

Mobility Training for User and Public Safety

(with MOTORIZED WHEELCHAIRS & SCOOTERS)

The National Institute for Rehabilitation Engineering (NIRE) is a non-profit organization which operated clinics to design, dispense and fit customized assistive equipment, with user training, from 1967 through 1996. Working with disabled people and their own doctors and therapists, these NIRE clinics assisted hundreds of people having severe and permanent motor impairments. *The N.I.R.E. pioneered the development and use of personalized power wheelchairs (some steered and controlled with inertial guidance systems or with breath controls, by people unable to use hand controls); these included indoor, outdoor, indoor-outdoor models, and some designs capable of climbing curbs or stairs.* During these years, a great deal was learned concerning USER TRAINING and SAFETY. This paper details many user training safety issues. The paper is intended to be of assistance to power wheelchair - and scooter - users, new and old. **PERMISSION is herewith granted for the free copying and distribution of this © paper, provided all copies are complete and unaltered and The NIRE is fully credited as the source.**

THIS PAPER is intended for people using, or planning to use manual or power wheelchairs (or scooters) – and for their physicians, therapists and equipment dealers. The wheelchair user who has learned about, and understands the various safety issues will enjoy more, better and safer mobility.

BACKGROUND: Many people, including those with disabilities, regard mobility devices for disabled people simply as merchandise to be bought, used and sold. Why not? Q. Aren't mobility devices for children (scooters, skates, bicycles, etc.) bought and sold as merchandise without special user fitting or training? A. Yes – But there are big differences between healthy, active children and disabled elderly people!

Such comparisons really are not valid because, unlike disabled people, non-disabled children: (1) see and hear well, (2) have normal reflexes, (3) can move quickly to avert falls or collisions or upsets, and (4) are less vulnerable to serious injuries from even minor falls than elderly people or disabled people of any age.

Accident and Injury Reports for disabled people consistently demonstrate very high rates of mobility-equipment injuries that could have been avoided if the mobility aids had been dispensed with adequate user training. Why, then, do these problems persist? And with which types of mobility aids?

(1) **Low injury rates** are reported for disabled people using canes, crutches and walkers. Low rates also are reported for users of automobiles with hand controls – or other accommodations. The reasons are that canes, crutches and walkers are usually prescribed by physicians - after patient assessment and training by a qualified therapist or mobility trainer. Adapted motor vehicles are usually used safely because to drive one, the person has to have been road tested and licensed by the state, based on his demonstrated performance skills.

(2) **High injury rates** are reported for disabled people using power wheelchairs and motorized scooters. Most of these accidents and injuries are easily preventable with adequate personalized training for each user. These injuries generally fall into one or more of these categories:

2a. **User bought power wheelchair or scooter as merchandise** from a store, a catalog or a TV ad ... and received no professional fitting, and minimal or no training to use it.

2b. **User had not been evaluated by a physician or trained by licensed therapist** prior to, or after the purchase. There were no prescriptions and no specifications by a physician familiar with the patient's present (and future) limitations. Note: The prescribing physician assesses a patient's judgment, reflex and reaction times, eyesight and hearing as relating to mobility safety, balance (and ability to avoid falls), susceptibility to injuries if there are falls, and expected rates of progression of disabling conditions. He determines how often patient needs to be re-evaluated because of possible worsening of disabilities over time.

Many rehabilitation departments, in-patient and out-patient, conduct periodic "wheelchair-mobility clinics" where therapists trial-fit, train and evaluate disabled individuals for specific mobility aids. Besides evaluating for safe-use abilities and skills, they also evaluate for safe transfer skills (on- and off- the device transfers). This is of critical importance because many of the reported injuries and deaths result when disabled individuals fall during transfers, on or off, while alone.

2c. **Wheelchair or scooter was loaned to, given to, or sold to a user by a lay person** – a social worker, volunteer or other well-meaning "not-qualified-to-dispense" person, often without user manuals, without complete and adequate equipment fitting and adjustment, and without necessary user instruction and training.

2d. **Wheelchair or scooter user gets hurt when in a new operating environment** for which he had not been trained. For example, some individuals use an indoor power wheelchair successfully in the residence, indoors. Suddenly, one day, the person decides to travel a bit outdoors ... on sidewalks, roads and grass. Lacking experience, the person fails to see, or fails to grasp the significance of raised cracks or deep holes in a damaged sidewalk slab. Or, the person rides across an incline such that the chair or scooter tips over sideways. Just as with driving a car, a disabled person MUST not use his power wheelchair or scooter in new (to him) environments until after he is properly trained for that particular environment.

