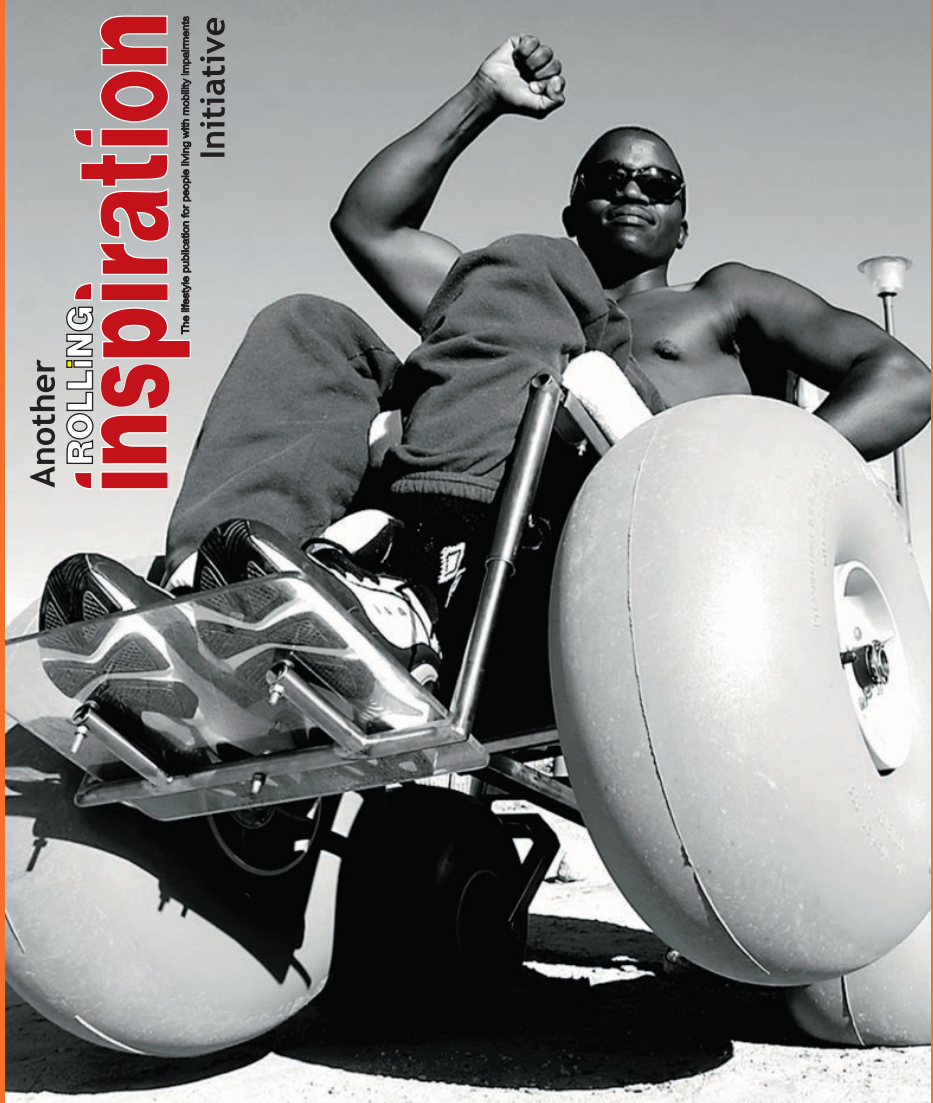


# WHAT IS AN APPROPRIATE WHEELCHAIR?



Another  
**ROLLING**  
**inspiration**  
The lifestyle publication for people living with mobility impairments  
Initiative

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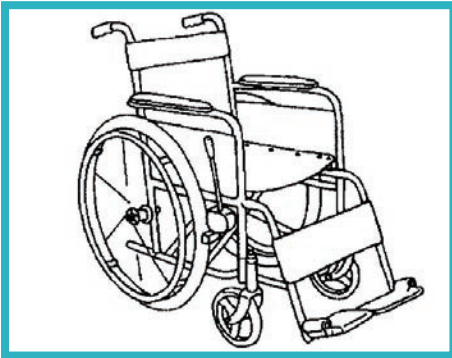
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Wheelchair users in South Africa are confronted with a multitude of wheelchair types and designs, varying from locally produced- to imported devices and varying in price from very cheap to really expensive. Selecting the most appropriate wheelchair may appear to be an easy process and is often based on appearance (look) and weight of the wheelchair and the size of your wallet. However, the user should consider several critical factors to ensure that the wheelchair contributes to their quality of life.



