”, but rather an athletic male. After speaking with him and learning about his lifestyle I decided to develop a rounded program for someone with many rounded physical interests, instead of focusing on the common muscle imbalances and injuries a basketball player generally faces. Much of the program, however, does focus on specific exercises to target his muscle imbalances – and these particular imbalances are common for many male (and female) athletes.

BACKGROUND:
Josh is a very tall, very muscular, athletic male. He is also young and his body is agile. He has impressive flexibility and range of motion for someone with such an athletic lifestyle. He has extensive biking, swimming, running, basketball, and weight lifting schedules. He has no experience in Pilates.

Name: Josh

Age: 24

Height: 6’3

Weight: 207

POSTURAL ANALYSIS:
When observing Josh’s static posture I acquired information about his muscle imbalances. I saw no postural distortions through the foot and ankle complex, knees or lumbo-pelvic-hip complex. All of the postural distortion occurred above the hips. The shoulders were somewhat rounded, elevated and protracted, the scapula was rotated forward in abduction. The head tilted forward, but not excessively. Thus, there was noticeable cervical lordosis and thoracic kyphosis.

LIMITATIONS:
Josh had fairly weak back extensors, though not excessively. He had trouble keeping his shoulders and scapula stable during exercises, but again, not excessively. He suffered from a mild to medium case of UCS. His limitations were not severe and his muscle imbalances would not take long to correct.
COMPREHENSIVE PILATES TREATMENT:
Some of the more valuable Pilates exercises for an athletic male, such as Josh, include:

- Foot Work (with focus on the ankle extensor when on the toes, and foot work on the Wunda chair to promote ideal posture)
- Abdominal Work
- Hip Work – using lighter springs (or hip work on the Cadillac or Avalon)
- Stretches
- Full body integration work – using lighter springs on the Reformer
- Arm work which focuses on maintaining posture and shoulder rotation
- Back Extension (with focus on keeping the scapulae retracted and stable)

The valuable Pilates exercises for an athletic male with UCS include:

Reformer:
- Up Stretch Group – focusing on scapular retraction as the heel of the hand pushes away from the bar
- Stomach massage flat back and Reaching
- Balance control back (prep), working into full
- Shoulder push, Arms Sitting, Kneeling and Side Arm Series
- Rowing Series
- Mermaid
- All back extensor work

Cadillac:
- Roll up top loaded, Roll up bottom loaded, Teaser prep, Breathing with Push Through Bar
- Shoulder stretch
- Kneeling cat stretch, Saw, Sitting back
- All arm work
- All back extensor work

Wunda Chair:
- Footwork, focusing on posture and balance
- Cat stretch kneeling, Standing pike reverse, Torso press sit, Pike sitting
- All arm work
- All back extensor work

Ladder Barrel:
- Shoulder stretches 1 and 2
- Back extension
I focused on developing a program that included valuable exercises for an athletic male as well as exercises to help correct Josh’s muscle imbalances. I also tried to create unstable exercises where possible to challenge core strength whilst encouraging very limited engagement of the shoulders. I did this through the use of lighter springs to promote body awareness.

Also, seeing as Josh was very strong, I decided to move into more intermediate to advanced exercises sooner than I would with other clients. Indeed, many of my clients may never be able to execute some of the exercises Josh was able to execute beautifully after only 10 sessions – but as a young athletic male with mild limitations, these exercises were an important part of his journey.

**INDIVIDUAL PROGRAM – 12+ WEEKS**
The individual program for purposes of this paper has been drawn into a scope of typical sessions over a 12 week period.

**GOALS**
- Target weak and underused muscles mid and lower back
- Stretch shortened muscles in the chest, shoulders and neck
- Enhance shoulder extension and shoulder rotation
- Encourage scapular retraction
- Strengthen deep core and pelvic floor muscles
- Encourage more movement in a transverse plane of motion
- Deep stretching and lengthening of the hamstrings, hip flexors, and adductors, but primarily the pectoralis major, upper trapezius, neck and latissimus dorsi

