PILATES FOR INCREASING TENNIS PERFORMANCE AND AVOIDING INJURIES RESULTING FROM MUSCLE IMBALANCES

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Every tennis player at any age and skill level wants to play high-level tennis without pains and injuries. If you are a tennis player who strives for improvement but cannot train as hard as you wish to, because you are afraid of injuries, Pilates is for you.

Tennis is a particularly sport because it exercises mostly one side of the upper body, often resulting in muscle imbalances in the back, shoulder, knee and elbow. Pilates is to correct muscular imbalances between player’s dominant and non-dominant sides because these imbalances can lead to injuries and poor performance.

We, as the Pilates instructors, must pay attention to flexibility, strength and endurance of the muscles to prevent injuries and to provide increase in the performance.

A specific Pilates program for tennis players can play a key role in preventing common injuries resulting from muscle imbalances.

I will point out the muscular imbalances that may play role in causing injuries and will compose a specific program for a non-injured tennis player based on the BASI BLOCK SYSTEM that have a goal of both preventing injuries and enhancing the player’s performance.
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MUSCLE IMBALANCES IN TENNIS

Tennis is by nature “one-sided,” putting extra demands on the dominant side of the body. As a result tennis players often have muscular imbalances between their dominant and non-dominant sides. These can lead to injuries of the knee, hips, back, shoulder, elbow and wrist.

- Hamstring muscle group is weak and tight. This situation causes imbalances between quadriceps and hamstring muscle groups.
- There are imbalances with the hip.
- On the dominant side the lower back muscles may become tighter and less flexible as compared to those on the other side
- Anterior shoulder muscles are relatively stronger than the posterior. Also there may be some strength disparity in the biceps of your racquet arm as compared to your non-racquet arm.
- Certain muscles on the racquet side becomes bigger, stronger, tighter and less flexible.
- Wrist and finger extensor versus flexors imbalances.
KNEE & HIP

The most common knee problem in tennis players is anterior (front) knee pain. This is due to either chondromalacia (softening of the cartilage) of the patella (knee cap) or tendinitis, especially at the patellar tendon. In order to avoid any injuries; the tennis player frequently needs to build up the quadriceps muscle also the hamstrings. Hamstring muscle tightness in the presence of especially in the vastus medialis weakness has been associated with anterior knee pain. The tightness of the hamstrings increases the compressive forces to the patella femoral joint (Knee Cap).

An devastating effect has been observed because of the weakness of several key hip stabilizers such as the hip abductors and hip external rotators on the patella-femoral joint.

So, In addition to the muscle imbalance between the quadriceps and hamstring muscle groups, muscle imbalances of the hip can also cause patella femoral tracking problems. Several key hip stabilizers, such as the hip abductors and hip external rotators of a tennis player, are weak and must be strengthened in order to avoid any devastating effect on patella femoral joint.
BACK

Tennis players asymmetrically load the trunk while playing. Neuromuscular imbalances are risk factors for low back injuries.

It's possible that certain muscles on the dominant side of the body can become tighter and less flexible as they become bigger or stronger. In addition to the obvious cosmetic effects (such as with the overdeveloped forearm) that some of these muscular imbalances may cause, they can also have an effect on the player's athletic performance and risk for injury.

Core strength is very important to secure the lower back muscles also to increase performance.
SHOULDER

Each of these muscles play a part in both moving the shoulder as well as stabilizing the joint. Whenever there is a weakness or problem with one of these muscles there can be a problem at the shoulder joint itself. Proper strength and function of each of these muscles is very important to maintain a strong and injury free joint. The reason why tennis players face shoulder problems is concerned with this issue.

The shoulder girdle is a very complex structure and allows large range of movement. But unfortunately it doesn’t provide a lot of structural support. The shoulder joint relies on the muscles and tendons around the bones for stability. But these bands can be injured through misuse and overuse, resulting in pain.

In most cases of shoulder pain the rotator cuff is injured. The rotator cuff is responsible for internal and external rotation and therefore is commonly used in serving and hitting a tennis ball. The four deep muscles around the shoulder joint that make up the rotator cuff provide stability to the shoulder joint.

We should have focus on the posterior shoulder muscles deeply so as to balance the anterior and the posterior muscle imbalances of the shoulder.

Muscles of Shoulder Anterior View

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By strengthening the shoulder girdle and improving flexibility, shoulder injuries and pains are prevented and it is also good for the player’s performance.

**ELBOW AND WRIST**

Tennis elbow is mostly brought on by an underlying extensor vs. flexor imbalance resulting from poor elbow muscle training techniques. Extensor tendons are open to injury when they weak, imbalanced and lacking in proper blood flow.

Finger extensor muscle tone vs. finger flexor muscle tone contributes to elbow joint stability. The imbalance of finger muscle ratio (extensors vs. flexors) is a vital, yet overlooked.

9 muscles close the hand and 9 muscles open the hand. These muscles originate equally on the front and back of the elbow. Dominant hand closing muscles (resulting from repetitive activities) result in elbow imbalance. Finger extensor tendons are underprepared and lack blood flow and are prone to injury. The same hand muscle imbalance leads to carpal tunnel syndrome.

Wrist extensor vs. wrist flexor muscle ratios must also be balanced in order to stabilize the elbow and prevent the tennis elbow.
AN INTERMEDIATE PROGRAM FOR THE TENNIS PLAYER CLIENT BASED ON THE BASI BLOCK SYSTEM:

1) WARM UP
Roll up, Spine Twist Supine, Double Leg Stretch, Single Leg Stretch, Criss Cross.

2) FOOT WORK (On the Reformer )

3) ABDOMINAL WORK
Double Leg (Abdominals Legs in Straps), Double Legs with Rotation (Abdominals Legs in Straps).

4) HIP WORK ( Single Leg Supine Series On the Cadillac are preferred)
Hip Extension, Frog, Bicycle, Circles Down/Up.

5) SPINAL ARTICULATION
Tower Prep, Tower.

6) STRETCHES
Shoulder Stretch, Kneeling Lunge.

7) FULL BODY INTEGRATION 1
Elephant, Up stretch 3.

8) ARM WORK
Shoulder Push Single Arm, " Chest Expansion, Up Circles, Down Circles, Triceps, Biceps (Arms Kneeling) ".

9) FULL BODY INTEGRATION 2
Balance Control Back.

10) LEG WORK
Backward Step Down.
11) LATERAL FLEXION & ROTATION

Side Stretch.

12) BACK EXTENSION

Pulling Straps 1, Pulling Straps 2.

CONCLUSION:

As a BASI based Pilates program, my goal is to achieve the most efficient, reliable, useful way. I focused on the needs of the tennis player accordingly. Here are the main points;

- Preventing injury caused by muscle imbalances
- To increase the performance
- Work the muscles and their opposing muscles.
- Improving the balance and control for quick reaction and direction change.
- Strengthening shoulders and arms to improve the stroke velocity

- To improve flexibility and stability to control shots and avoid injuries.
- Improving muscle control to prevent over-use injury
- To increase upper and lower body strength and endurance

To improve the tennis players performance, we need a program that can correct/avoid muscle imbalances, strengthen essential core and stabilizer muscles and prevent injury. With its focus on core strength, flexibility, stability and balance, Pilates is a great tool for tennis performance.
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