2e. **Wheelchair or scooter user is hurt, trapped and alone, and cannot call for help.** He is not found for days by which time he is very ill or dead. This can occur in one's apartment or in an isolated location out-of-doors. **A Simple Precaution:** Every user of powered mobility equipment should have with him, at all times, a small cell phone. Those who can afford the monthly bill should have regular cell phone service with a reliable carrier. Those unable to afford paid cell phone service can obtain a cell phone (for a one-time fee or totally cost-free) that dials **only** 911. The only consideration is that the user can reach, hold, dial and use the cell phone. A quadriplegic, for example, would need a specially adapted cell phone because he cannot use his fingers. Yes, there are technicians, paid and volunteer, who can and will mount, adapt and install a suitable cell phone. (Note: The cell phone works anywhere while the "monitoring pendant" devices rented to seniors work only in the place of residence.)

2f. **Safe Equipment Storage and Battery Charging Practices** have to be learned. Because these are highly technical procedures and specific to each make and model of equipment, these important-for-safety practices must be learned from the manufacturer or his representative, or the seller of the equipment. Failure to follow the correct practices in this category can lead to fires or exposure to sulfuric acid and toxic fumes. It can also lead to being stranded somewhere, unexpectedly, with a dead battery.

We now see that two types of user training are needed for safe and efficient use of powered mobility aids: **FIRST, user training by licensed therapists** or mobility trainers ... in a wheelchair clinic or in the person's home ... and also outdoors on grass and soil. This serves to ensure safe driving skills and to prevent collisions, injuries and rollovers.

SECOND: user training for equipment-specific safety, storage, and maintenance procedures by the manufacturer, his representative or the seller of the equipment.

2g. **Periodic equipment examination, cleaning, tune-up and repair maintenance.** Some mobility equipment users can learn (with training) to perform these inspections, tests, adjustments and repairs, themselves. Others either cannot learn or have too little physical dexterity to do this work, themselves. Therefore, they should either rely on the seller, or the manufacturer's representative, to do this work – or else, arrange for a local technician to do the work. Typically, there are daily, weekly, monthly, bi-monthly, and quarterly maintenance tests and procedures that should be done routinely.

(3) **Beneficial User Attitudes and Mechanical Aptitudes** can and should favor safety. A disabled engineer is likely to view the world in terms as: "every action has its consequences" and thusly determine for himself the precautions he must take to traverse a given course without incident or injury. In contrast to this person, a non-technical disabled person may never think in terms of physical acts and consequences. While one cannot change his entire method of thinking, one can and should learn to be analytical when driving powered machines (wheelchairs, scooters, automobiles, tractors, powered riding lawnmowers, etc.)

(4) **Configuration Awareness** is also a necessary learned skill for the disabled user of mobility aids. Discussed below are the differences between indoor- and outdoor-power wheelchairs. Also discussed are the compromise shortcomings of certain combination indoor-outdoor wheelchairs and of standup, stair-climbing and other types of wheelchairs. People really should know about all these options before selecting and buying a particular mobility aid. The wheelchair clinic is most likely to offer the many different devices to consider. Typically, a particular retail seller has some types, but not all, blocking him from giving his customers the full range of options to choose from. This is unfortunate.

WHEELCHAIRS – Common Types and Configurations

Folding, Light-Weight wheelchairs, manual and powered models, (for indoor use) are often similar in appearance ... except for the presence of small electric motors and a detachable tray with one or two rechargeable batteries. These wheelchairs are usually compact for indoor use and have small, self-pivoting wheels (casters) in front. Most of these powered wheelchair models are controlled by the user's hand with a small control

stick. Quadriplegics unable to use a hand for steering and control may be equipped with a mouth- or breath- control device. These foldable power wheelchair models are usually purchased because they can be folded for storage, for transport in a car or car-trunk, or for transport on a train or airplane. The small-wheels-in-front design enhances maneuverability indoors, in small apartments and tight quarters. However, they are potentially very dangerous outdoors because of uneven and cracked riding surfaces.

