

Thanks to

 **Lexington Clinic**
Shoulder Center of Kentucky

Recognized as a
Center of Excellence by the Society of Tennis,
Medicine and Science (STMS)



USTA KY ASK THE DOCS- STRETCHING

QUESTION:

I hear a lot of talk about stretching. Is stretching important for tennis players, and if it is, how should I stretch for tennis.

ANSWER:

Stretching is very important for tennis players. It is one of the “4 S’s” (stretching, strength, speed or power, and stamina or endurance) of a comprehensive conditioning program for tennis players at all age, skill and activity levels. Because tennis requires repetitive starts, stops, direction changes, twists, turns, and large ranges of motion, a flexible or pliable muscle is much better equipped than a tight or stiff muscle to respond to these tennis demands with optimum performance and minimal risk of injury. There are 3 main reasons to do regular stretching. First, stretching can reduce the risk of injuries to muscles and joints that may occur as a result of repetitive use and overuse. Second, it can loosen up tight muscles so you can have increased joint motion and reach some of those wide balls. And third, stretching helps you overcome the effects of strenuous play which cause muscles to get tight after the match.

There are 2 general types of stretching programs, with different effects on and different goals for the muscles, the static and the dynamic stretch. The static stretch is performed slowly, reaching the point of maximum muscle length, and then holding in that position for 15- 20 seconds. Its purpose is to reset the muscle’s resting length in a longer position, so it will become more pliable over time. It is effective in improving flexibility after injury or when inflexibility is known to be a risk factor for injury or deleterious for performance. Examples would include a **tight hamstring muscle** after a muscle pull, a **tight trunk muscle** in low back pain, **decreased shoulder range of motion** as a risk factor for shoulder injury, or to maintain flexibility over a tournament season. While static stretching will increase flexibility, it will also result in a short term (15- 30 minutes) decrease in muscle strength, **so it should be performed on days when you are not practicing or playing matches.**

The dynamic stretch is performed faster and more rhythmically, reaching the end point of the stretch and then moving smoothly away from it within 2- 5 seconds. Its purpose is to quickly decrease the resting tension in the muscle, making it pliable and preparing it for the activity. It also increases the internal muscle temperature. It is effective when performed within 10- 15 minutes prior to play, as a “warm up” to loosen up key parts of the body, but is just as, or even more, important immediately after play, in the “warm down”, helping to decrease the muscle tightness and soreness that results from repetitive motions during play. Dynamic stretching does not result in long term changes in muscle flexibility, so it must be used with static stretching in the overall program.

Static stretches are most commonly used for muscles that are known to frequently develop tightness, such as **the hamstrings, hip rotators, back flexors, trunk rotators, shoulder rotators, and elbow flexors**. Dynamic stretches may address individual muscles but are also commonly used as warm ups for muscles that are active in patterns of motions. Examples would include **arm rotation overhead and by the side, combined trunk and hip rotation, combined knee and ankle rotation**, and the entire motions of the serve, forehand, and backhand.

Stretching exercises may be done daily in order to maintain baseline flexibility. They should be utilized as part of an integrated and balanced conditioning program that includes all of the “4 S’s”, which will be covered in other Ask the Doc segments.

There are many web sites and apps that provide detailed information regarding many types of stretching exercises. It is best to know your goals for your stretching program- improving certain tight areas, maximizing certain motions, working on previously injured areas, providing overall improved flexibility- and pick a variety of exercises that will address these needs and goals. We will provide samples of exercises that have worked in our experience and will be glad to discuss them with you.

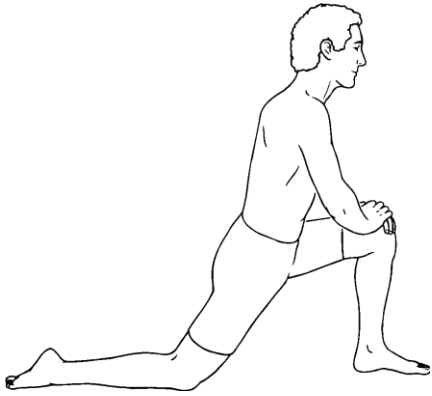
Static Stretches:

Hamstrings



Place sheet or belt around the ball of your foot. Start with your knee bent and then straighten knee until a comfortable stretch is felt in back of thigh. Pull down on sheet until a comfortable stretch is felt in your calf. Secondly, turn foot inward and pull down. Then turn foot outward and pull down. Repeat __3-4__ times per set. Hold __20__ seconds. Do 1 set per session. __1-2__ sessions per day.

Hip Flexor



Kneeling on right knee, slowly push pelvis down while slightly arching back until stretch is felt on front of hip. Hold 20 seconds.

Repeat 3-4 times per set. Do 1 sets per session. Do 1-2 sessions per day.

Piriformis Stretch-Hip Rotators



Cross legs, right on top. Gently pull other knee toward chest until stretch is felt in buttock/hip of top leg. Hold 20 seconds.

Repeat 3-4 times per set. Do 1 sets per session. Do 1-2 sessions per day.

Sleeper Stretch



Lying on your ____ side, bring your elbow up to shoulder level and with elbow bent at 90 degrees use your other hand to push ____ hand toward table.

Repeat 10 times; Hold 5 seconds each; 1 set

Dynamic Warm Up Stretches:

External Rotation/Internal Rotation with Racquet at neutral



Keep arm against body, gently use RACQUET to rotate arm away from body and toward body. Keep elbow bent and against your side as you do this. Hold for __5__ sec. Repeat __10__x __1__ session/day

External Rotation/Internal Rotation with Racquet at 90/90 position



Place arm into 90 degrees shoulder elevation and 90 degrees elbow flexion as pictured. Use RACQUET to rotate arm away from body and toward body. Keep elbow bent and as you do this. Hold for __5__ sec. Repeat __10__x __1_session/day

Pronation/Supination:



Stand tall, start with racquet in neutral, rotate forearm each direction as pictured slowly. Hold 3 count each way.

Repeat __10__ times and HOLD for 5 SECONDS __1-2__ Sets __1_session/day

Eccentric Biceps



1. Begin with elbow bent and forearm supinated (Palm facing you)
2. Slowly lower weighted ball, moving forearm to a pronated (palm away position)
3. Slowly lower for a count of 5 Seconds
4. Repeat 10 times 1 Sets 1 session/day

Seated Thoracic Rotation/Extension



1. Start sitting in chair with elbow touching opposite knee
2. Rotate shoulder/elbow and look to ceiling
3. Repeat 10 times Hold 5 seconds 1 Sets 1 session/day

USTA ASK THE DOCS- STAMINA

QUESTION:

Why do I need to have endurance on the court if the distance I run for each shot is short?

ANSWER:

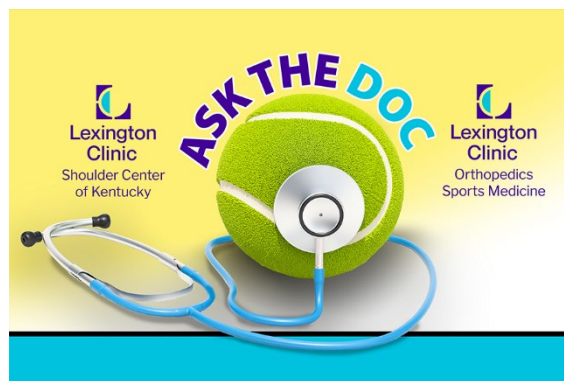
Tennis is classified as an 'anaerobic' sport, i.e., each individual point is of relatively short duration and each run during the point is of a short distance. However, tennis is also classified as an 'aerobic' sport, meaning that the number of points and runs is large and recovery between each point is required. Therefore, stamina or endurance, is one of the 4 "S's" of complete conditioning for tennis.

