

# TRAIN SAFE, TRAIN SMART

**Train for SUCCESS, Train SAFE, Train SMART!**

## Why Strength Train?

There are many benefits to resistance training for the tennis athlete, two of the most important are improved performance and injury prevention. In a study by Kraemer et al., female collegiate tennis players who underwent a periodized, multiple-set resistance training program saw significant increases in:

- Power
- Strength
- Jump height
- Increased velocities of serve, backhand, and forehand
- Lean body mass



Other researchers have found strength improvements by up to 92% with just 6 weeks of training. In addition to the increase in performance, resistance training can help build the foundation and base needed to reduce the risk of injuries by improving movement patterns, motor control, and overall strength and stability.

Despite these benefits, there are still risks involved with resistance training. However, with the proper knowledge and appropriate training and certification of your team members, these risks can be minimized, and potential can be maximized.



**"TALENT IS NEVER ENOUGH. WITH FEW EXCEPTIONS, THE BEST PLAYERS ARE THE HARDEST WORKERS."  
-MAGIC JOHNSON (FORMER NBA PLAYER)**

## Common Gym Injuries

Gym injuries due to resistance training are becoming increasingly more common. In the US alone, there were over 50,000 emergency room visits due to resistance training injuries in those aged 23-30 between the years 2002-2005. When we include the number of people who seek care outside of the hospital, it is estimated that 25-30% of those participating in resistance training have sought medical attention for a gym-related injury.

- Acute injuries, such as hernias, fractures, dislocations, tendon ruptures, sprain, strains, and acute disc herniations, account for up to 70% of the injuries attributed to resistance training.
- 46-60% of these injuries are classified as sprains or strains, 90% of which are attributed to improper use of free weights.
- Chronic injuries account for ~30% of resistance training injuries and include tendinopathies, arthritis, and stress fractures due to repetitive loading and poor lifting mechanics.
- Females were found to have significantly higher rates of accidental injuries compared to males, linked with poor mechanics and improper training and knowledge.
- Many of these injuries are due to an imbalance between the large muscles groups and the smaller stabilizing musculature as well as imbalances between muscle force couples.

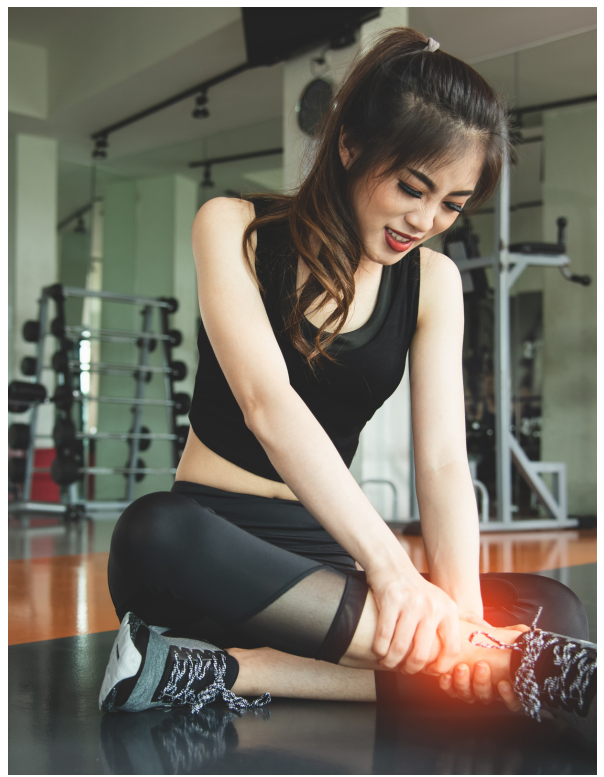
Movements and Commonly Associated Injuries					
Squat	Deadlift	Lunge	Bench Press	Lat Pull Down	Clean and Jerk & Snatch
<ul style="list-style-type: none"> <li>• Disc Herniation</li> <li>• SI Joint Dysfunction</li> <li>• Patellar Tendinopathy</li> <li>• Patellofemoral Pain Syndrome</li> <li>• Thigh Strains</li> <li>• Back Muscle Strains</li> <li>• Hernias</li> </ul>	<ul style="list-style-type: none"> <li>• Disc Herniation</li> <li>• SI Joint Dysfunction</li> <li>• Spondylolysis</li> <li>• Back Muscle Strains</li> </ul>	<ul style="list-style-type: none"> <li>• SI Joint Dysfunction</li> <li>• Patellar Tendinopathy</li> <li>• Patellofemoral Pain Syndrome</li> <li>• Hip Pathology</li> <li>• Thigh Strains</li> </ul>	<ul style="list-style-type: none"> <li>• Triceps Tendinosis</li> <li>• Pectoralis Major Strains</li> <li>• Biceps Tendon Tendinopathy</li> <li>• Biceps Tendon Ruptures</li> <li>• AC Joint Injury (especially Osteolysis)</li> <li>• Clavicular Pathology</li> <li>• Wrist Pathology</li> </ul>	<ul style="list-style-type: none"> <li>• Rotator Cuff Injuries</li> <li>• Long Thoracic Neuropathy</li> <li>• AC Joint Pathology</li> <li>• Anterior Instability (*behind the neck variation)</li> </ul>	<ul style="list-style-type: none"> <li>• SC Joint Pathology</li> <li>• AC Joint Pathology</li> <li>• GH Joint Dislocations</li> <li>• Shoulder Impingement</li> <li>• Rotator Cuff Tendinopathy</li> <li>• Biceps Tendon Tendinopathy and Rupture</li> <li>• Wrist Pathology</li> <li>• Quad Tendon Rupture</li> <li>• Patellar Tendon Rupture</li> <li>• Spondylolysis</li> </ul>