Having casters in front makes these wheelchairs very dangerous to use outdoors where one or both wheels can suddenly be turned sharply by encountering a crack in the pavement, a rock, a bump, a drop-off, or a sideways incline. *These wheelchair models usually do NOT have electric elevating legrests, backs or headrests which are desired or needed by some wheelchair users.*

Light-Weight “Power-Assisted” wheelchair models are usually similar to folding manual wheelchairs and are manually propelled in similar ways. These models do have a battery plus one or two motors for propulsion assistance. Typically, the user is a paraplegic or quadriparetic person who desires to manually propel himself as much as possible for the exercise and resulting health benefits. The power assist feature is enabled and used to climb inclines or for extended distance travel, when the user tires or has insufficient arm strength and so desires to use the power assist feature. These wheelchair models are often lighter-weight than the folding power models discussed above because the intermittent power use allows for smaller battery and motor sizes.

Non-Folding, Stand-Up power wheelchair models (primarily for indoor use) are sometimes used by people, unable to stand unaided, so that they can be stood up by the wheelchair for household chores or to converse face-to-face with non-handicapped people who are also standing. Generally, these models do not rely on swiveling front casters so that they are less maneuverable in small apartments (tight quarters) than conventional folding wheelchairs with casters. When in the elevated position, this type wheelchair has a very high center-of-gravity and can easily topple over. For this reason, the user of a “stand-up” power wheelchair should never put himself in the stand-up position when outdoors or even indoors, on cracked, rough or broken flooring indoors. **Stand-up wheelchairs are safe only on perfectly flat and smooth flooring** and only if the user is properly strapped to the seat and seat back. *These wheelchair models sometimes have electric elevation of legrests, back or headrest, often helpful for quadriparetics or quadriplegics.*

Combination “Indoor-Outdoor” power wheelchair models are often purchased by people able to have only a single power wheelchair. Lack of storage space or limited finances can prevent the safer option: a person owns two power models – one for optimal indoor use – and another for optimal outdoor use. Typically, the “Combination I/O” power wheelchair compromises both functions and performs poorly at each function due to various unavoidable safety limitations. Outdoor safety requirements usually require that large, powered wheels be in front. These “combo” wheelchairs are probably most useful and safe when used (1) outdoors, on pavements and sidewalks in urban and suburban areas – not on grass or soil in rural areas; and (2) indoors, in nursing homes, assisted living facilities or apartments with wider halls and doorways that facilitate the

wheelchair with larger turning radius and maneuvering space requirements. *These wheelchair models sometimes have electric elevation of legrests, back or headrest, often helpful for quadriparetics or quadriplegics.*

Outdoor power wheelchair models were developed many years ago for use by people living in mostly rural countries such as Sweden. Very efficient outdoors, most have large diameter wheels in front with which to climb and steering may be accomplished, depending on design, by (1) rotating a rear-wheel dolly or (2) powering one of the large front wheels while braking the other. Many such power wheelchairs are able to safely climb grades of as much as 40%; climb curbs and, sometimes, climb outdoor stairs as seen in front of a courthouse or public building. (They do NOT climb stairs indoors due to the smaller steps and steeper grades.) These wheelchairs weigh as much as 400 to 500 pounds, unoccupied or up to 650 lbs. or more with the user seated. If the equipment breaks down, a tow truck has to be called because of the weight. They sometimes can be used indoors in hotels, hospitals, nursing homes, or public buildings ... which all have wide corridors and strong weight-bearing floors. Often, these power wheelchairs are not safe or practical for use in a particular apartment. *These wheelchair models sometimes have electric elevation of legrests, back or headrest, often helpful for quadriparetics or quadriplegics. A few have optional elevating seats or stand-up features.*

Indoor Stair-Climbing power wheelchair models have been developed and tested over the past thirty years. The developers and manufacturers have generally been unable to obtain product liability insurance coverage and, thus, have not been able to market many of these products. Recently, the U.S. FDA approved yet another stair-climbing power wheelchair which has some very interesting and attractive design features. This stair-climber, as others before it, was designed for use in private homes and apartments as well as in public buildings. The earlier models, by other designers, were primarily for stair-climbing and were rather poor performers for general wheelchair use. The recently approved model appears to perform well in most wheelchair functions, as well as in climbing and descending stairs in private homes, in public buildings, and outdoors. *These wheelchair models may or may not have electric elevation of legrests, back or headrest, often helpful for quadriparetics or quadriplegics.*

A BASIC DANGER OF STAIR-CLIMBING in a wheelchair is the fact that, if an occupied stair-climbing wheelchair falls down a flight of stairs (it could fall from near the top of a 32-step stairway) then serious injury or death to the user is likely. Other people in the area may also be injured or killed.

