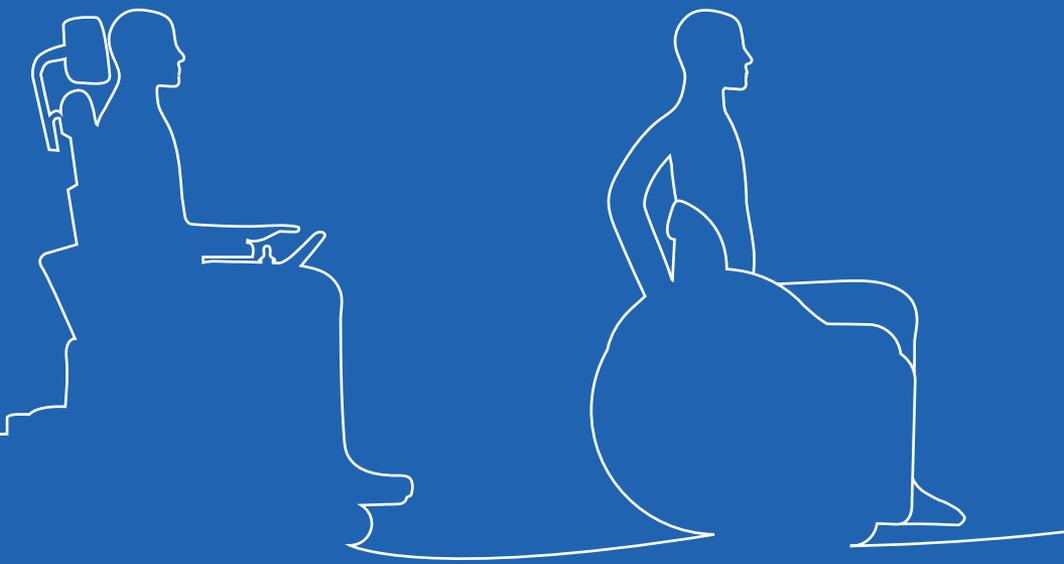


# The Wheelchair Handbook

A consumer's guide to seating and mobility equipment





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# Introduction

This guide is intended to provide you, the consumer, with information about the wheelchair service provision process. This guide can be used when you are being evaluated for your first wheelchair, before receiving a new or replacement wheelchair, and to share with your caregivers involved in these processes.

For the purposes of this guide, the term “consumer” will be used to represent those using wheelchairs and is inclusive of other terms referring to these individuals such as patients, end user, clients, wheelchair user, wheelchair rider, and riders.

This guide seeks to show the equipment solutions that Permobil manufactures and how they may benefit a variety of consumers in many ways. Please note: we intended to include a wide variety of equipment solutions but this is not all inclusive. Consult with your healthcare providers and work with your team to identify the best technology solutions for you and your needs.

This document contains current information based on the time of the publication October 2021.

**Disclaimer:** *The information in this document is for educational purposes only and is not intended to be billing or legal advice. The information provided does not guarantee funding from any source. For coverage information, verify the policy of the appropriate provider.*



## Dedication

This guide is dedicated to Brandon Edmondson, Permobil Business Region Americas’ late Director of Clinical Education (1975-2020). Brandon’s vision of Clinical Education in the Complex Rehabilitation Technology industry helped to create this department within Permobil and strongly influenced the development of this guide. We remain forever grateful to the impact Brandon made in the CRT world.

## Chapter 1

# Your right to choose

When a wheelchair fits you and matches your "individual lifestyle", your daily focus can shift to participating in what is meaningful to you. Conversely, when equipment is selected without your input, the wheelchair can become a barrier to your independence. You are the expert in the subject of you.

Successfully matching you to your equipment, requires insight into your routines, challenges, values, and preferences. Your team can best assist you if you come prepared to explain your routines and any medical challenges. Having a clear picture of what your needs are, and understanding the process of equipment provision is essential to reaching a good outcome.



# Getting started

## Selecting your clinical team

Working with a physician and therapy team that have experience recommending complex seating and mobility equipment will help ensure your required documentation is completed with proper assessment measures and submitted in a timely manner.

### You are in charge!

When selecting a wheelchair, ask to see a few different wheelchair styles that may meet your needs. Be sure to ask about the pros/cons of each. Request a trial in each, in your home when possible, so that you can compare their performance and how the different chairs maneuver in your spaces.



## Specify what equipment you are interested in

You are the leader of your team, and it is important to voice your needs and preferences. In addition, if your team recommends a specific device or component, a provider should discuss any changes in the type of equipment with you before they complete the order. When your equipment arrives, check that you are receiving what you and your team expected.

## In the United States only

- If there is a question about whether your insurance will cover a specific item, you may request that the item(s) in question are still submitted to insurance even if the team is hesitant.
  - This ensures your right to appeal if insurance denies that coverage, and your right to a fair hearing if your appeal is denied.
  - While this will make the process of getting your equipment take longer, you may get a ruling in your favor.
  - There are no fees for appeals or hearings to serve as a barrier to exercising this right.
  - Also, a denial may be necessary if you plan on approaching alternative funding resources.
  - Many alternative funding resources require an insurance denial before they will assist with funding.
- Request that your supplier is a RESNA-certified Assistive Technology Professional (ATP). RESNA members must subscribe to a code of ethics/standards of practice, which includes protecting a consumer's right to choose what medical equipment is requested.
- The primary goal of Medicaid is to provide medical assistance to persons in need and to furnish them with rehabilitation and other services to help them "attain or retain capability for independence or self-care" (42 U.S.C. § 1396). This includes equipment needed outside of the home.
- If you are a US Military Veteran, we encourage you to contact your local VA Hospital for support with mobility equipment.

Chapter 2:

# Process to obtain Equipment



# Process for new equipment

## 01

### Prepare for your visit

- Review your key team members: Physician, Clinician (Occupational Therapist (OT) and/or Physical Therapist (PT)), Equipment Provider, Equipment Technician, and Manufacturer Representative.
- Complete a self-assessment to determine what your needs are in all environments and at all times of day.
- Investigate your funding sources and find out about your benefits in advance, when possible.

## 02

### Physician referral

- This may be a physician, nurse practitioner, or physician assistant.
- A prescription will be written for an evaluation: “OT or PT for Wheelchair Evaluation” or “OT or PT for Seating Evaluation”.
- Be sure that they also document your mobility impairment in the chart notes as the reason for the visit and have accurate diagnoses.



- *Physician referral is not required in all provinces of Canada for equipment evaluation.*

## 03

### OT/PT specialty evaluation & assessment

- This assessment will document your posture, range of motion, muscle testing, muscle spasms/spasticity, balance, skin integrity, your medical/surgical history, and wheeled mobility skills.
- Because this equipment is being built specifically for you, you may be asked your height and weight. You also may need to be weighed, so the equipment prescribed is specific to your needs.

## 04

### Provider selected

- An equipment provider works for a company who can provide Complex Rehabilitation Technology (CRT). They may also be called a dealer or supplier.
- In the U.S., for private insurance, it is essential to know which equipment provider is in your network.
- It is important to understand what the equipment provider’s service policy is, as well as the physical location of their office.



- *It is not a requirement in Canada that a certified Assistive Technology Professional (ATP) is involved in your assessment. Your equipment provider will have several representatives, so be specific about the type of equipment you are considering when asking for someone to assist you.*



#### Helpful tip

Keep in mind that you may be asked to transfer out of your wheelchair at this appointment, so make arrangements as needed.

## 05

### Equipment evaluation

An equipment evaluation (or equipment trial) may be completed on the same day as your OT/PT evaluation. However, depending on your needs and what type of equipment you require, you may be asked to return for an additional visit for this purpose.

- It is very beneficial to trial the equipment in your home environment, if possible. Discuss with your team to see if this is a possibility.
- Not every clinic will have every type and size of equipment you may need, but you should be provided with options to visualize the equipment if it is not available for a physical trial.
- Be prepared to transfer into trial equipment; bring someone with you if you need assistance with transferring.

## 06

### Recommendations & selections

- The equipment selection process will detail the specific items related to your needs, which may include measurements, brand, type, style, color, etc.
- Equipment provider should give you choices for your equipment selection, as well as discuss what is typically covered by your insurance and what is an anticipated out-of-pocket expense.
- Request a copy of the equipment recommendation to take home with you so that you can learn about your equipment and have it for reference at delivery if needed.
- If you plan to obtain an accessible vehicle, this is a great time to make sure your transportation matches your mobility device.

## 07

### Coordinate necessary documentation

- OT/PT writes a letter of necessity explaining all the functions and components of the recommended equipment that are medically required and functionally beneficial for you.
- Depending on the funding source, there may be specific timeframes that need to be met for this documentation.
- The equipment provider collects and submits the documentation to your insurance company to review for prior authorization of the equipment.



- *In Canada there are different processes for funding applications. Ask your therapist for more information on how to navigate this process.*

## 08

### Approval is decided by funding source

- If there are any out-of-pocket costs that were not anticipated or agreed upon, the equipment provider should call you and discuss the options with you.
- If there are non-covered items, your equipment provider should discuss these with you too.
- An equipment provider should not change the recommendations without you and the clinician involved, since this is a prescription.
- If there is a denial, you may be the first one to receive notice in the mail. Make sure you notify your clinical and supplier team so that they can discuss options to either appeal or approach alternative funding resources.

## 09

### Return to OT/PT for fitting & training

- The best outcomes occur when you have your entire team present, including the therapist, to ensure the fit and utilization of your customized equipment alongside the equipment provider who helps make adjustments.
- Fitting: Make sure all the components recommended are present and properly adjusted to support your body and needs.
- Training: Your team will provide education and skill training on use of equipment (including special features such as Bluetooth® and Memory Seating), pressure management techniques, wheelchair skills, etc.



#### Helpful tip

Some companies now have online resources for you to follow your order through the paperwork process so that you are more informed.

## 10

### Provider delivers equipment

- If the equipment is being set up at your home, you must ensure that everything has been delivered and there are no back-ordered parts. If you are still waiting for a component, ask the provider when it will be delivered.
- If you are in the clinical environment and you cannot take your equipment home with you that day, the equipment provider should be able to make arrangements to deliver it to you.

## 11

### Education on maintenance, repairs & follow-up

- If you have issues with your skin, posture, comfort, and/or function, you should consider returning to your clinician for a follow-up appointment.
- If there is concern with the equipment function (for example: noise, error codes, cushion material malfunction, poor tracking, rips/tears in fabric) you should contact your equipment provider.
- Outcome measures such as a survey may be used by the clinician or the equipment provider to help determine if your needs are being met.