**Figure 1:** *The basic folding frame wheelchair (or so-called standard- or orthopaedic style wheelchair) is seldom an appropriate choice for active wheelchair users.*

## One-type-fits-all approach

The most commonly used and prescribed wheelchair in South Africa is the basic folding frame wheelchair (or so-called standard- or orthopaedic style wheelchair). See Figure 1. This tendency is alarming, as the basic folding frame, by nature of its design, is a low active use wheelchair, and most suitable for an indoor environment. The chair is not suitable for active users, and is not designed for outdoor

urban-, peri-urban- or rural terrain. The chair offers minimal postural support options. Despite these obvious drawbacks, the majority of wheelchair users, irrespective of functional and environmental needs and irrespective of their postural support needs, are most frequently prescribed / recommended this type of chair. This “one-type-fits-all” approach is probably the biggest single indicator of the poor quality of wheelchair services in South Africa.

## Aim

This booklet will attempt to introduce the wheelchair user, clinicians and others working in the wheelchair industry and -services to the concept of an appropriate wheelchair as defined in the World Health Organisation (WHO) Guidelines on the provision of manual wheelchairs in less resourced settings (2008).

## Note:

- All examples referred to in the text are available on the **Department of Health National Wheelchair Tender** and adhere to local and/or international wheelchair durability standards.
- This booklet primarily refers to users with no, or minor, postural deviations. Management strategies and optimal supportive seating solutions for those who suffer from moderate to severe postural deviations may differ significantly from the solutions provided in this text. Please consult a wheelchair service provider trained in intermediate and advanced wheelchair seating skills for advice and optimal management.

## 2. WHAT IS AN APPROPRIATE WHEELCHAIR?

The **'WHO Wheelchair Guidelines'** definition of an appropriate wheelchair states that:

"A wheelchair is appropriate when it:

- meets the user's needs and environmental conditions;
- provides proper fit and postural support;
- is safe and durable;
- is available in the country; and
- can be obtained, maintained and serviced in the country at an affordable cost."

Based on the WHO definition, choosing an appropriate wheelchair should take the following into consideration:

- Environment
- Function
- Postural support
- Safety and durability (life-span)
- Economic factors

## 3. ENVIRONMENT

You would never climb a mountain in ballet shoes! Similarly, wheelchairs should suit the environment of the user. When selecting an appropriate wheelchair for a specific environment one needs to look at:

- Frame type
- Overall length
- Wheelbase
- Rear wheel and front castor size
- Stability versus mobility

### FRAME TYPE

Most people are familiar with 4-wheel rigid frame wheelchairs but are seldom aware of the 3-wheel design (see figure 2). Despite the many advantages over the 4-wheeler, this design is seldom prescribed or used.

Generally 4-wheelers do not work well on uneven surfaces. They often get stuck as they need all four wheels to be in contact with the ground for stability and traction. 3-wheelers are specifically designed for uneven surfaces as all wheels are on the ground

at all times giving maximum traction and propulsion. They also track better than 4-wheelers on footpaths and single tracks.

### User Tip:

If you use your wheelchair mostly outdoors in rural and rough terrain, consider using a wheelchair with a 3-wheel design.

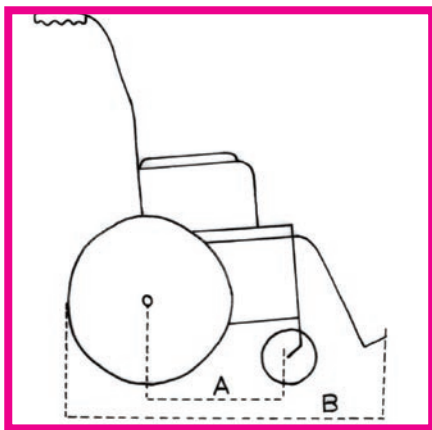


**Figure 2:** The stability of the 3-wheeler design demonstrated over rough ground

### 3. ENVIRONMENT (Cont.)

#### OVERALL LENGTH

The overall length, measured between the two most distal points of the wheelchair will specifically affect indoor accessibility. (See figure 3 for the difference between wheelbase (A) and overall length (B).) The shorter the overall length, the more compact the chair and the smaller the turning circle.