There are 2 aspects of stamina/endurance. The first is the ability of the heart (circulatory system) to efficiently provide oxygen to the tissues. This allows the muscles to efficiently use the oxygen to do the work required in each point and over the length of the match, so you can be almost as "fresh" at the end of the match as you were at the start. You can still run to the ball, hit it and last as long as necessary in the rally. The second aspect of stamina is perhaps even more important- the ability to recover between points. This allows the body systems to replenish energy and strength rapidly and efficiently, to be ready to play the next point, game and set. Both aspects need to be trained - like the other "S's", you can't completely achieve maximum stamina/endurance just from playing. Also, stamina/endurance is more dependent upon hydration and fuel for optimum function.

Conditioning for stamina/endurance requires exposing the body to exercise for longer periods of time than for strength or speed and building in periods of recovery. The most frequently suggested training times are at least 20 - 30 minutes and at least 3 - 4 times per week. It has been suggested that 20 minutes can be obtained by exercising in several shorter periods of time that will add up to 20- 30 minutes, but most recommendations are to complete the time in one exercise episode. The exercise resistance must be enough to raise the heart rate to a minimum level, depending on age and fitness level. A common formula for determining the training heart rate involves subtracting your age from 220 (maximum possible heart rate) and multiplying it by 0.67 - 0.75, to get a satisfactory training range. A good estimate of the ability to recover is to determine how long it takes your heart rate to return from maximum to baseline after a workout. The target recovery range is between 20 and 60 seconds. **A good estimate of your baseline level of stamina/endurance is your resting heart rate. A rate of 65 or lower is usually considered indicative of good stamina/endurance.**

Multiple types of exercise, including running, bicycling, rowing, aerobics, weightlifting and swimming, will elevate the heart rate to the desired level to achieve the training load to improve stamina. The best training for tennis usually involves some type of running or lower body exercising because it closely mimics the challenges in tennis. A common method of conditioning for tennis would include alternating jogging and sprinting (*for stamina/endurance*) with walking (*for recovery*), with the work/recovery time ratio of 3:1. Because of the amount of time and effort in stamina/endurance training, warm up and cool down is important. Adequate stretching should be performed and a gradual increase in exercise intensity should occur.

For guidance on specific stretches, please refer to our previous article in the May 2021 USTAKY newsletter.



USTA KY ASK THE DOCS- *STRENGTHENING*

QUESTION:

What is the role of strengthening for tennis? I don't think football type muscles are needed in tennis. Can I get strong enough just by playing?



ANSWER:

You are right- the type of muscles that football players develop are not helpful in playing tennis. However, there are several reasons why specific programs devoted to strengthening, the second of the 4 “S’s” of conditioning, are necessary. The definition of “strength” is the ability to develop and exert force. The first reason is that muscles rarely respond to the playing of tennis by increasing their strength. They may not get weaker, but all medical evidence points to the muscles requiring dedicated time and exercises in order to increase their internal capabilities for strength. The second reason is that your body needs strength to stabilize your legs, trunk and arms as they stop, start and move during tennis activities. The third reason is that your body can develop the forces needed to hit the tennis strokes with optimum speed and control. The final reason is that strength is needed to decrease the forces and loads that may result in injury.

Muscles need to be strengthened in 2 fashions. They must develop concentric strength, or the ability to develop force while shortening (the biceps muscle when the elbow is flexing), and eccentric strength, the ability to develop force while lengthening (the quadriceps muscle when the knee is flexing in standing). Both are necessary in tennis. Concentric exercises develop the ability to swing the racquet hard as you hit the ball or run fast on the court, and eccentric exercises develop the ability to slow down the arm after you hit the ball or stop and change directions and control the movement to decrease the risk of injury.

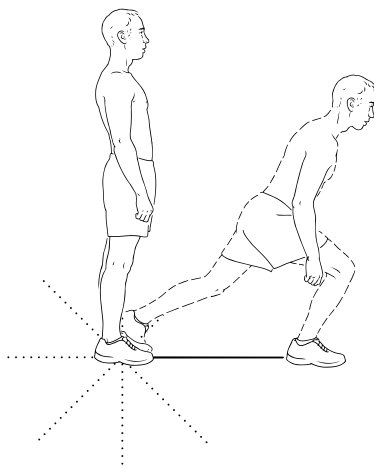
One of the main goals of a strengthening program is to identify what muscles need to be strengthened, and for what purposes. In general, attention should be placed on building the optimum strength in the legs and core, as these areas are the main generators of power and force in all tennis strokes. Over 50% of all the force produced at the racquet head to hit the ball is developed from the legs and core. The goals of strength for the upper body are not directed towards maximum strength but attaining functional strength to control the movements. There are many examples of exercises that can develop the type of strength needed. They may be performed with machines, tubing or other resistance bands, bar- dumb- or kettle- bells, or body weight. They may be performed by emphasizing a specific group of muscles (quadriceps, rotator cuff) or a more general pattern (lunges for leg and hip, overhead abduction for shoulder and arm).

The emphasis in leg and core exercises is on placing a high amount of resistance on the muscles, to develop the most strength. A good guideline is to determine the “1 repetition max”- the maximum load that you can lift, and then using 40- 50% of that amount as your load for the exercise. Concentric exercises such as quadricep extensions, hamstring flexions, calf raises, abdominal crunches, and back extensions are examples. Eccentric exercises such as calf extensions, lunges, hamstring extensions, quadricep flexions, and planks are examples. Upper body strengthening exercises usually are performed with lighter weights or resistance, about 30- 40% of the 1 repetition max. More emphasis is placed on control of arm movements and coordinating muscle activity in the front and back of the shoulder, elbow, and wrist. Frequently, concentric/eccentric exercises such as shoulder internal/external rotation, elbow flexion/extension and wrist pronation/supination, can be done at the same time to develop the coordinated strength necessary. Specific exercises that are used at the Shoulder Center of KY will be demonstrated in later issues of this newsletter.

Strengthening exercises should be performed after a period of stretching/warm up, to optimize the muscle's ability to contract and extend without placing too much strain on the tissues. **The best strength gains occur if the exercises are performed 3- 4 times a week. The exercises are usually done in 1- 3 sets of 6-8 repetitions, with a short period of 15- 30 seconds between each set (use this guidance for the exercises listed below). As strength is developed, progressions can be added, either in more sets, more repetitions or more resistance, calculating the new 1 repetition max.**

Strengthening exercises work by placing the muscle in a state of relative overload, so it has to develop more muscle fibrils and shortening/lengthening ability to withstand the imposed load. While this adaptation is occurring, recovery is a mandatory component of a strengthening program. Because of required and necessary recovery after the work load, it is not helpful to perform strengthening exercises every day. There can be a time of muscle soreness after exercise. Slight soreness can be worked through, but high levels of soreness indicate a need to allow more recovery. Strengthening & conditioning should be combined with the other "S's" - stretching, speed and stamina- in a balanced program.

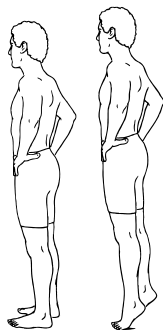
Lunge:



Stand with equal weight on both feet. Lunge with right leg forward, repeat with left leg leading. Do not allow forward knee to go over your toes.

Repeat ____ times. ____ Reps ____ Sets ____ sets per day

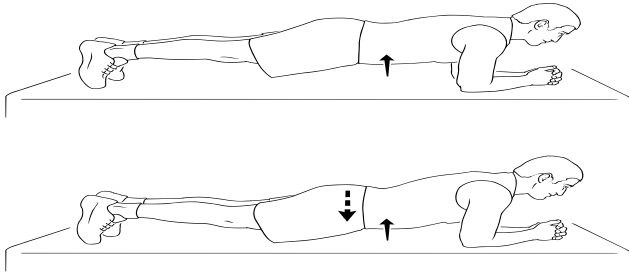
Calf Raises:



Rise on balls of feet.

