INJURIES

Bad Luck or Poor Training?

by

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CONTENTS

INJURIES: Bad Luck or Poor Training?

In the past few years, the Grand Slam events, Tennis Master Series, Challenger and Tier 1 tournaments have suffered an alarming loss of players due to injuries. The tendency for players to make early or untimely exits from the draw seems to be occurring in much greater numbers. For example, Mark Philippoussis was forced to give up a possible Wimbledon championship when he sustained a knee injury during his quarterfinal match with Pete Sampras in 1999. One and a half months later at the U.S. Open, Patrick Rafter had to retire because of a rotator cuff injury and Pete Sampras sustained a back injury knocking him out of the tournament as well. Ironically the year before he strained his thigh during his semifinal match.

This list of casualties extended into the 2000 season as well. At the French Open, Andre Agassi only won 6 points during the fourth set in his match with Karol Kucera because of blistered feet. Serena Williams pulled out due to a quadricep injury and Lindsey Davenport lost in the first round as she struggled with a bad back. At the next major, the list of wounded looked like "General Hospital" with every player at Wimbledon bidding for a script in the TV show. During the tournament fortnight the athletic training staff had little rest due to the number of players sustaining new or reoccurring injuries.

For example, Yevgeny Kafelnikov had a second round loss due to a back injury, the young upstart Taylor Dent had Agassi on the ropes during their first round match but injured his knee and was forced to retire. Todd Martin, who

suffered from elbow and knee problems in the past, was just returning to form after ankle surgery. Even the two players reaching the finals have had a long list of injuries curbing them to the sidelines for a number of months. Rafter spent almost one year regaining his form after surgery on his shoulder. Sampras developed acute tendinitis of the left shin during his second round match and struggled with this ailment throughout the tournament. Following the Championships, Agassi and Sampras pulled out of their Davis Cup match with Spain citing injuries and needing rest to recuperate. The Spanish team was not immune either. Carlos Moya, troubled by a chronic back problem was sidelined from the tie as well.

Other top male players who recently had to drop out or retire during a match include Magnus Norman who pulled out of the Stella Artois tournament with a back problem (the same tournament in which Agassi fell and hurt his back). Jan-Michael Gambill sprained his right ankle during the LA Open final while trying to favor a sore left knee.

The women are not immune to such injury-ridden problems either. Davenport's back has troubled her for years and obviously limited her movement at the big W. Three weeks later when the WTA tour came to Manhattan Beach, Monica Seles pulled out of the tournament due to blisters and arm problems while Serena Williams was forced to retire one week later in the finals of the du Maurier Open due to a foot injury. (The previous year she pulled out because of a shoulder injury.) Anna Kournikova has had problems this past year (sprained ankle and other related injuries) along with Seles who was out for 5 months with a stress fracture in her foot. One of the top absentees from the tour was Venus Williams who struggled with tendinitis and a number of other nagging injuries prior to capturing her Wimbledon crown.

The recent rash of injuries on the tour seems to be growing at an alarming rate, and as a result players are questioning the ATP and WTA scheduling

guidelines. But is the problem really that the tour is so grueling that it forces top players into early retirement, or are a number of the injuries that plague the players caused by a lack of tennis specific fitness?

It is hard to fathom that professional athletes could be out of shape, but distinguishing between being in shape to play the sport and being in shape to play at your potential while decreasing the chance of injuring yourself are two different things. This is especially true with regard to injuries that are diagnosed as “overuse”. For the most part, an "overuse" injury is often attributed to too much match play or too many hours spent on the court, when in truth these injuries are caused by inadequate, or improper preparation, especially during the early years. By not building a solid foundation during the development years weak links in a player's physical capabilities can show up later in one's career.

It is important to understand that the constant stress one experiences from the sport will inevitably strike the weakest link, thus increasing the likelihood of an injury. But it is important to understand that "overuse" injuries can easily be prevented (as opposed to injuries of circumstance, i.e. an ankle injury caused by slipping or landing on a wet court). As the term implies, when you overuse the muscles and other tissues that are involved in game play, they will be strained and become injured. But if you physically prepare the muscles and other tissues to withstand the forces that are involved in hitting for long periods of time, the number of injuries can be prevented. For example, if top players would incorporate the reverse trunk twist, reverse sit up and back raise exercises into their training program they would decrease the likelihood of incurring a back injury and at the same time improve their stroking. For detailed descriptions of these exercises see the following web site addresses: www.dryessis.com/preventbackpain.htm, www.dryessis.com/reversesitup.htm and www.dryessis.com/backraise.htm.

Think of it as follows: You have a certain amount of strength that allows you to do a certain amount of work (play). When you get into a match that requires not only this amount of strength, but 25% more strength in order to execute the strokes forcefully over the duration of play, you will be at a deficit, unable to maintain the work without overstressing the tissues. In this case, your likelihood of injury increases greatly. If you do not sustain an injury, your body will certainly let you know that you overdid it that night or the next day. This is why many players do so poorly after a tough or drawn-out match.