**Figure 3:** The difference between wheelbase length (A) and overall length (B)

This will enhance access to small spaces, tight corners and reach over tables, desks and into cupboards. For indoor and active urban use, a wheelchair like the ECONO RIGID (manufactured by CE Mobility) (see figure 4) offers a compact solution.

#### WHEELBASE

For better stability a longer wheelbase (see figure 3) is required. This makes the chair more stable over uneven terrain and safer when going down on steep downhill as it is less likely to tip

**User Tip:** If you use your wheelchair mostly outdoors in rural and rough terrain, a wheelchair with a long wheelbase will improve outdoor performance



**Figure 4:** THE CE ECONO RIGID offers a compact solution for urban and indoor wheelchair users

forward. See figures 5 and 6. A longer wheelbase reduces the weight placed on the front castor wheels enabling them to easily clear obstacles. This stops the front castors from getting stuck and pivoting the user out of the chair.

Hybrid (dual terrain) wheelchairs combine the benefits of a long wheelbase without changing the overall length of the wheelchair. This ensures that the wheelchair is compact enough for indoor use, whilst at the same time, stable enough to allow for active use over fairly rough and uneven terrain. Examples of hybrid wheelchairs include the ATW (3-wheeler) (figure 15) and the ROUGHRIDER (4-wheeler) (figure 6), both manufactured by CE Mobility.

**User tip:**  
If you use your chair both indoors **and** frequently outdoor over rough and/or rural terrain, consider using a hybrid (dual terrain) wheelchair

### 3. ENVIRONMENT (Cont.)



Figure 5



Figure 6

*Figure 5 & 6: The longer wheelbases of the rural WORLDMADE 3 (Shonaquip) and the dual purpose ROUGHRIDER (CE Mobility), allows the user to access very steep gradients with safety*

#### REAR WHEEL AND FRONT CASTOR SIZE

##### REAR WHEELS:

**Diameter of the wheel:** Large wheels will improve clearance over uneven ground, but may limit your ability to sit at tables and desks. Large rear wheels provide the user with a larger force lever, thereby making it easier to propel over the demands of rough and uneven terrain.

**Width of the wheel and tyre:** Wider rear wheel tyres are essential if the user lives in an area with soft sand or muddy ground. Standard width rear wheels are fine for use on hard-packed soil.

Another factor to consider is that standard wheelchair wheels are smaller in diameter than bicycle wheels and are not always readily obtainable outside main centres. Many dedicated rural wheelchairs therefore make use of bicycle wheels to enhance mobility and maintenance of the wheels. Bicycle shops are commonly found in developing and rural areas and wheelchair users can access these

shops for maintenance and support. An example of a dedicated rural wheelchair is the 3-wheeler design, WORLDMADE 3, distributed by Shonaquip. (Refer to figures 2 and 5)

##### FRONT CASTORS:

Smaller, narrow castors are better for indoor use as they improve responsiveness and mobility. Urban wheelchair users who do not need to often travel long distances over very rough / uneven terrain and who are skilled enough to ride their chairs whilst balancing on their rear wheels will prefer small, narrow castors to optimise general mobility. See figure 7. Those who do not have advanced wheelchair skills may find that wider and larger castors will improve their outdoor mobility, as they won't get stuck against obstacles and are less likely to sink into mud and sand. However, larger, wider castors will increase both weight and rolling resistance of the chair.

#### User

**Tip:** To optimise mobility, match the size and width of rear wheels and front castors with the demands of the terrain, your level of skill and the level of mobility required.

## STABILITY VERSUS MOBILITY

Stability is an essential factor for active rural users. For rough, uneven ground a wheelchair with a long wheelbase will improve front / back stability. Cambered rear wheels (rear wheels fitted at an angle to the frame) will add sideways stability. See figure 7.