**PROGRAM OUTLINE – CLASS PLAN 1-12+**

<table>
<thead>
<tr>
<th>BASI BLOCK</th>
<th>Sessions 1-12</th>
<th>Sessions 12+</th>
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<tbody>
<tr>
<td>Warm Up</td>
<td>Roll down then variations of pelvic curl, chest lift, chest lift with rotation, spine twist supine, leg changes (focus on body awareness, breathing and connection of the core)</td>
<td>Roll down then variations of pelvic curl, double leg stretch, single leg stretch, roll over, hamstring pull, criss-cross (advance once body awareness has progressed)</td>
</tr>
<tr>
<td>Footwork</td>
<td>Done on all apparatus, but focusing mainly on the Wunda Chair</td>
<td>Done on all apparatus, but focusing mainly on the Wunda Chair</td>
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<tr>
<td><strong>Abdominals</strong></td>
<td>Primarily done on the Cadillac and Chair – important exercises being Roll up top loaded, Roll up bottom loaded, Teaser prep, Breathing with Push Through Bar, Cat stretch kneeling, Standing pike reverse, Torso press sit, Pike sitting</td>
<td>Progress to adding more intermediate to advanced work on the reformer like legs in straps, short box series, or even backstroke and teaser prep or teaser with focus on keeping the scapulae stable</td>
</tr>
<tr>
<td><strong>Hip Work</strong></td>
<td>Primarily done on Cadillac, Spring Board or Avalon</td>
<td>Primarily done on Cadillac, Spring Board or Avalon</td>
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<tr>
<td><strong>Spinal Articulation</strong></td>
<td>Start basic with bottom lift and pelvic curl (to promote an understanding of spinal articulation), bottom lift with extension then semi-circle. Move into monkey, short and long spine as well as tower prep.</td>
<td>Slowly add jack knife and tower</td>
</tr>
<tr>
<td><strong>Stretches</strong></td>
<td>Focus on shoulder stretching and shoulder external rotation using the Ladder Barrel, the Cadillac and the pole and ball</td>
<td>Add stretches for hamstrings, gluteals, hip flexors and adductors</td>
</tr>
<tr>
<td><strong>Full Body Integration</strong></td>
<td>Up Stretch Group, kneeling cat stretch, saw, sitting back</td>
<td>Move into adding balance control back (prep) and slowly adding other groups and exercises</td>
</tr>
<tr>
<td><strong>Arms</strong></td>
<td>shoulder push, Arms Sitting and Kneeling, all arm work on the Cadillac and all arm work on the Wunda chair</td>
<td>Add Side Arm Series and Rowing</td>
</tr>
<tr>
<td><strong>Legs</strong></td>
<td>Leg press standing, hip opener, hamstring curl, frog front, backward step down, single leg skating, ankle weights – only one exercise per class</td>
<td>Add forward lunge, Single Leg Side Series, Squats, look to add jumping</td>
</tr>
<tr>
<td><strong>Lateral Flexion</strong></td>
<td>Focus on mermaid primarily, look to add side kneeling stretch and side stretch</td>
<td>Slowly add butterfly, side over on box, side pike – watch shoulders stay low and body stays in line</td>
</tr>
<tr>
<td><strong>Back Extension</strong></td>
<td>All back extension work apart from advanced</td>
<td>Look to move into Prone 2 and Hanging Back as shoulder mobility increases</td>
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CONCLUSION

When working with clients with Upper Crossed Syndrome (UCS), whether they are basketball players and athletes or non-athletes, Pilates instructors should focus on correcting the muscular imbalances and challenges they are facing. Upper Crossed Syndrome is defined by rounded, elevated and protracted shoulders, protracted scapula, and a tilting forward of the head and neck. Without corrective exercise, UCS can lead to a loss of external rotation in the shoulder, and injuries resulting in headaches, chronic pain and possible rotator cuff impingement.

Strengthening exercises include those that focus on scapular retraction and stability of the scapulae as well as exercises for the back extensors (mid and lower trapezius, rhomboids) and deep cervical flexors. Stretching should include external rotation, or rotation of the shoulder, and stretching for the pectoralis major, latissimus dorsi and upper trapezius.

Pilates can be an excellent corrective regimen for those suffering from UCS. A well-rounded program focusing on the client as a whole as well as limitations resulting from UCS should allow clients to feel relief and relaxation in the shoulder region, less pain and better posture – all of which promote a healthier lifestyle.
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