



# WHEELS CONNECT

Tennis Wheelchair Setup  
& Maintenance Guide



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# INTRODUCTION

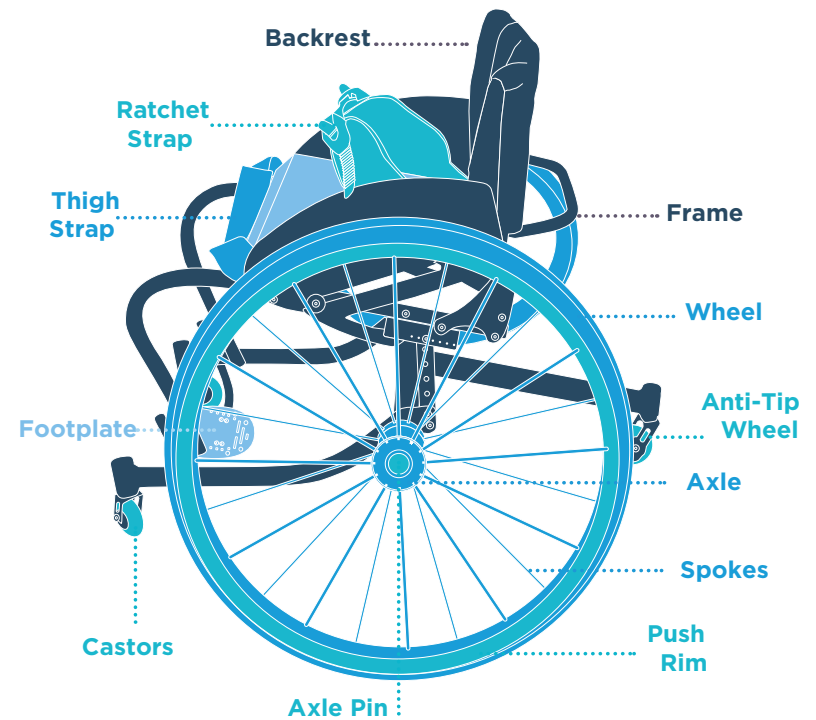
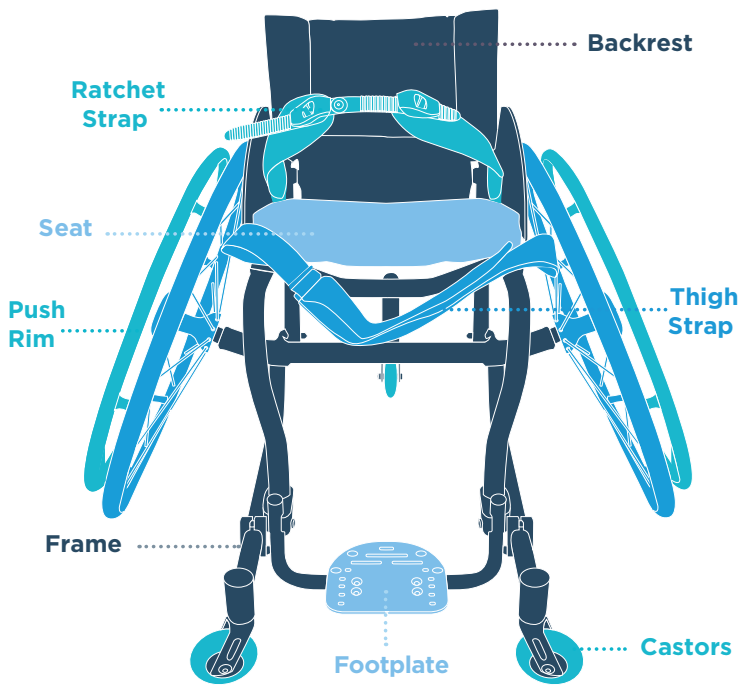
## Wheels Connect

With a vision to increase wheelchair tennis participation, Tennis Australia's Wheels Connect program aims to make tennis a sport of choice. Providing opportunities to play tennis and encouraging people to to maximise their personal potential.

Wheels Connect is working with clubs to increase accessibility and programs, upskilling and, educating coaches to develop players and utilising innovation and research to provide up-to-date equipment.



# THE WHEELCHAIR



## Why make changes?

A tennis-specific sports wheelchair can be configured and adapted to suit the player's needs and improve performance and comfort. The aim is to have the chair work with the player as much as possible to:

- Maximise speed around the court
- Promote efficient turning
- Provide support and balance through the hit
- Maintain momentum after the hit to recover more efficiently
- Provide comfort for the player.

## The Wheelchair

Sports wheelchairs come in various shapes and sizes and can be fixed or adjustable. Fixed sports wheelchairs are preferred by elite players, while fully adjustable chairs are more suited to those newer to the sport as it allows the same chair to be used by different people. Chairs can also be adjusted as a player's body shape changes and/or as their game style develops. This is an ongoing process, requiring regular checks for each individual.

