Pilates for Brachialis Tendonitis (Tennis Elbow)

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Abstract

Tennis Elbow is a term used to describe a painful condition in which the tendons of the elbow are overloaded as a result of repetitive motion. Although often associated with tennis, it is not just tennis players who suffer from this condition. Any sport or activity that involves repetitive stress on the elbow muscles can cause Tennis Elbow.

This paper focuses on Brachialis Tendonitis, as this form of Tennis Elbow is formally known. The pain from this condition presents directly above the elbow joint. The Brachialis muscle bends the elbow joint isometrically and as a result is frequently used in sports where arm flexion is extensively required. Rehabilitation involves stretching and strengthening the brachialis, along with all round strengthening of the shoulder and elbow extensor and flexor muscles.

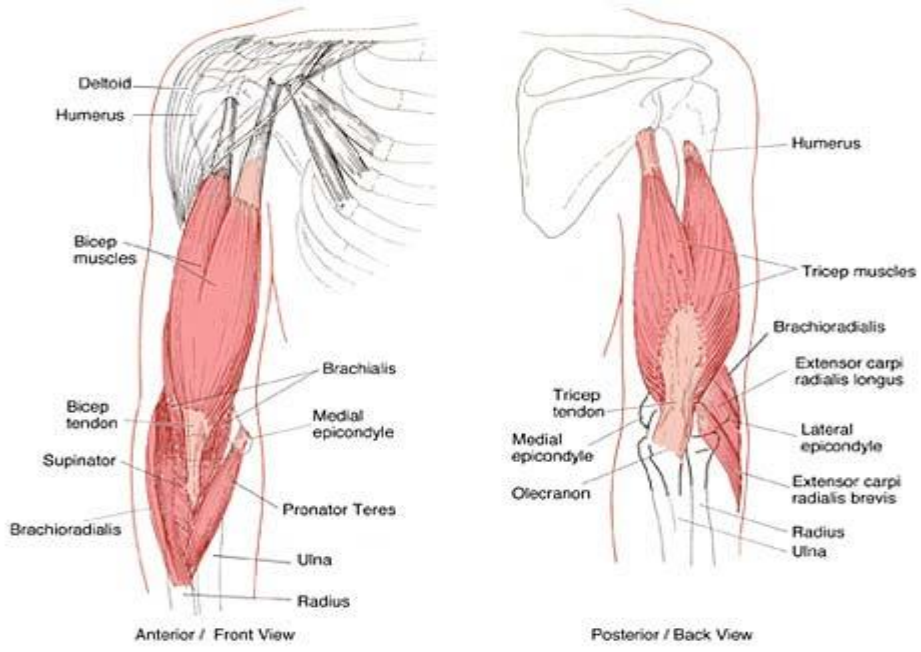
Contents

Anatomy of the Elbow Joint

The elbow joint is a relatively simple hinge joint which serves two main functions. Firstly, flexion and extension which allow the upper limb to fold on itself and extend, making the distance between the shoulder and hand either shorter or longer. Secondly, pronation and supination which allow the forearm to rotate around it's longitudinal axis, creating many possible hand positions.

Three bones come together to form the elbow joint; the humerus (bone of the upper arm), ulna and radius (bones of the lower arm).

There are large numbers of muscles which cross the elbow joint, as illustrated below from an Anterior and Posterior View.



http://www.hawaiianshirtray.com/wp-content/uploads/2011/02/Muscles-of-the-elbow1.jpg

The following are the largest and most commonly injured muscles of the elbow.

Elbow Flexors:

Biceps Brachii - this is the main flexor of the elbow. The two heads of the biceps brachii originate from the scapula and travel down the arm, across the elbow joint, inserting on the radius.

Brachialis - this muscle is the strongest elbow flexor when the arm is pronated. It originates from the lower half of the front of the humerus and attaches to the coronoid process – the front bony protrusion of the ulna. It is often the muscle injured in sports/activities where arm flexion is required (for example in tennis, causing Brachialis Tendonitis, or Tennis Elbow).

Brachioradialis - this muscle flexes the elbow and assists pronation and supination. It starts at the outer edge of the lower third of the humerus, crosses the joint and attaches at the lower end of the radius.

Pronator Teres - this muscle aids flexion and pronation of the forearm. It originates just above the medial epicondyle and attaches on the outer surface of the radius.

Elbow Extensors:

Triceps Brachii - this is the main extensor of the elbow. The triceps brachii consist of three heads which originate from the scapula and back surface of the humerus to cross the elbow and attach to the olecranon process at the back of the ulna.

