Pilates for the Treatment of Shoulder Bursitis

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Abstract

The following case study applies the principles of Pilates using the BASI block system to address a specific shoulder dysfunction. The shoulder is a sophisticated and complex joint prone to injury and dysfunction due to incorrect use or overuse of a muscle or group of muscles, causing pain and inflammation, including the conditions addressed in this case study of a 44 year old male. Daniel is an otherwise healthy family man with neck and shoulder pain who has been diagnosed as follows:

• Bursitis
• Calcific Tendonitis
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Anatomy of the Shoulder

Shoulder Mechanics:

- It has the greatest range of motion of any joint in the body with complete global movement allowing you to position the arm and hand anywhere in space.
- The coordinated activity of numerous muscles working together in set patterns is required to produce this motion – Scapulo-Humeral Rhythm.
- It must also be strong and stable enough to lift and push heavy weight against resistance.
- It is made up of FOUR joints and FIVE linked bone groups which are related and work together.
- To allow so much movement the joints need to be 'free' to move, therefore the shoulder should be 'unstable' compared to other joints of the body; however a series of complex ligaments and muscles keep it ‘in joint’.

Because the shoulder is such a unique joint it is also prone to injury and overuse.
The deepest layer includes the bones and joints of the shoulder – see below.

The next layer is made up of the ligaments and joints.

The tendons and the muscles come next.

The nerves supply all the above structures and make them work.

**Bones & Joints of the Shoulder**

There are four joints making up the 'shoulder joint':

- The shoulder joint itself known as the Glenohumeral joint, where the arm (humerus) attaches to the shoulder blade (scapula).
- The acromioclavicular (AC) joint - where the collarbone (clavicle) meets the acromion of the scapula.
- The sternoclavicular (SC) joint - where the clavicle meets the chest bone (sternum).
- The scapulothoracic joint (where the scapula meets with the ribs at the back of the chest).
Muscles which act on the shoulder joint may be explained broadly in 3 categories:

1. Global stabilisers: trapezius, rhomboids, levator scapulae, petoralis minor and serratus anterior – moving or stabilising the scapulae depending on the needs of the arm

2. Local stabilisers – the rotator cuff group: comprising supraspinatus, infraspinatus, teres minor and subscapularis – providing support for good movement of the whole shoulder joint

3. Global mobilisers: pectorlis major, latissimus dorsi, deltoids and teres major – to perform gross movement of the arms

Introduction

Bursitis and Calcific Tendonitis

Bursitis is the inflammation of a bursa.

A bursa can be thought of as a self-contained bag with a lubricant and no air inside.

Bursae offer a smooth, slippery surface between two joints. These small, fluid-filled sacs lubricate and cushion pressure points between your bones and the tendons and muscles near your joints. Without the bursa between these surfaces, movements would be painful due to friction.

Causes of Bursitis

When it becomes inflamed, the bursa loses its gliding capabilities, and becomes more and more irritated and painful when it is moved. The added bulk of the swollen bursa causes more friction within an already confined space.

There are several common causes of bursitis; they include the following:
- repetitive bursa irritation
- traumatic injury
- systemic disease

Repetitive Bursa Irritation

Bursitis usually results from a repetitive movement or due to prolonged and excessive pressure.

What is Shoulder Bursitis?

**Shoulder bursitis** is an inflamed shoulder bursa.

There are several bursa in the shoulder, helping to reduce friction in the shoulder spaces. The subacromial bursa is the most commonly inflamed of the shoulder bursa and is a common cause of shoulder and neck pain that is usually related to shoulder impingement of the bursa between your rotator cuff tendons and bone (acromion). The subdeltoid bursa is less commonly inflamed shoulder bursa.
Calcific Tendonitis

Calcific tendonitis refers to a build-up of calcium in the rotator cuff (calcific deposit). When calcium builds up in the tendon, it can cause a build-up of pressure in the tendon, as well causing a chemical irritation. This leads to pain which can be extremely intense. It is one of the worst pains in the shoulder (the other being frozen shoulder).

In addition to the chemical irritation and pressure, the calcific (calcium) deposit reduces the space between the rotator cuff and the acromion, as well as affecting the normal function of the rotator cuff. This can lead subacromial impingement between the acromion and the calcium deposit in the rotator cuff when lifting the arm overhead.

The cause of the calcium build-up in the rotator cuff is not known. It tends to be more common in people between the ages of 30-60 years of age. It does eventually disappear spontaneously, but this can take between 5 to 10 years to resolve.