# Replacement equipment

- Complete a self-assessment: Think about your needs in all environments and also what works with your current equipment, as well as what needs to be different.
- Some repairs or replacement solutions only require a physician prescription (ie. new drive tires for a power chair).
- Some repairs or replacement solutions require an OT/PT evaluation, as well as a physician prescription (ie. replacement power wheelchair).
- Typically, funded repairs include normal wear and tear items such as tires, batteries, seat covers/upholstery, hardware, etc.
- If you need to repair/replace a complete power or manual wheelchair, keep in mind that the cost to repair your chair typically needs to exceed the cost of replacing it with a new chair. Additionally, replacement equipment is also considered when there is a documented change in your condition.
- If you already have accessible transportation, it's a good idea to make sure your new equipment fits in that existing vehicle.



## Helpful tip

Every individual has distinctive and unique needs. Permobil has a range of heavy-duty products with higher weight capacities and sizes. This includes both mobility and seating solutions, which will meet your needs to increase your independence, protect your skin, and support your functional needs. Heavy-duty products can also be beneficial if you have a lot of muscle tone, spasticity, and movement that causes increased wear and tear on your equipment.



## Chapter 3

# Power wheelchairs

A power wheelchair is recommended when you are unable to functionally walk or propel an optimally configured manual wheelchair for all your necessary and desired activities. Your clinician can help determine what power wheelchair solutions match your unique needs, environments, mobility limitations, diagnosis, and life roles. Your team can also help identify what power seat functions, seating system, and accessories will help increase your function, independence, comfort, and safety.



“ No matter what end of the spectrum of life you're on, the wheels keep moving forward. Time doesn't stop for me, you or anyone so we keep rolling.

— Jake, Business Owner

# Wheelchair base configuration

The placement of the large drive wheel is your choice (front, middle, or rear). What will work best for you depends on many factors including your body, your function, and your environment. Where would you like to use your chair? What do you need to be able to do from your chair? We will focus on front and mid-wheel drives below, while also recognizing that there are other configurations available.



## Helpful tip

The equipment trial is a great time to experience equipment in your environment before finalizing your choice.

## Front-wheel drive (FWD)

### Benefits:

- When approaching an obstacle, the front wheel is the first to meet the obstacle and drive over it. The drive wheel then pulls the rest of the wheelchair over the obstacle resulting in a smoother transition.
- With no front casters, FWD allows you to get closer to things and gives more options for foot placement.
- Can easily navigate tight corners in a home, such as 90° turns in a hallway.
- For alternative drive control users, particularly those using switch input devices such as head array or sip & puff, less casters on the ground means less of an impact of “caster whip”. This results in fewer corrective inputs required when changing directions.



*Drive wheel is in front*

## Mid-wheel drive (MWD)

### Benefits:

- The drive wheel is directly beneath you, so it is intuitive and easy to learn how to drive.
- When doing a 360° turn, the MWD takes the smallest amount of space.
- Can easily navigate most turns in your home.

### Considerations:

On uneven surfaces or grade transitions, casters can get stuck on an obstacle, resulting in high centering (suspending the drive wheel off the ground).



*Drive wheel is in middle*

# Power seat functions

Power seat functions provide you with the ability to reposition yourself throughout the day as needed for functional tasks, reduce pressure over your sitting surfaces, and increase your comfort throughout the day. The power seat functions that are often discussed include: tilt, recline, and elevating legrests. Other power seat functions include seat elevate and forward tilt (at Permobil, we call those ActiveHeight™ and ActiveReach™), and let's not forget standing. We will go into all of these in more detail and show how these power seat functions can have a positive impact on your functional tasks and life roles.

## Drive controls

Based on your evaluation, your team will help you to determine the easiest and most efficient way for you to control your power wheelchair. This can vary from a joystick at your hand or foot, to a single button used with any active movement, and even eye gaze.



## Power tilt

Power tilt is when your entire body is tilted backwards and your weight shifts to your back, while keeping the hip and knee angles constant. It traditionally has been a movement posteriorly (rearward); however, anterior (forward) tilt is now also available (see ActiveReach). You can benefit from up to 50° backward tilt depending on the Permobil PWC you choose.



### Potential health benefits

Positions your body so that gravity can assist you to reposition yourself further back into the seating, as well as reduces pressure on your bottom as compared to sitting upright.



### Social engagement

Tilt also offers a restful position if needed and can assist with energy conservation so that you don't feel the need to get back into bed or transfer as often in between activities. The tilted position reduces the impact of gravity on your spine so it can help with managing back pain. That means you may tolerate more active time in your chair. If you have limited neck range of motion, you may require use of tilt to allow you to see your environment more easily.



### Functional activities

When going down an incline such as a ramp, tilting the chair slightly back can help stabilize your positioning in the chair. Also, when entering or leaving a modified van, tilt can be helpful to ensure you don't bump your head at the doorway.



#### Helpful tip

When power recline is used after power tilt, it can provide even more pressure management. When you are ready to come back up, reverse the order to keep your positioning in the chair.

## Power recline

Power recline moves the back support from an upright sitting position to a lying down position. Power elevating legrests can be combined with power recline as you move into a more horizontal position. Permobil PWCs can have up to 180° of power recline.



#### Potential health benefits

Power recline, when used in conjunction with power elevating legs, can be used to reduce pressure on your buttocks. It can also provide an alternate positioning option, instead of a transfer to a high exam table during routine medical exams/procedures at your doctor's office or dental office, or even at the barber. Power recline is also used when catheter management tasks need to be performed, either by yourself or your care team.

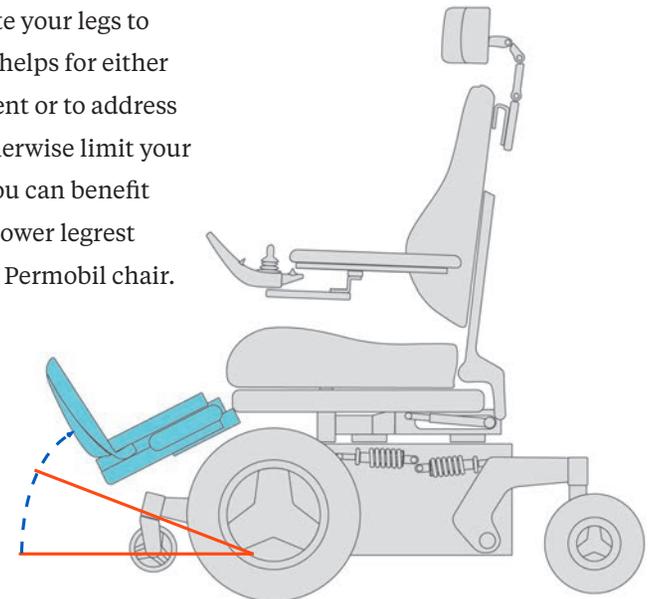


#### Functional activities

Power recline is an excellent position for dressing activities in the chair, or undergarment changes when transfers to a toilet or return to bed is not possible.

## Power elevating legrests

The ability to elevate your legs to the angle you need helps for either swelling management or to address pain that would otherwise limit your sitting tolerance. You can benefit from up to 180° of power legrest elevation with your Permobil chair.



## ActiveHeight™

This function raises and lowers the overall seat height of your wheelchair. This may also be called power adjustable seat height or power seat elevate. For Permobil power wheelchairs, the seat can elevate from 8"-14" depending on the chair model you choose. It is also unique that while elevating, your Permobil seating system repositions 3.5" backwards to maintain optimal forward stability and allows you to get closer to objects.



### Potential health benefits

Helps get you closer to things which can reduce the risk for repetitive stress injuries or managing existing shoulder pain caused from overhead reaching. This function can compensate for limited strength or range of motion, and may reduce your neck pain from frequently looking up.



### Social engagement

You can more easily engage with people who are in a standing position by making more direct eye contact, have improved line of sight in crowded environments such as concerts, and improve your visibility to others.



### Functional activities

There are numerous positioning benefits with seat elevation:

- You can adapt to different bed or surface heights for transfers
- Be able to look through a door viewer to see who is at your door
- Manage a variety of door lock heights or access a thermostat in your home
- Reach items in the top of a closet at home/work, or on a higher shelf while grocery shopping
- Independently reach elevator buttons
- Access raised counters at home (for eating or cooking) or in the community (for banking, customer service desks, hotel check in)
- Crossing the street in an elevated position may improve your visibility and safety



**ActiveHeight**  
Allows you to drive while fully elevated with speeds of up to 3.2 mph.

## ActiveReach™

This forward tilt of your seating system can allow you to complete some of the tasks with greater ease and/or improved independence. It is amazing how much access is improved with just 20° of ActiveReach! It also helps by putting your body in a more engaged and active position instead of being positioned sideways to the task at hand. For Permobil power wheelchairs, the seat can tilt forward from 5-45° depending on the chair model and ActiveReach package you choose, and when combined with ActiveHeight, this can give you up to 4.5” of additional reach.



### Potential health benefits

An ActiveReach position can improve your access to faucets and other surfaces for your hygiene routines. It can also provide some weight bearing through your legs which may help reduce spasticity or provide a possible method for forward weight shift to help with pressure management.



