



WHEELCHAIR COACH

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INSTRUCTING WHEELCHAIR TENNIS PLAYERS

Instructing wheelchair tennis can be fun and challenging. In general, all standard coaching procedures apply when coaching wheelchair tennis.

However, there are a few general differences an Instructor needs to keep in mind when coaching wheelchair athletes:

1. **The Chair**
2. **Injury Level**
3. **Technical Considerations**
4. **Mobility Cycle**
5. **Rules of wheelchair tennis**

1. THE CHAIR

In general, **all** wheelchairs can be used. However, use of a rigid frame sport wheelchair is strongly recommended. The newest chairs all have 4 wheels. The wheels can be in various configurations (the typical 4 wheel chair has a single castor in front and a smaller 'tip' castor in back). These chairs dramatically increase the player's ability to maneuver.

WHEELS	<ol style="list-style-type: none"> 1. Preferably lightweight and rigid 2. The more the wheels are 'cambered' (angled with the top of the wheel more <i>in</i> towards the player and the bottom more <i>out</i>) the more maneuverable and stable the chair. 12 to 22 degrees is recommended
TIRES	<ol style="list-style-type: none"> 1. Non-marking 2. High Pressure 3. Lightweight 4. 24 to 26 inches in diameter and one inch wide
CASTERS	<ol style="list-style-type: none"> 1. Approximately 3 to 4 inches in diameter (10 to 12.5 cm). <ul style="list-style-type: none"> • If larger: slows down the ability to turn • If smaller: may not roll smoothly and may 'flutter'. 2. Not too thin (may damage the court)
CHAIR	<p>The following adjustments increase speed, mobility, and balance: <i>*Note: with all adjustments, personal preference and disability should be considered.</i></p> <ol style="list-style-type: none"> 1. Slant seat downward for more stability (lower in the back of the seat) 2. Adjust seat so elbows are close to wheel for optimal pushing 3. Weight Distribution: Find the best balance between maneuverability and stability <ul style="list-style-type: none"> • Adjust weight towards axles for quicker movement. (chair becomes 'tippy') • Adjust weight forward to increase stability and a quicker start • The feet could be moved more under the body to keep the weight centered 4. Side panel can be added to reduce sideways movement of buttocks
STRAPS	<p>These can enhance balance and improve mobility:</p> <ol style="list-style-type: none"> 1. Chest & Waist straps: These can improve balance and often confidence, but can hinder reaching and rotation movement, if not properly adjusted. 2. Leg straps: A strap around the thighs or just above the knees prevents the legs from spreading and keeps the body moving as a unit. A strap in front of the knees or shins keeps the legs back. 3. Foot straps: These will keep the feet securely on the footpad when turning, or during leg spasms.