## The Frame

The frame is a key component as it connects all parts of the wheelchair. Lighter chairs are easier and quicker to manoeuvre so aluminum and titanium options are available. Frames come in two formats: fixed and adjustable.

	ADJUSTABLE FRAME	FIXED FRAME
SUITABILITY	Players within group sessions	Elite level players
	Younger players who are likely to experience body shape changes	Players who want their own personal chair and know their best set-up after an extended period of trial and error
	New players are able to try different setups to see which one is best for them	

**DID YOU KNOW?** Wheelchairs can be customised to suit an individual's specific needs.

# THE WHEELCHAIR

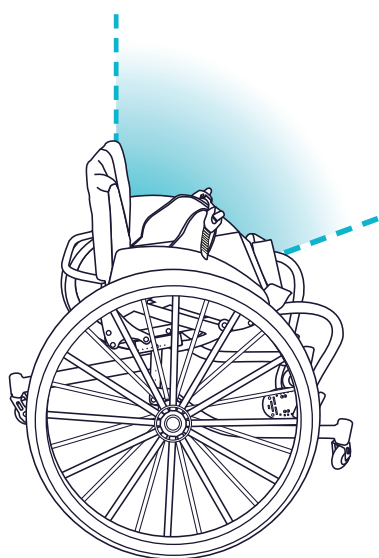
## The Seat

It is important to ensure the seat is correctly set up for the player using the wheelchair as this will have a major impact on their comfort and mobility. To ensure maximum mobility and comfort the following needs to be assessed:

### Bucket (Seat Angle)

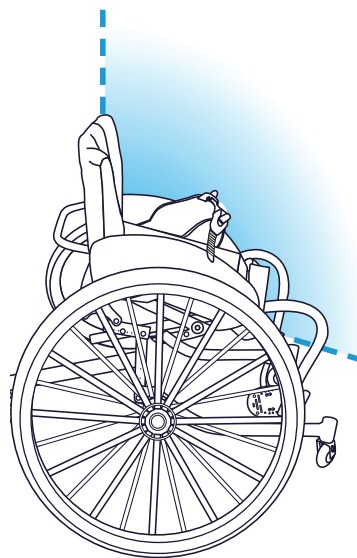
The angle of the seat, referred to as the bucket, has an impact on the balance and stability of the player.

	<b>INCLINED</b> (front of the seat points towards the sky)	<b>DECLINED</b> (front of the seat points towards the ground)
<b>SUITABILITY</b>	Players with less core function (high break or spinal injury)	Players with more core function (low break or spinal injury)
	New players who may require greater stability	Players with an amputation



#### PLAYER WITH REDUCED CORE FUNCTION

The angle of the seat (bucket) is smaller and the front of the seat points towards the sky.



#### PLAYER WITH GREATER CORE FUNCTION

The angle of the seat (bucket) is greater and the front of the seat points towards the floor.

## Seat Height

The height of the seat has an impact on stability, mobility, reach, power and court view.

	<b>HIGH SEAT</b>	<b>LOW SEAT</b>
<b>SUITABILITY</b>	Players with more core function (low break or spinal injury)	Players with less core function (high break or spinal injury)
	Players with an amputation	New players who may require greater support/stability

**SEAT TIPS:** When sitting on the seat, players should be able to reach the axle.

## Backrest

The backrest is vital to ensuring the player is comfortable while using the chair.

	<b>HIGH BACKREST</b>	<b>LOW BACKREST</b>
<b>SUITABILITY</b>	Players with less core function (high break or spinal injury)	Players with more core function (low break or spinal injury)
	New players who may require greater support	Players with an amputation

**BACKREST TIPS:** Backrests need adequate padding or upholstery so that rubbing does not occur.

## Footplate and Knee Position

The footplate is another component of the chair that can be altered to increase stability.

	<b>FEET IN FRONT OF THE BODY</b>	<b>FEET DIRECTLY UNDER THE BODY</b>
<b>SUITABILITY</b>	Players who are looking for more stability (beginners and those with less core function)	Players with good stability and looking for greater mobility

**FOOTPLATE TIPS:** As a player develops it may be beneficial to move the foot plate back further as this allows the player to position themselves more over the ball and moves their centre of gravity nearer the axle of the chair. For those who have leg function, it allows them to be able to push through their feet a bit more.

# THE WHEELCHAIR

## Strapping

Strapping is vital in ensuring players are supported and stable while playing tennis. Strapping comes in different formats and for different areas of the chair and body.

### Waist Strap

Those with less core function will probably require a strap round their middle (waist up to chest) to help stabilise and support them. This helps with balance and can assist with shot production and recovery. Neoprene/velcro straps can be used.