### Social engagement

Provides you with a more suitable position to:

- Give someone a hug or shake a hand
- More engagement in a conversation
- Ability to participate in tabletop games/activities
- Improved access to smartboards at school/work



### Functional activities

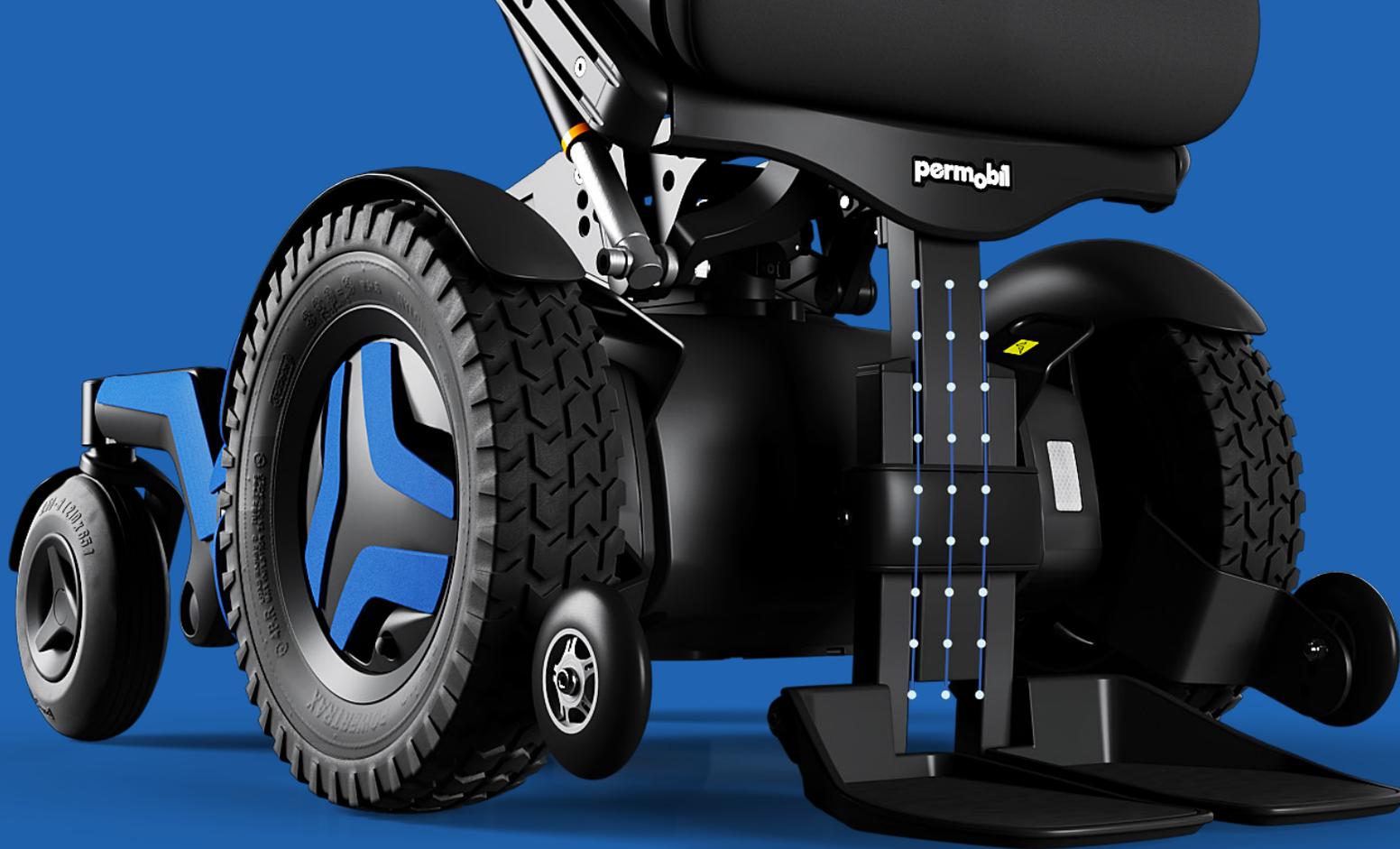
There are numerous positioning benefits with ActiveReach:

- Provides the possibility to lower your knees slightly to get under tables/sinks/desks
- Allows you to stabilize your elbows on a desk while using a keyboard
- Shifts your body forward during eating for improved access to eating surface/plate/cups/etc.
- Increases clearance for knees under steering column of an accessible vehicle (when driving)
- Lets you get closer to objects such as your fridge, sink, reaching for cabinet contents, or stovetop cooking
- Get under a wall-mounted or pedestal-style sink in the bathroom to access the faucets and provides you with a more forward position for teeth brushing and general hygiene needs
- Easily reach ATM and pay platforms at stores
- Improves ability to appropriately place transfer boards or use gravity to get into a transfer-ready position

“ I absolutely love the ActiveReach feature on my chair! It is a total game changer for the disabled community. It gives me a new level of independence that I have always dreamt of.

— Ricole, Empowerment advocate & CEO of COLEMIND shoes





## Power adjustable footplate height (with Permobil VS legrests)

Power adjustable footplate height allows you to move the footplates higher (towards seat) and lower (toward ground). This function can assist with transfers, leg positioning, comfort throughout the day, as well as if you wear different types of footwear. In addition, there may be times when it is required to have the Permobil VS legrests.



### Potential health benefits

Changing the footplate height may assist to redistribute pressure throughout your lower extremities and body, as well as intermittently reduce pressure from the bottoms of your feet to facilitate improved sitting tolerance or pressure management (if skin breakdown on the feet is a concern).



### Social engagement

Changing the footplate height through a powered function can allow you to properly support your feet when wearing different types of footwear (high heels, boots, slippers, sneakers, etc.)



### Functional activities

Assists with stand pivot transfers by allowing your feet to get closer to/on the floor, and also improves access under surfaces such as tables/desks by lowering your knees.

## Standing power wheelchair (Permobil F5 Corpus VS)

Having the ability to stand in your power wheelchair can help your overall health and increase your ability to complete daily tasks. It can possibly eliminate the need to use a separate piece of equipment to perform a prescribed standing program.



### Potential health benefits

There are numerous benefits with standing:

- Standing in a power wheelchair provides an independent way to achieve weight bearing through the legs multiple times a day to help slow bone loss
- Improves bladder emptying
- Promotes regular bowel function by providing decreased compression of your internal organs
- Enhances respiratory support which can result in improved volume of speech
- Allows you to redistribute pressure while remaining in a functional position
- Reduces the risk for leg contractures by stretching your hips, knees, and ankles
- May help reduce spasticity through sustained weight bearing
- Helps manage shoulder pain associated with reaching overhead and reduces cervical strain from frequently looking up
- Improved circulation that can result in decreased edema



### Social engagement

Allows you to achieve standing position during social gatherings, religious practices, work-related engagements, national rituals (national anthem), or while delivering a speech.



### Functional activities

Improves your ability to reach for items at home, work, and/or school while achieving the above health benefits, and remain engaged throughout the day while completing your pressure management (compared to tilt/recline, which is not a position of engagement).



### Helpful tip

The F5 Corpus VS design provides exceptional base stability and has intelligent support wheels in the front that deploy automatically to provide you with further steadiness while in standing. The F5 Corpus VS also allows you to stand while driving.



“ This chair is very important because it has increased my independence and my self-esteem.

— Landon, High School student and gamer



# MyPermobil

A dedicated app that lets your wheelchair communicate directly to your smartphone. The MyPermobil app empowers you to do more and go further by providing you with real-time information on battery range estimates, distance traveled, power seat function activity, and key systems information.

- MyPermobil is available on M & F-series Corpus and Corpus VS models.
- Once you provide consent, key wheelchair data is also sent automatically to your service provider's Fleet Management portal once you activate your wheelchair.

This connects you and your service provider like never before, making the remote diagnostic and service process easier with the goal of reducing your wheelchair downtime.



## Helpful tip

As of June of 2021, MyPermobil is now compatible with your Amazon Alexa and Google Assistant device providing hands-free insights to end users who might be challenged navigating a smartphone thanks to the built-in Voice Assistant.



Ask MyPermobil, how far can I drive?

You can drive 12 miles outdoors and 18 hours indoors.

# Accessories

## Lights

We know that activities happen even after sunset (or before sunrise), so Permobil wheelchairs have an LED light option to help you in all kinds of scenarios.



### Potential health benefits

Improved confidence and safety by providing enhanced visibility in community settings at night or during the day.



### Social engagement

Confidence to participate in evening activities (social and work related).



### Functional activities

Confidence in community settings like grocery shopping or heading out in the evenings. Lights also give you improved visibility of surface changes, bumps, sidewalks edges, and roads to help you steer clear or adjust speed in the dark. Lights help you be more visible while crossing streets which also enhances your safety.



### M and F-Series

Permobil lights are bright enough to light your path during the night.

## Technology for safety and awareness

Add-on or integrated technology device accessories may improve safety for power wheelchair users by providing obstacle detection, collision avoidance, drop-off protection, and/or anti-tip protection. This enhancement may provide opportunities to consumers that may have been “ruled out” for power mobility for various safety concerns (ie. low vision, decreased reaction time, spasticity, and inability to navigate in tight spaces).

# Programming

When you receive your wheelchair, you may want to customize the settings, just as you would with other devices (like a smartphone). Customizing the programming to your unique needs gives you the ability to use your chair safely and easily. The team helping with your wheelchair delivery should know how to make these adjustments to meet your individual needs. Make sure to tell them what works best for you!



## Helpful tip

Make sure your abilities, needs, and wants are discussed so that your custom piece of equipment is programmed to meet your unique needs.

## Bluetooth® and Infrared (IR)

These technologies give you the option of controlling your phone, tablet, computer, TV and other environmental controls through your power wheelchair drive control, making it easier to interact with the world around you.



### Bluetooth and IR capability

Standard on all Permobil M and F-series Corpus and Corpus VS models and the M300 HD.



### Smart home compatibility

The Bluetooth can be used in conjunction with smart home technology to ease your access to other environmental controls (for example, lights or thermostats). This is often done through smartphone applications and requires additional smart home hardware.



### Drive adjustments

If you have difficulty driving your power wheelchair, there are multiple adjustments that can be made to help the wheelchair drive according to your preferences. For example, if your chair is “too touchy” or “too sensitive”, adjustments may be needed to joystick throw, turn acceleration, or overall torque.



### Independent Repositioning Mode (IRM)

IRM is a memory seat that allows you to achieve a pressure management position with multiple actuators (tilt, elevating legrests, recline) working together with just one command. This can be done through the drive control or one press/hold of a switch that can be mounted at any switch site. IRM also controls the order of the actuator movement to help you maintain your seated position and posture in the wheelchair.



### Memory seating

With a single command, your most common or favorite positions can be achieved with memory seating. Two memory seating positions can be enabled on a Corpus and Corpus VS seating system. Think of memory seating like the pre-saved driver's seat position in an automobile. This programming allows all your power seating actuators to run simultaneously once you activate via the joystick or switch and will stop once you have reached your saved position. Because all the actuators work in unison, common positions can be accessed quickly and consistently.



# Power wheelchairs for kids



## Potential health benefits

Based on the age and/or needs of each child, the health benefits will vary. Children who use power mobility when they are very young, around 12 months, need to move to support postural, visual, and motor development. Sometimes wheeled mobility can even help improve speech! When children start to become school aged, health benefits of power mobility will also include preventing secondary complications such as pressure injuries and pain.



## Social engagement

May enable more independent exploration and play, interaction with family and friends, and improve engagement in classroom settings and other community environments. Wheeled mobility can improve confidence, decreasing learned helplessness, a behavior that develops when a child has to rely on someone else.



## Functional activities

Power wheelchairs may provide a child with increased access to a variety of surfaces and the ability to reposition themselves to participate in classroom activities like writing, playing, or circle time. Power mobility may be used as a primary solution or alongside another device like a walker or manual wheelchair so that they have a solution for every activity.

### Permobil K450

Check out the Permobil K450 lowering to the ground to increase socialization with other kids and for ease of transfers.



