



In-season warm-up, strengthening program for overhead racquet sports

Racquet sports are highly popular activities for both competitive and recreational athletes of all ages. Approximately 17.9 million Americans play tennis and 3.5 million play racquetball. The tennis participation rate at least among adults, is high because the overall injury risk is low when compared to sports that involve contact. However, tennis is not without risk of injury. Therefore, it is important to recognize the risks and take measures to prevent an injury in order to allow healthy and enjoyable participation in the sport.



Although each racquet sport is unique, there are injuries common to all racquet sports, including tennis, racquetball, badminton and squash. Acute traumatic injuries occur more frequently and primarily to the lower body in racquet sports, while chronic overuse injuries are more prevalent in the upper body of racquet sport players. Lower body injuries are the result of running and quick directional changes. Acute ankle ligament sprains are most common, followed by knee sprains and gastrocnemius (calf) muscle and Achilles tendon strains. Reducing the risk of muscle strains can be accomplished with a proper warm-up before playing. Also, to avoid sprains, it is helpful to improve your balance, strength and body mechanics. Playing surfaces and footwear also are factors. The risk for an injury increases as the friction between the shoe and playing surface increases.

Tennis elbow, or lateral epicondylitis, has been found to correlate with playing for long periods of time—more than two hours per day among recreational players. It has been suggested that poor grip strength, one-handed backhand technique, inconsistent swing/ball contact, as well as improper grip size, racquet size and string tension all can contribute to this overuse injury. Overuse shoulder injuries tend to relate to instability in younger players and to rotator cuff problems in older players. Poor shoulder and scapular conditioning and mechanics (movement patterns), restricted shoulder joint motion and poor serving mechanics, have been cited as possible contributors.

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Racquetball and squash players risk injury resulting from contact with each another or the wall. Protective eyewear is recommend for these two sports. Overall, badminton shows a slightly lower rate of injury than the other racquet sports; but, badminton players, unfortunately, tend to experience more severe knee injuries, like ACL tears.

Regardless of which racquet sport you prefer, you should complete a proper warm-up before you play and select the proper equipment for your skill level and environment. Additionally, performing a regular exercise program focused on injury reduction and strength maintenance for your sport will allow you to enjoy playing this season and many more.



Important Note on Technique

As with any exercise program, it is essential to maintain proper technique during the warm-up and exercise to receive maximum benefits and prevent injury. Seek professional help on arm swing, jumping, and landing mechanics to learn pointers and stay injury free.

Warm-Up Exercises

Warm-Up Exercises	Sets	Time/Reps	Notes
Jumping Jacks	1	30	
Arm Circles	1	10 forward 10 backward	
Calf Stretch	2	30 seconds	
Thoracic Rotation	2	10	
Wall Slides Facing the Wall	1	15-20	
M,T,W	1	10	To increase the difficulty/intensity, use a band with more resistance
Diagonal 1 (shoulder PNF)	2	10	Light resistance band
Leg Swings	1	15 forward 15 backward	Alternate version perform side leg swings
1 Leg Toe Touch (balance)	2	10	
Skipping	2	30 feet forward 30 feet backward	
Wrist Stretch Top of Forearm	2	30 seconds	

IMPORTANT NOTICE

Not all exercises are suitable for everyone. Consult your physician before beginning this or any other exercise program. Also, always warm up for several minutes before beginning a workout and **NEVER** exercise beyond the level at which you feel comfortable. If at any time you feel you are exercising beyond your current fitness abilities, or feel discomfort, discontinue exercise immediately and reconsider your participation in this program.

The in-season warm-up and strengthening program for overhead racquet sports provided in this publication should not be attempted by anyone who does not meet minimum fitness requirements, or who has a history of hip, knee, ankle, shoulder, elbow, wrist or spinal (neck or back) problems. **THIS WARNING IS NOT TO BE DISCOUNTED.** There are many other fitness alternatives if you have weaknesses, or are prone to injuries. The user assumes all risks of injury in the use of this program.

