

Mobility

The most significant difference between wheelchair and able-bodied tennis is in **mobility**. It is also the one area that tennis coaches may be most unfamiliar with. In both games, mobility is the most important aspect of the physical game. The major difference of course is that wheelchair players generate all movement with the use of their hands and arms only. Other differences are:

- Circular movements as opposed to linear movements.
- Baseline Positioning
- Stop and Hitting
- Back turning

Mobility can be affected by a player's pure athleticism; their level of injury, how much time the person has spent or spends in a wheelchair or simply pure strength. Levels of play in wheelchair tennis as you will soon realise are dependent heavily on mobility.

The importance of mobility however cannot be understated. An excellent way to understand more personally the art of wheelchair mobility is to try it.

Wheelchair tennis mobility can be broken down into 3 general categories

Raw mobility – How to pushing the wheelchair

Technical mobility – How to push the wheelchair on the tennis court

Tactical mobility – Where to push the chair while on the tennis court

a. Raw Mobility

Physical Elements

When we talk about raw mobility we are generally referring to human elements such as:

- **Strength**
- **Athleticism**
- **Hand speed**
- **Range of motion in the arms**

The muscle groups that are used most in pushing the wheelchair are:

- **Deltoid (shoulder)**
- **Triceps (back of arms)**
- **Biceps (upper arms)**
- **Latisimus (back muscles)**
- **Pectoralis (chest)**
- **Abdominal (stomach)**

As mentioned earlier, which of these muscles groups the individual can use, will depend heavily on their level or type of injury. How well they can use them will depend more on strength and athleticism, momentum and for a few technique.

Range of Motion

Another important element of mobility is **range of motion**. Players able to bend at the waist can use the weight of their entire upper body in the downward push to apply force to the push, allowing them to extend the range of motion and increase power to the push. Players with higher disabilities that strap themselves around the mid-section are somewhat disadvantaged because of their restricted range of motion. Players with limited muscles usage and range of motion should look to improving **hand speed**.

The Push

Pushing the chair is something that will be natural for most players but unfamiliar for most tennis coaches. The sequence is as follows:

- Grab the wheel or rim as far back as possibly, typically just behind the backrest.
- Push hands in and down to ensure a firm grip on the rim and minimise slipping.
- Thrust forward with a full extension of the arms
- Recoil arms to push again without bobbing head and shoulders up and down.

COACHES TIP

Take time to experiment with moving around in a wheelchair, it may be the quickest way of understanding the push and mobility in general.

Head Bobbing

Players will have a tendency to put their head down or bob it up and down as they are pushing or they will stare at their point of recovery. Sometimes the upper body will shift the momentum in the opposite direction. Head and shoulders should remain as steady as possible while hands and arms work rapidly on the push. Heading and shoulder bobbing tends to create negative momentum.

Coaches Tip

Much of what determines the level of play an individual could achieve will depend on their raw mobility but technically strong mobility can sometimes compensate.

b. Technical Mobility

Mastering on court mobility involves combining of both physical and mental elements. Not only is physical strength and agility needed for pushing, stopping, starting but the player must also be efficient and effective pusher. **Technical mobility** refers to not so much how to push, but how to push on a tennis court.

Momentum and Perpetual Motion

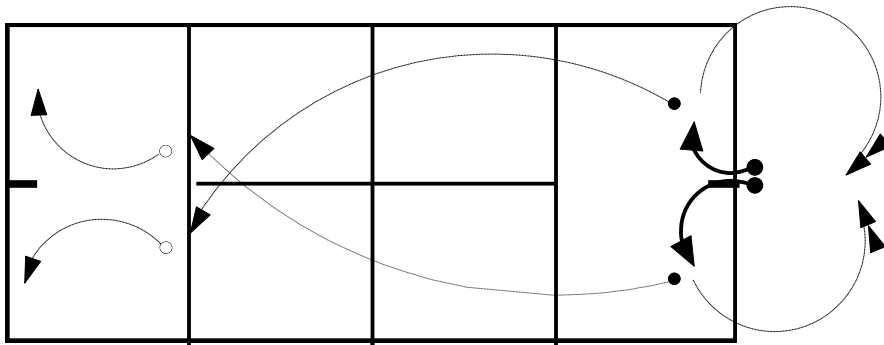
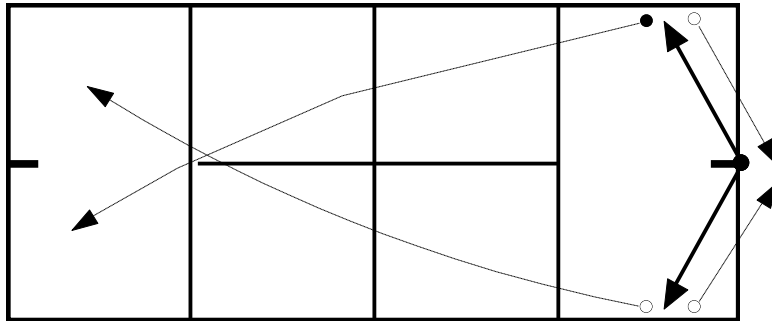
Wheelchair tennis players must make effective use of **momentum**. Because an object set in motion will accelerate faster and easier than one at rest, wheelchair players find it beneficial to their goal of being faster with less effort. Therefore, wheelchair tennis players should strive to keep the wheels and chair in continuous or **perpetual motion** throughout the entire point or rally, accomplished through:

- Circular on court movements
- Keeping both hands active at all times
- Rotating the chair into the shot
- No stop, plant and hit, rather; slowing to the ball and hitting while keeping the chair moving.

Circular vs. Linear

On court movements in wheelchair tennis are circular in nature. Although a longer path to recovery, circular movements on court maximise the use of momentum.

Basic Able- Bodied recovery method- Linear



Even when preparing to strike the ball, players should allow the wheel to slide through their fingers, rather than gripping the wheel firmly and causing the chair to slide to a complete stop, to continue the momentum into the shot. After the execution of the shot, the chair should immediately be set back in motion.

The Turns

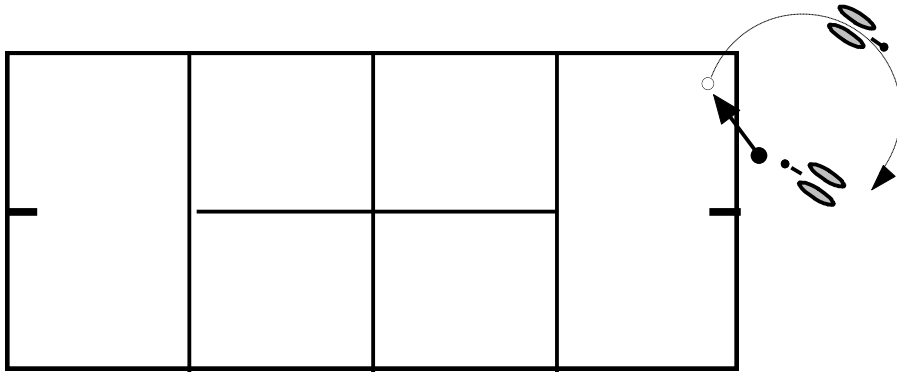
There are three basic types of turns in wheelchair tennis:

- **Outer turn** – A turn away from the net, often referred to as a “negative turn”.
- **Inner turn** – Turn in towards the net, considered an attacking turn
- **Reverse mobility** – Turn away from the net when executed inside the court.

Inner and outer turns are used for recovery and when attacking the ball.

a. Outer Turn

The most fundamental turn in tennis is the **outer turn**, also referred to as a negative turn. After the execution of the shot the player turns away from the court, or outward, thus positioning themselves deeper in the court.



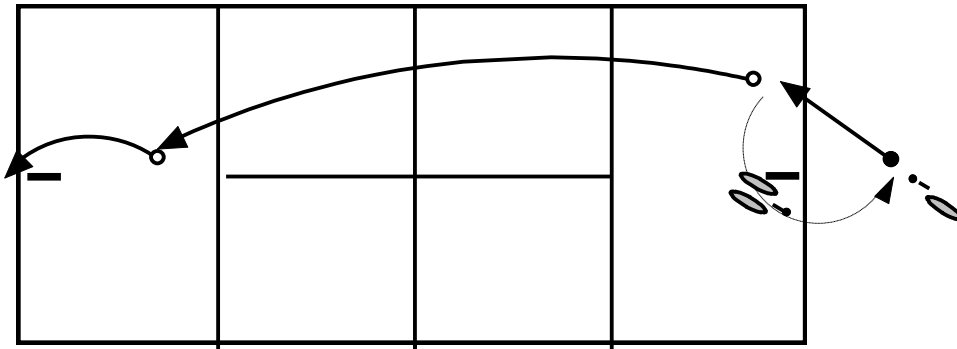
Use Outer Turn When:

- Seeking a safer position (deeper) on the court.
- The player is late getting to the ball and not able to get forward rotation into the shot, generally while on the defensive.
- Player forced out wide from the court and thus requires a deeper, more defensive positioning.
- Going after deep shots and balls hit behind the player

b. Inner Turn

The second basic turn is the inner loop or positive turn. In executing this turn the player rotates the chair into the court. It is considered a more aggressive or attacking turn. The player's momentum guides the turn into the court after the shot is executed.