Each person considering the use of a stair-climbing power wheelchair should think about a lot of different variables, all of which interact with each other. These are just a few of the most significant of these important variables: (1) Does the user have firm and immediate manual control of steering, braking and other controls? Examples: a paraplegic YES; a quadriplegic NO; users with ALS, MS or CP: variable – MAYBE – to what degree? (2) Does the user have sharp eyesight for spotting objects or defects on steps? (3) Does the user have engineering training or hobby experience in mechanics? If not, can the user understand the dynamics of stair-climbing and learn to observe, analyze and think before climbing stairs? (4) Are the stairs to be climbed in the user's home? Are

they stairs he has climbed and descended in the wheelchair time and time before? Or, is it a new staircase not previously accessed? (5) Has the user visually inspected the stairs before attempting to climb or descend them, for the presence of toys, clothing, and wet or damaged areas? Any of these or other items could cause the wheelchair to fall. (6) Has the user had someone else visually inspect the stairs for clutter, wet spots or damage before attempting to climb or descend? (7) Has the wheelchair user been trained to climb and descend a particular flight of stairs by a professional such as an engineer, or a therapist, or a mobility trainer? (8) Does the wheelchair user regularly climb or descend a new (to him) stairway on his own? Or does he always have another experienced person evaluate the new stairway, first? (9) Who is the first person to try climbing or descending a new stairway in the power wheelchair? The user or his therapist, engineer or other proxy?

Age & Health Factors can be very significant to safety, both in preventing and in surviving accidents. Examples: (1) Young paraplegic with normal upper body functions and strength. This fast moving person, with good eyesight, may well maneuver fast and vigorously enough to prevent an accident. Even if his wheelchair turns over or falls over an embankment, the person has the highest chance of surviving with minimal injuries. Or, (2) an elderly paraplegic, or a wheelchair user of any age with upper body weakness and impaired movement abilities, is less likely to prevent an accident or fall at the last moment and is much more likely to suffer serious injuries or death in a fall, collision or accident.

Wheelchair Control Methods are very significant to safety. Most power wheelchairs are controlled solely by the user, without intervention by computers, terrain monitors gyroscopes or autopilots. These powered models require, for safety, that the user quickly sense, recognize and react to each and every situation, as it arises. The young, healthy paraplegic will usually meet these requirements most rapidly and effectively. The power wheelchair user with weak and/or slow-moving hand responses is more likely to have accidents and may be more severely injured. An ALTERNATIVE is available in some more costly power models. This is the addition of computer-controlled systems that constantly monitor and correct for: wheelchair position and attitude; forward terrain variations; up and own stairway variations; user commands; and overall wheelchair performance. ***In theory***, these power wheelchairs are much safer to operate than those without computer oversight. ***In practice***, however, these power wheelchairs are sometimes more dangerous than non-computer wheelchairs. Serious accidents sometimes result from sensing or computer system failures. The failures may be subtle ones not recognized by the user. Or, they can be in the form of a sudden, unexpected total failure of the wheelchair computer system, which may result in an accident when occurring at a critical time. Disregarding cost factors and considering safety issues alone, it is difficult to recommend the use of power wheelchairs that have – or that lack- computer monitoring and control capabilities. This decision is best made with advice, on an individual basis, by each patient's physician, therapist or mobility trainer. A "*Dead-Man's*" safety control to automatically stop and brake the wheelchair if the user should let go of the control stick or slump in his seat, can protect against accidents due to sudden loss of manual control or due to fainting or seizure. This feature is highly recommended and was included in most power wheelchairs dispensed by this Institute.

USERS of Power Wheelchairs – DISABILITY CATEGORIES & SAFETY RISKS

as summarized below, do not include the added hazards of navigating a power wheelchair with poor vision or with susceptibility to fainting or unexpected seizures. It is assumed that all wheelchair users are strapped in for safety. Two straps should be used: one, down, lap to chair – and the other higher up, securing the upper body to the backrest of the wheelchair. ***The wheelchair user must be secured both ways for maximum safety.***