Repeat ____ times per set. Do ____ sets per session. Do ____ sessions per day.

Planks:



On toes and elbows, pull abdomen in while stabilizing trunk. Slowly lower downward without arching back.

___ reps per set, ___ sets per day

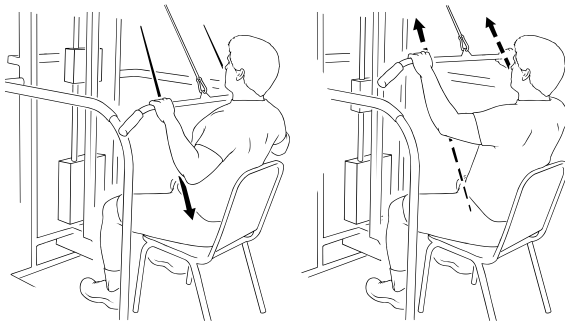
Eccentric Wrist Extension:



With tubing wrapped around left fist and other end secured under foot, bend wrist up (palm down) as far as possible. Keep forearm on thigh.

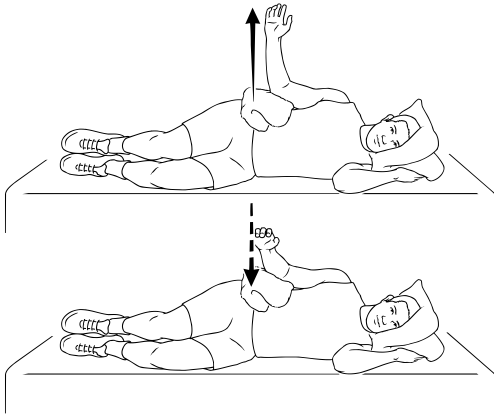
Repeat ___ times per set. Do ___ sets per session. Do ___ sessions per day.

Lat Pull Down:



Pull bar down quickly toward chest. Slowly release for 3-5 seconds. Use ___ lbs on machine. ___ reps per set, ___ sets per day

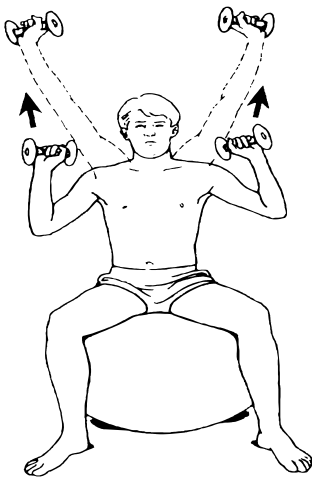
Shoulder Side-lying External Rotation:



Lie on side, affected arm on top, elbow bent to 90°, towel under upper arm. Quickly lift forearm. Slowly lower affected arm for 3-5 seconds. ___ reps per set, ___ sets per day

Add ___ lbs when you achieve ___ repetitions.

Overhead Dumbbell Press:



Stand or sit straight with shoulder down and back to start. Straighten elbows and press ___ lb dumbbells above head. Keep palms facing outward.

Repeat ___ times per set. Do ___ sets per session. Do ___ sessions per day

STRENGTHENING EXERCISES

Half Kneeling Chops



1. Start in half kneeling position and reach hands towards the back leg
2. Quickly lift hands overhead towards opposite side and rotate trunk
3. Slowly Return to start position

Perform 5-10 repetitions 3-4 sets 1x/day

Box Squat



Feet shoulder width apart, back straight, heels down, bend hips and knees until bottom touches chair or box. Keep knees parallel. Lower slowly, explode on return.

Perform 10 repetitions 6-8 sets 1x/day

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Forward Shuttle Runs



1. Start at baseline of tennis court
2. Run to net and back pedal to baseline
3. Some of the sets can be done with end point of slowing down the movement and others can be done with sudden stop

5-6 sets of 5 forward/backward shuttles

Lateral Shuttle Runs



1. Start at baseline of tennis court
2. Side shuttle to net and back to baseline
3. Some of the sets can be done with end point of slowing down the movement and others can be done with sudden stop

5-6 sets of 5 side shuttles

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USTA ASK THE DOCS- *SPEED AND POWER*

QUESTION:

What is the role of speed and power in tennis?
Do I need it, and what are ways to get it?

ANSWER:

Tennis is all about speed and power- speed to get around on the court and move the racquet to hit the ball, and power to put the most force into ball impact. This is the third of the 4 “S’s” of conditioning for tennis. Speed is about moving rapidly, and power is about applying force.

Speed has both linear and rotational components. Linear speed is about moving (usually running) in a straight direction- forwards/backwards or side to side. Linear speed conditioning drills are basically running drills. You should try to develop a strong start, emphasizing quickly moving to maximum speed, while running under balance and control. In tennis, linear speed is over short distances, so you should train over those distances- 5- 15 yards. You should train in both forwards and backwards movements and side to side movements. Since tennis play occurs in repetitive episodes of short runs, you should run 5- 6 sets of 5 forward/backward and 5 side to side movements, with a short period of rest between sets, in each conditioning session. Some of the sets can be done with the end point of slowing down the movement, but others should be run with the end point of a sudden stop to the movement, to prepare for changes of direction that are commonly needed in running. In this case, the counter movement should start immediately after the stop. The exact type of running drills can consist of any movements that will mimic the movements during the tennis match. They can be done on the court, in the gym, or at home. Running while using weights is probably not best for these drills, as weights add extra load and require different body responses that are not well translated into the movements needed on court.

Rotational speed refers to movements of body segments, and usually refers to trunk rotations and arm rotations. The goal of these conditioning drills is to generate speed of the segments to optimize the force applied at ball impact. To optimize rotational speed, optimum flexibility around these joints is necessary, so a preliminary stretching program needs to be implemented. Speed is best acquired by moving the trunk or arm through the full range of motion, with low resistance. Body weight is used first as the resistance, but in progressions, 1- 5 pound weights held in the hands can be used. This will allow the full range of motion to be accomplished. Heavier weights can apply too much load to the joint and result in undesirable compensations in activating the muscles. Trunk rotations should be done with the feet stable on the ground and shoulder width apart, and the motion should be from full left twist to full right twist and then reversed. 6-8 sets of 5 repetitions can be done each session. Arm rotations can be done with the full arc of motion, starting with the arms at the side, moving into full overhead motion and back down, and with the arm starting at shoulder level and moving from internal to external rotation and back. Once again 6- 8 sets of 5 repetitions can be done in each session.

Speed can transition into power. Power is not the same as strength. Power is using strength rapidly and in a concentrated fashion. It requires strength and flexibility. Power is best conditioned by using medium resistance through short distances and rapid velocities. Resistance can start with body weight and progress to bands,

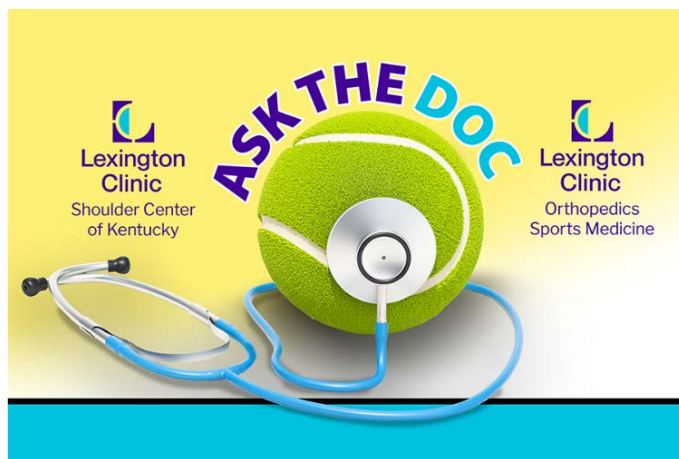


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handheld weights, and bars, with relatively high repetitions. Examples would include 6-8 sets of 10 repetitions using 6- 10 pound weights, medium resistance tubing, or 15-pound bars. The resistance should be moved through a specific arc of motion and should frequently include the motions needed in tennis such as trunk rotations, arm motions of the stroke patterns, and leg motions for stopping, starting and cutting. A good method of improving speed is plyometrics, a stretch/shortening technique that couples relatively slow motion in one direction (lengthening the muscles) with a relatively fast motion in the opposite direction (shortening the muscles). An example would be slow knee flexion coupled with fast knee extension or slow elbow flexion coupled with fast elbow extension. These types of exercises are especially helpful in tennis, which is basically a plyometric sport, comprised of a series of start/stop, stretch/shortening activities. Effective plyometric muscle function maximizes the ability to apply power to the stroke and ball impact. Multiple exercise programs can be used to improve power; a few exercises that are used at the Lexington Clinic Sports Medicine Center are provided below.