Basic Inner Turn



Advantages

- Allows for a shorter path for recovery
- Uses the swings natural forward momentum into the shot

Disadvantage

- Leaves the player positioned more inside the court

The inner turn is the preferred turn on the forehand side because:

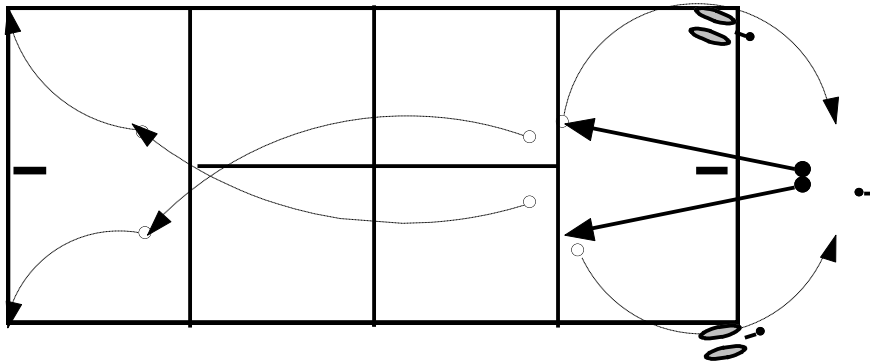
1. Non-playing hand is positioned inside the court so the chair is naturally pulled inward.
2. The forehand can and should be hit with an open stance, therefore the player will have a much shorter distance to turn.

c. Reverse Mobility

Reverse mobility refers movement away from the net area. The shortest path of course would be to turn and head straight back, but when caught near the middle of court, this requires turning the back on the opponent. The reverse mobility technique maximises two main factors:

- **Visibility** – ensuring that the players has maximum court visibility
- **Court coverage** – ensuring maximising coverage opportunities

Basic Reverse Mobility



In order for a player to gain maximum visibility, a circular path should be used. The inside shoulder will be facing the opponent allowing for an easy head turn and minimising back turn.

By turning so that the playing hand is inside the court the player will create a balance push and be able to use the backhand for more reach, maximising court coverage. More about the importance of reverse mobility is covered in the Tactical Mobility section.

c. Tactical Mobility

Tactical mobility refers to on court positioning. Limited by speed and reach, players will find positioning several feet behind the baseline players will be able to utilise the second bounce and allow them more time to reach the ball. Although the top players in the modern game are utilising less and less the second bounce, it remains predominate in the game. The best way to visualise wheelchair tennis court positioning is basically the same way you may able-bodied clay court tennis.

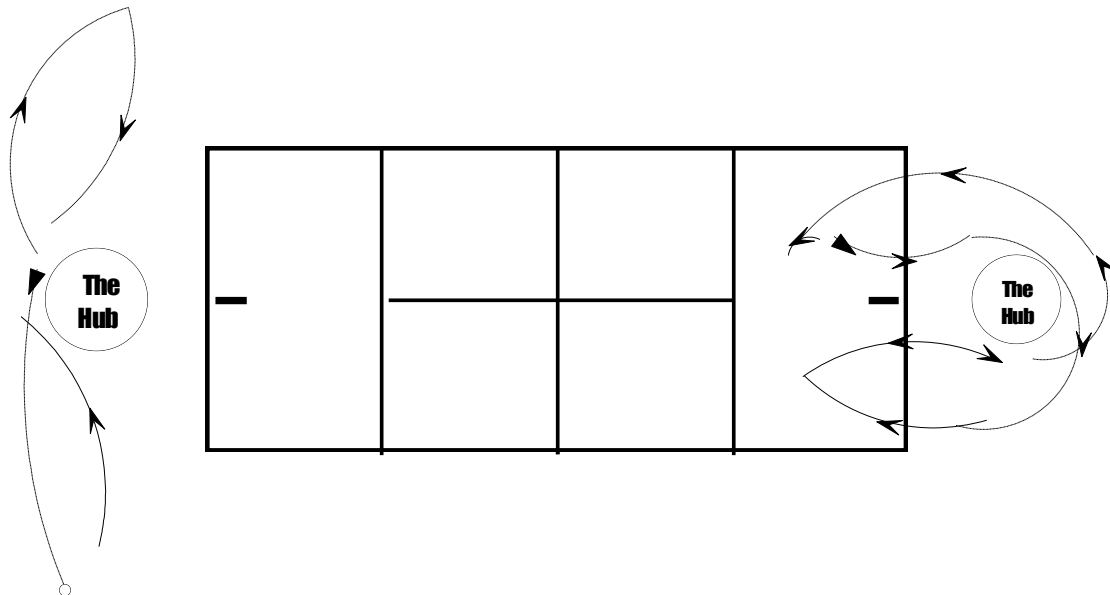
COACHES TIP

The most common mistake beginner and intermediate players make is positioning too far inside the court or gradually drift into the court after executing a shot. Reinforce good recovery habits early.