- A) **Paraplegics - Healthy, Fit & Active** are typically the safest users of manual, power-assisted, and fully powered wheelchairs. LOWEST RISK
- B) **Amputees - Missing Legs and/or Arms but with active upper bodies** are usually safe users of power wheelchairs, depending on the type of control devices used. If planned and implemented properly, then LOW RISK.
- C) **People with Weak or Poorly Controlled Upper Bodies** *using standard joystick* to reliably control power wheelchairs. This category may include some people with Cerebral Palsy, some with Multiple Sclerosis, some with Parkinson Disease, and people with many other conditions. Some of these conditions may cause impaired eyesight, slowed reflexes and/or impaired judgment. All should be fully screened for such functional deficits just as for automobile driving safety.
MODERATE RISK.
- D) **People with Little or No Upper Body Movement, using special quad controls** such as mouth joystick, puff & sip breath control, or gyroscopic (inertial) wheelchair controls. HIGH RISK.
- E) **Paralyzed Small People – Children and “very small” Adults ...in special seats** or carriers often need a power wheelchair, most of all when significantly paralyzed. Depending on mechanical implementations, individual conditions, and personalized mobility and safety training, these people are at HIGH RISK.

SAFETY - INFORMATION ... for Users of Power Wheelchairs

- 1) **Mechanical BRAKES** that can be set or released by the wheelchair user are necessary safety items – an absolute “must” for outdoor wheelchair use. Some chairs have mechanical brakes that are hand-operated by a user with normal functioning of both hands - but not by users with impaired hands. Other chairs have no mechanical brakes but use “dynamic braking.” This helps slow the chair to a rapid stop when powered and moving. ***It does NOT lock the wheels to prevent rolling down a steep incline.*** ***Buyers of power wheelchairs should always insist that the vendor includes mechanical brakes that the user can operate.*** They must be operable when moving, to brake, stop and lock the chair. Also, it must be possible for the wheelchair user to manually lock or to release the mechanical brakes ... when stopped. For quadriplegics unable to move a lever, it is feasible to use standard mechanical brakes that are set, locked and unlocked by small user-controllable electric motors.
- 2) **FRONT-WHEEL Configurations** are very important for user safety. Power wheelchairs for outdoor use should always have powered large

wheels in front; never free-swinging casters. Indoor wheelchairs with front casters are safe for outdoor use only on flat, level surfaces. They are at risk on sidewalks because of slab variations and irregularities, and totally unsafe on grass and soil. Wheelchairs with front casters are designed for indoor use because they offer better indoor maneuverability.

- 3) **USER ARM-STABILIZATION** should be considered for the wheelchair user with impaired arm and hand function. An orthotic elbow or forearm support can be installed on the wheelchair to support the hand used to operate the wheelchair's controls. This support can provide vital stabilization for the hand that steers and controls the power wheelchair.
- 4) **SAFETY SHUT-OFF & BRAKING CONTROLS** should be provided for power wheelchair users who use mouth, or breath controls. The user with normal use of one hand can steer the power chairs with the control stick, can operate auxiliary power control switches and can apply or release mechanical brakes. Quadriplegics should have special devices installed immediately to shut the power off and apply the brakes, if special sensors detect the wheelchair moving unsafely or out of control. The seller of the wheelchair and controls should include these safety features, which should be tested with the user and be approved by an occupational therapist..
- 5) **Traversing INCLINES** - Always steer UP or DOWN an incline. **NEVER travel across an incline** because the wheelchair is likely to fall over sideways if you do. For wheelchairs with casters in front, **avoid areas in the pavement or path that tilt to one side** to avoid having the wheelchair roll off the path and over an embankment.
- 6) **Avoiding GROUND OBSTACLES to Wheels** ... such as stones, cracks, curbs, etc. which must be seen and avoided by the wheelchair user to prevent sudden deflection of the chair to one side, off the path.
- 7) **BATTERIES should be Fully Charged** before leaving home. It is dangerous to be stranded outdoors in a power wheelchair with dead batteries. Periodically, the batteries should be checked by a technician for proper fluid levels and for remaining charge capacities.
- 8) **Always have a CELL PHONE** ... for safety. People with impaired hand dexterity, unable to operate a standard cell phone, can have a cell phone attached to the wheelchair that is modified for use by even a quadriplegic. If you cannot afford monthly cell phone fees, then get a "911-only" cell phone for which there are no monthly charges. Cell phones should be wired to work from both internal battery and wheelchair battery. Electrical noise filters may be needed to suppress motor noise.
- 9) **Powered VENTILATOR Users** should have a separate rechargeable battery on the wheelchair, for the ventilator. This assures that the ventilator will not fail even if the power wheelchair battery is exhausted.