While working to maximize power through a conditioning program, or when applying power during play, power can place high levels of potential injury loads on the joints, muscles and bones. Care must be taken in doing the exercises for power conditioning, especially the plyometric exercises. Going through too large a range of motion, applying too much resistance, or doing too many sets can lead to acute or chronic overload and injury. Progressions of extra load, repetitions, or sets should be implemented gradually, with no more than a 15% increase in any component at a time. Power can be a tennis players best friend to win points and matches, but it can turn into an enemy if overload occurs.



TENNIS ELBOW

WHAT IS TENNIS ELBOW?

Lateral epicondylitis, commonly known as “tennis elbow”, refers to pain about the outside of the elbow. It is aggravated by wrist extension (bending it back) and supination (turning the hand from palm down to palm up). The condition gets its name from the repetitive stress on this area from hitting a backhand, but you do not have to play tennis to develop this problem.

WHAT CAUSES TENNIS ELBOW?

The repetitive microtrauma from heavy lifting or hitting a ball causes the tendon to become painful and actually changes the microscopic architecture of the tissue.

WHAT CAN I DO FOR TENNIS ELBOW?

The majority of treatment options focus on taking stress away from these tendons. Rest and avoidance of activities that cause pain will help symptoms calm down. A wrist splint can be used to decrease wrist extension. Forearm straps take change the vector of tension on the tendon at the elbow. Anti-inflammatories, such as ibuprofen, can help alleviate pain.

Specifically, for tennis, try using a larger grip. Also changing your technique by going to a two-handed backhand or striking the ball with less wrist flexion and pronation can reduce irritation to this area..

I HAVE TRIED THIS AND IT STILL HURTS, WHAT DO I DO NEXT?

The good news is 80% of people with tennis elbow will feel better by one year. To help speed up recovery, strengthening the muscles of the shoulder and around the shoulder can help provide a stable base for when the arm is away from the body reducing the stress on the elbow. At the elbow, stretching and exercises, usually eccentric exercises, can help alleviate pain.

Steroid injections can provide temporary relief, but do not usually provide a long-term effect. There is some early evidence that platelet-rich plasma injections may be helpful to speed up recovery. But for tennis elbow that still persists, surgical debridement can reliably improve symptoms.

E L B O W E X E R C I S E S

When applying power during play, power can place high levels of potential injury loads on the joints, muscles and bones. Care must be taken in doing the exercises for power conditioning, especially the plyometric exercises. Going through too large a range of motion, applying too much resistance, or doing too many sets can lead to acute or chronic overload and injury. Progressions of extra load, repetitions, or sets should be implemented gradually, with no more than a 15% increase in any component at a time.

ECCENTRIC WRIST EXTENSION

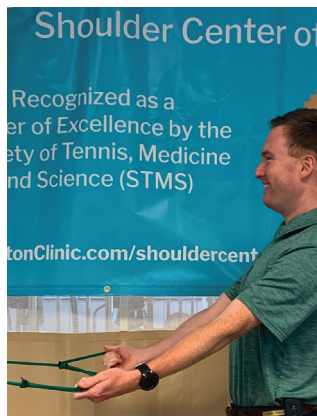


With Tubing wrapped around left fist and other end secured under foot, bend wrist up, palm side down as far as possible. Slowly lower to neutral position. Keep forearm on thigh.

REPEAT:

Perform 20 repetitions; 1-2 sets; 2 times per day

LOW ROW

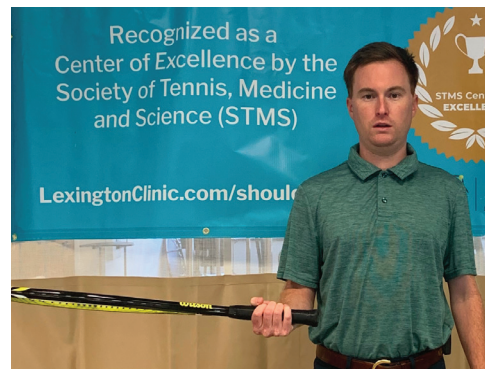


Place tubing in door near door handle. Grab both ends. Slightly lean forward, then stand tall as you pull band back with arms and wrists straight. Squeeze lower part of shoulder blades together.

REPEAT:

Perform 20 repetitions; 1-2 sets; 2 times per day

PRONATION/SUPINATION



With right forearm supported, grasp object and gently rotate palm down, then up, as far as possible without pain.

REPEAT:

Perform 20 repetitions; 1-2 sets; 2 times per day



KNEE MENISCUS

WHAT IS A KNEE MENISCUS?

A meniscus is a thin fibrous cartilage between the surfaces of some joints. The knee menisci are two thin C-shaped cartilages that sit on top of the tibia and help provide cushioning and stability to the femur. One meniscus is on the inside (medial); the other on the outside (lateral) of the knee. They are particularly helpful when the knee is flexed. These small structures are extremely important in preventing osteoarthritis.

HOW DOES THE MENISCUS TEAR?

The meniscus is often acutely torn with an instability event, such as when an athlete tears their anterior cruciate ligament (ACL) or sprains their medial collateral ligament (MCL). Much like the other cartilage of the knee, which is known as hyaline cartilage, a meniscus can wear down over time, which is referred to as a degenerative tear.

WHAT DOES A MENISCUS TEAR FEEL LIKE?

Meniscus tears usually create pain at the joint line of the femur and tibia. Medial meniscus tears hurt on the inside and lateral meniscus tears hurt on the outside of the knee. Additionally, tears can create painful popping or clicking swelling, and even locking up of the knee.

WHAT IS AN EASY TEST I CAN DO AT HOME IF I THINK I HAVE A MENISCUS TEAR?

A doctor will often perform a McMurray test in the office, but that is not possible to perform on your own. The Thessaly maneuver is one that you could do at home. Stand on the injured leg, bend the knee slightly and gently twist your body while standing only on the injured leg. If it creates pain on the inside or outside of the knee, you may have a meniscus tear. The best way to confirm that diagnosis is with an MRI.

WHAT CAN BE DONE FOR A MENISCUS TEAR?

For acute tears in the setting of an instability event, we usually recommend surgical fixation, as these tears usually heal well and will help prevent future osteoarthritis. First line of treatment for degenerative tears is physical therapy with strengthening. If physical therapy does not help and the knee does not have much osteoarthritis, arthroscopic repair or debridement would be the next step. In the setting of arthritis, we usually recommend NSAIDs and injections before likely going on to knee replacement.

KNEE EXERCISES

When applying power during play, power can place high levels of potential injury loads on the joints, muscles and bones. Care must be taken in doing the exercises for power conditioning, especially the plyometric exercises. Going through too large a range of motion, applying too much resistance or doing too many sets can lead to acute or chronic overload and injury. Progressions of extra load, repetitions or sets should be implemented gradually, with no more than a 15% increase in any component at a time.