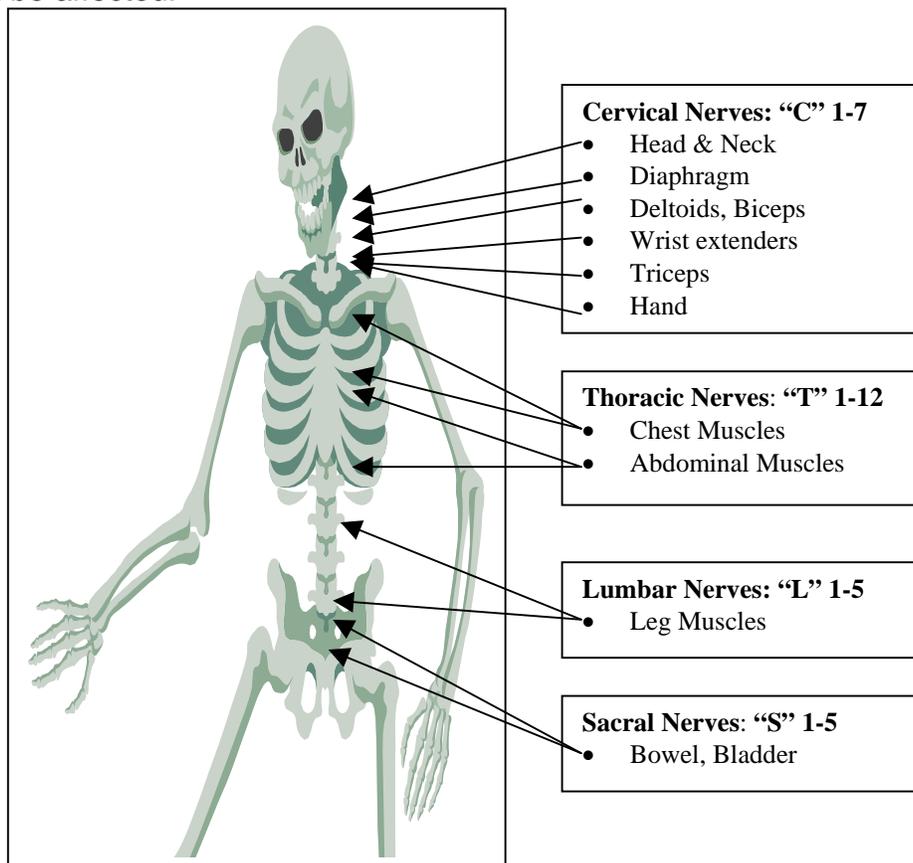
There is no single way to set up the player's chair. The process of adjusting for optimal position is an ongoing process. The general rule is to make small adjustments over time to avoid major changes in balance.

2. INJURY LEVEL: (Note: Players who are not physically challenged can also play the sport of wheelchair tennis)

The level and degree of injury in Spinal Cord Injured (SCI) players will affect their balance, available range of motion, and mobility. The more you know about the student's injury level, the better you will be able to adapt techniques and drills. The following SCI classification can help you determine the student's capabilities.

The lowest level on the spinal cord that exhibits intact motor and sensory function classifies spinal cord injuries. For example, a player classified T3 was injured at that vertebra.

It is also important to note that a player's injury can be *complete* or *incomplete*. The latter will allow some function below the level of injury. The diagram shows the level of injury and what muscles might be affected.



Please note that this is a general guide. **It is always best to ask the player to show you their specific movement capabilities related to the requirements of wheelchair tennis.**

The following are terms you should be familiar with:

Amputees: An amputee is a wheelchair tennis player who has lost part or all of one or both legs. In general, they have all the same capabilities as other wheelchair players. Sometimes, in the case of a player with no legs, they may even have the potential for more maneuverability because of less body mass.

Quadriplegics: A Quadriplegic is an SCI with an injury to the cervical or high thoracic part of the spine causing impairment to one or more lower, and one or more upper limbs.

3. TECHNICAL CONSIDERATIONS

In principle, the fundamentals of racquet work and ball control are the same for wheelchair players as A/B's (Able Bodied players). The main difference is that wheelchair players have **less time** to execute strokes. The combination of mobility limitations and the fact that the racquet hand is engaged in maneuvering the chair makes it difficult to prepare early.

The following are some specific technical points to consider regarding the three stroke families:

GROUNDSTROKES	<p>Grips: All grips for tennis also work for wheelchair players. Coaches should guide players into grips that would work best for each individual. One additional grip required is the grip to hold the wheel and the racquet. Each player must find a grip that can maximize the contact point on the wheel and allow for a quick transition to hitting.</p> <p>Balance & Stability: It is acceptable for the player (right-handed) to grab the left side of the chair for balance while performing groundstrokes. On forehands, a player may lean on both knees with the left forearm. For extra rotation, a player can pull back on the left wheel on forehands.</p>
SERVE & OVERHEAD	<p>Toss: Higher injury level players will not be able to toss the ball directly over or behind the head.</p> <p>Impact point: On overheads, the player must maneuver to impact the ball slightly in front of the chair. Taking the ball on the bounce, or chasing it down and hitting 'over the shoulder' are other options. With 4-wheel chairs (chairs with an additional wheel in the rear) a short backward roll is also possible.</p> <p>Balance & Stability: A technique that can improve stability is to grab the left side of the chair or pull back on the left wheel immediately after the serve toss.</p>
VOLLEYS	Wheelchair players do not come to the net often because of lateral mobility limitations. However, players should be encouraged to attack the net to finish points.