“ I've never seen Sylvia in that good of a sitting position ever! She was upright, forward, and engaged. She was reaching for stuff, and it was just so cool to see her that way.

— Mike, Sylvia's Dad



It is critical for children to experience “on-time” independent mobility. Being able to move through and explore various environments has been shown to assist with reaching their developmental milestones. Power mobility devices provide an effective and efficient tool for a child to use during critical periods of development in a child’s life. The Permobil Explorer Mini is approved for use with children as young as 12 months.



#### Chapter 4:

## Manual wheelchairs and power assist solutions

Manual wheelchairs are often characterized based on where the rear wheel is placed and how adjustable that rear wheel position is. For example, a fully customizable chair will have a rear wheel or axle that is adjustable forward, backward, up, down and at an angle for camber. A wheelchair with an adjustable rear wheel is necessary, regardless of the way you move yourself. This means if you push a wheelchair with both hands, feet, or other combination. The primary goal is to get the large wheel underneath your body to ease the force you need to move the chair and the number of times you must push.

# Configurations

## Folding

(TiLite Aero X)

These have a cross-brace or “X” design where the frame folds in half by bringing the sides of the wheelchair together.



## Rigid

(TiLite Aero Z or TiLite TR)

A rigid frame by design does not fold in half, but the backrest can fold down for ease of transportation. TiLite offers mono and dual.



### Potential health benefits

Folding frame wheelchairs are often needed if you require elevating legrests or have limited ability to bend your knees. It is often used if you require a seat width >20" or a higher weight capacity. It can be easier to grow and shrink the chair with changing weights and sizes.



### Social engagement

A manual folding wheelchair is easier for a family member or caregiver to load into a vehicle for you.



### Functional activities

The use of a folding manual wheelchair often depends on how you propel and transfer. Swing-away legrests on folding frame manual wheelchairs are often thought to help individuals who push the wheelchair with their feet and/or put their feet on the ground for transfers.



### Potential health benefits

Typically lighter in weight, with fewer moving parts, rigid chairs decrease the effort required to push. More personalized sizing also supports your balance and can be built so that it is easier to turn and maneuver.



### Social engagement

Often easier to self-load into a vehicle by lifting it across your body. Usually has a smaller footprint so it also takes up less space.



### Functional activities

Because the casters are tucked back and the chair has a smaller footprint, it is usually easier to maneuver in tight spaces compared to a folding wheelchair with the same width and depth.

## Ergonomic seating

Ergonomic (ergo) seating uses the wheelchair frame to help give you the support you would expect from a seating and positioning product. Permobil knows positioning matters, and that it impacts your position and comfort in your chair. TiLite provides an ergonomic seating option on all our rigid wheelchair frames to fit your wheelchair to you with customized measurements.



### Potential health benefits

Ergo seating may give you the ability to take deeper breaths, have better digestion, and improved use of your upper body and trunk muscles. It may also help to keep your pelvis properly positioned for upright posture.



### Social engagement

Helps keep knees level and stable, making it easier to carry items on your lap. Level knees can also help get underneath tables, sinks, desks, and counters. You can also benefit from enjoying activities longer thanks to increased support.



### Functional activities

More stability for negotiating ramps, doing wheelies, and leaning forward when doing wheelchair skills. Enables a lower sitting position for better rear wheel access to improve your pushing, especially if you have shorter limbs.



### Helpful tip

If you think the ergo seat might work for you, try sitting in a demo chair to get the seat well measurement that meets your body size.

# Materials

Manual wheelchairs can be made out of a wide variety of materials. Aluminum is the most common material you will see for rigid and folding chairs that can be customized. We are going to highlight two special materials here that you may not already know about or may not be traditionally offered to you right away.



## Titanium

This has the highest strength-to-weight ratio of all manual wheelchair frame metals, meaning less material is required to build the wheelchair frame. It holds its shape over time and is not easily damaged, and resists corrosion that can occur when wheelchair frames are exposed to salt, water, urine, and humidity.



### Potential health benefits

Titanium is more resistant to fatigue (wearing out) than other wheelchair frame metals like aluminum and steel, preserving your frame strength and ease of pushes over time. Many people also report a smoother ride with a titanium frame, which can help increase your comfort when rolling over cracks in the sidewalk, cobblestones, and thresholds.



### Social engagement

Some titanium models are slightly lighter in overall weight compared to other metal frame materials. Even half a pound lighter may make transportation easier.



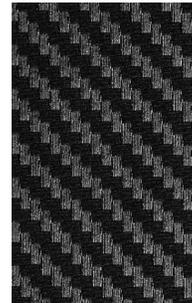
### Functional activities

TiLite offers customized solutions in titanium that are not available with aluminum.



“ I know with the titanium chair, if I get the right frame and the right fit, then it will last long enough. In a few years I might have to replace a couple components and things like that, but I won't have to replace the whole frame.

— Seth, Rugby player



## Carbon fiber

Carbon fiber is a composite material that can be used for a variety of applications on a manual wheelchair. You can find it being used on the side guards, back support or other frame components.



### Potential health benefits

Carbon fiber is very lightweight, so if lifting and loading a chair is your priority, saving ounces will make a difference. Depending on the fabrication process, carbon fiber can also be stiffer which translates to a more responsive chair to the user's inputs.



### Social engagement

Aesthetics are a large part of why people select carbon fiber beyond the performance benefits. This may allow you to feel more comfortable and confident with your equipment.



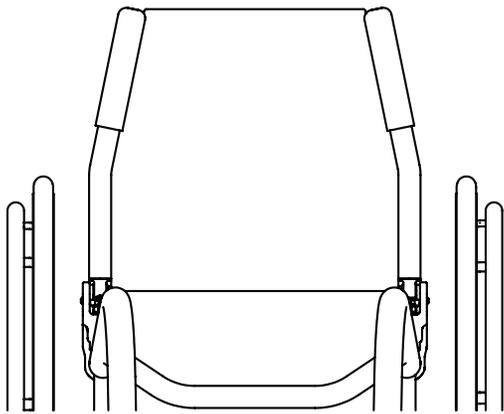
### Functional activities

The weight savings and improved responsiveness of carbon fiber can make a difference when pushing long distances, up hills, and loading your chair into a vehicle.

# Characteristics

## Wheelchair shape

The wheelchair can be made to fit your unique body shape, so it is not too tight or with extra room in the seat, back, or foot support area.

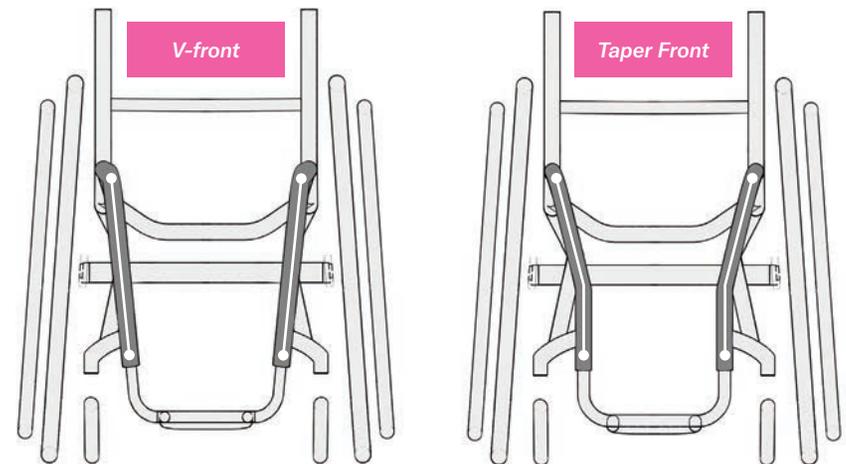


Clients with wider hips and a narrow trunk can get tapered backrests to keep their arms from hitting the backrests. Wheelchair seats can also be tapered for users with lower limb amputations or very narrow lower legs, while keeping the seat wide enough for your hips.

## V-front and/or Taper

The front profile of the chair is adaptable to your unique shape and size and provides support for your lower legs and feet. Customizing this profile will provide you with the best width, angle, and position for your body.

A tapered front-end will narrow in 2" width increments, while V-front ends have 1/2" width customization options. The V-front is a more gradual design compared to the frame taper. Keep in mind how you need your feet placed during transfers, and if you utilize the footplate for additional purposes like sitting on when transferring between the wheelchair seat and the floor.



### Helpful tip

Pressure on the lower legs may be managed more effectively with a V-front frame configuration.

## Made-to-measure frames

Manual wheelchair frames are either modular, prefabricated, or made-to-measure. Made-to-measure wheelchairs are custom built to your body's measurements. All TiLite rigid chairs offer this made-to-measure solution.

- Depending on the position of your lower body, the front frame angle of the chair can be 82° instead of the standard 85° bend so that the frame is built exactly to fit you.



### Helpful tip

Once you know exactly how you like your chair set up to maximize function, you may want to look into what TiLite calls the “Ultimate Ride” in the TiLite TR or TiLite ZR, where you have non-adjustable caster housings and less moving and bolted-on components.



“ My chair is so fast my friends have to run to keep up.

— Wyatt, Race car enthusiast

## Pediatric manual wheelchairs

Chair set up is just as important in our youngest riders. When selecting a manual wheelchair for a younger person, there needs to be some growth that can be accommodated. Rapid growth primarily occurs in length and not width in children, which is reflected in the design of the TiLite Pilot. The width is growable with parts, but the length of the seat and side frames are adjustable in a single visit so that the chair grows with the child. In addition, the rear wheel placement is just as important in this population as children have a wide variety of push techniques and activities that they have to adapt to throughout their day.

# Components

## Handrims

A wheelchair handrim is the part of the wheel the consumer grips to propel the wheelchair. They are attached to the wheel and come in different shapes, surfaces, and materials.



### Potential health benefits

Handrims come in different shapes (round vs. oval) and surface textures (smooth, plastic coated, textured grip) to best meet your needs. Handrims with more of an oval shape can be easier to grasp and release for pushing the wheelchair. Textured handrims that are also oval are generally easier to grasp and require less grip strength for pushing, reducing the risk of over-use injuries in the wrist and hand.



### Social engagement

Different model handrims can vary in width and may increase the overall width of your wheelchair. Evaluate how your desired handrims may influence your wheelchair footprint, so they are not limiting your environmental access.



### Functional activities

If you have hand weakness, textured handrims require less grip strength to push than smooth surface handrims. Handrim coatings also increase the surface area, making it a larger rim to grab onto which translates into less grip strength required in contrast to gripping thinner ones.



## Pneumatic tires

These air-filled tires are generally lighter, shock-absorbing, and offer good traction.



