

A Guide to Wheelchair Selection

How to Use the ANSI/ RESNA Wheelchair Standards
to Buy a Wheelchair

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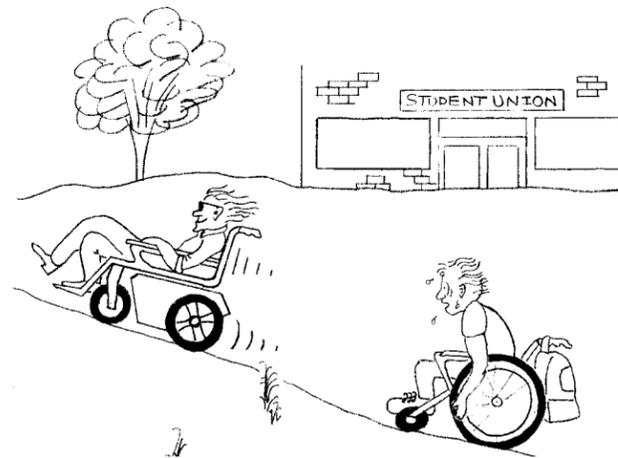
Illustrations by Peter Thomas

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MANUAL VS. POWERED

Rehabilitation programs used to emphasize that if it was possible for you to push a manual wheelchair, you should do so. The saying was, “Use it or lose it.” However, many people with marginal ability to use a manual wheelchair are finding that they deplete all their energy resources just trying to get where they want to go. Once they get there, they have no energy left to do what they want to do. Worse yet, people with 20 or 30 years of experience pushing a manual wheelchair are realizing that their shoulders are worn out as a result of the years of “using it” and not “losing it.” Should healthy manual wheelchair riders spend some time in a powered wheelchair? To answer this question, do some self-examination. Ask yourself which type of mobility meets your needs.



In some environments, a manual wheelchair may not leave you with the energy that you will need when you get to your destination...

Some Reasons to Select Manual Mobility

- You have sufficient upper body strength and overall endurance to propel your wheelchair all day.
- Reducing the weight or increasing the maneuverability of the wheelchair would enhance your independence.
- Some of your daily activities are easier to perform in a manual chair.
- A manual wheelchair is smaller, lighter, and less expensive to maintain and repair.
- You are not experiencing chronic pain in your arms or shoulders.

Some Reasons to Select Powered Mobility (including Scooters)

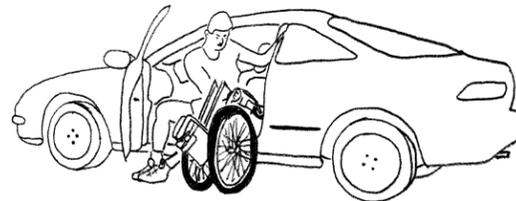
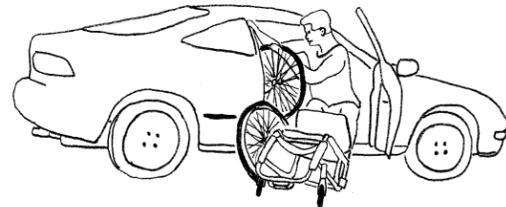
- You have insufficient endurance or functional ability to propel a manual wheelchair independently.
- You need to conserve energy during long-distance wheeling to work or school.
- Powered mobility would enable you to be more independent in your daily living, work, and recreational activities.
- You have access to personal or public transportation that accommodates a full-sized powered chair or scooter for longer distance travel.

Many powered wheelchair riders have a manual wheelchair to use when a powered wheelchair is inconvenient. When traveling, a powered wheelchair user may use a manual wheelchair and have a person help with mobility. Other users may rely on a manual wheelchair at home and at work and use a powered wheelchair for traveling to and from work. There is something to be said for the use of a powered wheelchair to prevent overuse of the shoulder muscles, although this option is not often discussed. Financial considerations are

important as well, since powered wheelchairs are expensive. Whether the primary wheelchair is powered or manual, a backup manual wheelchair should be available in the event of breakdown of the main wheelchair.

RIGID VS. FOLDING MANUAL WHEELCHAIRS

If you plan to use a manual wheelchair, the first decision you have to make is whether it should be rigid or folding. Nonfolding fixed-frame chairs are more rigid, where folding chairs tend to have a little more flex in the frame. This flex can be an advantage when you are traveling over slightly uneven surfaces, because all the wheels of the chair tend to stay on the ground. When you use a rigid wheelchair on an uneven surface, one wheel often lifts off the ground. However, on a hard floor surface, a rigid-frame chair gives a more responsive feeling, since all the energy you expend goes into propulsion, and none goes into flexing the frame of the chair. Many people prefer the aesthetics of a rigid frame, although both types are available in lightweight models and in a variety of colors. Some of the advantages and disadvantages are listed to the right.