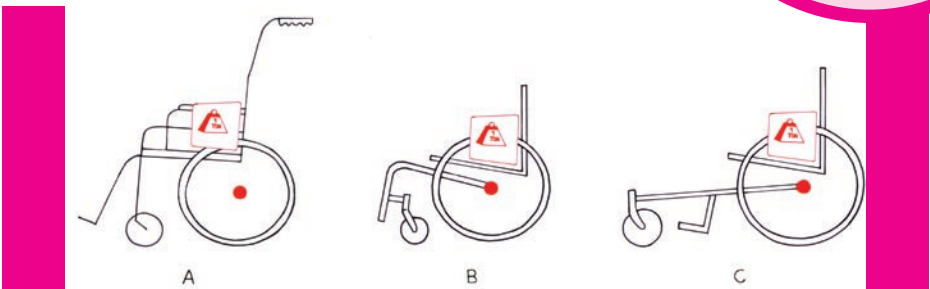


**Figure 7:** Urban users who seldom travel long distances on rough terrain and who have advanced wheelchair skills to ride on the back wheels over uneven terrain, will prefer small, narrow castors to optimize mobility.

The closer the seat is to the level of the rear wheel axle the better as this will keep the centre of gravity low. Generally rural wheelchairs are also heavier which helps to make them more stable. Figure 8 demonstrates the distribution of the user weight on the basic folding frame (A) compared to that of active wheelchair designs (B+C).

Both stability and mobility are improved by reducing the weight on the front castors. This is achieved by distributing the weight over the rear wheels. This however, can in turn negatively affect the backwards stability of the chair. With an adjustable chair you can match the user's ability and skills to optimise the balance between stability and mobility. An adjustment of just one centimeter can make a big difference in the stability and overall function of the user.

**User Tip:**  
Active wheelchair users should use an adjustable chair and have it set up to meet the demands of the environment, their level of activity and their level of skill. Some suppliers will custom-build a chair to the individual requirements of the user.



**Figure 8:** Comparing the distribution of the user weight: On the basic folding frame (A) the user weight is distributed high above and in front of the rear wheel axle, compared to that on the of active 4-wheeler (B) and 3-wheeler (C) wheelchairs.

## 4. FUNCTION

The ability of a wheelchair user to function well in his/her chair depends on the users' skill, the environment, the activity level of the user and, lastly, the wheelchair itself (including set-up, fit and postural support).

When selecting a wheelchair to optimise functional ability you need to consider:

- Overall length, type and size of wheelchair
- Weight of the wheelchair
- Transportability
- Access to the rear wheel
- User skill and ability

### OVERALL LENGTH, TYPE AND SIZE OF WHEELCHAIR

The overall length, type and size of a wheelchair are all closely related.

To optimise function, the user should carefully consider the impact of the design, size and length of the chair on their specific daily functions e.g., a wheelchair with a long overall length may limit access to the inside of cupboards and have safety implications such as access to the back burner of a stove.

#### User Tip:

Your wheelchair should fit snugly around your pelvis or trunk (whichever is wider) without causing pressure.

### WEIGHT OF THE WHEELCHAIR

When made from similar materials, rigid frame wheelchairs (both 3 and 4-wheeler models) will be lighter than the equivalent folding frame chair. The cross-bars of the folding frame wheelchair add considerable weight to the wheelchair. Many ultra-lightweight folding frame wheelchairs have clever

folding mechanisms to reduce the weight of crossbars. However, these wheelchairs are much more expensive than basic folding frame wheelchairs. Although the weight of a wheelchair is not critical to function and performance, it is an important consideration for children, users who travel long distances, those who have significant weakness and those who struggle with physical endurance.

Not only does the folding mechanism make the chair heavier but it also reduces the stability of the frame and some movement will occur at this point during propulsion. This means that not all of the energy produced by the wheelchair user is used to move the chair forwards. Some of the energy is lost in the movement of the frame. This loss of energy will impact on users who do not have good upper limb strength, function or endurance.

#### User Tip:

Rigid frame wheelchairs are often lighter and more stable than their folding frame counterparts. These features will improve mobility and function. In addition, rigid urban designs are often more compact and will enhance indoor function.