### Potential health benefits

These can help absorb vibrations which can translate from the ground to your body as you propel over uneven surfaces. In addition, pneumatic tires are lighter and have less rolling resistance leading to less fatigue and shoulder wear and tear. When inflated correctly, air tires may increase your comfort in the chair as you propel all day long.



### Social engagement

It is always smart to balance maintenance with performance. If you select pneumatic tires, you'll want to know the optimal inflation PSI (Pounds per Square Inch), plus keep an air pump handy for inflation, a patch kit, and extra tubes. You may even find it helpful to possibly keep a second set of wheels with solid tires as your spare set.



### Functional activities

Pneumatic tires, when properly inflated, may increase your ability to navigate curbs and steps since they roll along the edge and have better surface grip. Keep in mind, larger and more aggressive tread patterns result in more surface friction, which is good for improved grip but creates more rolling resistance and will make it harder for you to push.

## Performance wheels

These are typically more durable and weigh less than standard model rear wheels.



### Potential health benefits

Compared to standard rear wheels, performance wheels reduce excess weight on the sides of your wheelchair, helping make the chair easier to start, stop, and change direction quicker. Performance wheels also help with vibration dampening to decrease fatigue and increase the comfort of your ride.



### Social engagement

Performance wheels are available in a variety of colors and patterns, which allows you to personalize the look of your wheelchair aesthetic. Performance wheels are lighter and simpler to detach from the wheelchair, making it easier to load them into a car.



### Functional activities

The spokes on performance wheels are bendable, meaning they flex when encountering obstacles, unlike aluminum or metal spokes that when bent cannot go back to the original shape.



## Side guards

These are a type of support panel that insert into receivers on your wheelchair frame or connect directly to the frame. They may also be called skirt guards or hip guides. Side guards can provide a variety of advantages described below. When deciding if side guards are right for you, know that they come in a range of sizes, are made of different materials such as aluminum, carbon fiber or cloth, and with designs that can ease application and removal from your wheelchair or ones that can be fixed in place. They can be used with all armrest styles, or even without armrests.



### Potential health benefits

Stabilizes hip position when rolling over bumps and curbs or during muscle spasms. Protects skin from rubbing against the wheels or tires. Can even protect skin over the boney areas on the sitting surface of your pelvis because they keep your hips from sliding side to side which sometimes cause friction and shear injuries.



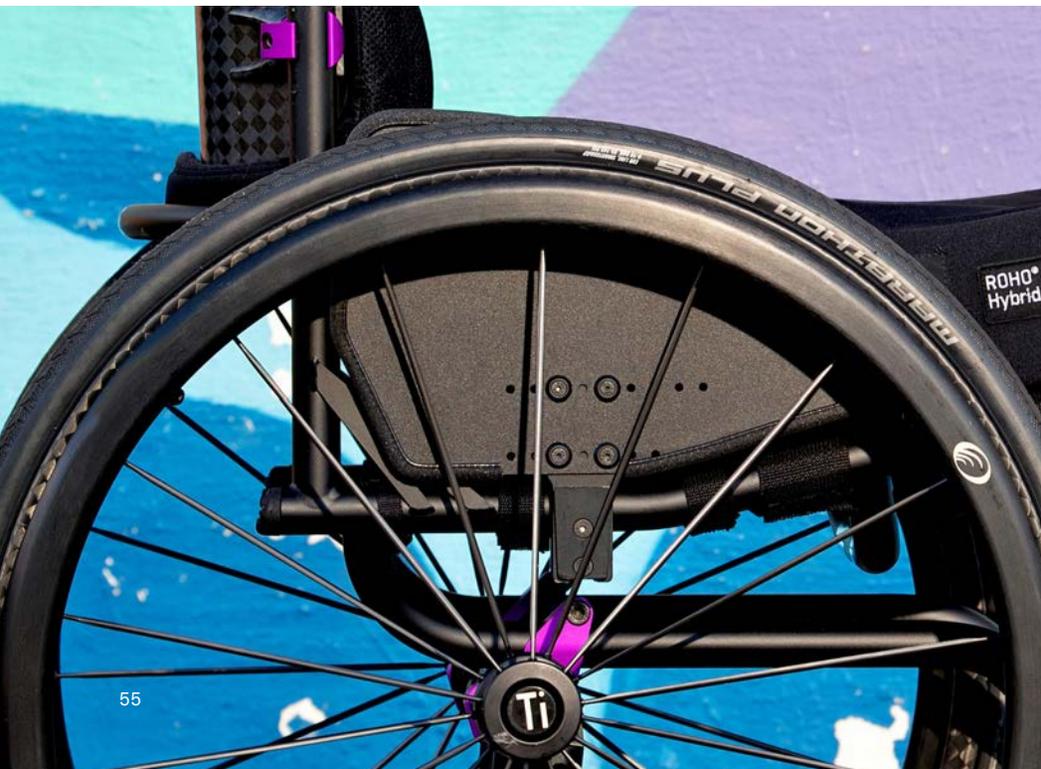
### Social engagement

Protects cushion from damage caused by interference with rear wheels. With side guards helping with hip positioning, you may experience the ability to maneuver your wheelchair more easily.



### Functional activities

Keeps your clothing from becoming soiled with water, dirt, and whatever else the wheels may ride through during the day. This can help you look and feel confident with your equipment.



# Accessories



## Luggage carrier

You don't have to put everything on the back of your chair. A luggage carrier can be mounted to the frame of the chair near your feet to rest your baggage or briefcase on. This is great for keeping your belongings secure, but also to keep your chair weighted properly so it doesn't impact your center of gravity.



## Impact guards

These zippered neoprene covers protect the front frame of your chair, especially while loading or unloading. Also makes it easy to grip when grabbing hold of your chair.

## Medical necessities bag

Made of a hard shell with lots of room for essential items like your medical supplies, technology, food/hydration, files.



## Fold-down push handles

If you do not need push handles all the time, the fold-down option will allow you to select when you want to use them.



## Seat pouch

A zippered pouch that hangs underneath your seat for easy access. Great for securely carrying your keys, wallet, and small essentials.

## Frame color, anodized packages, tattoos

Your manual wheelchair should be as unique as you are! You can select natural titanium that allows you to buff out scratches but can also add tattoos. Additionally, you can accent your caster forks or other accessories by anodizing.



# Power assist

(Permobil SmartDrive)

The power assist solution, Permobil SmartDrive, is controlled through fully programmable SwitchControl buttons and/or a wearable PushTracker. A manual wheelchair user pushes 2,000-3,000 times each day. The goal of a power assist device is to reduce the number of times you must push your chair and the amount of force needed to push. Power assist devices are an aid to your mobility and can be added on to almost any manual wheelchair. It lets the battery-powered motor propel you while you only need to manage the steering, turns, and stopping. This helps you to be proactive about your health and energy, before injuries or pain set in. Other potential benefits of a power assist device include reducing strain with propulsion, increasing your functional mobility, and enhancing your participation in desired activities.



## Potential health benefits

When propelling a manual wheelchair, your arms repeat the same pattern over and over. In addition to reaching, transfers, and other daily activities, the joints and muscles of your arms become at high risk of injury, so power assist helps to reduce that risk. Power assist is also especially helpful when going up hills or ramps, and when there are long climbs or inclines. It can also reduce the strain on caregivers pushing up ramps or rough terrain.



## Social engagement

The benefit of power assist allows you to focus on the world around you without the stress or strain of propulsion. This lets you save energy for what you want to do, without having to limit what you choose to do with your day.



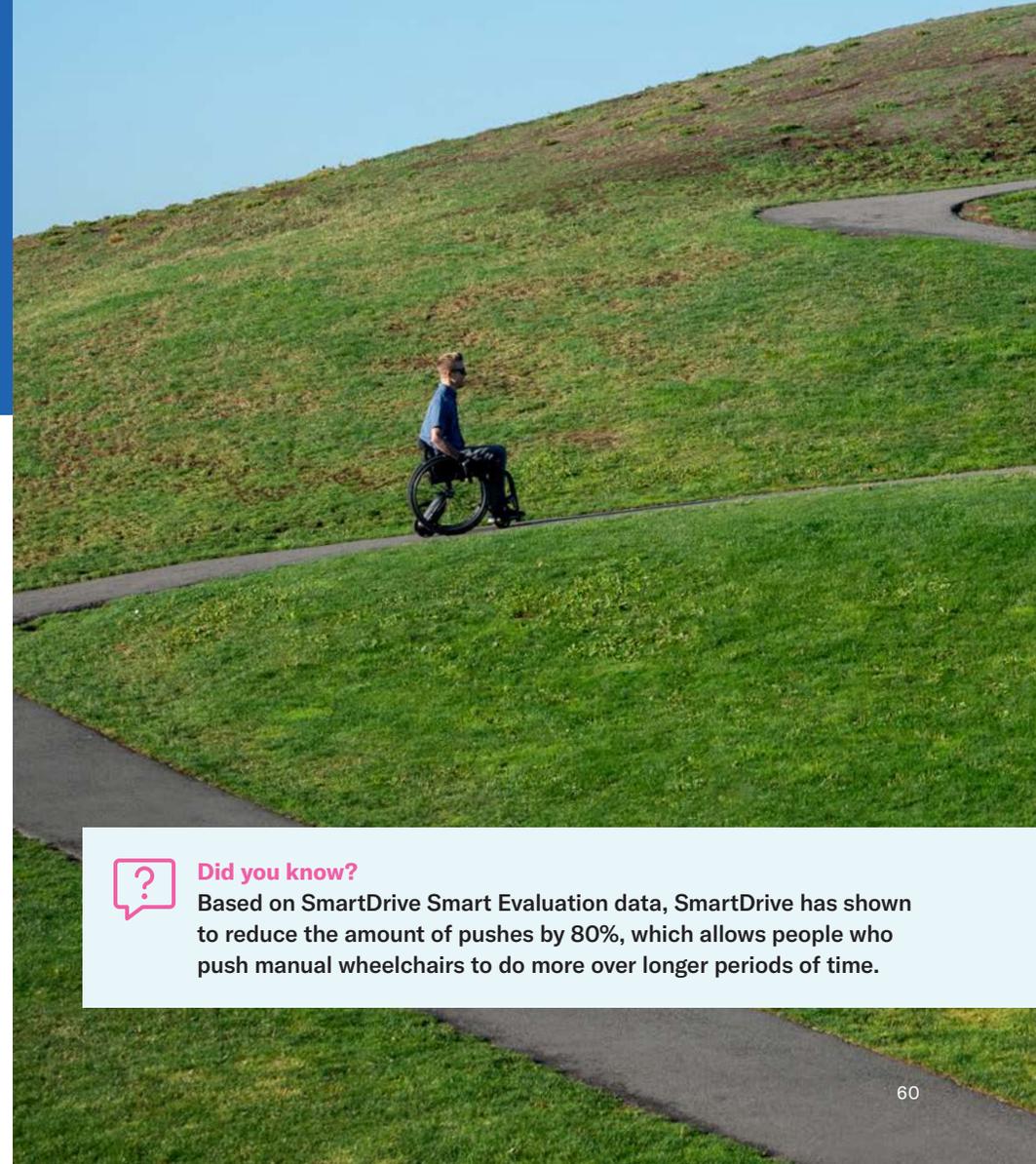
## Functional activities

Power assist can be an integral part of completing functional activities such as carrying items on your lap, pushing a grocery cart, or bringing in the trash from the curb. In addition, think about the other areas you need to access as part of your roles in the family, social circles, work settings, and in the community. There is more to daily activities than just inside the home, and it is important to create an entire picture to see if power assist can help meet your needs.