### Ratchet Strap

Similar to a ski-binding, a ratchet strap is used to secure the player into the chair around the hips. A ratchet strap is more effective than a velcro one.

### Thigh Strap

A strap just above the knee is used to stop legs moving side-to-side as the chair turns. This improves turn efficiency and prevents the legs from working against the movement of the chair. A ratchet strap or neoprene/velcro straps can be used.

### Knee/Shin Pads

These pads allow players to push against them providing resistance when striking the ball and help limit extra movement of the legs.

### Feet Strap

Typically smaller ratchet straps, toe clips or velcro are used to secure a player's feet so that they do not come loose or move around during play.



## Wheels (including castors)

To ensure maximum mobility, the following needs to be assessed:

### Sizes

There are different sizes of wheels which have an impact on acceleration, top speed and turning.

	SMALLER WHEELS (24'/25')	LARGER WHEELS (26'/27')
BENEFITS	<ul style="list-style-type: none"> <li>Greater acceleration</li> <li>More turn efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Higher speed once moving</li> <li>Chair rolls for longer resulting in energy saved as less pushes required</li> </ul>
LIMITATIONS	<ul style="list-style-type: none"> <li>Lower speed once moving</li> <li>Chair doesn't roll for as long as more pushes/energy are required to keep chair moving</li> </ul>	<ul style="list-style-type: none"> <li>Less acceleration</li> <li>Reduced turn efficiency</li> </ul>
SUITABILITY	This will depend on the player and their requirements.	

### Anti-Tip and Front Coasters

The anti-tip castor at the rear of the wheelchair and the front castors add stability and prevent the chair from toppling over. The three castors should not all be on the ground at the same time as it prevents wheel spin.

### Camber

The camber is the angle of the wheels in relationship to the axle. 20-24 degrees is generally the preferred camber for wheelchair tennis; anything above is not recommended.

	GREATER CAMBER/ANGLE	LESS CAMBER/ANGLE
BENEFITS	<ul style="list-style-type: none"> <li>Greater balance</li> <li>Easier and quicker to turn</li> </ul>	<ul style="list-style-type: none"> <li>Greater straight-line speed reducing the number of pushes required and saving energy.</li> </ul>
LIMITATIONS	<ul style="list-style-type: none"> <li>Reduced straight-line speed, requiring more pushes and energy</li> </ul>	<ul style="list-style-type: none"> <li>Reduced balance</li> <li>Slower to turn</li> </ul>
SUITABILITY	This will depend on the player and their requirements.	

# WHEELCHAIR MAINTENANCE

Maintenance can be broken down into three main areas:

## Cushion and upholstery

- Look for ripped fabric or seams and worn out foam.
- Check the cover and seat upholstery is tight within the chair and does not move or slide.
- Clean the cushion cover and upholstery whenever it gets dirty.
- When washing, dry the cushion and upholstery fully before re-fitting to the wheelchair.
- Exposing the cushion to direct sunlight and heat will damage the fabric.

## Anti-tip and front castors

- Check if the anti-tip and front castors run smoothly. If they do not, then the bearings may need changing or ball fluff/hair picked up from the courts will need to be removed.
- No need to oil or grease the chair.

## Tyres/wheels

- Check tyres are fully pumped prior to each use.
- Check spokes are tight.
- Check the rear wheel quick response axles are secure at each time of using.
- Tyre pressure should be around 100-120psi (tyres will be printed with their recommended rating). Depending on court surface, tyre pressure should be altered accordingly.

CHECK	WEEKLY	MONTHLY	3 MONTHS	6 MONTHS	YEARLY
TYRE PRESSURE	✓				
CUSHIONS & UPHOLESTRY		✓			
ANTI-TIP & CASTORS			✓		
WHEELS, TYRES & SPOKES			✓		
FRAME				✓	
ANNUAL SERVICE					✓

### WHEELCHAIR REPAIRS

VIC – [www.melrosewheelchairs.com.au/servicing/](http://www.melrosewheelchairs.com.au/servicing/)

Other states – check your local mobility or bike repair shop or service centre.

Melrose Wheelchairs provide a 10% discount on maintenance and servicing.

# USEFUL RESOURCES

## Play tennis

[www.wheelchairtennis.com.au](http://www.wheelchairtennis.com.au)

[www.tennis.com.au/play/inclusion-and-diversity/wheelchair-players](http://www.tennis.com.au/play/inclusion-and-diversity/wheelchair-players)

[www.tennis.com.au/play/inclusion-and-diversity/wheelchair-players/play-wheelchair-tennis/wheelchair-loan-program](http://www.tennis.com.au/play/inclusion-and-diversity/wheelchair-players/play-wheelchair-tennis/wheelchair-loan-program)

## Melrose Wheelchairs

[www.melrosewheelchairs.com.au](http://www.melrosewheelchairs.com.au)