There should be an audible alarm device and the chair should have a cell phone or a 911 phone.

- 10) **Avoid RAIN and SNOW** which are especially hazardous to power wheelchair users, and to the expensive equipment. Try to stay out of falling rain or snow; try to stay off wet, slippery surfaces coated with rain or snow. If you must travel in rain or snow, use a wheelchair van.
- 11) **When being TRANSPORTED in a Wheelchair Van** always make certain that: (a) the wheels of the wheelchair are locked to the floor of the van; (b) that the wheelchair undercarriage or seat is tightly strapped down to the floor. (c) that the user is strapped DOWN to the seat – and BACK , from the chest to the seat's back structure. Countless wheelchair users have been thrown forward, out of their chairs, into the windshield and to their deaths because they did not follow these precautions. These must apply whether the van is privately owned, rented or a public for-hire service vehicle.
- 12) **Outdoor STAIR-CLIMBING Wheelchairs.** Outdoor steps are usually wider, deeper and shallower than inside steps, and often of shorter height. **Some outdoor power wheelchairs** with large, powered wheels in front are designed to safely carry the user up or down flights of outdoor steps, as found in front of courthouses or public buildings. ***These chairs cannot safely carry a person up or down the types of stairs found indoors, in homes, offices and public buildings.*** Never try on indoor stairways!
- 13) **Indoor STAIR-CLIMBING Wheelchairs** ***are the most dangerous to use*** because indoor steps are steep, narrow, high and have short depths as compared with outdoor steps. Most indoor stairways are not designed to support heavy weight in one area and can crack or break without warning. Also, indoor steps often have poor visibility so that unseen clutter, wet spots and damaged areas can cause the heavy power wheelchair to slip, slide, lose its grip on the stairs, and crash to the bottom injuring or killing the user. **CAUTION:** Always have an able-bodied wheelchair technician or mobility trainer who is familiar with the stair-climber, test climb and descend a particular flight of indoor stairs before the wheelchair user tries it. Even then, the user should climb and then descend the same stairway two or three times in the presence of the technician or trainer. **CAUTION:** **Stair-climbing wheelchairs may be unsafe in a private home** because they are heavy. With batteries, such a wheelchair may weigh about 400 lbs. Add 200 lbs. for the user and the total weight can equal 600 lbs. This is enough weight to crack, break or dislodge one or more steps, causing the wheelchair and user to fall down the entire flight of stairs.
- 14) **Periodic Preventive MAINTENANCE** is absolutely necessary to maintain the safety of any power wheelchair, stair-climbing or not. We recommend daily minor and weekly major inspections by the user. We also recommend a professional inspection at least once every 3 months for most users, and as often as once a month for very active and/or severely

disabled users. If tires are air-inflated, air pressure should be checked before each day's use. Solid tires should be visually inspected for breaks. ***For SAFETY, legal and financial reasons, it is recommended that all power wheelchair service be provided by the seller, by the manufacturer or by a local mechanic who is designated as a "manufacturer's representative."***

CONCLUSIONS

1. Never buy a mobility aid from an advertiser or vendor without first having it prescribed or recommended by a physician or therapist (usually at a wheelchair clinic). When a particular mobility aid has been prescribed, after a complete evaluation with trial-fittings and user training, then buy the appliance from a nearby medical supply dealer ... not by mail from an out-of-state manufacturer or vendor.
2. Have the seller visit the user at his residence: to deliver the mobility aid; to adjust it to fit the user, to make certain it can safely be brought in and out of the house by the user's driving it; and to train the user in storage, daily inspection and routine maintenance procedures. The seller's representative should also give the user enough user training for him to be able to safely use the wheelchair or scooter within the user's apartment, and building.
3. Arrange for a mobility trainer or registered occupational therapist (OTR) to visit the residence to train the mobility aid user in safe ways to store the device; safe ways to transfer on- and off- from it; safe ways to enter and level the house using the power chair or scooter, and safe ways to use the mobility aid for outside travel under different weather, lighting and traffic conditions.
4. Make it a firm policy to never attempt to drive the mobility aid under conditions that are new to you, such as at the beach or outdoors, on unpaved soil or grass ... without FIRST assessing the compatibility of one's equipment to the ground conditions that exist. For example, one must never attempt to ride on sand in a wheelchair that has small caster wheels in front. One must know which types of wheels are compatible and which are not, to a sand or other unusual environment.

For additional information or free technical support, please email: nire@warwick.net
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