Strengthening Exercises

DAY 1

Strengthening Exercises	Sets	Repetitions	Notes
1 Arm Dumbbell Push-Press	2	3-5 each arm	Alternate each arm and rest 2-3 minutes before next set
Plank Row	2	10 each arm	Alternate each arm and rest 1 minute before next set
Supine Pullovers	2	20	Rest 1 minute between sets
90/90 External Rotation	2	15	Alternate each arm and rest 1 minute between sets
Wrist Rolls with Dowel Rod and Hanging Weight	2	2 reps each of rolling up and rolling down	Rest 1 minute between sets

DAY 2

Strengthening Exercises	Sets	Repetitions	Notes
Forward Lunge Push-off	3	5 each leg	Alternate each leg and rest 2-3 minutes between sets
Bent Over Row	2	10	Rest 2-3 minutes between sets
Reverse Flys	2	8	Rest 1 minute between sets
Side External Rotation	2	15 each arm	Alternate each arm and rest 1 minute between sets
Negative Wrist Extension	3	10 each arm	Alternate each arm and rest 30 seconds before next set. Use resistance band or dumbbell

Warm-Up

Jumping Jacks

Sets	Time/Reps
1	30



1. Stand up straight with both legs together and arms at your sides.
2. Jump up and simultaneously spread your legs apart and bring both hands overhead.
3. Jump again and simultaneously lower both arms down to your sides and bring both feet back together to complete one repetition.
4. Repeat this sequence 30 times.

Warm-Up

Arm Circles

Sets	Time/Reps
1	10 forward 10 backward



1. With both arms out to the side at shoulder height and palms down, begin to make forward, circular movements with your arms for ten repetitions.
2. Start small and fast, then gradually make circles larger and slower.
3. Repeat this circular motion backwards with your palms up for ten repetitions.

Warm-Up

Calf Stretch

Sets	Time/Reps
2	30 seconds



1. Stand with feet split apart and hands placed against a wall/fence.
2. With both heels down, lean into the wall with your hands until you feel a stretch in the back of your calf.
3. Switch your feet and repeat on the other leg.

Warm-Up

Thoracic Rotation

Sets	Time/Reps
2	10

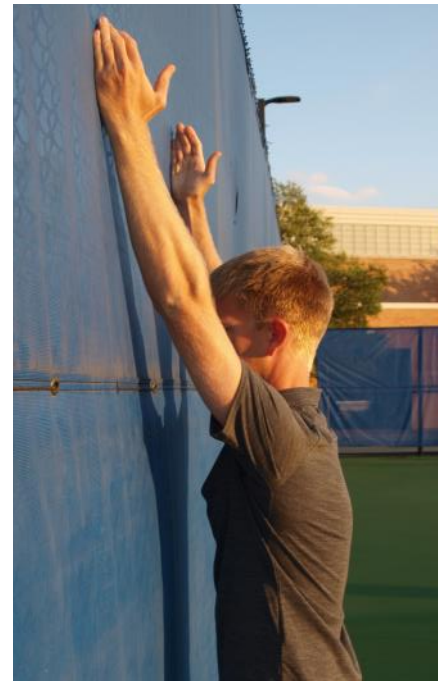


1. Kneel on your hands and knees, place your right hand behind your head.
2. Rotate your shoulders and torso to the left until your right elbow is as far as you can go without rotating your hips.
3. Repeat same motions with left hand behind head.

Warm-Up

Wall Slides (facing wall)

Sets	Time/Reps
1	15-20



1. Stand with your feet almost touching the wall/fence.
2. Place your hands on the wall at shoulder height.
3. Lightly press into the wall as you slide your hands up and then back down to starting position.
4. Repeat this motion for 15 to 20 repetitions.