BOX SQUAT



1. Stand with feet shoulder width apart.
2. With hands at shoulder height and stomach tight, sit down very SLOWLY.
3. Tap chair or box without putting any weight on the surface.
4. Return to standing.

REPEAT:

Perform 10-12 times. Complete 1-2 sets per session, 1 session per day.

BRIDGING



1. Lie down on hard surface with knees bent, feet on floor or table and arms resting at your sides.
2. Slowly raise hips from floor to create a straight line from your knees to your shoulders, keeping your stomach and glutes tight.
3. Hold 3 seconds (each repetition).
4. Lower back to surface.

REPEAT:

Perform 10 times per set. Complete 1-2 sets per session, 1 session per day.

HIP HINGE



1. Stand about a foot's length away from the wall. Place your feet in deadlift stance, around hip-width apart with minimal toeing out.
2. Unlock your hips FIRST and hinge back by pushing your buttocks towards the wall (or chair or counter). The hips lead the movement.
3. Continue to drive your hips back towards the wall while allowing some natural flexion at the knees.
4. With full control and feet solid on the ground, tap the wall with your buttocks and come back up into position.

REPEAT:

Perform 10-15 times per set. Complete 1-2 sets per session, 1 session per day.

SIDE STEPPING



1. Place TheraBand at ankles/knees.
2. Take a step out to side, while staying down in a squat.
3. Using the length of a hallway, repeat stepping 3 – 5x in 1 direction, leading with left leg.
4. Then return the opposite direction, leading with right leg, and repeat stepping 3 – 5x.

REPEAT:

Perform 3-5x (down and back length of hallway = 1). Complete 1-2 sets, 1 session per day.



ACHILLES TENDINITIS

Question:

What are the signs/symptoms of Achilles tendinitis and how is it treated?

Answer:

The Achilles tendon is a long and broad tendon connecting the calf muscles (the gastrocnemius and soleus) to the heel bone (calcaneus). The Achilles is necessary for plantarflexion (flexing the foot down), allowing for a powerful push off when running and jumping. Every step requires the calf muscles to fire through the Achilles, and therefore, tendinitis is very common because of this constant use.

Achilles' tendinitis is simply inflammation in this region (calf muscle to heel bone) resulting in pain. The pain can be directly over the heel bone from rubbing in the area, at the attachment of the tendon to the calcaneus (heel bone), or at the junction of the muscle and tendon. Pain is usually worse with activity and improves with rest. Tendinitis is often related to overuse, increased activity or stress on the Achilles, or an imbalance of strength between the muscles behind and in front of the ankle. Tight calf muscles (usually the gastrocnemius) decrease the ability of the Achilles to relax, creating more tension and stress on the tendon fibers.

Treating Achilles Tendinitis usually does not involve surgery. Activity modification with decreasing running and jumping, aggressive stretching of the calf muscles (gastrocnemius and soleus), and anti-inflammatories are the first line of treatment. A heel lift can also decrease stress on the Achilles. A walking boot or night splint to hold the foot at 90 degrees can be helpful. Physical therapy for eccentric strengthening and ankle stabilization is often recommended. Avoid steroid injections in this region as they can cause Achilles ruptures. There is some evidence that patients may benefit from platelet-rich plasma injections. If all these conservative measures do not provide relief, there are surgical options available.

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Achilles Tendinitis Exercises/Stretches

Standing Straight Knee Calf Stretch



Stand with left foot back, leg straight, forward leg bent. Keeping left heel on floor and foot pointing straightforward, lean into wall until stretch is felt in calf. Hold 60 seconds.

Repeat 2 times per set. Do 1 set(s) per session.

Do 2 sessions per day.

Standing Bent Knee Calf Stretch



Stand with left foot back, both knees bent. Keeping left foot pointing straightforward, lean into wall until stretch is felt in lower calf.

Hold 60 seconds.

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Repeat 2 times per set. Do 1 set(s) per session.

Do 2 sessions per day.

Eccentric Heel Raises



Stand with only toes on step (heels off) and use support as needed for balance. Rise up on toes. Lifting non-injured leg, slowly lower injured heel for 3-5 seconds into stretch position (heels below toes/heels down).

15 reps per set, 3 sets per day, 7 days per week.

*If you are not injured, you can still use this exercise for a good stretch. Place toes on step with heels off and hold for 15-30 seconds, 3-4 repetitions.

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TENNIS LEG

Question:

What is "Tennis Leg"?

Answer:

Classically, the term was used to describe a plantaris rupture. The plantaris is a small muscle that starts in the back of the knee and runs under the gastrocnemius (large calf muscle) attaching the calcaneus (heel bone) just inside the Achilles tendon. It plays a small role in ankle plantar flexion. Injury to this muscle occurs with a hard dorsiflexion force (foot going up towards the shin) and a feeling/hearing of a pop can be associated. More recently, this term can also be used to describe a medial gastrocnemius (big calf muscle) or soleus (calf muscle under the gastrocnemius) strain. These large muscles of the calf will not pop, but injuries can result in significant pain and dysfunction.

For pain in this area without an injury, you should contact a physician as this could be a deep vein thrombosis (blood clot of the leg).

Treatment for tennis leg is primarily focused on decreasing pain, stretching, and regaining strength. A walking boot can help to keep the ankle from pushing down which requires calf activation. Stretching the calf muscles, with the knee extended (plantaris and gastrocnemius) and the knee flexed (soleus). Compression, icing and anti-inflammatories may help decrease discomfort and swelling. There should be no pain with walking before considering running, jumping and more athletic maneuvers.

Please review the following stretches to help address soreness in the calf muscle.

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“Tennis Leg” Exercises

12.13.21

Standing Straight Knee Calf Stretch



Stand with left foot back, leg straight, forward leg bent. Keeping left heel on floor and foot pointing straightforward, lean into wall until stretch is felt in calf. Hold 60 seconds.

Repeat 2 times per set. Complete 1 set per session, 2 sessions per day.

Standing Bent Knee Calf Stretch



Stand with left foot back, both knees bent. Keeping left foot pointing straightforward, lean into wall until stretch is felt in lower calf. Hold 60 seconds.

Repeat 2 times per set. Complete 1 set per session, 2 sessions per day.

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Eccentric Heel Raises



Stand with only toes on step (heels off) and use support as needed for balance. Rise up on toes. Lifting non-injured leg, slowly lower injured heel for 3-5 seconds into stretch position (heels below toes/heels down).

Complete 15 reps per set, 3 sets per day, 7 days per week

*If you are not injured, you can still use this exercise for a good stretch. Place toes on step with heels off and hold for 15-30 seconds, 3-4 repetitions.

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Lexington Clinic

Shoulder Center of Kentucky



USTAKY January 2022 Ask the Doc Article: **Shoulder Labrum**

Question:

What is the shoulder labrum? What is a SLAP tear?

Answer:

The labrum is a thin fibrocartilage layer in the shoulder that creates a bumper around the glenoid (the shoulder socket) helping to create a stable ball-and-socket joint. It can become injured when someone dislocates the shoulder or from repetitive overhead activities. A SLAP

(Superior Labrum Anterior and Posterior) tear is a common way to describe a labral tear from repetitive overhead activities. Since one of the biceps tendons attaches to the superior labrum (top portion), shoulder motion – particularly overhead with external rotation (twisting the forearm away from the body) – puts strain on the bicep's tendon and subsequently the labrum. Additionally, shoulder tightness with internal rotation (twisting the shoulder down and towards the body) will push the ball of the shoulder backwards, injuring the labrum.