### TRANSPORTABILITY

Wheelchair users who drive their own vehicles, might prefer a rigid frame design if they transfer the wheelchair over their lap to the passenger seat. Most roof-mounted wheelchair hoists can only accommodate folding frame designs. The weight and size of wheelchair components will concern care givers. Features such as quick-

### User Tip:

If the wheelchair will be frequently transported, consider how the chair folds, how long it takes to fold the chair and how big and heavy the individual components are.

release rear wheels cut down the weight and bulk of the chair. Users of both folding and rigid frame wheelchairs (3 and 4-wheelers) have successfully used a variety of public transport.

### ACCESS TO THE REAR WHEEL

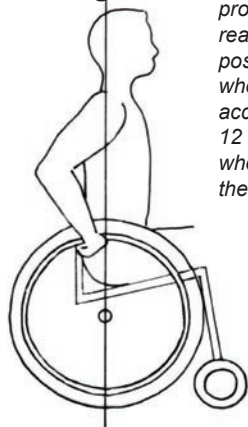
To optimise power when pushing, the user needs to be able to push on the wheel through the largest possible arc of movement. The body weight should be as close as possible to the rear wheel axle (vertical and horizontal, see figure 9). This will enable

maximum push on the rear wheel from the 10 o'clock to the 2 o'clock position. (See figure 10) The body will remain upright and the shoulders will not be forced excessively backward

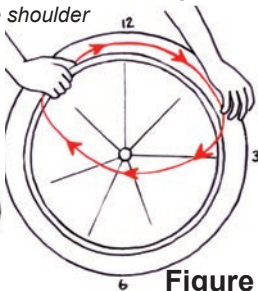
### User Tip:

When propelling comfortably, your body should remain upright, the shoulders be relaxed and your hands should easily move from the 10 o'clock to the 12 o'clock position.

**Figure 9**



*Figure 9 and 10: For optimal propulsion and access to the rear wheel, the user should be positioned directly over the rear wheel axle. This will allow easy access from the 10 o'clock to 12 o'clock position on the rear wheel without causing strain to the shoulder*



**Figure 10**

which can lead to long term shoulder injury. This position will also remove weight from the front castors giving greater mobility and preventing the castors from getting stuck and tipping the chair forwards. This is the most common cause of wheelchair accidents.

### USER SKILL AND ABILITY

Not all wheelchair users are able to perform advanced wheelchair skills such as the ability to traverse over rough terrain by balancing on their rear wheels. Clearing the front castors over obstacles is an essential skill to independently travel over obstacles and rough terrain. Correctly setting up a wheelchair and unloading the front castors will significantly improve the ability of the user to clear the castors and thus enhance safety. A wheelchair with a long wheelbase will also compensate for the users' inability to perform advanced wheelchair skills.

### User Tip:

Sit upright, with shoulders and hands hanging relaxed next to the body and wheelchair. The palm of the hand should be more or less over the rear wheel axle.

### User Tip:

If you are not able to wheelie (back wheel balance), have your wheelchair set up to distribute the majority of your weight on your rear wheels (obviously within the parameters of balance and safety). Alternatively, consider getting a wheelchair with a longer wheelbase.

## 5. POSTURAL SUPPORT

Postural support is often disregarded. According to a survey done for WHO in the Western Cape, 80% of all wheelchair users require modifications or additional postural support systems in their wheelchairs. Studies show that almost all children who become wheelchair users in their pre-teen years will develop postural deformities later on.

ischial tuberosities (the IT's or sitting bones). (Figure 14)

With the spine supported in its normal S-curve all the small joints of the spine are in their most stable position, thereby passively "locking" the spine into a position of stability. If the wheelchair is properly set up, you should not require any muscle control or activity to maintain this alignment.



*Figure 11, 12 & 13: Shows typical postural deviations following poor postural support*

### THE OPTIMAL POSTURE

Figures 11 to 13 show typical postural deformities in three active wheelchair users following inadequate postural support of their wheelchairs. When viewed from the front, the correctly aligned posture is with the head centred over the shoulders and pelvis. The shoulders and pelvis should be in line with each other. (Figure 14)

When viewed from the side, the ear, shoulder and hip should be lined up. The same line should also go through the front of the cervical and lumbar curves creating an upright pelvis and distributing the weight evenly on both

Elements to consider when optimising postural support are:

- Seat: seat angle and footplate support
- Back: height and angle
- Cushion and back support system
- Arm-rest height and upper limb and trunk support
- Postural support systems
- Tilt of the seat unit