The Hub

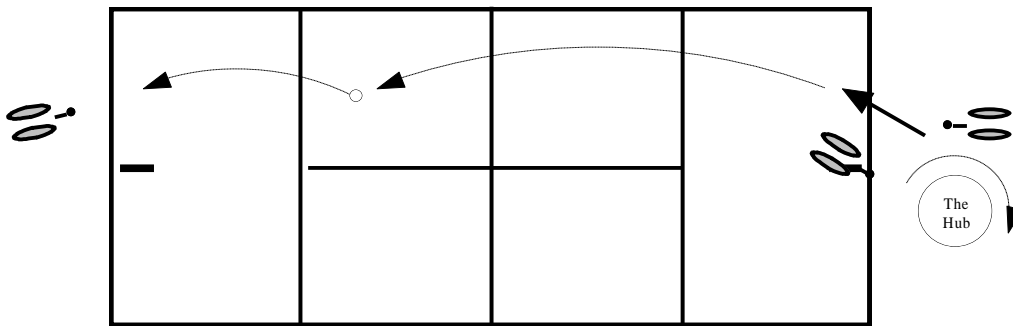
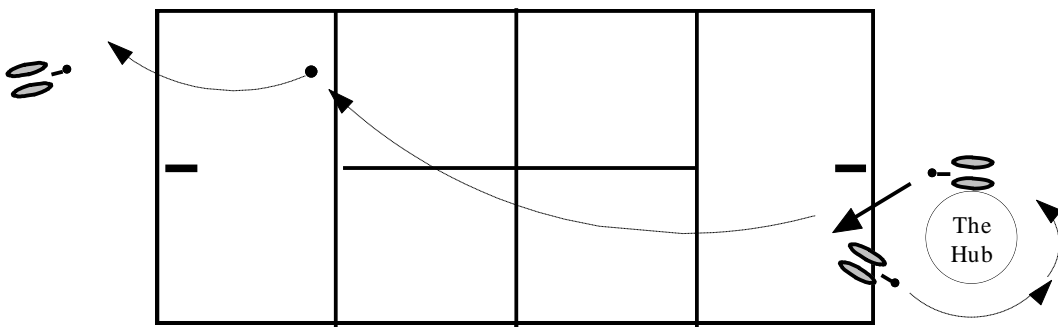
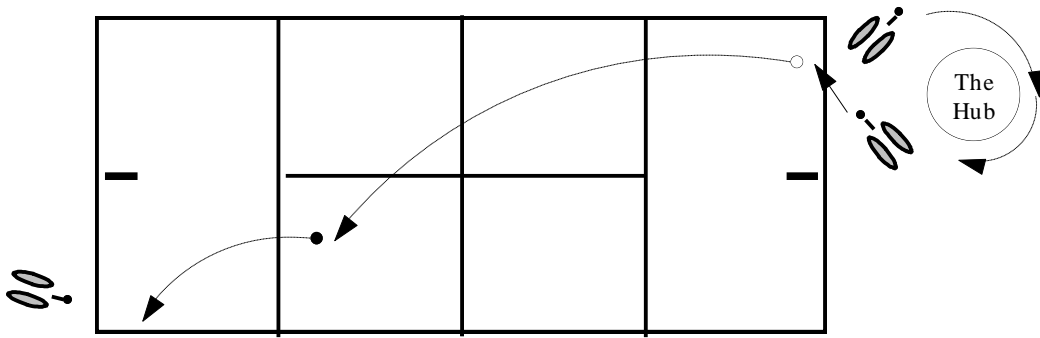
“The Hub” is the fundamental positioning concept in wheelchair tennis. “The Hub” is a term coined by former ITF Wheelchair Tennis World Champion Randy Snow and his coach and co author, Bal Moore, in their book “Wheelchair Tennis: Myth to Reality”. It refers to an imaginary circular area positioned one or two meters behind the baseline with a circumference of two or three meters.

After execution of the shot, the player objective is to get back into the “Hub” area as quickly as possible. The first two of three pushes after the shot are therefore vital. Players should focus on recovering with the ideal of achieving peak speed as they approach the “Hub”, then a slow down, turning into the court as their opponent executes their shot.