Shoulder labrum tears are common and do not necessarily mean there is pain or dysfunction in the shoulder. Often, athletes who perform repetitive overhead tasks will have a SLAP tear that has developed to allow them the extreme motions and accelerations to perform at a high level. The clinically significant labrum injuries – those creating pain and dysfunction – usually are a result of tears that dramatically disrupt the bumper role of the labrum. These labral tears usually create pain at the ball-and-socket joint with acceleration of the arm or extremes of motion. Some will also describe the shoulder as feeling unstable. This is a common source of shoulder pain in tennis players ages 15 to 40 years old. Similar symptoms in older players are more commonly associated with rotator cuff problems.

Many labral tears can be successfully treated with physical therapy. By stabilizing the shoulder blade and optimizing its motion during overhead tasks, the glenoid (shoulder socket) is in a better position to keep the ball centered decreasing the strain on the labrum. Additionally, the therapist can work on shoulder rotation flexibility, dynamic stability through rotator cuff strengthening and biceps stretches. If symptoms persist, you should seek evaluation by a sports or shoulder surgeon.

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Shoulder Labrum Exercises/Stretches

Wall Slide



Repeat 15 times 1-2 Sets
1x/day

Stand facing the wall. Place designated hand on wall. Slowly slide hand up the wall within a pain-free range of motion. Hold for 3 seconds and slide hand back down wall to chest height.

Low Row



Repeat 15 times 1-2 Sets
1x/day

Place tubing in door near doorhandle. Grab both ends of tubing. Slightly lean forward, then stand tall as you pull band back with arms straight. Squeeze lower part of shoulder blades together.

Mid Row

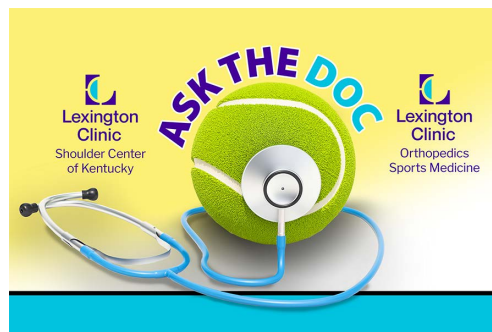


Repeat 15 times 1-2 Sets
1x/day

Place tubing in door near doorhandle. Grab both ends of tubing. Slightly lean forward and bend knees, then stand up tall and squeeze your shoulder blades together as you pull the tubing back while keeping your arms at a 90-degree angle.

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February 2022

TOPIC: **WORKLOAD**

HOW CAN I TRAIN AND PLAY AT THE HIGHEST FREQUENCY BUT HAVE THE LOWEST CHANCE OF INJURY?

This has always been a concern. Players will report, “I need to play enough matches and do enough conditioning to be at my best ability level, but I am concerned that I will ‘overdo’ it.” OR, “I’ve seen that players may have a high level of conditioning then play and do well, while others who try that level get injured.” In many cases, the problem can best be understood by examining the “load” a player experiences in tennis. “Load” is the total demand placed on the player as the result of all the activities required in playing. This article will only address the physical load, although the mental load also has implications and will be discussed in another article.

Load is a combination of the strokes hit, distance run, intensity of play, the content and amount of conditioning, and rest/recovery from a tennis session, and is usually called the training load. For many years it was thought that the total amount of the training load should be kept below a certain level, although it was difficult to accurately establish that exact level. There were many problems with this approach – people whose training load was below that level could get injured and some whose training load was above that level did

well. Most current evidence shows that most overload injuries are not caused by training or competition per se, but by inappropriate training or competition. It appears that the change in training, going abruptly from a certain level of load to a different level of load, is more important than the actual amount. Anyone who has played tennis twice a week and then went to a tennis camp and played twice a day or to a tournament and played 2 matches a day knows about the effects of an acute change in training load.

For most tennis players, the 2 most important variables in creating the training load are the number of strokes hit and the time on court. Keeping a log of the time on court and an estimation of the total number of balls hit will help in knowing the load. This measurement is determined for a week at a time. If a player is on the court for 4 hours, and hits 700 balls, then the load would be 2800 for that week ($4 \times 700 = 2800$). To identify significant change in load, the acute/chronic workload ratio (ACWR) can be calculated by relating one week’s load to the average load from the previous 3 weeks. If the ratio is greater than 1.5, studies have shown that the risk of injury is higher by 43%. The effect is the same for players who play rather infrequently and those who play regularly. (**See TABLE on next page.**)

TABLE

	Week 1	Week 2	Week 3	Week 4	ACWR= <i>Week 4/ combined avg of Weeks 1, 2 & 3</i>
Scenario 1	2800	2640	2840	3100	1.1
Scenario 2	2800	2640	2840	4280	1.5

For Scenario 1, the load is within the body's usual capabilities (under 1.5). For Scenario 2, the injury risk is much higher (1.5 or above).

The ACWR can be calculated on a rolling basis, always comparing the latest load to the average of the most recent loads. That way you have a current estimate of your workload.

Large changes in load may overwhelm the body's capabilities to withstand the loads. A way to lower the risk of overload is to monitor weekly loads and try to maintain a consistent amount, or by gradually increasing the load by less than 10% (ratio 1.1) if you are trying to play more or prepare for a tournament.

Additional strategies to help avoid overload include optimum conditioning as discussed in previous "Ask the Doc" articles, and by emphasizing recovery, both rest and sleep.

ASK THE DOC: MARCH 2022

TOPIC:

LOW BACK PAIN



WHAT ARE THE CAUSES OF LOW BACK PAIN?

Low back pain (LBP) is one of the most common musculoskeletal complaints that plagues tennis players worldwide. LBP may have a variety of causes and can vary in characteristics including location, severity, radiating symptoms, numbness, spasms, etc. The most common cause of LBP is mechanical, meaning a muscular imbalance. Common contributing factors include tight hamstrings, weak core muscles, poor conditioning, overuse, inefficient serve/swing mechanics or poor ergonomics while at work/school.



HOW DO YOU TREAT LOW BACK PAIN?

Luckily, with the proper exercise regimen and early recognition, LBP typically has a good prognosis and tennis players are able to return to play without limitations or residual deficits. Examples of exercise-based therapy that have been shown to provide benefits include walking, swimming, bicycling, stretching and yoga. Particularly for tennis, rotational core strengthening is important. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) and muscle relaxers may also be beneficial during sudden flares of pain. Inactivity and bed rest as a means of treating LBP can actually worsen symptoms, leading to decreased mobility and increased pain. Preventing LBP is the best option. It is important to maintain flexibility throughout the hips, hamstrings, calves and ankles. Regular core strengthening and spine stabilizing exercises have proven to be helpful.

You should seek medical advice for any of these symptoms: pain radiating down the legs, leg muscle weakness or loss of bowel/bladder control. Additionally, if you have LBP that is affecting your ability to be on the court and perform at your best, we recommend consulting with a physical therapist or a licensed medical provider for further guidance.

LOW BACK EXERCISES

HAMSTRINGS



Place sheet, exercise band or belt around the ball of your foot. Start with your knee bent and then straighten knee until a comfortable stretch is felt in the back of the thigh. Pull down on sheet/band until a comfortable stretch is felt in your calf. Secondly, turn foot inward and pull down. Then turn foot outward and pull down.

REPEAT:

Repeat 3-4 times; 1 set. Hold for 20 seconds in each position. 1-2 sessions per day.

LOWER TRUNK ROTATION



With feet on floor and knees together, slowly rock knees from side to side in small, pain-free range of motion. Allow lower back to rotate slightly.

REPEAT:

Repeat 10 times; 1 set. Hold for 3 seconds. 1-2 sessions per day.

PIRIFORMIS STRETCH



Pull right knee toward opposite shoulder. Hold for 30 seconds, then relax. Repeat with the left knee (pulling toward opposite shoulder).

REPEAT:

Repeat 3-4 times; 1 set. 1-2 sessions per day.

ASK THE DOC: APRIL 2022

TOPIC:

HEAT ILLNESS

WITH SUMMER COMPETITION APPROACHING, WHAT ARE THE BEST STRATEGIES TO AVOID HEAT ILLNESS WHILE PLAYING?