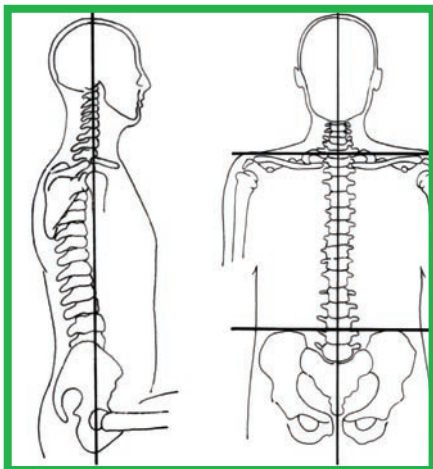
These elements all contribute to the total postural support and are therefore dependent on each other and should be set up together.

### User Tip:

If you slouch or sit skew and have no fixed deformities, your wheelchair may not be adequately set up to support you.

### Configuration of the seating system:

The amount of postural support required vary from user to user. Trained wheelchair professionals can make the necessary adjustments in order to provide the correct postural support you require. Should you require more support than that provided by the



**Figure 14:** The required postural alignment when seated in a wheelchair when viewed from the side (A) and the front (B)

wheelchair itself, most wheelchairs can also be fitted with additional postural support devices. See figure 15 for an example of a Jay® back system fitted to a young active user's hybrid wheelchair. For those with special needs there are dedicated postural support wheelchairs like the Shonaquip SAM and RONNY chairs (Fig. 16).



**Figure 15:** A young active wheelchair user set-up in the CE ATW (3-wheeler hybrid / dual purpose) and a Jay II® back support system



**Figure 16:** A young active user using the Shonaquip RONNY wheelchair

### Seat angle:

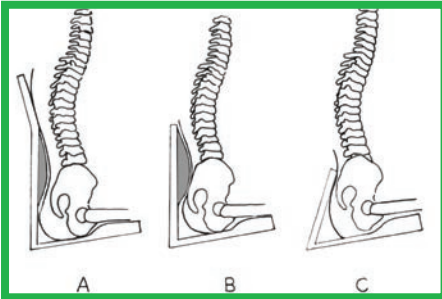
For optimal stability and safety in active users, the wheelchair seat needs to be tilted backwards, i.e. the back-seat angle will be less than 90 degrees (see Fig. 17). This will prevent the pelvis from sliding forward and provide increased stability to the user.

### Back support:

The length of the back support should match the user's balance and the normal curvature of the spine.

## 5. POSTURAL SUPPORT (Cont.)

In figure 17 you can see how the standard and tall back support follows the curvature of the thoracic spine. Medium backs (B) are straight and low back wheelchairs (C) have a straight back that is angled forward. These configurations ensure that the normal curves of the spine is followed to maximally support it in the correct alignment. This is essential to prevent any deviation of the spine and/or any shift of weight to one side, which again may lead to pressure sores.



**Figure 17:** Optimising postural support: The seat is angled backwards and the back support is contoured and angled to follow the normal spinal alignment. Configuration for wheelchair with:

- A: Standard and tall back support;
- B: Medium back support and
- C: Short back support

Aim of good postural support in a wheelchair

- Prevention of spinal deviations
- Prevention of pressure sores
- Enhanced functional ability
- Aesthetics and self image

### User Tip:

If you slouch or tend to lean to one side, chances are good that your wheelchair is not set up properly. You are at risk of developing discomfort, and may develop stiffness and/or, deviations of the spine and/or pressure sores.

### User Tip:

If you tend to slouch or sit skew, have your seating set-up checked out by a trained wheelchair professional. Small adjustments can result in dramatic improvement in postural support.

### PREVENTION OF SPINAL DEVIATIONS

When the spine is properly supported in it's normal curves, the joints are "locked" into position, increasing the stability of the spine and preventing spinal deviations from occurring. Users who are at risk of developing spinal deviations include: pre-teen children, users with significant trunk weakness, users with unequal trunk muscle strength, people suffering from progressive diseases and those whose spasticity or movement abilities results in sustained, habitual postures when seated or lying down.