I want to do more. I want to conserve my energy for the things that I love most. I don't want to be tired just getting there. SmartDrive is my ticket to an adventurous life.

— Aaron, Father, Athlete, Entrepreneur



## Did you know?

Based on SmartDrive Smart Evaluation data, SmartDrive has shown to reduce the amount of pushes by 80%, which allows people who push manual wheelchairs to do more over longer periods of time.

## Chapter 5: Seating and Positioning

You will know that you require a cushion or back support, or other seating component when your body is doing something it shouldn't be doing. With prolonged sitting, your body can shift into what is known as abnormal postures, in order to seek stability and/or alleviate pain and pressure. Often your condition itself causes your body to shift into these altered postures and positions.

Seating and positioning products include wheelchair cushions, back supports, and accessories. Your seating system should provide you with skin protection, stability, and comfort, while promoting function. These components are made from different materials and come in many shapes and sizes to meet your individual needs. If an off-the-shelf option does not work for you, there are also custom options to explore.



# Cushions

A cushion is more than what you sit on. It is a wheelchair seating solution designed to deliver you with protection, positioning, stability, and even more importantly, peace of mind. Cushions range from basic to custom and can be made from a variety of mediums: flowing air, foam, non-flowing air, and hybrids. Wheelchair cushions are also designed to adapt and adjust to your needs throughout each day and over time. Work with your therapist to determine the best cushion for you.



## Helpful tip

Try out different functional tasks to see which cushion works best for the activities that you do regularly (e.g. transfers, reaching into the fridge, holding a baby, carrying a plate to the table, work/school activities).



## Skin protection cushion

### Potential health benefits

- May reduce the risk of developing a pressure injury
- Provides comfort
- Provides shock absorption and/or shear/friction reduction



## Adjustable cushion offering both skin protection & positioning

### Potential health benefits

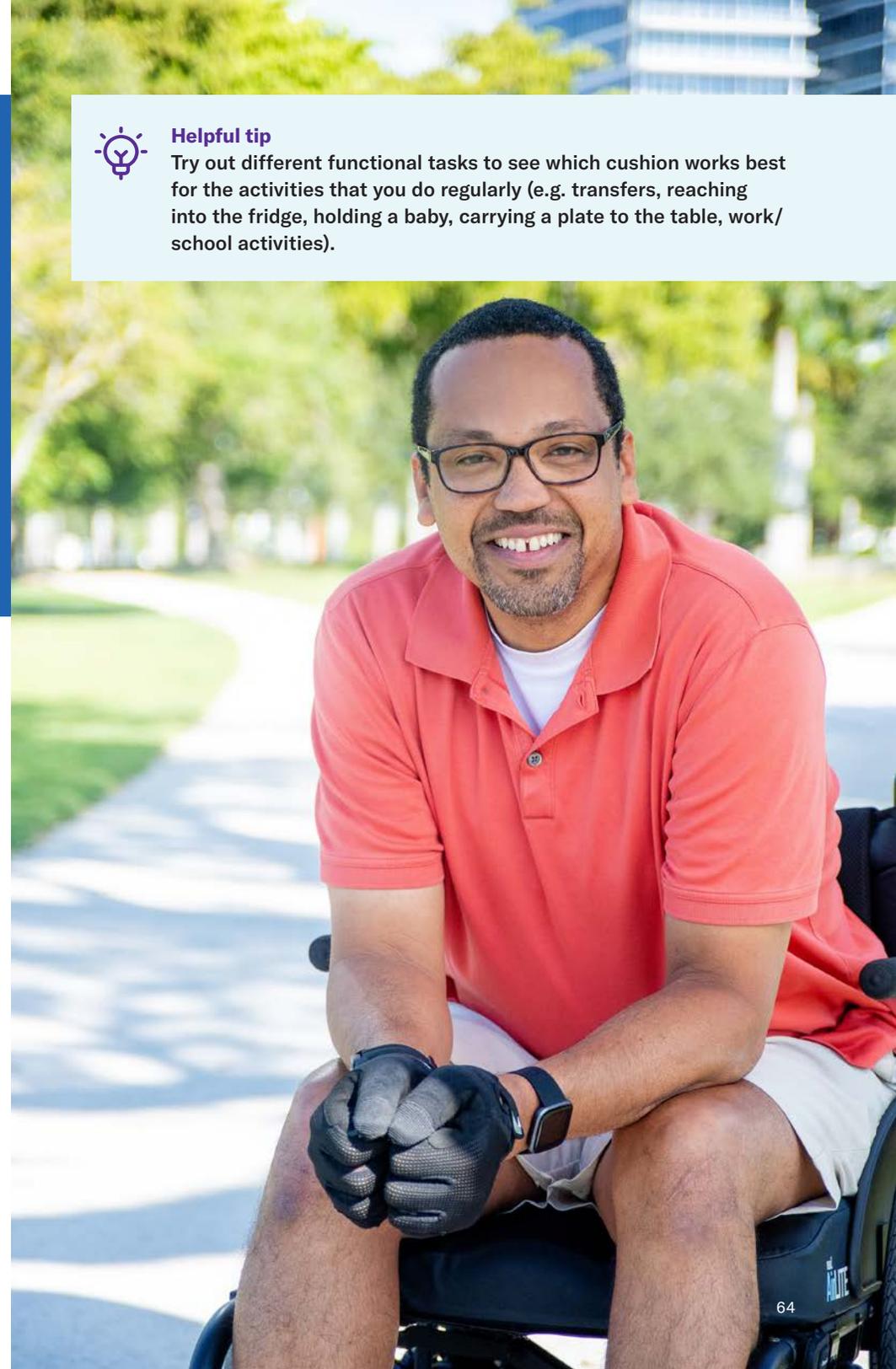
- May reduce the risk of developing a pressure injury, but also reduce the risk of developing a posture problem or deformity
- Provides stability, but allows movement for function
- May help to correct or accommodate any postural deformity, therefore keeping the body aligned as much as possible
- Provides comfort and may reduce pain from sitting in a poor position
- Allows for changes over time as the body and activities change



## Stability cushion

### Potential health benefits

- Helps to hold the pelvis in place creating stability in your spine
- Allows you to transfer easily and control your body position
- Allows you to reach and lean forward



# Back supports

For manual or power wheelchair users, your back support is an important part of your seating system. Look for the material and style that works best for your activities and condition, and that fits you well, to give you the support you need.



## Potential health benefits

- Assists in providing upright posture and comfort, and may reduce the risk of developing a postural problem like leaning or falling to one side
- Assists in holding upper body in place so that arms can move for function
- May assist in protecting skin and tissues when using power seat functions such as tilt or recline



## Custom cushion/back supports

Everybody is unique, so your custom back and cushion can be too. By using different cell height combinations and multiple or single valve options for air flow control, this customization allows you to design the right fit for your body shape and posture support needs.



## Potential health benefits

- Made to match your body shape
- Provides support and/or stability where you need it
- May provide comfort and pain management for very specific needs

“ My AGILITY Active Carbon back is sleek and light and seamlessly attaches to my chair so I feel supported with every push.

— Julie, *Outdoor Adventurer*



## Did you know?

Some “off-the-shelf” products have customizable features? You can customize cell heights on ROHO® cushions or use the ISOFLO® Memory Control on the Select Series cushions to help manage postural deformities, provide stability, and adapt with you over time. The Comfort Acta-Relief back support utilizes the BOA® Fit System with adjustable dials to provide individualized positioning that can correct and/or accommodate postural needs.

# Components

## Back support hardware

Back supports have different styles of hardware that allow your back shell to be attached to the wheelchair frame. The hardware has different types of adjustments to ensure that the back support fits your body and shape, allowing for optimal alignment, stability, and function.



## Covers

Removable covers protect the underlying material of your cushion and back support. Be sure to choose a cover that meets your overall needs for comfort, moisture control, air circulation management, and cleaning.

- An incontinent or waterproof cover will protect the cushion or back support from any spills, incontinence, or excess moisture. This type of cover will ‘pool’ any liquid, and therefore, will need to be cleaned shortly after exposure. But it will also protect the material of your cushion or back support and lessen the need to clean the inside as often.
- There are some covers that have various material choices for you to choose from. The material should assist in providing comfort, stability, and skin and tissue protection. Please note that a waterproof cover does not allow for air to circulate. A stretchy, breathable cover allows for air circulation, but does not protect for incontinence or moisture management.

- Reflective piping on covers allows for you to be seen in darker environments and when out at night.
- Handles on your covers help to carry and move the cushion or back support to and from the wheelchair.
- Pockets on the side or front of the cushion cover allow you to carry small items.

As an embedded upgrade to Permobil’s Stretch-Air and Comfort-Tek cover options for Comfort cushions, GlideWear™ technology further reduces your risk of pressure injuries and enhances end user comfort. It is lightweight, breathable, and reduces moisture buildup for micro-climate control to protect your skin. By reducing the amount of friction, it helps reduce the daily stresses on soft tissue and the probability of skin breakdown from the effects of shear.



### Helpful tip

An extra cushion cover is essential. When sitting on the same cover day in and day out, it gets dirty and needs routine laundering. The answer to having a clean cover on your cushion every day is to get an extra cushion cover! This way you have a clean cushion cover to sit on while the other cover is being washed.

## Solid seat insert

This is a removable, firm component that goes underneath your cushion, inside of the cover. The solid seat insert creates a stable base of support underneath cushions, so your pelvis and thighs stay in good alignment. Most cushions are made of softer materials which is great for skin protection. However, when a soft cushion is on a sling seat upholstery like in manual wheelchairs, it can hammock when sat upon. The insert can help prevent this.