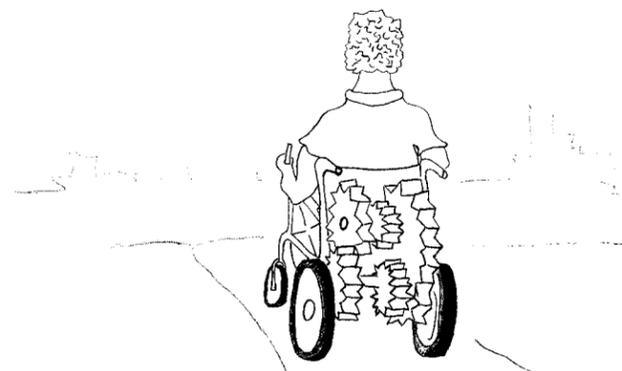
Getting a folding wheelchair into and out of a car can be quicker than a rigid-frame chair. However, many riders prefer the performance of a rigid-frame chair on hard surface floors. . .

	ADVANTAGES	DISADVANTAGES
Rigid frame	<ul style="list-style-type: none"> • Frame design requires fewer components and thus has more strength for a given amount of weight • Usually a lighter weight chair than a similarly equipped folding chair • Fewer removable parts • Required to meet National Wheelchair Basketball Association specifications • Seat-to-back angle is often adjustable 	<ul style="list-style-type: none"> • Requires removal of quick-release rear wheels for loading into car • May feel bumpier on uneven surfaces • Does not fold into as small a package for stowing in car or airplane
Folding frame	<ul style="list-style-type: none"> • Folds into compact package for stowing in car or airplane • Flexes to enable all four wheels to stay on the ground when riding on uneven surfaces • Can be folded and stowed without removing parts 	<ul style="list-style-type: none"> • More moving, adjustable, and removable components • May not meet rider's sports or leisure activity needs • Seat-to-back angle usually not adjustable • Lateral stability can decrease as the chair flexes or starts to fold

DIRECT-DRIVE VS. BELT-DRIVE POWERED WHEELCHAIRS

When the motors are mounted directly to the drive wheels with only gears in between, the system is called a direct-drive system. When belts connect the motors to the drive wheels, the system is called a belt-drive system. Most wheelchairs are only available one way or the other. Keep in mind when comparing two scooters that one may have a direct-drive system while the other may have a belt-drive system. Full-sized powered chairs are also manufactured with either a direct-drive or a belt-drive system.

Like the rigid-frame manual wheelchair, the direct-drive system has no “flex” or slack. The drive wheels respond directly to the actions of the motors. The belt, on the other hand, introduces a slight delay between the action of the motor and the wheel. Depending on your trunk balance, you may find the delay in a belt-driven chair provides a more comfortable ride. Unfortunately, belts can slip if they are not properly adjusted or if they are wet, and the rear wheels will not always respond when you want them to. You must look at the advantages of direct drive versus belt drive and make the best choice for your needs and your environment.



Many users are choosing lower maintenance direct-drive chairs despite some drawbacks...

functional needs as a result of an uninformed decision. In most cases, the rehabilitation center will assemble and adjust the chair to fit you, and training is often available through the center or the wheelchair supplier to help you learn the performance characteristics of the chair.

If you feel you can bypass seating and mobility professionals because you have enough personal experience, you may be able to save money by purchasing the wheelchair directly from a mail order house or with cash through a local supplier. As with any mail order purchase, you will forgo local support, including warranty repairs, assembly, setup, and adjustment to fit your body, abilities, and skills. Such a purchase also will not include training, which you might need if the new wheelchair has very different performance characteristics than your previous one.

Some of the advantages and disadvantages of the two drive systems are listed below.

	ADVANTAGES	DISADVANTAGES
Direct drive	<ul style="list-style-type: none"> • Requires little maintenance • No exposed parts to get dirty wear 	<ul style="list-style-type: none"> • Can be noisy during operation • Gears wear if not properly lubricated
Belt drive	<ul style="list-style-type: none"> • Belts can be easily replaced • Generally quiet during operation • Can provide a smooth ride 	<ul style="list-style-type: none"> • Chair will drive in a circle if a belt breaks • Belts can slip when wet, reducing control • Generally requires more maintenance • May require adjustments if there is a change in temperature • Belts can be noisy during start-up



Seating and mobility professionals can provide a thorough clinical evaluation of your needs, environment, size, and functional strengths and limitations to help you choose the appropriate wheelchair. In addition, the rehabilitation facility may have a variety of wheelchairs on hand to demonstrate the “latest and greatest” in design and components. A proper clinical evaluation and knowledge of available components may prevent costly mistakes. Many wheelchair users have received chairs that did not fit or did not meet their