

MOBILITY CYCLE

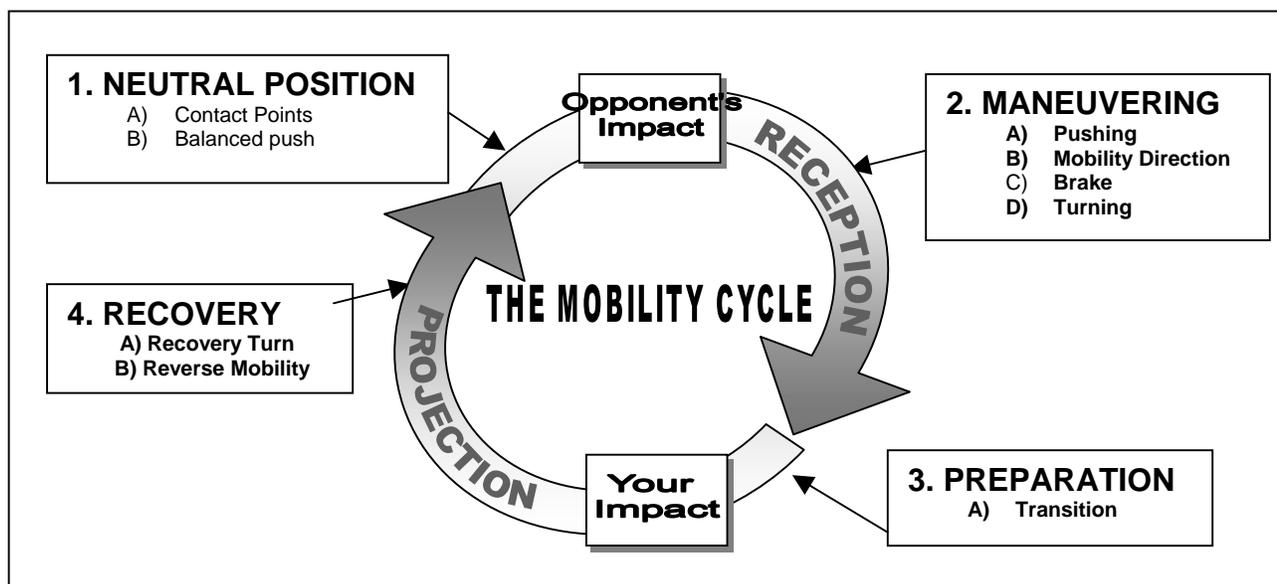
Dr. Bal Moore, former coach of the US Olympic wheelchair team has said, *“Mobility is the single most important aspect of wheelchair tennis. It provides the base and transition for balance, timing, motion, and the execution of skills. This is perhaps the biggest difference between wheelchair and able-bodied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

Randy Snow, 10 time US Open wheelchair champion has added, *“Mastering mobility is probably the most important area in becoming a good wheelchair player.”*

Coaches need to know the framework and components of wheelchair tennis movement to develop players.

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 players' movement flowing from one Cycle to the next. This continuous movement is called, ***'Circular Mobility'*** and is preferred over repeated stationary starts.



1. NEUTRAL POSITION

From the serve or return, a player begins the cycle in a Neutral Position with the body in balance to allow a quick start in any direction. On return, the position requires both hands on the wheels for quick movement. During play the Neutral Position is dynamic with the player simply regaining balance and establishing good Contact Points after a stroke.

A) Contact Points: These are areas of the hand or racquet grip that connect with some part of the wheel (tire or hand rim). Players commonly use either the pad of the palm against the tire or the forearm. Some use a larger hand rim and others remove the hand rim completely. Whatever the technique, **the main goal is to develop solid contact points.**

B) Balanced Push: It is often an advantage to "overturn" (be angled slightly to the left for a right hander) when in a Neutral Position. This compensates for the stronger push available from the non-racquet hand.

From a Neutral Position a player is better able to 'read' the opponent's shot and react with a strong first push.

