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Weight training and selected resistance exercises for tennis players

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Abstract

Tennis is an Olympic sport and is played at all levels of society at all ages. The sport can be played by anyone who can hold a racket, including people in wheelchairs. Tennis is a sport usually played between two players (singles) or between two teams of two players each (doubles). Each player uses a racket that is strung to strike a hollow rubber ball covered with felt over a net and into the opponent's court. The object of the game is to play the ball in such a way that the opponent is not able to play a good return. A well-designed tennis strength training program can work wonders for your game. Long gone are the days when coaches believed all forms of strength training were detrimental to sports demanding finely-tuned skills. In order to achieve results or produce a change in muscle strength, a set of guidelines for resistance training helps to ensure progress.

Keywords: Tennis, resistance and weight training exercises

Introduction

Tennis is a sport usually played between two players (singles) or between two teams of two players each (doubles). Each player uses a racket that is strung to strike a hollow rubber ball covered with felt over a net and into the opponent's court. The object of the game is to play the ball in such a way that the opponent is not able to play a good return. Tennis is an Olympic sport and is played at all levels of society at all ages. The sport can be played by anyone who can hold a racket, including people in wheelchairs.

Most historians believe that tennis originated in northern France in the 12th century, but the ball was then struck with the palm of the hand hence the name jeu de paume ("game of the palm"). It was not until the 16th century that rackets came into use, and the game began to be called "tennis." Until the 20th century, the history of strength training was very similar to the history of weight training. With the advent of modern technology, materials and knowledge, the methods that can be used for strength training have multiplied significantly.

Hippocrates explained the principle behind strength training when he wrote "that which is used develops, and that which is not used wastes away", referring to muscular hypertrophy and atrophy. The dumbbell was joined by the barbell in the latter half of the 19th century. Early barbells had hollow globes that could be filled with sand or lead shot, but by the end of the century these were replaced by the plate-loading barbell commonly used today

If you haven't heard the term before, "periodization" sounds complex. But it's a very simple principle that separates strength training for sport from the countless bodybuilding and general fitness routines out there. Periodization is simply a way to break a larger training regime into smaller chunks or periods. Each period might be a mini training program in and of itself lasting 6 weeks or more.

General weight and resistance training principles

In order to achieve results or produce a change in muscle strength, a set of guidelines for resistance training helps to ensure progress. These principles form the basic strategies that are used to achieve your goals, and apply to any resistance training program.

Stress/Rest

To gain muscle strength, the muscles need to be stressed, then they must be given sufficient time to recover and adapt. Between 48-72 hours rest between workouts (of the same muscle group) is recommended.

Progressive Overload

Once the body adapts to a particular training stress (by getting stronger), a new stress must be introduced.

There are 2 general methods for overloading a muscle:

- increase the resistance used for a certain # of reps
- increase the volume of training (sets, reps, exercises)

Specificity

Muscles will adapt to a particular training strategy. For example to specifically train for maximal strength, heavy loads (85-100% of 1RM) with fewer reps (1-6) will be needed. To train for muscular endurance, lighter loads (30-70% of 1RM) with higher reps (15+) will be employed. Using moderate loads (75-85% of 1RM) with reps ranging from 6-12 per set will increase both the strength and size of the trained muscles.

F.I.T.T.

The F.I.T.T. principle includes the following 4 variables:

- **Frequency:** 3-4 times per week; one day rest b/t workouts
- **Intensity:** determined by # of sets, reps, exercises, and rest b/t sets
- **Time:** duration of the workout is dependent upon the amount of rest b/t sets and exercises and the # of sets, reps, and exercises performed.
- **Training for general strength gains:** 1-2 min. rest b/t sets & exercises
- **Training for maximal strength gains:** 3-5 min. rest b/t sets & exercise
- **Training for muscular endurance:** 0-60 sec. rest b/t sets & exercises
- **Type:** machine or free weights

Symmetry

This principle refers to the balanced development of the body. The most important consideration in applying this principle is balance b/t agonist and antagonist muscle groups (push vs. pull muscle groups). For example, if the muscles on one side of the joint are overdeveloped, there is an increased risk for injury.

Ceiling Principle

As a person increases their strength and endurance, and approaches their genetic potential, their rate of improvement will tend to get smaller. It is also common to see plateaus in training due to physical staleness (i.e. following the same program for a long period of time). Strategies one can use to minimize the ceiling effect include:

- vary the intensity of the program throughout the year
- Frequently (exercises, # of sets, reps, rest) change up your routine.

Principle of Maintenance

Once an individual's goals have been reached, it is possible to maintain the results gained through a reduction in training frequency (up to one third). However, the intensity and duration must remain the same.

Principle of Reversibility

In order to maintain a desired level of muscular fitness, an exercise stress must be present, otherwise the benefits will deteriorate. In other words, "if you don't use it, you lose it." The level of detraining will be dependent upon the gains made during training.

Annual Tennis weight training and resistance training program

A tennis weight training program changes significantly over the course of the year. If your only goal is to lift more and more weight, using largely the same exercises and the same format, not only are you training inefficiently, you also run the risk of injury.