A solid seat insert can be flat and made of ABS plastic or plywood, or it may be a curved insert to allow the cushion to sit flat on a hammocked seat upholstery. The insert could also be made of aluminum and have adjustable 'fingers' around the perimeter, that will allow adjustment to bend or contour the cushion on the sides, the back or the corners, helping to correct or accommodate your shape and posture.



### Social engagement

- Being comfortable and supported allows for longer periods of time in a wheelchair and therefore you could do more activities throughout the day.
- Being supported to complete functional activities, such as reaching to a counter or shaking hands with someone new. It also allows you to interact allows you to interact with peers, go shopping and pay for items independently, get a drink from the bar, etc.
- Being able to sit for longer periods of time allows for more time to socialize, go out after work or school, and participate in activities that are longer in duration.



### Functional activities

- When you are stable and supported and have increased sitting tolerance in your wheelchair, you can reach better and farther, can push a wheelchair, or drive a power chair, can lean forward to work at your desk, and can transfer to and from various surfaces depending on the environment (car, taxi, seat in movie theater).
- Feeling stable and being able to sit in a balanced posture allows you to do more, reach for more, and feel safe during all activities.
- The weight of the seating components is important when considering transporting your wheelchair in a vehicle. How heavy is each component, and how easy is it to either remove from your wheelchair or lift into a vehicle?

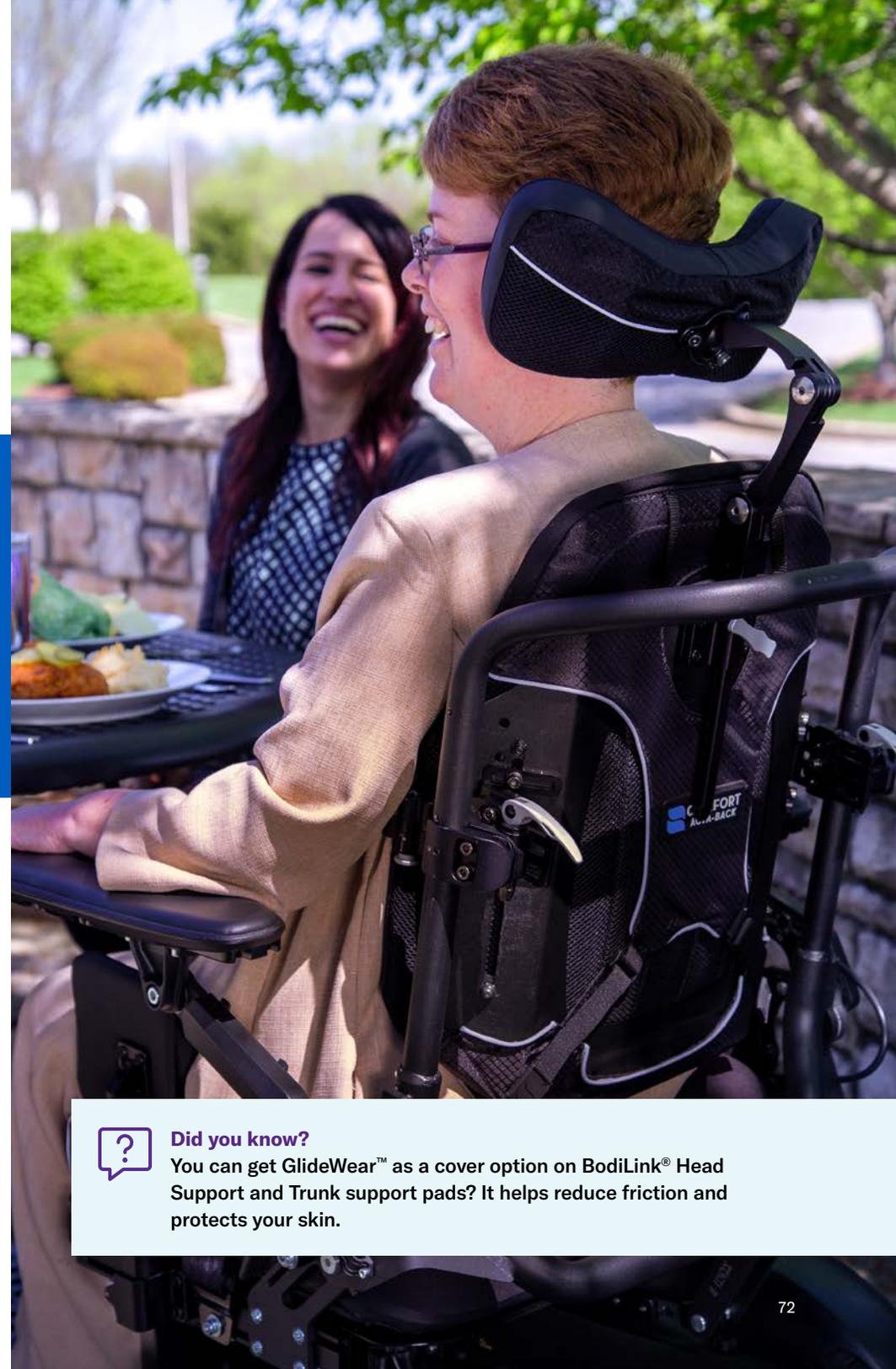
# Accessories

There are a number of seating accessories as well as secondary supports that work together with your cushion and back support to help optimize your positioning, comfort, and safety.

## These can include:

- Head support
- Trunk support
- Thigh support
- Knee support
- Arm support
- Amputee support
- Foot support/box
- Knee blocks
- Chest support
- Pelvic support
- Foot straps, ankle huggers

With all these types of supports, it is important to look at the material used, the buckles and attachments needed to secure/undo the device, how it will be mounted, and how you can put it on and take it off on your own (or how a caregiver can manage if they are helping you). There are many different versions and styles, and again it is important to make sure that you are positioned well, comfortable, your skin is protected, and adjustment is manageable.



### Did you know?

You can get GlideWear™ as a cover option on BodiLink® Head Support and Trunk support pads? It helps reduce friction and protects your skin.

## Trays

A tray that attaches to your wheelchair is helpful for eating meals, to do your work off, or for grooming. It also provides postural support and positioning by supporting your arms in the appropriate position. There are several models of trays, so find the right style and mount that works best for you.

- Trays are mostly removable and some stay on the wheelchair but can flip out of the way for transfers.
- Trays can be a helpful option if you can't access tables or sinks for activities, as it gives you the ability to do the activity right where you are!
- Make sure to consider the material that the tray is made of, how it is put on and taken off the wheelchair, and if you need to do this on your own or with assistance.



## Solutions for alternative surfaces

There are many products that assist you in other chairs and surfaces that you may utilize throughout your day, for example, shower chairs, toilet seats, lift chairs, your vehicle, an airplane seat, or when sitting on the floor.

- It is important to ensure that your skin and tissues are protected, and that you are stable and safe when not sitting in your wheelchair.

### Bed support surfaces

For the other half of your day when you are not sitting in your wheelchair, you want to ensure that your bed has the appropriate surface for your optimal comfort and safety.

- Selecting a bed support surface is similar to selecting a wheelchair cushion.
- Consider your level of inactivity and immobility, the need to influence temperature, moisture and shear, your size and weight lying on the surface, the risk of pressure injuries, and the history of pressure injury.
- Bed surfaces can be powered or non-powered and have various features. It is important that you are assessed, and your individual needs determined match the features of surfaces – optimizing durability, longevity of use, and flexibility of the surface if your needs change over time.



#### Did you know?

ROHO® makes bed support surfaces. The same air cells that protect you in your wheelchair cushion are available as a mattress overlay.



## Chapter 6: Funding Considerations

*The information in this document is for educational purposes only and is not intended to be billing or legal advice. The information provided does not guarantee funding from any source. For coverage information, verify the policy of the appropriate provider.*

## United States funding

### What is the funding process?

The funding process is a team approach and typically involves physicians, physical and/or occupational therapists, complex rehab technology (CRT) providers/assistive technology professionals (ATP), and most importantly you.

You will have a visit with your physician where your mobility and seating/positioning needs will be evaluated and a prescription for the equipment to meet your needs will be written. You will also have a visit with a physical or occupational therapist where you will be evaluated further and have an opportunity to trial different types of equipment. The therapist will provide clinical justification for all the mobility and seating/positioning equipment necessary to meet your needs. The CRT provider/ATP are the actual equipment providers and will be involved throughout the process. They will obtain prior authorization, when applicable, provide and deliver your equipment, bill your insurance, and assist you with any ongoing equipment needs.

### How do I find out what is covered by my insurance policy?

Depending on which insurance carrier you have, there are several ways to determine what benefits are available. You can always call the insurance company directly and ask them what benefits are available for durable medical equipment (DME) and specifically complex rehab technology (CRT) equipment. If you have an employer sponsored insurance plan, your human resources office should be able to provide this information to you as well.

### Titanium funding

In the current funding environment, titanium has become more challenging to obtain. There are some payers who recognize the value of titanium and will pay for it, but the majority do not. In many cases, providers can bill your insurance unassigned, which means you pay for your equipment upfront,



and your insurance will reimburse you less your deductible/coinsurance and any non-covered items which includes the titanium cost.

### SmartDrive funding

For Medicare, SmartDrive is reimbursed differently than other complex rehab equipment because it's generally paid as a capped rental versus a lump sum purchase. The capped rental period is 13 months. During this period, your provider still owns the SmartDrive and is responsible for any repairs and/or maintenance. Your provider will bill your insurance each month and you will be billed for your monthly coinsurance. Once the capped rental period is complete, ownership of the SmartDrive is transferred to you from the provider and your insurance will begin covering repairs on your behalf.

### **What if my insurance denies the claim for my equipment?**

A denial does not necessarily mean you will not get your equipment, but it does add time to the process. There are several levels of appeal available that allow for further information to be provided to the insurance company for reconsideration. Your provider and clinical team can assist with this process. If you need assistance for an appeal or a denial, please feel free to email [US\\_Funding@permobil.com](mailto:US_Funding@permobil.com)

### **How often can I get new equipment?**

The general rule of thumb for complex rehab equipment replacement is five years unless you have a change in your medical condition and require new equipment to meet your needs. During this 5-year period, your insurance company will pay for reasonable and necessary repairs to keep your equipment functioning properly.

### **What is least costly alternative and how does it affect you?**

Least costly alternative is a term used by insurance companies to ensure they meet your medical needs for the least possible cost to them. In theory this seems reasonable, however, complex rehab equipment users often have advanced needs that cannot be adequately accommodated with less expensive products. This is important to know because whatever equipment you end up with will have to last five years, and less expensive does not always equate to the most appropriate outcomes for you.