Another area that increases the likelihood of injuries is related to the now prevalent use of the open-stance rather than the classic side-facing stance when hitting forehands and backhands. The open-stance has its advantages as it allows for quicker recovery and increased court mobility, yet, the gains seen in increased mobility from hitting in the open-stance also have their drawbacks. In the side-facing position, more power can be generated by the body than by the arms in the open-stance. Understand that in the open-stance you must rely on shoulder rotation and the arm swing. The more the arm is used to generate force, the more it is susceptible to the "overuse" syndrome and the greater the chances of injury.

If players used the side-facing stance they would more often be able to generate greater force with less stress on the shoulder and arm. Keep in mind that the weight shift from the rear leg to the front leg, as well as hip and shoulder rotation, in sequence, contributes most of the force seen in a groundstroke. When you use the body, you do not have to rely on the arm to generate the force. The arm in this case can be used more for accuracy rather than for trying to get more power.

From information gleaned from the media and top professionals, it appears that most good players do some form of conditioning. Some of the more

notable cases include Agassi, who in the past trained as a bodybuilder. After seeing how this interfered with his playing, he now supposedly does tennis specific conditioning. Davenport is playing better now after losing weight and becoming more fit. The Williams sisters who have been on fitness training programs for years have developed greater strength and are able to hit the ball harder than most players. Sampras has been on a USTA training program for several years and still participates.

However, from looking at some of the exercises and programs that these players have been or are presently doing, they appear to be more related to general conditioning and fitness rather than being specific to the game of tennis. You should understand that there is a great difference between general conditioning and tennis-specific exercises.

For example, two common exercises employed by many players include the push-up and the crunch. In the push-up, execution is performed with the elbows in close to the sides so that the movement pattern is shoulder joint flexion as you push the body up from the ground. In the crunch, you raise the head and shoulders up as high as possible while keeping the lower back pressed against the floor so that all the action is in the upper (thoracic) spine area.

However, when hitting tennis strokes, such as the forehand and backhand, the arm moves diagonally across the body, (a combination of shoulder joint extension, adduction and flexion, especially when hitting with topspin). When the abdominals come into play in the forehand, backhand and even in the serve, they act to flex the spine with the axis in the waist, not in the upper spine or upper thoracic trunk area. Thus, neither the push-up or crunch exercises qualify as specific exercises that duplicate what occurs in execution of the tennis strokes. They may be good exercises to strengthen the shoulder and upper arm

as well as the abdominal muscles respectively, but not as they are used in execution of tennis strokes.

The push-up and crunch exercises are excellent examples of what are known as general conditioning exercises. They are of value and may even help improve some of the strokes; however, for maximum improvement of the strokes you must do specialized exercises that duplicate what happens in the actual skill execution during play. More specifically: (1) the specialized exercises must develop strength in exactly the same movement pathway as in the actual stroke, (2) the exercise must duplicate the exact range of motion over which the strength is displayed, and (3) the specialized exercise must duplicate the same type of muscular contraction seen in execution of the competitive stroke.

When these criteria are satisfied, you will see an immediate effect in the execution of the tennis stroke. In essence, you strengthen the muscles exactly as they are used in execution of the tennis stroke. This is the key to injury prevention and improving your hitting. By doing specialized strength and flexibility exercises you also improve neuromuscular coordination, which is also a major factor involved in causing injury. By developing good neuromuscular coordination, strength and flexibility in the same range of motion and movement pathway, you can prevent injury, and equally important, improve the force of the shot.

Think of specialized exercises as prerequisites to hitting well and playing on a high competitive level. When you satisfy the prerequisites, i.e., strength, flexibility and coordination, as needed in execution of the competitive stroke, you are better able to execute the strokes, prevent injury, and enhance your overall game play.

To create the exercises that duplicate exactly what occurs in executing a tennis stroke, a biomechanical and kinesiological analysis is first needed. From the analysis, it is possible to determine which actions are in need of improvement and the exercises that are needed to make the necessary changes. In many cases the exercises will have to be created to duplicate what occurs. If stroke execution is effective, then specific strength and flexibility exercises can be prescribed to improve the power generated in hitting the ball.