### PREVENTION OF PRESSURE SORES

Although a good pressure relief cushion plays an important role in the prevention of pressure sores, the role of the postural support properties of the cushion is usually ignored. Postural support is provided by stabilising the user between the back and cushion systems. This set-up will prevent the sliding forces normally created in sitting by "locking" the pelvis into place. This, together with equal weight-bearing on both IT's (sitting bones) will limit the risk of pressure areas developing. Uneven weightbearing following poor postural support in the wheelchair (figure 18) will increase pressure and sliding forces under one sitbone, resulting in pressure sores developing (figure 19). Pressure sores are the leading cause of death in users with spinal cord injury.



**Figure 18**



**Figure 19**

**Figure 18 & 19:** Uneven weight-bearing resulted in fixed postural deviations and pressure sores in this young boy.

## ENHANCED FUNCTIONAL ABILITIES

The human body is a very efficient machine and like all machines, requires proper biomechanical alignment to optimise power generation and function. Poor posture results in compression of internal organs and poor alignment of the trunk and upper limbs. This will negatively affect upper limb function (usually a wheelchair user's most crucial function) and the ability to optimally propel the chair. Good alignment will also optimise the user's head in space for social interaction and prevent problems with swallowing. In addition, compression of the internal organs will be prevented and breathing and digestion will be optimised.

### User Tip:

Poor posture will lead to a waste of energy, as the resultant poor biomechanics will lead to compensatory movement strategies and poor upper limb power or force generation.

## AESTHETICS AND SELF IMAGE

Last, but not least, a poor posture contributes significantly to the negative picture of disability and results in the user looking "different" and more disabled. A well-aligned posture contributes to a sense of well being, positive personal presentation and will enhance the users self esteem.

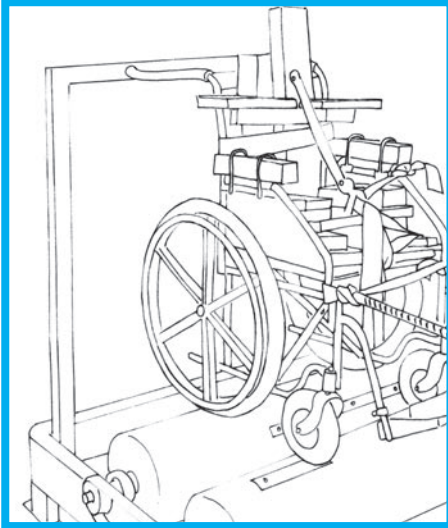
### User Tip:

Your posture will contribute to how other persons perceive you and your disability. Ensure that your posture is as upright and straight as possible.

### User Tip:

Uneven weightbearing and sliding of the pelvis following poor postural support are 2 of the most common contributing causes of pressure sores in wheelchair users. By optimizing your posture, sliding forces will be limited and weight evenly distributed, thus decreasing your risk to develop pressure sores.

## 6. SAFETY AND DURABILITY



**Figure 20:** A wheelchair being tested on a rolled bed test bed

Apart from the Department of Health, most private funders (medical aid / insurance, the Compensation Commissioner [Workman's Compensation] or the Road Accident Fund) do not require minimum durability standards for wheelchairs provided and/or funded by them. This has significant implications for users, as many of these funders impose a 5 year minimum replacement cycle on the wheelchair. A wheelchair which does not meet any durability standards can not be expected to last for the duration of a 5 year replacement cycle.

The two most common wheelchair standards to which wheelchairs are manufactured and tested in South Africa, are those of the South African Bureau of Standards (local standards) and the International

Standards Organisation (ISO) (international standards). Note that only ISO 7176 standards refer to wheelchair durability standards. ISO 9000 certification often published by suppliers does not refer to wheelchair durability standards at all, but only to business management standards.

Safety and durability testing involves different tests in which the strength and durability of the wheelchair is tested and often include tests such as static strength tests, impact tests, roller bed (Figure 20) and kerb-drop tests. The aim of these tests is to expose the wheelchair to similar rigours, forces and impacts as would be encountered by the wheelchair user in everyday use. The tests should also clearly specify at which user weight the chair was tested.

The moving parts which allow the folding frame to fold will act as shock absorbing mechanism of the frame, but at the same time, because of the movement be subjected to subsequent wear. The cross-bars are typically the weakest point of a folding frame wheelchair.

### **User Tip:**

Always request a copy of the durability certificate.