4. MOBILITY CYCLE

Adapted from: 'Wheelchair Tennis: Myth to reality' in consultation with Randy Snow.

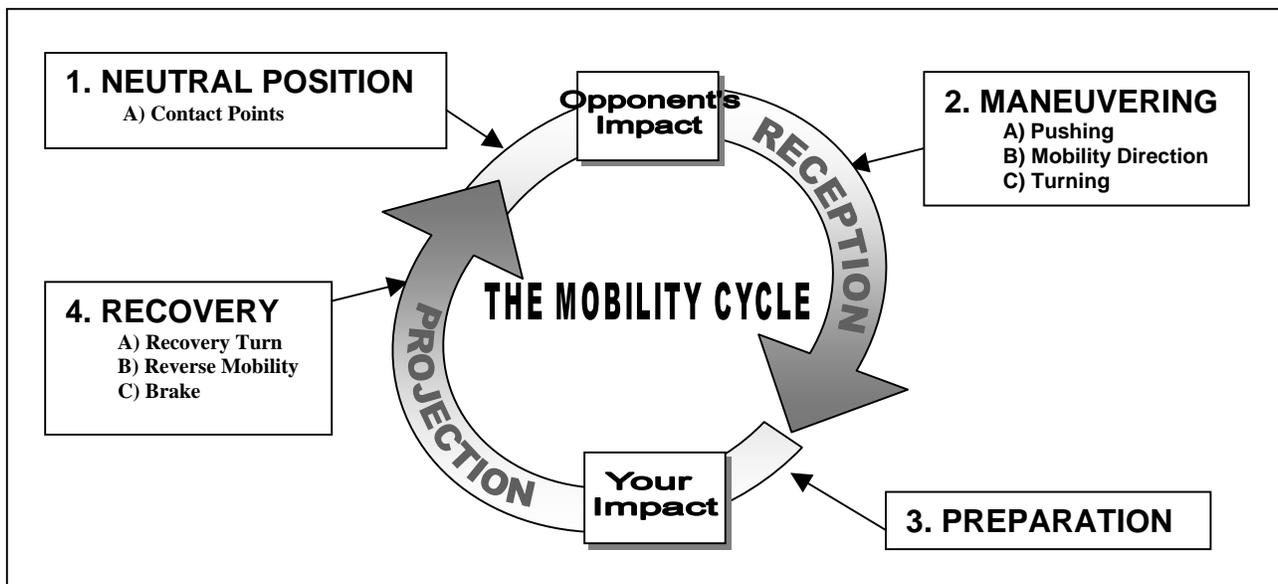
Dr. Bal Moore, coach of the US Olympic wheelchair team says, "Mobility is the single most important aspect of wheelchair tennis. It provides the base and transition for balance, timing, motion, and the execution of skills. This is perhaps the biggest difference between wheelchair and able-bodied (A/B) tennis."

Randy Snow, 10 time US Open wheelchair champion adds, "Mastering mobility is probably the most important area in becoming a good wheelchair player."

To develop players, coaches need to know the framework and components of wheelchair tennis movement.

In order to maximize positioning for any shot, a wheelchair player goes through a "Mobility Cycle". The Cycle includes: The 'Neutral Position', 'Maneuvering' (the movement of the chair to position for the shot), 'Preparation' (setting up for the stroke & the stroke itself), and 'Recovery' (the chair movement to prepare for the next shot).