WHAT IS HEAT ILLNESS?

Heat illness refers to an acute medical condition that represents the body's inability to effectively dissipate the internal heat that is developed during play. The internal heat load will be created during practice or match play by both muscle activity and exposure to environmental conditions such as direct sunlight, high ambient temperature, high humidity and heat from the court surface. The body responds to increased internal heat load by the mechanism of sweating, allowing evaporation of water from the skin surface to dissipate the heat. Heat illness will occur most frequently in hot and humid conditions, especially if there is little wind.

WHAT DO SYMPTOMS OF HEAT ILLNESS LOOK LIKE?

Symptoms from heat illness may vary depending on the stage of heat illness. There are three recognized stages of heat illness: (1) Heat cramps--characterized by muscle tiredness and weakness, actual muscle cramping and mild dizziness; (2) Heat exhaustion -- characterized by muscle weakness, headache, nausea, dizziness, skin clamminess and inability to play; and (3) Heat stroke -- characterized by disorientation, passing out, skin clamminess and elevated body temperature. Athletes with heat illness may progress through all three stages but may present with more advanced symptoms early in the course of the illness. Heat illness can be seen across all age groups, but young athletes, due to smaller body surface area available to dissipate the heat, and older athletes, due to less efficient sweat mechanisms, are at more risk of developing heat illness symptoms.



WHAT TO DO IF YOU EXPERIENCE HEAT ILLNESS?

Any athlete with any of the symptoms should be removed from play immediately and not allowed to return to play the same day, because continued or resumed play creates a high risk of increasing the severity of the condition. Basic first aid methods are usually successful in addressing the milder forms of heat illness. Athletes with heat cramps or heat exhaustion should be removed from the sun and the heat and moved to shade or air-conditioned building, supplied with water (if they can drink fluids; don't try to force water), and take steps to reduce body temperature (fans to circulate air over the body, cool or wet towels applied to the face, neck, armpit and groin, ice packs to the same areas, and cool showers should be instituted). Heat stroke is a medical emergency that requires immediate medical attention and transfer to an ER. The first aid methods may be used with these athletes until experienced medical help is available.

HOW DO YOU MINIMIZE RISK OF HEAT ILLNESS?

There are several effective methods to decrease the risk and severity of heat illness. Several steps could be made to maximize efficient sweating, as this is the principal means of dissipating internal heat. The first steps would emphasize optimal hydration, both before and during the practice or match, and fluid replacement immediately after the practice or match. A good hint is to not use thirstiness as a guide for the need for fluid replacement, because that indicator has been shown to not be correlated with actual fluid levels in the tissues. Water is the replacement of choice. Flavored or "enhanced" water may be used depending on individual preference. Sodas or other acidic beverages, energy drinks and alcoholic beverages are not recommended for replacement. The second step is to optimize the sweating mechanism by acclimation to the climate by gradual exposure to hotter and more

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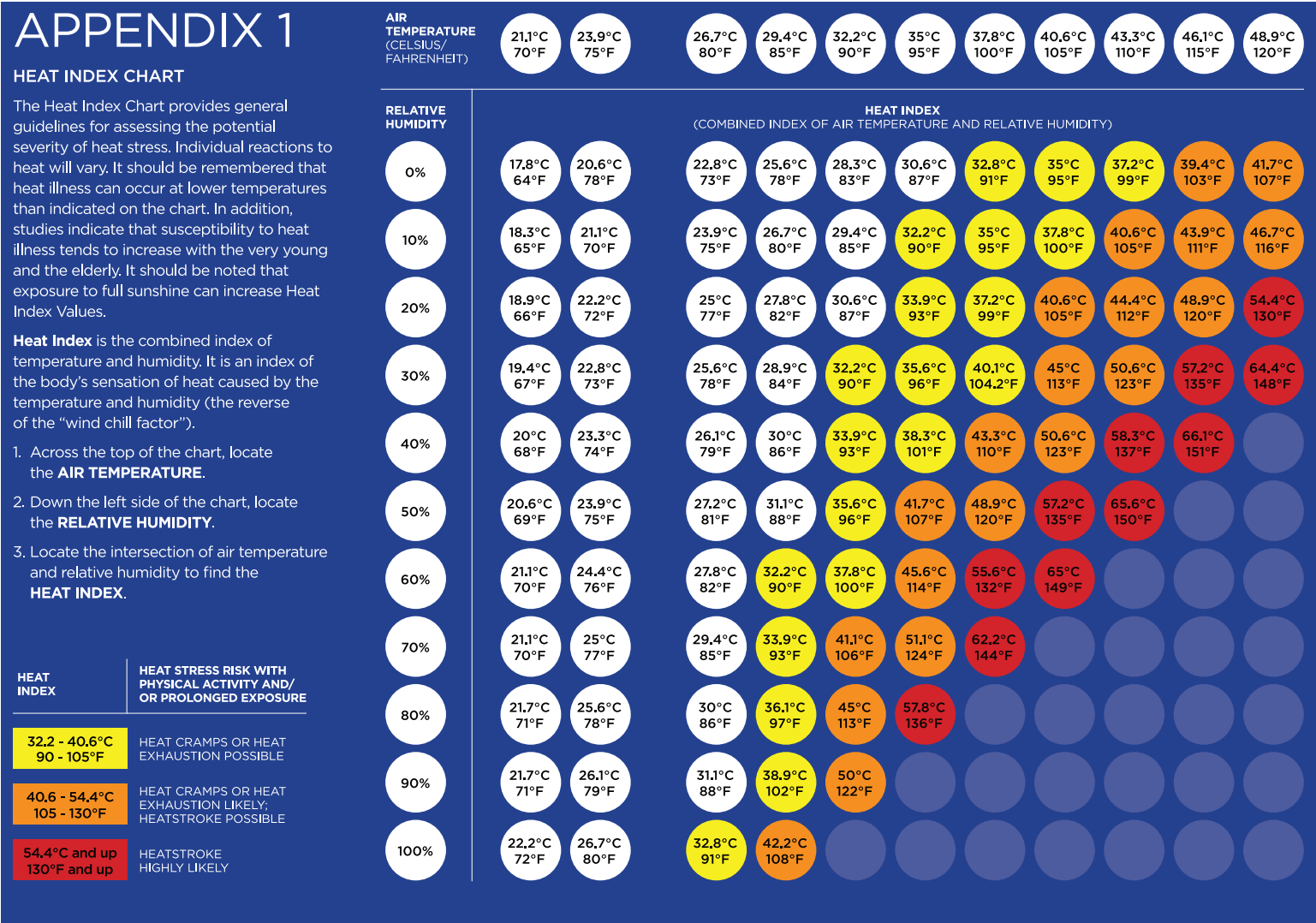
WITH SUMMER COMPETITION APPROACHING, WHAT ARE THE BEST STRATEGIES TO AVOID HEAT ILLNESS WHILE PLAYING? CONTINUED

humid climates. This improves the efficiency by increasing the water loss and conserving the loss of key nutrients such as sodium and potassium. Acclimation usually takes about two weeks to be effective. One good method of assessment of acclimation is the taste of the sweat. If the sweat is salty, there is insufficient acclimation. In this situation fluid replacement should be combined with salt replacement.

Modification of the environmental conditions is also very helpful in decreasing the risk and severity. It is important to be aware of the ambient temperature and humidity throughout the day, and to anticipate an increase in internal heat load as the heat index changes throughout the day. Heat index is a combined index of temperature and humidity that can be helpful in scheduling the timing and duration

of play. Increased risk of heat illness is present when the heat index is equal or greater than 32.2 degrees C (90 degrees F), according to the values in the chart below. Alterations in play when there is a high heat index can include changes in the timing of the matches, taking extended breaks between sets, provision of opportunities to take breaks in the shade, provision for ice or iced towels on court during changes of ends or shortening matches.