The Shifting Hub

The “Hub” can also shift left and right depending on the return angle of the ball. General tennis positioning theories apply here,



It is also important not to overrun the Hub. It is better to extend or widen the path for recovery i.e. using an outer turn to not overrun the desired angle of coverage and, not to have to stop when in position.

A One Bounce Game?

Modern wheelchair tennis is moving The Hub closer and closer to the baseline as players are getting quicker and more athletic. Today's top players are rewriting wheelchair tennis tactics

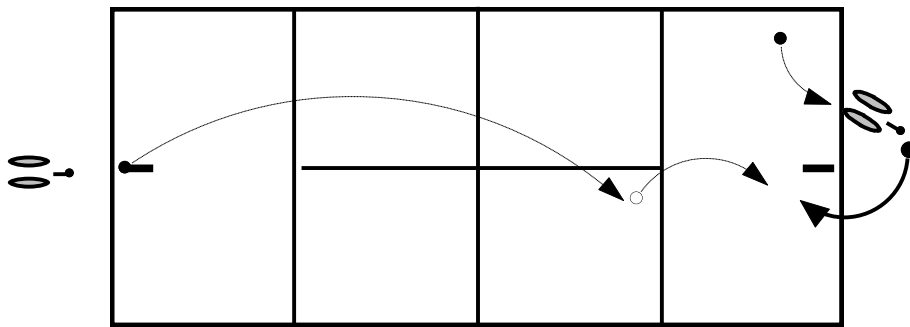
moving the Hub further inside the court attacking the ball on the first bounce, and thus catching their opponent out of position.

Choosing Turns

As you can see from the diagram, players recover to the Hub using both inner and outer turns, so which one should be used. We have said before that players need to listen to their chairs but there are tactical situational advantages to consider both when attacking the ball and recovering.

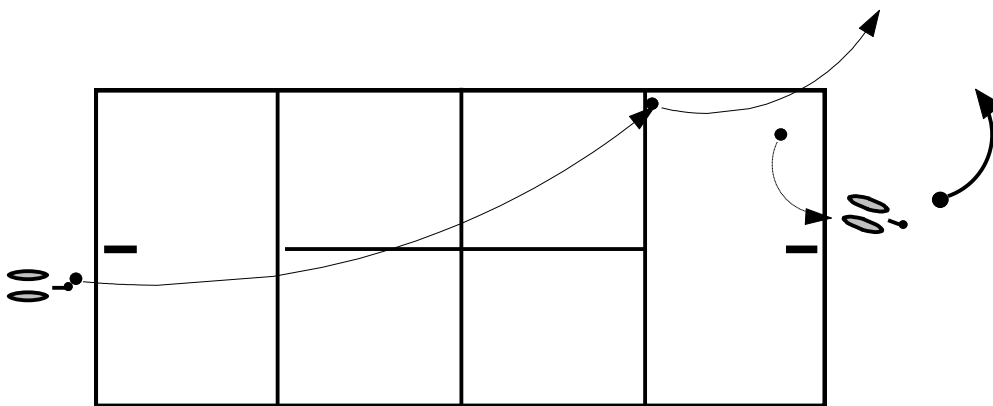
Inner turns

- When seeking a quick return into the court
- On the forehand the free hand is positioned on the inside, and players find it natural to use that hand to rotate into the shot, hence an inner turn seems more natural.
- When attacking a weak ball



Outer Turns

- When seeking a more defensive position
- When looking to drift back in order to not over recover
- When going after wide angled balls



All these techniques look to maximise:

- **Momentum**
- **Visibility**
- **Court coverage**
- **Percentages**

Attacking Angles

A subtlety when considering mobility is the angle at which the player attacks the ball. Able-bodied players are taught to “cut-off” the angle of the ball by moving into the court and thus shortening the distance to the ball. Wheelchair players are typically better off meeting the ball by moving perpendicular to the baseline, other than for short balls.

Retreating and Reverse Mobility

Retreating in wheelchair tennis is not only acceptable but also often the best tactical choice. As a general rule, net positioning is less advantageous because of lack of reach, height and limited mobility of the wheelchair player make him too easy to pass or lob over. Therefore, players will typically retreat back to the baseline after the first volley is hit.

Improving your push - Mobility Drills

Mobility drill should be primarily accomplished with the racquet in playing hand. It is essential that players become very comfortable with this. Most of these drills simulate on court movement with the primary emphasis on recovering to the hub, speed and visibility. It is also a good idea to time players while performing these drills so you and they can measure progress.