Calcific deposit in the rotator cuff of the shoulder:
Case Study

Daniel is a 44 year old family man living in London UK. His job involves working from home using a laptop computer and a phone all day plus travelling abroad on a regular basis. He is very fit and active, working out and playing racquetball, both very dynamic sports, and a weekly Pilates mat work class.

A frozen shoulder three years previously had been diagnosed and treated. However recently he began to suffer from right-sided shoulder and neck pain which got progressively worse so he was unable to carry out his daily activities or sports without pain. His physician diagnosed bursitis and calcific tendonitis, and his treatment involved anti-inflammatory medication for the pain and inflammation, osteopathy for manual treatment, physiotherapy to strengthen his rotator cuff, and advice to continue with Pilates classes.

Daniel wanted to augment his Pilates mat practice with a more structured, individual programme using the studio equipment to target his problem areas, with a view to gaining full function and enable him to resume his sporting activities.

Conditioning Programme

Assessment:

Observation: Daniel has a Stiff thoracic spine; limited right side rotation; limited flexibility in general; upper crossed syndrome, anterior pelvic tilt.

Goals: Over a period of 6 weeks – 3 sessions per week.

Address posture; mobilise uniformly; encourage good shoulder mechanics; increase ROM; restore functional movement, then strengthen.
**BASI Block System:**

Basic Warm Up – roll down, pelvic curl, spine twist supine, chest lift, chest lift with rotation and hundreds position with knees bent arms reaching forward no pulsing. All these flexion movements are to aid in stretching the back of the body, targeting the tight thoracic spine. Cue emphasis on Daniel’s tight right side.

Supine on the foam roller to perform arm work and open the chest.

**Footwork**

Weeks 1 & 2

Footwork on the Reformer – Parallel heels, parallel toes, v-position toes, open v-heels, open v-toes, calf raises, prances, single leg heels, single leg toes, prehensile

**Abdominal Work**

Cadillac – Roll up with the roll up bar

Chair - Pike Standing, Torso Press Sit

Week 5 & 6

Full Pike

**Hip Work**

Cadillac – Basic Leg Springs Series – Frog, Circles Down, Circles Up, Walking, Bicycle

Cue - emphasis on hip disassociation to maintain pelvic lumber stabilisation

**Spinal Articulation**

Week 3 & 4

Cadillac – Tower Prep

Reformer – Semi Circles - good shoulder mechanics encouraged plus moving from anterior tilt to posterior tilt which is good for his awareness

Cue - straight arms with scapular stabilisation
**Stretches**

Chair – Triceps & Press Sit – good for pectoral stretch

Ladder Barrel - Hamstring Stretch, Gluteal Stretch, Hip Flexor Stretch

Week 5 & 6

Cadillac – Shoulder Stretch

**Full Body Integration 1**

Cadillac – Push Through Series, Sitting Forward, Kneeling Cat Stretch, Saw, Sitting

Back, Side Reach

Cued – The saw for tight right side

**Arm Work**

Avalon Chair – Arm Chair Series, Chest Expansion, Hug A Tree, Up Circles, Down Circles, Salute, Biceps, Rhomboids

Chosen for feedback from the chair but not leaning. The objective was to increase ROM in shoulder joint

Cue – movement from abdominals and shoulders not chest

**Full Body Integration 2**

Week 5 & 6

Reformer – Tendon Stretch – Chosen particularly for serratus anterior connection

**Additional Leg Work**

Reformer – Long Box Series - Hamstring Curl – continues to keep the chest open

**Lateral Flexion / Rotation**

Wunder Chair – Side Stretch Progressing to Side Kneeling Stretch

**Back Extention**

Cadillac – Prone 1, Prone 2
Cool Down

Rest Position, Roll Down

Conclusion

Daniel’s 6 weeks programme has addressed and improved all of the issues surrounding his condition.

Work Related - He has become much more aware of his posture and takes regular breaks from his desk to perform some stretching exercises and uses a sitz cushion on his chair to maintain his spinal alignment.

Leisure – Daniel has not resumed his racquetball but is continuing with Pilates and hopes that he will continue to make good progress enabling him to take up more energetic pursuits before long.

Physically – Daniel’s forward shoulders have visibly opened out bringing them nearer to the plumb line (he’s very pleased with this). He has increased flexibility in all ranges. Improved scapular stability has allowed a freer movement around the shoulder girdle with a reduction in pain. Forward flexion in the roll down is also greatly improved and he can now touch his toes; unthinkable a few weeks ago.
Bibliography


https://www.shoulderdoc.co.uk/section/857


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