2. MANOEUVRING

After a player has either anticipated or identified where to go, they must line up the movement of the chair to set up for the best impact point possible.

A) Pushing: In order to propel the chair, the player can thrust with one or both hands. The degree to which each hand is used provides directional control of the chair. Learning to maneuver the chair with a racquet in hand is not easy; it takes time and practice. Any way to push the chair that works is correct. However, in general short quick thrusts are used to start and make fast adjustments. Long thrusts are used once the chair is going and keep the chair accelerating.

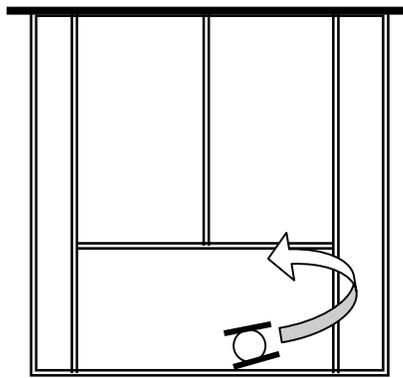
B) Mobility Direction: There are 3 types of maneuvering available during the Positioning phase:

- 1. Forward Mobility:** Moving straight towards the intended destination.
- 2. Reverse Mobility:** Moving forward but away from the net towards the back fence.
- 3. Backward Mobility:** Rolling backwards (only available with 4 wheel chairs)

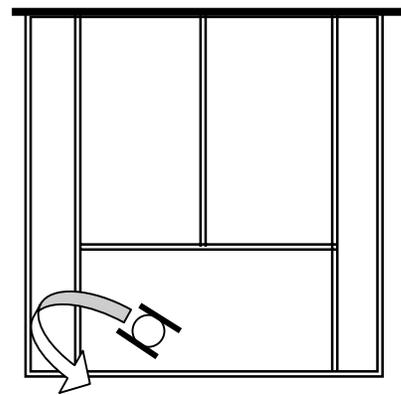
C) Brake: Just before the opponent's impact, it may be necessary to quickly slow the recovery movement. This is done by leaning back in the chair and braking sharply. When this 'Stutter' is performed, the player can change direction quickly.

D) Turning: To transition from one type of mobility to the next, there are 3 types of turns:

- 1. In-Turn:** Turning in towards the net or the centre of the court
- 2. Out-Turn:** Turning out away from the net or towards the sidelines
- 3. Pivot:** Pulling one wheel and pushing the other to produce an 'on the spot' turn. This move is often used when a ball is coming right at the player.



"In-Turn"



"Out-Turn"

Turns can be executed in 2 ways:

1. **Momentum Turn:** Using the movement of the chair to produce a turn by slowing one wheel.
2. **Cross Hand Turn:** Grasping a wheel with the opposite hand to cause one side of the chair to slow and produce a turn.

3. PREPARATION

Once the player is in position (either moving or not) the racquet is set for the stroke. In wheelchair tennis the dominant hand must make the transition from pushing to stroking very quickly. Since the racquet hand is involved in both the Mobility and Racquet Work Cycles, this stage should be included in both. ***The timing of the racquet hand making the transition from pushing to hitting is crucial.*** Too early and no positioning adjustments can be made, too late and the stroke may become a quick uncontrolled 'slap'.