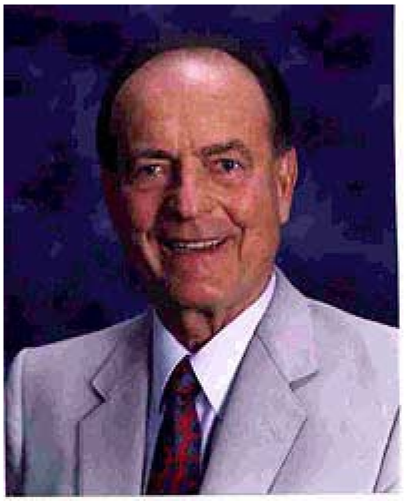
Up to this time comprehensive analyses of the various tennis strokes have not been done nor have specialized strength exercises been created to duplicate the actions that are involved. It is possible to find “tennis-specific” exercises by many authors but in reality these turn out to be general exercises. Authors who have used the term “specificity” have used it to mean that the exercise involves the same muscles that are involved in tennis play, but not in the same pathway in which the strength is applied or range of motion in which it is displayed.

However, information on the biomechanics and kinesiology of tennis strokes and the prescription of specialized exercises that duplicate what occurs in execution of the strokes is now available. Dr. Yessis and Brad Albert with their strong background in the areas of biomechanics, kinesiology and exercise science have done extensive biomechanical analyses of the various tennis strokes and have created many exercises to duplicate exactly what occurs in skill execution. They have developed what is now known as the "Yessis Method" of improving tennis performance. It includes a biomechanical and kinesiological analysis of the skills and the prescription of specialized strength and flexibility exercises for learning, correcting errors and swing flaws, for increasing hitting force and improving all-around play.

To make this information available, they have collaborated to write a series of books specific to the tennis forehand, backhand, serve, etc. The results

of their work in each of these different skills are reported in the series of books beginning with ***EXPLOSIVE TENNIS: The Forehand,*** which is now available as an e-book on cd. For more information, see the web site: **http://www.dryessis.com**

About The Authors



Dr. Michael Yessis is president of Sports Training, Inc., a diverse sports and fitness company. Dr. Yessis is also Professor Emeritus at California State University, Fullerton, where he was a multi-sport specialist in biomechanics (technique analysis) kinesiology and sports conditioning and training. In his work, Dr. Yessis has developed many unique specialized strength and speed-strength (explosive) exercises and training programs. He has been the training and technique consultant to several Olympic and professional sports teams, such as the L.A. Rams and L.A. Raiders football clubs, Natadore Diving Team and the U.S. Men's Volleyball Team. He has successfully worked with athletes from junior high school to the professional levels. Some of the sports in which he specializes include golf, tennis, basketball, soccer, baseball and track. Coaches and athletes who use his methods of training (which incorporate the latest technology from the Eastern bloc) have developed many outstanding athletes. Comparisons have shown that most of these athletes improved more in six months than fellow athletes had in two years! Dr. Yessis writes monthly features in ***Muscle & Fitness***. His ***"Muscles in Motion"*** column has been the number one article read. Other topics include sports medicine, bodybuilding and sports training. He also contributes a monthly column called Swing Doctor for ***Senior Golfer***. In addition, Dr. Yessis writes for other magazines on sports training and fitness topics. Many of his articles have been translated into German, Spanish and Japanese and published in foreign journals. Some can be read in various web sites. His TV appearances have been the Today Show, PM Magazine, Good Morning Los Angeles, Eye on San Diego, Cablevision, Sports Page on Cox Cable and CNN News. He has also been featured in newspapers and referred to in many journals, including ***Sports Illustrated, Sport, California Magazine, Time, "M," Special Report, Los Angeles Times, People***, and others.

Brad Albert is a member of the United States Professional Tennis Association, United States Tennis Association, Orange County Community Tennis Association, and National Athletic Trainers Association. Brad has served as on-site trainer for the USPTA national tournament in Palm Springs, the Seventeen tournament, Junior World Pentathlon and Battle of the Sexes. He also serves as an Oral examiner for the NATA national exam. While working on his Masters Thesis in Specialized Strength Training he attended the Institute of Physical Culture and Sport, in Moscow for insight on Soviet training methods. In 1984 Brad worked with the USA coaching staff (cycling) for the Summer Olympics. Since 1983, Brad has been Director of Tennis at Dana Hills Tennis Center in Dana Point, CA. Under his guidance and with the support of his head and assistant pros he oversees 150 children a week in the junior lesson program. The facility has received national honors from the USTA for being the "Tennis Center of the Year, 1991". In January of 2000, the OCCTA presented Brad with the teaching pro community service award. As tennis director at DHTC he has been involved with numerous events and programs including the National Foundation of Wheelchair Tennis, Rehabilitation Institute of Orange, local civic groups and Sports for Understanding. He has worked with beginners to competitive, highly ranked juniors, and collegiate players. He is also responsible for running USTA sanctioned Adult and Junior tennis tournaments, organizing night leagues for the Southern Orange County area and assists the head pro with coordinating the SCTA USA Junior Tennis for Southern Orange County. Brad has published articles in sports medicine, strength training and/or tennis for ***Sports Fitness Magazine, Muscle & Fitness, USPTA Journal & Tennis Magazine.***

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