Anconeus - this muscle works with the Triceps to extend the elbow. It originates from the lateral epicondyle of the humerus and attaches to the superior ulna.

Extensor Carpi Radialis Brevis - this muscle extends the wrist and aids extension of the elbow. This muscle is also commonly associated with Tennis Elbow pain.

The muscle starts at the lateral epicondyle of the humerus and attaches to the third metacarpal of the hand.

The Client

My client is a seventy one-year-old retired female tennis player. Playing four times a week on average, tennis is an integral part of her life.

She had previously had pain around the Lateral epicondyle of the right arm (her tennis playing arm), also commonly associated with tennis elbow, which she had recovered from with rest and wrist extensor stretching/strengthening. However, this time it was presenting itself mainly as pain in the Brachialis, just above the elbow joint. It was particularly painful when she struck the tennis ball.

After an initial period of rest, to reduce pain and inflammation, I put together the following conditioning programme. The aim was to gradually increase the load on the muscles and tendons of the elbow and shoulder, to a point where my client could resume tennis pain free. The following programme incorporates the full BASI Block System, with exercises chosen that work on strengthening and stretching both the elbow flexors and extensors, along with full body conditioning, that will be helpful to my client in her chosen sport.

With tennis being such a one-handed sport, I've been making my client aware of the benefits of an overall exercise programme that addresses both sides of the body equally. Using the BASI system, my client and I are now able to make this conditioning program part of an ongoing exercise plan, incorporating work on different apparatus, to help prevent a recurrence of the injury.

BASI Pilates Conditioning Programme

BASI Block	Apparatus	Exercise(s)	Notes
Warm Up	Mat	Pelvic Curl Spine Twist Supine Chest Lift Chest Lift w. Rotation Leg Changes	Fundamental warm up for the whole body, progressing on to the Intermediate warm up.
Foot Work	Reformer	Footwork series including single leg	As tennis requires movement in many varying directions, this is an excellent series for tennis players. Not only are the hip & knee extensors and ankle plantar flexors strengthened, work is also done on ROM of the hip joint (in the Open V Position) and hip adductor control. The single leg series is also important, due to the need to push off from one leg frequently when running for shots.
Abdominal Work	Step Barrel	Overhead Stretch	Not only does this provide solid abdominal work, it also strengthens shoulder extensors & flexors and improves shoulder mobility (all essential in tennis, particularly when serving).
Hip Work	Reformer	Frog, Circles (Down/Up) and Openings	To focus particularly on hip adductor strength and flexibility.
Spinal Articulation	Reformer	Semi-circle	To work on spinal articulation, particularly helpful when serving in tennis.
Stretches	Ladder Barrel	Shoulder Stretch 1 & 2	To improve flexibility of the shoulder extensors and flexors, which will improve her overall mobility when hitting the tennis ball.
FBI	Reformer	Elephant & Upstretch 1	To improve trunk and shoulder stabilisation whilst also stretching the shoulder and hamstrings. Trunk stabilisation will improve general core stability and balance.

Arm Work	Cadillac	Arms Standing, including Butterfly	The series encompasses elbow extensor & flexor strength, shoulder strength, stabilisation and ROM and stabilisation of the trunk. Adding Butterfly will give my client extra oblique stretch and control training which is also helpful in a sport such as tennis, where lots of rotation of the trunk is required.
Leg Work	Cadillac	Squats	To work on strengthening both the quads and biceps. This provides further work to specifically address the strength of the elbow flexors.
Lateral Flexion/ Rotation	Reformer	Mermaid	To work on spinal mobility and scapular stabilisation. Tennis requires much lateral rotation, so gaining increased mobility and support here will be very beneficial.
Back Extension	Reformer	Pulling Straps 1 & 2	To improve back extensor and shoulder extensor & adductor strength. Tennis involves movement in so many planes, both flexing and extending the spine, so including back extensor work is vital.

Conclusion

After researching Brachialis Tendonitis, it is clear that this condition can be troublesome to treat, especially if it becomes chronic. It is therefore important to get an accurate diagnosis and effective treatment as soon as possible.

Brachialis Tendonitis specifically relates to the brachialis tendon. General strengthening and stretching of all the elbow and shoulder flexor and extensor muscles has improved the flexibility and strength of the tendon and have been key in getting my client back to playing tennis pain free. She is now motivated to maintain her program to help prevent a recurrence of the condition and is feeling the overall benefit of strength and flexibility on her game. She is also enjoying exercising her whole body using the BASI system. With tennis being her primary form of exercise, it has made her much more aware of the muscular imbalances she has and she is finding that the programme is helping with her overall posture and general balance on and off the court.

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