Warm-Up

M,T,W

Sets	Time/Reps	Notes
1	10	To increase difficulty/intensity use a band with more resistance

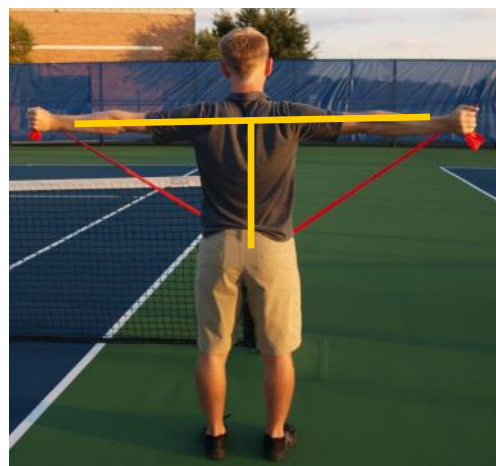


1. Anchor a resistance band to a fence or pole.
2. Stand with your feet shoulder-width apart and hold the band with your arms just below shoulder height.

M: Keeping your arms straight, pull your hands apart while squeezing your shoulder blades together, until your hands are even with your hips. Your upper body should take the form of an “M” during the exercise. Slowly return your hands to their starting position and perform ten repetitions.

T: Keeping your arms straight, pull your hands apart while squeezing your shoulder blades together, until your arms are even with your shoulders. Your upper body should take the form of a “T” during the exercise. Perform ten repetitions.

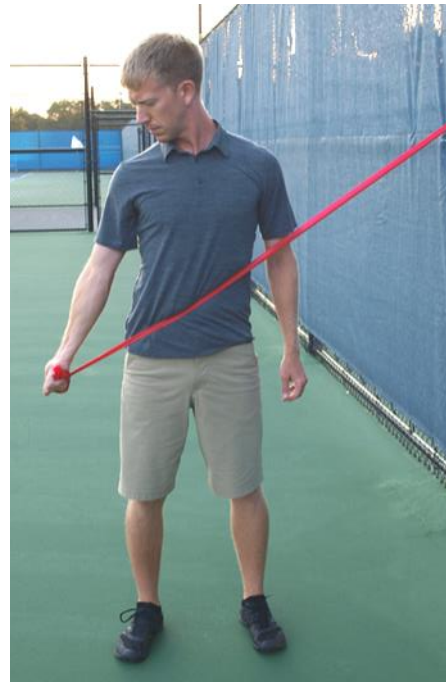
W: Raise your hands bending your arms at the elbows until your hands are even with your shoulders and your shoulder blades are squeezed together. Your upper body should take the form of a “W” during the exercise. Perform ten repetitions.



Warm-Up

Diagonal 1 (shoulder PNF)

Sets	Time/Reps
2	10



1. Wrap a resistance band around a fence, pole, or net.
2. Position yourself about four to five feet from the fence standing so your shoulders are perpendicular to the fence and your feet shoulder-width apart.
3. Grasp the band with the hand furthest from the fence by extending your arm across your body (as shown).
4. Pull the band across your body until your arm is fully extended toward the ground.
5. Slowly return your arm in a controlled manner to the original position. Perform ten repetitions.
6. Change arms and repeat sequence to complete one set.

Warm-Up

Leg Swings

Sets	Time/Reps	Notes
1	15 forward 15 backward	For an alternate version perform side-to-side leg swings



1. Stand on one leg and swing the other leg forward and backward.
2. As you swing backward, bend your knee as if trying to kick your glutes with your heel.
3. Gradually increase the height of your leg when swinging forward.
4. Repeat with opposite leg to complete first set.

Warm-Up

1-Leg Toe Touch

Sets	Time/Reps
2	10

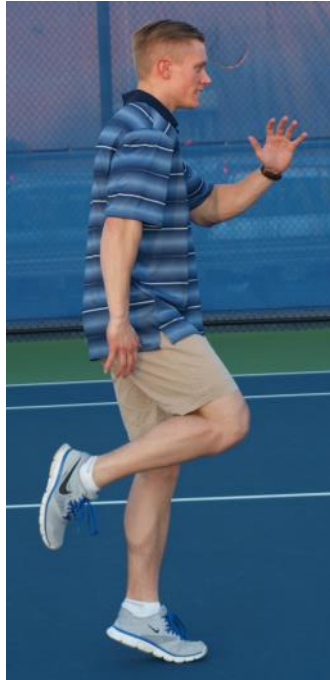


1. Stand on your left leg and slightly bend your knee.
2. Reach down with your right hand and touch your left foot.
3. Slowly return to the starting position and repeat the sequence to perform ten repetitions, then switch legs and perform ten repetitions to complete first set.