The 3 phases of a tennis strength training are covered in detail in the tennis strength training article.

Phase 1 - Foundational Strength

Perform the following tennis weight training routine 2 days a week for 6-8 weeks. It focuses on the major muscle groups and aims to strengthen the whole body. It should be performed during the off-season when you have a break from playing tennis entirely. Complete the exercises in order and try to leave at least a day or two between sessions.

You should also warm up with 10 minutes of light aerobic exercise before a tennis weight training session and cool down with 10 minutes of light exercise and some stretching exercises.

- **Sets:** 2-3
 - **Repetitions:** 12-15
 - **Load:** 40-50% 1 repetition maximum
 - **Rest Interval:** 90 seconds
- Dumbbell Squats or Lying Leg Presses (legs, glutes)
 - Dumbbell/Barbell Bench Presses or Push Ups (chest, triceps)
 - Back Extensions on Stability Ball (lower back)
 - Dumbbell Lunges (legs, glutes)
 - Single Arm Dumbbell Rows (upper back, biceps)
 - Crunches with Twist (abdominals)
 - Dumbbell Shoulder Presses or Machine Shoulder Presses (shoulders, triceps)
 - Standing Barbell Curls (biceps)
 - Standing Machine Calf Raises (calves)
 - Barbell Upright Rows (shoulders, trapezius)

You should also perform a rotator cuff and forearm program with light weights 2-3 days a week. This can be done easily at home and should take no more than 20 minutes to complete. Try to complete the program on separate days to your weight training sessions.

Phase 2 - Maximal strength

Maximal strength training should not be started until a foundational tennis weight training program has been completed. Follow the program below for 2-3 sessions per week over 6 weeks. This should coincide with the latter stages of your off-season, again when you are not playing any competitive tennis.

You should also warm up with 10 minutes of light aerobic exercise before a tennis weight training session and cool down with 10 minutes of light exercise and some stretching exercises.

- **Sets:** 2-3
 - **Repetitions:** 4-8
 - **Load:** 80-90% 1 repetition maximum
 - **Rest Interval:** 3-4 minutes
- Barbell Squats or Lying Leg Presses (legs, glutes)
 - Barbell/Dumbbell Bench Presses (chest, triceps)
 - Lat Pull Downs (upper back, biceps)
 - Barbell/Dumbbell Shoulder Shrugs (shoulders, triceps)

- Bent Over Rows (low back, hamstrings)
- Weighted Crunches (abdominals)

You should also continue with the rotator cuff and forearm program 2 days a week.

Phase 3 – Strength, Endurance and Power

Once you have developed maximal strength, your tennis weight training program should focus on converting that to sport-specific power and strength endurance. This phase of the program should last between 4-8 weeks depending how close you are to the competitive season. The end of this phase should coincide with the start of the competitive year.

Power Training Program

Complete the following plyometric exercises 1-2 days a week. The sessions should not be performed on back-to-back days or when you are particularly sore from the day before. They do not require any free weights although you will need a medicine ball. The routine should take no longer than 30 minutes and you can perform them as part of a practice session but you should be fresh (don't leave them until the end of a practice session). You should also warm up thoroughly with 10 minutes of light aerobic exercise before a tennis weight training session and cool down with 10 minutes of light exercise and some stretching exercises.

There are some important guidelines that you should take into account before beginning a plyometric program.

- **Sets:** 2-3
 - **Repetitions:** 8-10
 - **Load:** Bodyweight
 - **Rest Interval:** 3-4 minutes
-
- Squat Jumps
 - Side Throws
 - Hurdle Jumps with Sprint
 - Over the Back Toss
 - Box Drill with Ring

Strength Endurance Circuit

Complete the following strength endurance circuit 1-2 days per week. It should not fall on the same days as your plyometric training. Ideally, you would perform a circuit training session on Monday for example, a plyometric session Tuesday, rest Wednesday, then repeat Thursday and Friday. The plyometric session won't leave you fatigued and sore the next day whereas a strength circuit might do.

You should also warm up thoroughly with 10 minutes of light aerobic exercise before a tennis weight training session and cool down with 10 minutes of light exercise and some stretching exercises.

- **Time at station:** 60 seconds
 - **Load:** Bodyweight
 - **Rest between stations:** 30 seconds
 - **No. circuits:** 2-3
 - **Rest between circuits:** 2 minutes
-
- Squat Jumps
 - Push Ups
 - Squat Thrusts
 - Sit Ups with Twist
 - Box Step Ups with High Knee Drive
 - Bench Dips
 - Alternating Split Squats
 - Alternating Supermans

You will find descriptions and images of these exercises in the circuit training section. You may want to reduce the rotator cuff and forearm program to just one session a week during this demanding phase. Although it is not a physically demanding program, you will need to rest your muscles adequately between sessions. You can increase the sessions to 2-3 a week during the competitive season.

Conclusion

It will help the Teachers, coaches to undertake such information in Tennis which can further lead to innovative ideas and practices. To provide guidance to the physical education professional to develop sports environment in the society. It provide the knowledge of strength training to the coaches and the players to understand protocol of strength in Tennis. It will help the tennis player to develop power tennis in themselves

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