### **Alternative funding**

In cases where your insurance does not cover your equipment, or if you do not have insurance, there are alternative funding options available.

### **Lobbying/Advocacy**

Lobbying and advocacy is crucial to advance coverage for new technologies that can improve your independence, and no one's voice is louder than yours. No one else can tell your story and describe your needs better than you, so do not shy away from opportunities to speak to your local, state, and federal government officials, or your insurance company.

## **Canadian funding**

In Canada, government funding is organized on a provincial level. That means that every province does things a bit differently from one another. Some provinces have available funding for everyone for various products, and other provinces have little government funding opportunities. In some areas, funding assistance is based on your income, in others, it is not. Your best bet is to talk to your clinician, dealer, and any other professional that is assisting you with rehab and mobility equipment and they can direct you to the available agencies and funding sources.

Aside from government assistance, there is always the possibility of accessing funds through private insurance, Workplace Safety and Insurance Board, or other worker compensations organizations, as well as alternative funding sources, such as charities and service groups.





## Chapter 7: Resources

The most powerful voice for making policy-specific changes has always been the voice of those who are directly impacted by poor or restrictive policies. Your awareness of, and participation in, state and national efforts to improve funding for research, equipment coverage, and social support options is essential to ensure funding for such improves and is not reduced.

- The following associations are listed as possible resources for additional information on specific diagnoses, equipment considerations, and ongoing advocacy topics to be aware of for your future participation.
- Protecting access to medical equipment that can be customized and fit to meet your needs requires the participation of not only your medical and supplier team member, but also yourself and your care team.

## United States resources

In the United States, national laws and policies regarding the right to access to complex medical technology are most often shaped by consumers who push to protect their rights. Here are some resources that may be useful:

- **Permobil Advocacy:** The Permobil Government Affairs Department advocates on behalf of our users and the disability community to guarantee access to Complex Rehabilitation Technology (CRT) at all levels of government and in the private market.
- **Access2CRT:** A resource created to share information regarding Complex Rehab Technology (CRT) and provide resources and tools to promote and protect access for people with disabilities.
- **United Spinal Association:** United Spinal Association's policy priorities focus resources and expertise on advancing opportunities, social equity, and disability rights for all people living with a spinal cord injury or disease.
- **National Disability Rights Network:** Committed to advocate on Capitol Hill for laws that guard against abuse; advocate for basic rights; and ensure accountability in health care, education, employment, housing, transportation, and within the justice system.
- **National Coalition for Assistive and Rehab Technology (NCART):** NCART works with consumers, clinicians, and physicians along with federal, state, and private policymakers to establish and protect appropriate coverage, coding, supplier standards, and funding policies.
- **AT3 Center:** The purpose of the AT3 Center is to support quality implementation of state level and state leadership activities. It also supports a national assistive technology website that makes general AT information available to the public and other stakeholders.

## Canadian resources

In Canada, every province will have different rules and policies. Self-advocacy is crucial to ensure your right to adequate equipment for your daily life.

- **Council of Canadians with Disabilities:** CCD is a national human rights organization of people with disabilities working for an accessible and inclusive Canada.
- **Health Gateway:** Health Gateway has put together a list of organizations and agencies that you may find helpful to meet some of your information needs. Follow the A-Z Directory to find out about a variety of organizations and agencies whose work relates to complex chronic conditions and episodic disabilities.
- **The Canadian Disability Policy Alliance:** A national collaboration of disability researchers, advocates, and policymakers, aimed at creating and mobilizing knowledge to enhance disability policy in Canada. The Alliance was funded by SSHRC Community University Research Alliance.
- **Rick Hansen Foundation:** Raises awareness, changes attitudes, and funds SCI research and care.
- **Canadian/American Spinal Research Organization:** The CSRO is dedicated to the funding of targeted research to maximize functional recovery and cure paralysis caused by spinal cord injury. We envision a world without paralysis caused by spinal cord injury.
- **Spinal Cord Injury Canada:** Their mission is to assist people living with spinal cord injuries, or a related physical disability, to achieve independence, self-reliance, and full community participation.

Chapter 8:  
What's next?



# Maintain your ride

## Power and manual wheelchair care

It is helpful to remember that insurance providers will cover the cost of repairs to your wheelchair and components IF they purchased that wheelchair. Depending on the insurance you have (Medicare, Medicaid, or private insurance), you may have a co-pay for repairs needed. In Canada, check with your dealer to find out about the best process for getting repairs done and potentially funded.

The importance of knowing how to maintain your wheelchair has several benefits:

- Helps your wheelchair operate more efficiently/effectively to provide the reliability needed for everyday use.
- Reduces your risk of being stranded somewhere due to sudden loosening/loss of critical nuts/bolts.
- Insurance providers expect users/caregivers to take care of the equipment so that it lasts longer.

## The responsibilities of the consumer include:



Read and use owner's manual



Tighten wheel locks



Perform routine maintenance



Cleaning



Tighten loose bolts and nuts

When your wheelchair needs service or repair, contact the equipment supplier who provided the wheelchair. A technician will be scheduled to assess the chair for repair needs, then submit a quote to your insurance company. If the wheelchair is less than five years old, regardless of how many repairs are needed, insurance will pay for repairs. If the chair is over five years old, and the repairs are extensive, your insurance company will most likely choose to pay for a full replacement wheelchair. They may be able to provide you with a usable loaner wheelchair if your chair needs to stay at their repair location while awaiting parts. In Canada, funding for service or repairs varies by province. Check with your dealer.

### Below are excellent resources to consult regarding how to perform basic manual or power wheelchair maintenance:

- University of Pittsburgh Wheelchair Maintenance Training Program
- "My Wheelchair Guide" from United Spinal Association, iOS and Android available
- National Center on Health, Physical Activity and Disability "Wheelchair Maintenance Guide"



### Did you know?

All equipment requires maintenance. Ask about the durability of the equipment suggested for you during the selection process. For example, an ultralightweight chair made from high strength lightweight material such as titanium will last longer and costs less to operate compared to a standard manual wheelchair.

## Seat Cushions, Back Supports, Accessories Care

Seating and positioning components and accessories also require care to help them last longer and function at their best. Especially as insurance is increasingly limiting the frequency of replacement.

- All cushions, back supports & accessories require maintenance and inspection. For example, it is critical to have your ROHO® Dry Floatation cushion properly inflated.
- It is helpful to take pictures of your wheelchair and seating system on the day of delivery and fitting, so that you can track what pieces are part of your system. It is also helpful to have someone take photos of you IN your wheelchair, from all sides, so that you and your therapy team know how you were positioned when you were first provided the equipment.
- Most back supports and seat cushions have removable covers that can be laundered for cleaning and disinfection. Following the manufacturer's directions is important to reduce the risk for material damage. A foam seat cushion or back support can be wiped clean using a cloth and mild spray detergent. But foam cannot be immersed in water or disinfected due to its porous nature.
- Several ROHO seat cushions can be both clean and disinfected, with care taken to make sure the air valve is closed throughout the process. These are great considerations if you have concerns about management of bodily fluids and the need for frequent disinfection.



### Helpful tip

ROHO Smart Check is used to set up and monitor an individual's inflation range. With it, you can be more confident with this instant feedback on your inflation level and check it at any time.



## Wheelchair skills

Even though a chair can be prescribed to optimally match your body shape and functional needs, if you do not have proper instruction on how to use your chair, disappointment, frustration, and equipment abandonment may result.

- Wheelchair skills training is an important part of receiving and using the right equipment to maximize your participation and attain your goals. The best chair cannot work unless you know how to use it.
- Ask your clinician to schedule follow-up appointments to check your propulsion technique (if manual wheelchair is in use); navigation strategies in different environments (push/pull doors, ramps, curb cuts, crossing streets with and without signals, curbs, uneven surfaces, thresholds); plus emergency procedures if you have a fall or dead battery; safe transfer skills; and use of transportation vehicles (public or private).

# Ongoing assessment

You now have your new chair, it is dialed in, comfortable, and you can focus on other things in life. Great! But what if something changes? If you have a change in your medical condition, or posture, or comfort, or ability to use your wheelchair as it is set up today.

## What then?

A multitude of scenarios may lead to the need to return to your doctor and/or your therapist for another evaluation. During this time, it may be determined that adjustments to your chair may be needed, or a different type of chair/mobility device is necessary. These scenarios include, but are not limited to:

- Development of wounds or pressure injury signs and symptoms (these can occur anywhere your body is on contact with a bed, chair, or other equipment)
- Posture changes (more leaning to the side or forward; struggling to stay in a stable position in your wheelchair; arms or feet not staying in safe positioning on the wheelchair), use a full-length mirror to assess posture
- Use of your wheelchair is more difficult (manual propulsion or use of your current joystick in your power wheelchair) or you can no longer be active in your chair for a full day of tasks
- You cannot tolerate staying in your wheelchair as long because it is no longer comfortable
- Body functions: weight gain or weight loss, pressure injury (discolored/darkened/dry skin)
- New diagnosis, pregnancy, surgery, baclofen pump, tendon releases
- New activities that need to be considered (school, new job, parental tasks, caregiving)
- Environment: surfaces traveled, transportation, etc.



### Helpful tip

When your Permobil Connect-ready power wheelchair is activated, valuable wheelchair data and analytics is sent automatically via Fleet Management to your local service provider. They will get a notification if there is something wrong before you even notice it! Unlike other systems, it does not require use of your Wi-Fi or data to transmit the information to your provider's portal.

There are also times when you will need to call your equipment supplier, to address repair needs. Do not wait! Call as soon as you notice unusual performance of your chair or signs that repairs are needed. These problems only get worse with time and could result in a catastrophic injury or leave you stranded. These red flags, noted in the list below, are only a few of the common problems that can arise for a wheelchair user:

- Your chair is making new noises when in use
- Your wheelchair batteries are no longer holding adequate charge
- The wheel locks no longer hold tightly
- The tires no longer have adequate tread/traction
- The front smaller wheels (casters) no longer swivel, or shake when the chair is rolling
- When to call provider: wheel noise/do not wait



## Conclusion

We hope this guide will be a resource for you as you navigate through your journey of complex rehab technology. Permobil will continue to “Innovate for Individuals” and support the needs, values, and preferences of our consumers.

“ I really like how the guide explains that we, the consumer, are in charge. I remind people of this all the time. It's a hard concept to grasp and keeping in mind that they are working as part of a team to get a product that will be perfect.

— Amy, Team USA Para Athlete, Para Badminton,  
Permobil Foundation Board Member



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