Warm-Up

Skipping

Sets	Time/Reps
2	30 feet forward 30 feet backward



1. Stand with both feet together.
2. Bend your left knee and bring it forward while hopping forward on your right leg.
3. Quickly step on your left leg, bend your right leg and hop on your left leg repeating the hopping forward and stepping motion.
4. Swing the opposite arm forward of your bent leg on each hop.
5. Try to push off your toes to get a bounding effect.
6. Keep your head and chest up during the entire exercise.
7. Skip 30 feet forward and 30 feet backwards and repeat for two sets.

Warm-Up

Wrist Stretch: Top of Forearm

Sets	Time/Reps
2	30 seconds

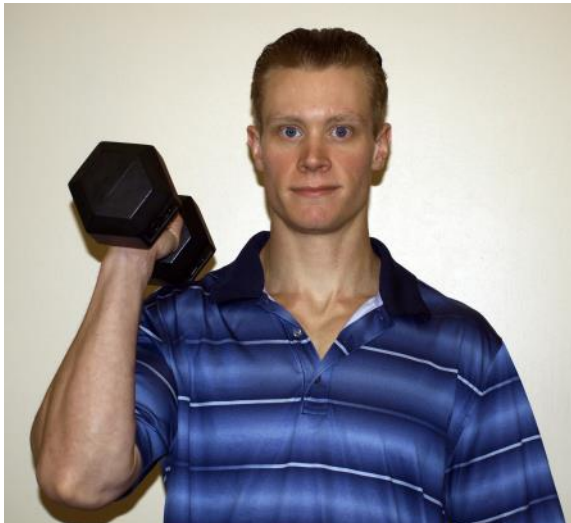


1. Grab the back of your right hand with your left and pull your fingers toward the ground.
2. Hold in this position for 30 seconds.
3. Switch hands and repeat for two sets.

Day 1 Strengthening

1-Arm Dumbbell Push-Press

Sets	Repetitions	Notes
2	3-5 each arm	Alternate each arm and rest 2-3 minutes before next set



1. Standing with your feet shoulder-width apart, grab the dumbbell with your right hand.
2. Bend your arm at the elbow and raise the dumbbell so it is over your right shoulder (as shown).
3. Quickly bend your knees and in a controlled, explosive manner, straighten both legs and arm pushing the dumbbell overhead, transferring your weight to the balls of your feet.
4. Return to your heels, lower the dumbbell and return to the starting position. Complete three to five repetitions.
5. Put dumbbell in left hand and repeat. Complete three to five repetitions.
6. Rest two to three minutes.
7. Complete second set of repetitions with each arm.

Day 1 Strengthening

Plank Row

Sets	Repetitions	Notes
2	10 each arm	Alternate each arm and rest 1 minute between sets



1. Start in a pushup position with your hands directly under your shoulders and feet slightly wider than should-width apart.
2. Lift your right hand off the floor and perform a single arm row movement pulling your right hand back while keeping your elbow at your side.
3. Lower your right hand back to the ground.
4. Repeat with the other hand to complete first repetition.
5. Continue alternating arms for ten repetitions.
6. Make sure to keep your hips and shoulders square to the ground. Avoid rocking side to side.
7. Rest one minute and repeat to complete second set.

Day 1 Strengthening

Supine Pullovers

Sets	Repetitions	Notes
2	20	Rest 1 minute between sets



1. Lay on your back with your feet on the floor. Arms are raised straight over your shoulders holding a weight with both hands.
2. Lower both arms at the same time backwards over your head toward the ground. Make sure to keep your back as flat as possible.
3. Return to the start position and repeat the motion for 20 repetitions to complete one set.
4. Rest one minute and perform a second set.

