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Ask the Lab: Improving fitness for tennis

PLEASE NOTE: The medical opinions in USTA.com's Ask the Lab are responses intended for the average player. Please consult with your primary physician before beginning any new exercise program.

From: Jackson L., Lexington, Ky: I have about two hours a day that I could spend at the gym but what machines/workouts do you think would best improve my fitness for tennis?

Dr. Mark Kovacs: Jackson, it sounds like you have a good amount of time to work on your physical training for tennis. A two hour time-period everyday is a substantial amount and a lot of great work can be accomplished. Unfortunately, you have not provided me with your age, years that you have been playing tennis and competitive level. All of these components will heavily influence the type and duration of physical training. However, there are some important areas to focus on when designing your weekly schedule.

Tennis is a sport that requires a solid foundation of strength, power, speed, agility, flexibility and balance. All of these areas need to be trained in some form during a training week. Structuring a weekly schedule to ensure that all these components are appropriately trained can be challenging. It is recommended that you consult a certified strength and conditioning specialist who has experience training tennis players and will go through extensive training in planning and implementing programs to maximize performance. A periodized program is important to vary volume, intensity, frequency and duration of exercises. As space is limited in this response, the main focus will be on the strength training component of the physical program; there are some great resources available on the Player Development website that go into more detail about structuring physical programs for tennis.

Machines versus Free Weights

Your questions about which machines to use is a common question when you walk into a large fitness center because you may have access to over 100 different pieces of equipment. The benefits of strength training machines are that they have a stable movement plane and isolate certain muscle groups. This is traditionally a little easier to use and reduces the learning curve of the exercise. The negatives to machines are that they are not typically using movements and combination of muscles similar to that seen during tennis play. Also, stabilizing muscles are not trained as well by using machines as opposed to free weights. The positives of free weight exercises (dumbbells, medicine balls etc) is that the athlete can go through motions that mimic movement patterns seen on the tennis court and it requires smaller muscles to help stabilize the larger muscles when performing different exercises.

Deciding on Types of Exercises

When performing strength training exercises it is important to make sure that all the important muscles and movements that are needed in tennis are trained. A focus of tennis training needs to be on the posterior (back side) of the athlete. Tennis play lends itself to the development of anterior (front-side) muscles. To ensure muscle symmetry and to reduce the likelihood of injuries, it is important to incorporate training focused on the muscles of the upper back and posterior shoulder muscles as well as the important hip extension muscles such as the glutes and hamstrings.

How many days per week

It is possible to physically train for tennis successfully 2-6 days per week. However, it is important to vary your daily workouts to achieve the greatest improvements, while also limiting the chance of overtraining and the chance of injuries.

Three different strength training programs:

Three-day a week example: If you structure your strength training three days per week, the most appropriate format is a total body workout that focuses on all the major muscles groups. A three-day per week program allows other areas to be trained on those non-strength days. This allows you to work on your tennis specific endurance, agility and flexibility in separate distinct sessions. Here is a list of the major areas that need to be focused on during training:

- Lower Back/Lower Body (deadlift etc)
- Upper Back (i.e: seated row, cable row etc)
- Chest (Bench press, DB bench)
- Hip Flexors/Quads (Squat etc)
- Arms/Forearms

Four-day a week example: If you are scheduling your strength training four-days per week it increases the options about how to structure the program. A four-day per week program will require you to incorporate some tennis specific endurance, agility and flexibility in each session. Here are some of the most popular methods to structure training:

Upper Body / Lower Body Split: Listed below is a typical four-day a week schedule with three days of recovery. These “recovery” days are time for other components to be trained (speed, agility, flexibility etc)

- Day 1 – Upper Body
- Day 2 – Lower Body
- Day 3 – Recovery

- Day 4 - Upper Body
- Day 5 – Lower Body
- Day 6 – Recovery
- Day 7 - Recovery

Push /Pull Split:

- Day 1 – Pushing Movements
- Day 2 – Pulling Movements
- Day 3 – Recovery
- Day 4 - Pushing Movements
- Day 5 – Pulling Movements
- Day 6 – Recovery
- Day 7 - Recovery

Five and six day a week programs are also possible, but these need to be coordinated with a certified trainer and the tennis coach to devise a program that will allow for appropriate training while limiting the likelihood of overtraining.

Listed above are some general examples about structuring a weekly strength training program. It is important to take into account the goals of the player, time available, strengths, weaknesses and time of the year in the athlete's competitive schedule. Please consult a certified strength and conditioning specialist to help assist in the development of a structured periodized physical fitness program for improved tennis play and the reduction of injury.

The examples above are based on an adult tennis player. It is important to understand that young tennis players may require different training programs based on their developmental needs. As athletes age through their developmental years (6-20 years of age) certain time periods need to be understood to help focus training and make the most effective use of training time. Please see the Progressive Development of the High Performance Tennis Player Poster produced by the USTA at www.playerdevelopment.usta.com which provides general recommendations for physical training based on different ages and stages of an athlete's development.

About the Author

Mark Kovacs, PhD, CSCS, is the USTA Manager of Sport Science and is a tennis researcher, certified strength and conditioning specialist and certified tennis professional. He was a former tennis All-American and NCAA champion. The USTA Sport Science department is responsible for testing, training and tracking top junior and professional tennis players as well as producing, evaluating and disseminating sport science and sport medicine information relevant to tennis.