It is generally OK to play in the heat. Just be prepared, play smart and be aware of the early symptoms of heat illness.



Provided by the ITF Guide to Recommended Health Care Standards.

ASK THE DOC: MAY 2022

TOPIC:

THE BICEPS

THE ROLE OF THE BICEPS IN TENNIS



WHAT IS THE BICEP(S) AND WHAT IS ITS ROLE IN TENNIS?

The bicep is a muscle in the upper arm that helps flex the elbow and supinate the forearm (rotate the forearm so that the palm faces up). At the elbow there is one tendon, while at the shoulder there are two tendons with one running along the front of the humeral head (ball of the shoulder). In the shoulder, the biceps play a role in stabilizing the humeral head (ball of shoulder) when the shoulder is brought into significant external rotation (while serving and getting the racquet from behind you up to strike the ball). What do symptoms of Heat Illness look like?

HOW DID I HURT MY BICEPS?

A common cause of anterior shoulder pain is biceps tendinitis. It usually creates pain when the tendon is being stretched, for example, bringing the arm behind your back when putting on a coat or reaching into the back seat of the car. It becomes inflamed if we put too much stress on this area when bringing the elbow too far behind the plane of the shoulder blade, particularly if there is not much flexibility in the biceps or shoulder. Repetitive actions of this nature, such as serving, particularly aggravate a tight biceps.

HOW CAN I MAKE MY BICEPS FEEL BETTER?

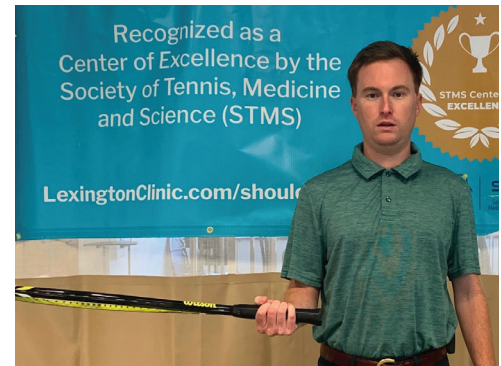
Biceps inflammation commonly improves with rest and stretching. Anti-inflammatories can be helpful, including steroid Dosepak or steroid injections. Eccentric strengthening (elongating the muscle and tendon while it is contracting) is one of the better ways to relieve symptoms. Additionally, taking stress off the biceps by improving scapular stability and rotator cuff strength can be achieved with exercise. Evaluating the mechanics of your serve and being mindful of the times that this area of the shoulder hurts, you can modify these activities to put less stress on the biceps.

Particularly during the serve, making sure the elbow is staying in line with your shoulder blade and not coming behind your back is one of the more important aspects of the serve to address. Lexington Clinic offers a video-based serve analysis (OTSA) to evaluate serve mechanics to help identify these mechanical issues. If symptoms persist, an evaluation by an orthopedic surgeon is recommended.



B I C E P S E X E R C I S E S

PRONATION/SUPINATION



Stand tall. Start with racquet in neutral. Rotate forearm each direction as pictured slowly. Hold for 3 counts each way.

REPEAT: Repeat 10 times; 1 set. 1 session per day.

ECCENTRIC BICEPS



Begin with elbow bent and forearm supinated (palm facing you).

Slowly lower weighted ball, moving forearm to a pronated (palm up) position.

Slowly lower for a count of 5 seconds until forearm faces downward.

REPEAT: Repeat 10 times; 1 set. 1 session per day.

If you are unsure about how to perform these exercises, are not getting better after attempting on your own for 2-3 weeks and/or would prefer to receive one-on-one evaluation and instruction, we recommend calling Lexington Clinic Orthopedics at 859.258.8575 to schedule an appointment with one of our Orthopedic physicians or Physical Therapists (doctor referral not required). Lexington Clinic also offers a Walk-in Clinic Mon/Thurs/Fri from 8:00 a.m.-3:00 p.m. and Tues/Wed from 8:00 a.m. - 7:00 p.m.—no appointment necessary.

An important aspect of rehabilitating the biceps is improving mobility and eccentric loading as portrayed in the above exercises, but a comprehensive program should include scapular stability exercises which have been included in previous articles.

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ASK THE DOC

June 2022



TOPIC: **TOURNAMENT NUTRITION**

WHY IS NUTRITION IMPORTANT DURING TOURNAMENTS/MATCHES?

There are many variables that play a role in helping athletes achieve optimal performance when participating in both competitive and recreational play. Perhaps the most important of these variables derives from nutrition. For tennis players in particular, match/tournament nutrition is crucial to help achieve optimal performance. Without providing the body with the appropriate nutrients it needs, the potential to underperform can be amplified. When it comes to tournament/match nutrition, it is important to consider water and calorie intake along with electrolyte replenishment.



WHAT IS THE IMPORTANCE OF HYDRATION? AND WHAT ARE THE SIGNS OF DEHYDRATION?

Maintaining adequate hydration through water intake is a must when playing an outdoor sport such as tennis. Water has many crucial functions within the body, two of which include circulating nutrients and maintaining body temperature. The amount of water that needs to be consumed varies from one athlete to the next depending on factors such as match duration, amount of sweat lost and environmental temperature. One helpful tip to consume enough water to help avoid dehydration is to begin consuming increased

amounts of water the day before a tournament begins. Signs of dehydration that players can experience include fatigue, headache, lethargy, muscle cramping and dizziness/lightheadedness.

Continued, next page.

WHAT ARE SOME EXAMPLES OF APPROPRIATE CALORIC INTAKE I NEED TO HELP FUEL MY BODY BEFORE, DURING AND AFTER A MATCH?

When it comes to caloric intake, think of calories as a measurement of the amount of energy in a drink or item of food. Tennis players competing in tournament/match play can be on court for upwards of 6-8 hours each day. With this in mind, the number of calories expended can reach upwards of 2000-3000 calories a day from match play alone. Achieving proper caloric intake must be carried out through a well-balanced diet consisting of the proper proportions of proteins, fats and carbohydrates.

- Carbohydrates are the primary fuel the body uses to help power through matches. It can be estimated that tennis players need to get over half of their caloric intake from carbohydrates. Examples of carbohydrates that provide sustained energy during tournaments include rice, potatoes, fruits, vegetables, granola/energy bars and sports drinks such as Gatorade and Powerade.
- Fats can also provide a great energy source after energy from carbohydrates have been burned. A diet consisting of roughly 25% of total calories from fat has been considered optimal. Sources of fats include oils, nuts, meats and dairy.
- Protein is essential for the body's ability to repair muscles during and after tournament/match play. Consuming roughly 20% of your caloric intake from proteins can improve recovery and help maintain muscular strength. Proteins can be found in meat/poultry, fish and eggs.

Lastly, replenishment of electrolytes is crucial for tournament or match play. Two of the most important electrolytes include sodium and potassium.

- Sodium is the main electrolyte that is depleted through sweat. It is essential to replenish sodium to help prevent muscle cramps, heat illness and fatigue. Foods that have been known to have high amounts of sodium include sports drinks, pickles, salted nuts, chips and soups.
- Potassium is also essential to help prevent muscle cramps and heat illness. It can be found in foods such as bananas, potatoes, avocado and tomatoes.

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The Shoulder Center of Kentucky (SCKY) is proud to announce its designation as a STMS Center of Excellence. This inaugural designation is reserved for only a handful of institutions around the world whom demonstrate the highest level of expertise in tennis medicine and science in clinical, research, education and outreach. As a part of Lexington Clinic Orthopedics – Sports Medicine, The Shoulder Center of Kentucky offers premiere orthopedics and shoulder care in Central Kentucky for the athlete, injured worker or for the degenerative shoulder.

For more information, please visit lexingtonclinic.com/sports.