During the Mobility Cycle it is an important goal for the player to keep moving continuously. In this way the laws of inertia and momentum can work for the player. A point may consist of many Cycles linked together with the player's movement flowing from one Cycle to the next. This continuous movement is called 'Circular Mobility' and is preferred over repeated stationary starts.



The Mobility Cycle provides a systematic framework for coaches to observe, analyze and train the specific components of footwork.

5. RULES OF WHEELCHAIR TENNIS

The game of wheelchair tennis follows the Rules of Tennis as endorsed by the International Tennis Federation, except the wheelchair tennis player is allowed two bounces of the ball. The player must, before the ball in play has hit the ground three times consecutively, return the ball.

The wheelchair is part of the body, all applicable ITF RULES which apply to a player's body shall apply to the wheelchair.

a) The Competitive Wheelchair Tennis Player

- i) The only eligibility requirement for an individual to become a competitive wheelchair tennis player is that he/she must be medically diagnosed as having a permanent mobility-related disability. In other words, he/she must have substantial or total loss of function in one or more extremities. If, as a result of these functional limitations, this person would be unable to play competitive able-bodied tennis (that is, having the mobility to cover the court with adequate speed), then this person would be eligible to play competitive wheelchair tennis in sanctioned ITF Wheelchair Tennis Tournaments.
- ii) A Quadriplegic Division player shall be characterized as one who has limited mobility, power and strength, in at least three extremities. Also included in this division are walking quadriplegics, power wheelchair-users, and triple amputees.
- iii) If there is a reason to doubt an individual's eligibility to participate as a competitive wheelchair tennis player, the ITF WHEELCHAIR TENNIS COMMITTEE reserves the right to determine any player's eligibility. A verification of eligibility may be required from a doctor, when in doubt.

The definition of lower extremities is: the lower limb including the buttocks, hip, thigh, leg, ankle, and foot.

b) The Service

- i) The served ball may, after hitting the ground in the service court, bounce on the ground once again within the bounds of the court or it may bounce outside the court boundaries before the receiver returns it.
- ii) The server shall throughout the delivery of the service:
 - a) the service shall be delivered in the following manner. Immediately before commencing to serve, the server shall be in a stationary position. The server shall then be allowed one push before striking the ball.
 - b) Not touch with any wheel, any area other than that behind the baseline within the imaginary extension of the center-mark and sideline.

- iii) If conventional methods for the service are physically impossible for a quadriplegic player, then an individual may drop the ball for such a player.

c) The Ball in Play

The ball is in play until the point is decided. The ball must be returned into the opponent's court prior to it striking the ground a third time. The second bounce can be either in or out of the court boundaries.

d) Player Loses Point

A player loses the point if:

- i) He fails to return the ball before it has touched the ground three times.
- ii) He uses any part of his lower extremities as brakes or as stabilizers while delivering the service, striking a ball, turning or stopping.
- iii) He fails to keep one buttock in contact with his/her wheelchair seat.

e) Wheelchair/Able-bodied Tennis

Where a wheelchair player is defined in Rule (a) above, is playing with or against an able-bodied person in singles or in doubles, the Rules of Wheelchair Tennis shall apply for the wheelchair player while the Rules of Tennis for able-bodied tennis shall apply for the able-bodied player. In this instance, the wheelchair player is allowed two bounces while the able-bodied player is allowed only one bounce.

References;

'Wheelchair Tennis: Myth to Reality'; Bal Mooore and Randy Snow. Kendall/Hunt Publishing. 1994
Available through the ITF.

'Tennis in a Wheelchair', Bradley A. Parks. Published and available through the USTA.1980, 1988.

Videos Available from the ITF, Bank Lane, Roehampton, London SW15 5XZ

- 1) No Brakes (coaching video, 1997)
- 2) Wheelchair Tennis for Quads (instructional video, 1997)
- 3) More Than Tennis (promotional video)

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