Day 1 Strengthening

90/90 External Rotation

Sets	Time/Reps	Notes
2	15 each arm	Alternate each arm and rest 1 minute between sets



1. Anchor a band at waist level.
2. Hold your elbow at 90 degrees to your shoulder.
3. Start with your elbow at 90 degrees and your forearm parallel to the ground.
4. Rotate your hand until it is directly over your elbow while pulling the band.
5. In a controlled manner, return to starting position and repeat motion for 15 repetitions and switch arms.
6. Rest one minute and repeat to complete two sets.

Day 1 Strengthening

Wrist Rolls with Dowel Rod and Hanging Weight

Sets	Repetitions	Notes
2	2 reps each of rolling up and rolling down	Rest 1 minute between sets



1. Hold a dowel rod at waist height.
2. Roll the rope up by turning your hands down and away from you.
3. Once the weight is at the top, slowly lower the weight until the rope is hanging straight.
4. Repeat rolling the rope down and up to complete one set.
5. Rest one minute and complete a second set.

Day 2 Strengthening

Forward Lunge Push-off

Sets	Repetitions	Notes
3	5 each leg	Alternate each leg and rest 2-3 minutes before next set.



1. Stand with your feet shoulder-width apart.
2. Step forward with our left foot. Land with your heel first.
3. Bend both knees lowering your body toward the ground. Don't allow your back knee to touch the ground.
4. Push off the front heel to return to the starting position.
5. Step forward with right foot and repeat motion to complete first repetition of five.
6. Repeat for three sets.



Day 2 Strengthening

Bent Over Row

Sets	Repetitions	Notes
2	10	Rest 2-3 minutes between sets



1. Stand with your feet shoulder-width apart.
2. Grab the bar or weight lifting barbell with an underhand grip placing your hands just outside your knees.
3. With a flat back, raise the bar and hold it at your knees. Keep your hips, back and chest out.
4. As you raise the bar to your stomach, bring your shoulder blades together.
5. Lower the bar and repeat for three repetitions.

Day 2 Strengthening

Reverse Flys

Sets	Repetitions	Notes
2	8	Rest 1 minute between sets.



1. Lay prone on a bench or incline bench.
2. Hold dumbbells in your hands with your arms straight just below shoulder height.
3. Keeping your arms straight, pull your hands apart while squeezing your shoulder blades together, until your hands are even with your shoulders.
4. Slowly return your hands to the front in a controlled manner.
5. Repeat this motion eight repetitions and repeat for two sets.

Alternate version with a resistance band:

1. Anchor a resistance band around a squat rack at chest height.
2. Stand with your feet shoulder-width apart.
3. Hold the band with arms straight just below shoulder height.
4. Keeping your arms straight, pull your hands apart while squeezing your shoulder blades together, until your hands are even with your shoulders.
5. Slowly return your hands to the front in a controlled manner.
6. Repeat this motion for eight repetitions and repeat for two sets.

Day 2 Strengthening

Side External Rotation

Sets	Repetitions	Notes
2	15 each arm	Alternate each arm and rest 1 minute between sets.

1. Lie on your left side.
2. Place a rolled up towel under your right elbow.
3. Hold a light dumbbell in your right hand with your right elbow resting on your right hip at 90 degrees.
4. Rotate your arm so your hand moves toward the ceiling.
5. In a controlled manner, lower the dumbbell to its starting position.
6. Repeat motion for 15 repetitions then switch sides and complete the same amount of reps. This completes one set.
7. Perform a second set.



Day 2 Strengthening

Negative Wrist Extensions

Sets	Repetitions	Notes
3	10 each arm	Alternate each arm and rest 30 seconds before next set.



1. Hang your hand over a counter, table, or your lap.
2. Hold a light resistance band in your right hand with your palm down.
3. Anchor the other end of the resistance band directly below your right hand under your foot as pictured.
4. Flex your right wrist back as far as you can to create a stretch in the band.
5. Slowly lower your right hand all the way down resisting the tension of the band.
6. Complete ten repetitions and switch sides.
7. Perform three sets with each arm.