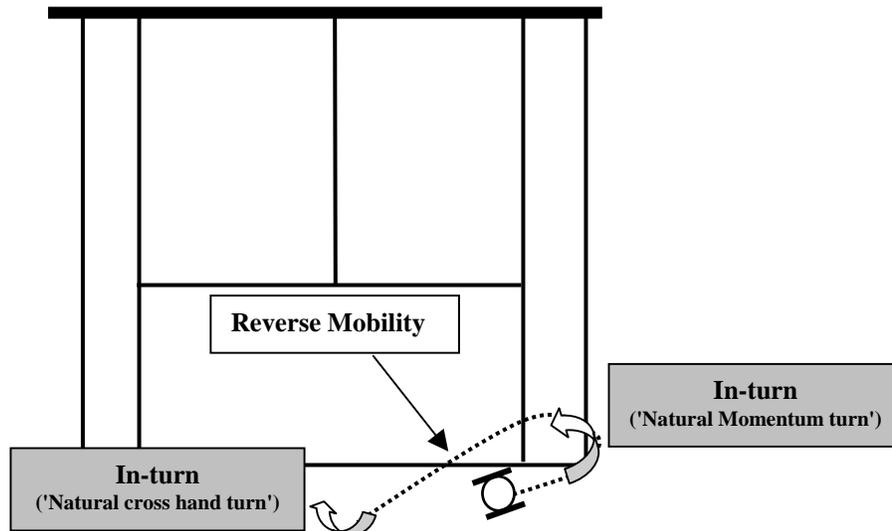
4. RECOVERY

Recovery for a wheelchair player includes many distinct features to maximize positioning.

- A) Recovery Turn:** Turning after the stroke can be either an **In-Turn** or an **Out-Turn** depending on:
1. **Momentum:** The force of a chair on the move will naturally carry a player into a particular turn.
 2. **Physiology:** The natural movement of the body, where the impact point is in relation to the player, and the racquet swing, will also carry a player into a particular turn.

***RULE OF THUMB:** A player should always attempt to perform a "Natural Turn" which is the turn that is most in harmony with the momentum & physiology principles. This type of turn will allow physics to work best for the player. The exception to the rule is when a player can gain advantage, or minimize an opponent's advantage. In this case a player may choose a, "Counter Turn" which is one that ignores the physiology rule. A Counter Turn is harder to perform but may be worth the effort tactically.

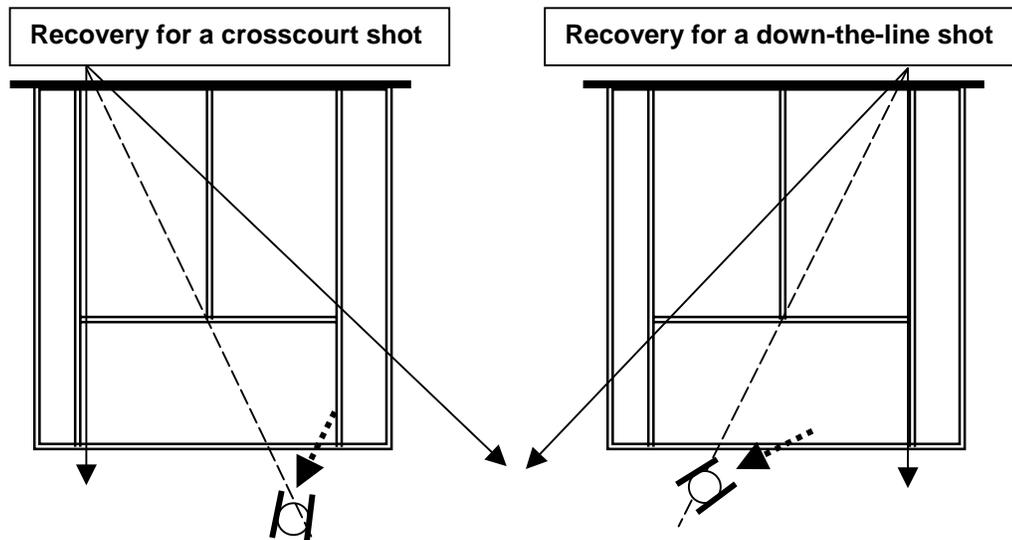
B) Reverse Mobility: When recovering, a player's best ready position is dynamic and is performed while wheeling towards the back fence. This allows the player to keep moving and maintain momentum. The player must look over their shoulder to pick up the information required to decide on an In-Turn or Out-Turn to cut off the opponent's shot.



C) Recovery Positioning: It is important when recovering to position in the best spot possible to cut off all the possible angles an opponent may make. This means recovering to the correct place at the correct time.