Table 1 outlines some of the common injuries seen in seven popular resistance training exercises. While these injuries are common to each movement, it is important to stress that with proper mechanics, weight and intensity progression, and coaching, many of these injuries can be avoided.

## Why Do Injuries Occur?

Gym injuries can occur acutely due to trauma or secondary to repetitive poor practices. Below are some of the most common reasons that injuries occur in the gym.

- Improper mechanics and compensations.
  - Poor functional movement patterns.
    - Poor mobility and lack of stability.
    - Muscle imbalances.
    - Underlying weakness or hindered activation.
    - A lack of general fitness.
  - Altered mechanics under load which are not addressed.
  - Increased focus on quantity instead of quality.
- Poor posture; inability to maintain a neutral spine.
  - Need proper POSITIONING with correct POSTURE to PERFORM.
- Poor work to rest ratios.
  - Undertraining and overtraining.
- Repetitive loading and overuse.
- Loading at extreme ranges or in mechanically disadvantaged positions without proper preparation.
  - Loading in extreme flexion or extension.
  - Loading in flexion with rotation.



**"PREVENTION IS BETTER THAN CURE."  
-DESIDERIUS ERASMUS (SCHOLAR)**

## Injury Prevention

While it may seem like injuries from resistance training are inevitable, it is important to remember that you are in control! Follow the steps below to safely carry out a resistance training program:

- Ensure you are performing each repetition with correct mechanics— a certified strength coach can guide your technique.
- Begin each session with a dynamic warm-up and mobility work to prepare the body to carry out each exercise properly.
- Ensure that you are training not only your large, power muscles but your stabilizers as well. Keep in mind the phrase: “Mobility before stability, stability before strength.”
- A qualified professional should monitor each session and modify your program as needed. Don't have a fitness trainer?
- Programs should be designed with periodization principles applied to minimize injury risk. This means your program should be created with your tournament schedule in mind and allow for periods of high intensity, but also rest and recovery.
- Ensure you are taking care of yourself! Proper nutrition, hydration, sleep, and mental fitness will all help to maximize training gains and minimize training risks.



Additionally, it is imperative to ensure that you are training correctly for tennis. That means that the principles of adaptation, loading, specificity, intensity, volume, frequency and recovery must all be adjusted and individualized to the tennis athlete. Without proper prescription and progression of training, injuries can result from over-training, under-training, or improper training in the gym.

## What To Look For In A Strength And Conditioning Coach

Proper education and certification are essential in maintaining the quality of the profession. Certified practitioners are educated on proper technique, progressions, modifications, and safety and are required to continuously participate in continuing education courses to maintain their certification. When looking for a fitness trainer, look for someone with one or more of these certifications:

- National Strength and Conditioning Association Certified Strength and Conditioning Specialist (NSCA CSCS)
- UK Strength and Conditioning Association Strength and Conditioning Coach
- Australian Strength and Conditioning Association Professional Coach Accreditation Scheme (ASCA PCAS)
- National Council on Strength and Fitness Certified Strength Coach (NCSF CSC)
- International Sports Sciences Association Strength and Conditioning Coach (ISSA SSC)