Note: *Can use a dumbbell as an alternative for the resistance band.*

Sports Injury Medicine Clinic

To assist coaches, athletic trainers, players and parents, Dr. Chudik a board-certified orthopaedic surgeon and sports medicine physician has urgent appointments for injured athletes. An on site X-ray suite and an open-bore, high-field magnetic resonance imaging (MRI) machine. Expedites proper diagnosis and treatment. To request an appointment with Dr. Chudik call 630-324-0402.

About OTRF

Steven Chudik, orthopaedic surgeon and sports medicine physician specializing in shoulders, knees and sports medicine, founded the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF) in 2007. OTRF is a nonprofit, 501(c)(3) organization dedicated to funding research and education for the purpose of keeping people active and healthy.

Dr. Chudik has seen a growing demand by patients, athletic trainers and clinicians for up-to-date medical information and unbiased research on injury prevention—as well as information on injuries, arthritis (wear and tear) to joints, cartilage, tendons, ligaments, etc. To fulfill these requests, OTRF produces and distributes an E-newsletter, shares information about health performance-related issues like nutrition and fitness, hosts athletic training educational programs, conducts seminars for healthcare providers and the community and most important, funds unbiased research and development

particularly in emerging areas such as arthroscopic and minimally invasive surgery for injuries to the meniscus, labrum, rotator cuff, ACL and cartilage.

However, none of this is possible without ongoing financial support. We are extremely grateful to all those who have contributed in the past. Many donations come from patients or their family members who benefited from Dr. Chudik's expertise. If you are interested in helping OTRF fund education and research programs, please contact Dr. Chudik at 630-324-0402, or visit otrffund.org and click on the "Donate" tab at the top.

Also, many companies sponsor programs that match charitable donations made by employees. Some even match retirees' and/or spouses' donations. Matching gift programs are a great way to double your generosity. Regardless of the amount, every contribution helps make a difference today and for years to come.

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Sports Medicine, Injury Prevention Expertise Provided by Team Chudik

The goal of Dr. Steven Chudik and his health performance team is to provide you and your athletes with reliable and proven training information so they can compete and perform at their highest level and ability and limit the risk for injury.

This program is based upon research which found athletes need to incorporate specific exercises into their weekly training schedules not only to maintain strength, but more important, help minimize injuries. To maximize the benefit of this program, it is important for players to follow the recommended programs and maintain proper form at all times. Failure to do so could result in an injury.



Steven C. Chudik, MD

Board-certified physician in orthopaedics and sports medicine with the Steven Chudik Shoulder and Knee Injury Clinic, Dr. Chudik is the founder and president of the Orthopaedic Sports Medicine Teaching and Research Foundation (OTRF) and an associate professor at Loyola School of Medicine.



Keith Tesch, CSCS, CNT

For more than ten years, Keith has been in the fitness industry working as a personal trainer and sports performance specialist, a position he currently holds. During the past five years, his focus has been helping individuals regain their strength and range of motion through research-based programs.



James Wolf, PT, DPT, OCS

A licensed physical therapist and board certified orthopaedic clinical specialist, James holds a doctor of physical therapy degree from Northwestern University. In his current position, he treats a variety of orthopaedic patients including competitive and recreational athletes.



Kurt Gengenbacher, PT, DPT, OCS, SCS, CSCS

Working as a board-certified physical therapist the past eight years for ATI Physical Therapy, Kurt Gengenbacher has been using his education and experience to combine therapy treatments and test to best suit patients and athletes. Kurt serves on ATI's advisory board for the clinical education committees and the research team.

Sports Medicine Injury Clinic

Monday Evenings
Call 630-324-0402
Ask for Dr. Chudik

Sign Up Today!

Don't miss another issue of **Active Bones**, a monthly E-newsletter from OTRF. Each issue is filled with information to help you stay healthy and live an active life. Simply email: **contactus@chudikmd.com** to receive the next issue of **Active Bones**.