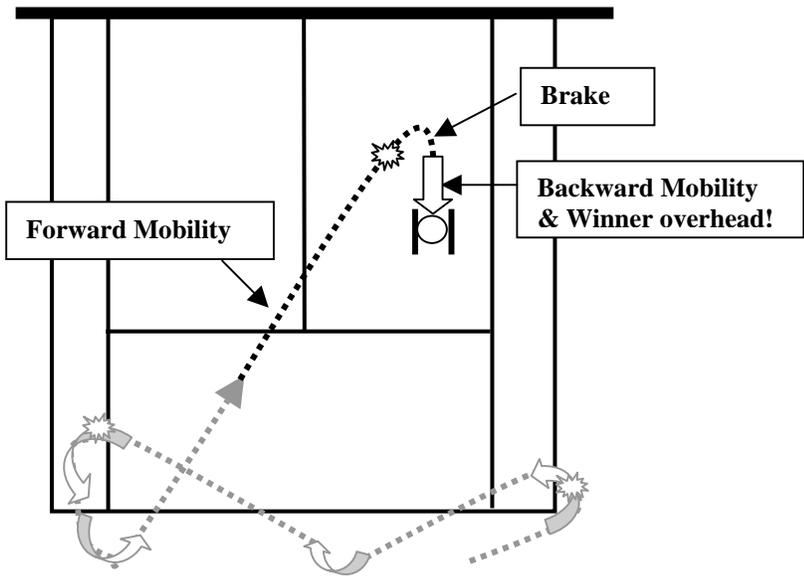
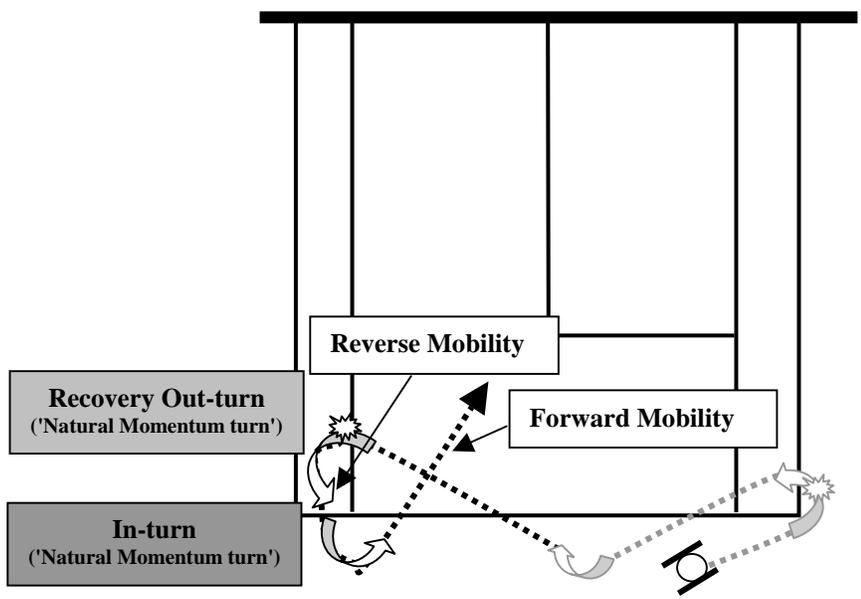
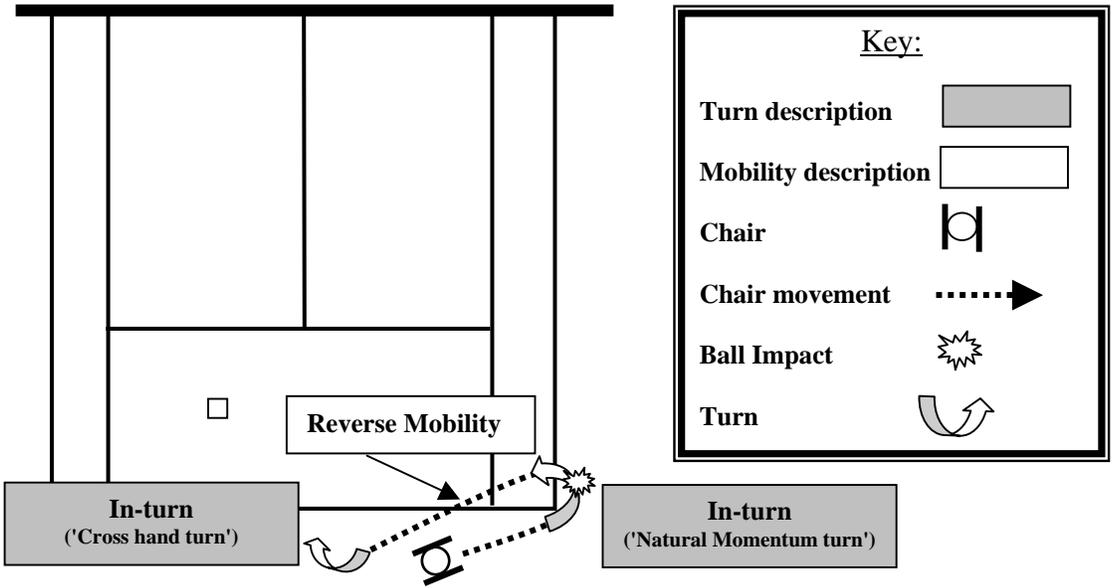
Correct recovery positioning: The idea is to be positioned directly in between the two best shots an opponent could make on either side (called "bisecting the angle of possible return" shown by the dotted line). This will give the player the shortest distance the opponent's best shots.

Correct recovery timing: The goal is to be in position just before the opponent makes contact with the ball. This will allow a player to see the opponent's shot and react accordingly. Not getting to the correct recovery position early enough (just before the opponent impacts), means being out of position for the next shot. Getting to that position too early means the player will lose momentum since they will be 'waiting' at that spot.



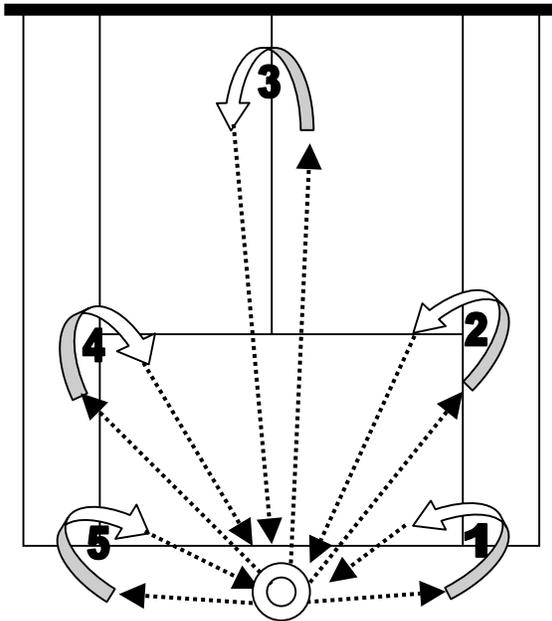
MOBILITY CYCLE EXAMPLE

In this example three Mobility Cycles are linked together in a point starting with the return of serve.

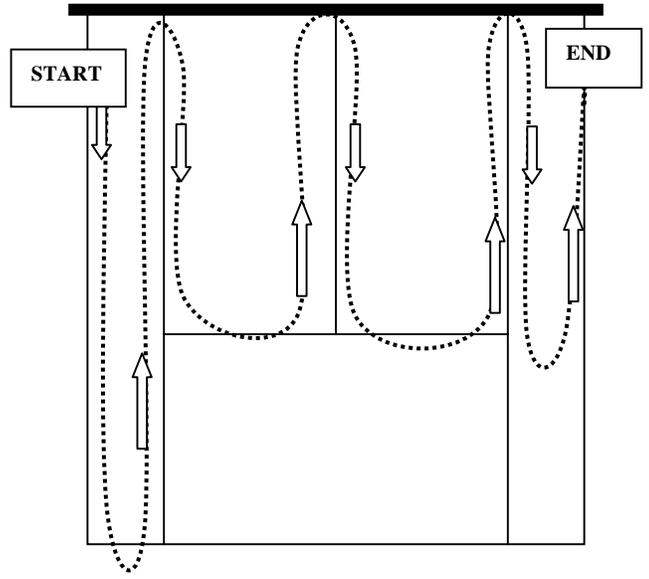


MOBILITY DRILLS

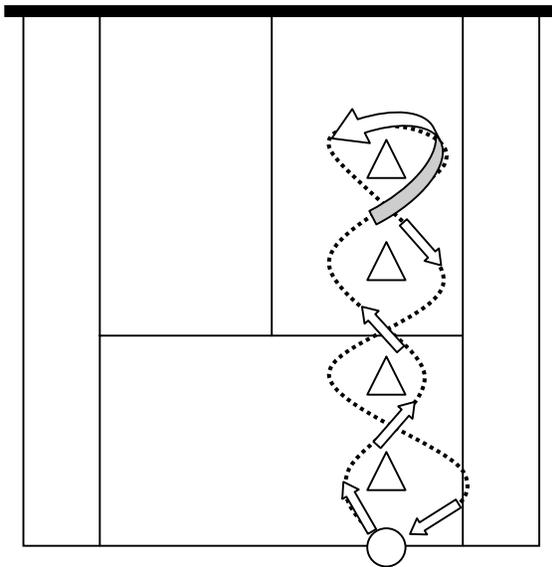
These are some sample Mobility Drills. The objective of any of these drills is to give players repetition of specific mobility components. Drills can isolate certain components (e.g. 'One Hand Slalom Drill') or train combinations of skills (e.g. 'Hub Drill'). **It is highly recommended that the player carry their racquet in all mobility drills.**



HUB DRILL: Player starts at 'Hub', goes to marker '1', executes a turn (player may simulate stroke), and returns to the 'Hub'. Coach may determine any sequence of markers (Clockwise, counterclockwise, Etc.)



'INDY "500"': Player begins at net at 'start' and goes through a circuit of 180 and 45 degree turns. 1-8 players can do this drill at the same time. The 2nd player starts when the 1st has completed the first turn.



ONE HAND SLALOM: This drill helps to learn and strengthen turning with racquet hand. Player(s) slalom through the circuit using only their racquet hand to push the chair. There can be more than 1 circuit per court.

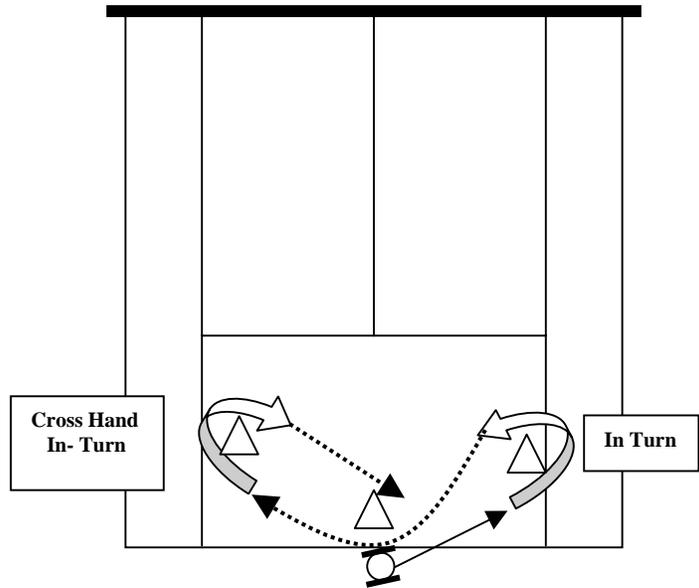


FIGURE 8: This is an excellent drill to practice In Turns and Cross Hand turns. The player must simulate a stroke at each turn. Drill should also be done in the reverse direction.