Certificates should not be older than 12 months and must clearly state the brand name and model tested. Check the user weight on the certificate and ensure that your own body weight does not exceed the certified tested weight. Active users should choose a wheelchair with more than a 1 year guarantee on the frame.

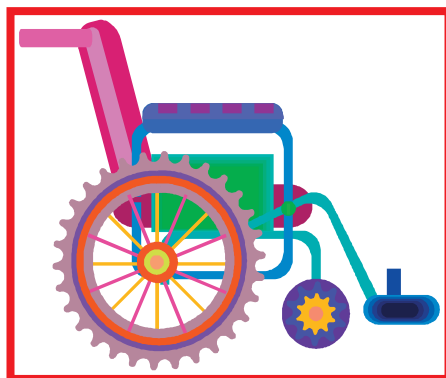
Uncontrolled importation of wheelchairs with no minimum durability standards has resulted in an over supply of cheap, basic folding frame wheelchairs, generally of poor quality. Funders and users alike will usually purchase the cheapest wheelchair without regard for durability standards. Several South African suppliers manufacture or import high quality wheelchairs, but cannot compete in terms of price. Buying a cheap, imported wheelchair also has a bad impact on the South African wheelchair industry which is one of the few industries in which persons with disabilities can be fully, and equally employed.

## 8. THE BASIC FOLDING FRAME WHEELCHAIR

The basic folding frame wheelchair is seldom appropriate for active users. It is a dedicated low active indoor chair. It has serious limitations for use as an active in- or outdoor chair or use in a peri-urban or rural setting. The chair offers minimal postural support options, even for users who require only the basic minimum level of postural support.

**Environment:** The 4-wheel design of the basic folding frame chair has a very short wheelbase which restricts use on rural or rough terrain. The user's weight is in front of the rear wheels, with the front castors carrying much of the weight. This causes the castors to get stuck easily and the chair to tip forwards. The seat is set high compared to the centre of the rear wheel making it unstable over rough ground. Despite the claims of some manufacturers / suppliers, the addition of mountain bike wheels and wide front castors will not turn this chair into an active, outdoor chair. Changing the wheel size may enhance some aspects of indoor and outdoor mobility but the inherent design severely limits

the appropriateness of this wheelchair for most active users. It is not suitable for active rural outdoor use.



**Function:** Although the wheelbase is short, the overall length is longer than that of most compact urban use chairs. This may affect function and safety when using it indoors. The biggest functional disadvantage relates to access to the rear wheel, weight distribution and safety. In Figure 21 it is clear that the user's weight is in front of the rear wheels. The front castors are loaded and safety may be at risk. Access to the rear wheel is from the 12 o'clock position only and

## 8. THE BASIC FOLDING FRAME WHEELCHAIR (Cont.)

results in extreme shoulder extension. This forces the upper trunk forwards, resulting in poor posture. The user is at risk of developing shoulder injury and postural deformities. The user can also reach down to the 4 o'clock position on the rear wheel causing them to accidentally hit the brakes and sustain injury.



**Figure 21:** Access to the rear wheel in basic folding frame wheelchairs is restricted from the 12 o'clock position. Note the degree of shoulder extension and the resultant slumped posture of the upper trunk.

**Postural Support:** This chair offers very little postural support. The typical 90° (or larger) back seat angle does not offer adequate postural stability to active users. Often the configuration of the back posts do not allow for adequate support of the normal postural alignment. Because the back height is not adjustable, it is not appropriate to all users. The sling back does not support the spine in its normal alignment. The sling upholstery can

sometimes be removed and the chair fitted with a range of postural support systems.

**Durability:** Even if this chair met minimum durability standards it is still intended for low active, indoor use. Any other use will reduce the lifespan and any breakages won't be covered by the guarantee as the damage may be considered the result of misuse or abuse. See figure 22.

**Economy:** As the design does not meet the demands of active use, the chair needs replacing more frequently. As a result, maintenance costs will be higher. An appropriate active design chair may initially cost more but the total cost will be less in the long term.



**Figure 22:** Cracked frame, torn upholstery and bent cross-bars after a short period of use by an active user

## 9. INTERNATIONAL GUIDING DOCUMENTS ON WHEELCHAIR SERVICES

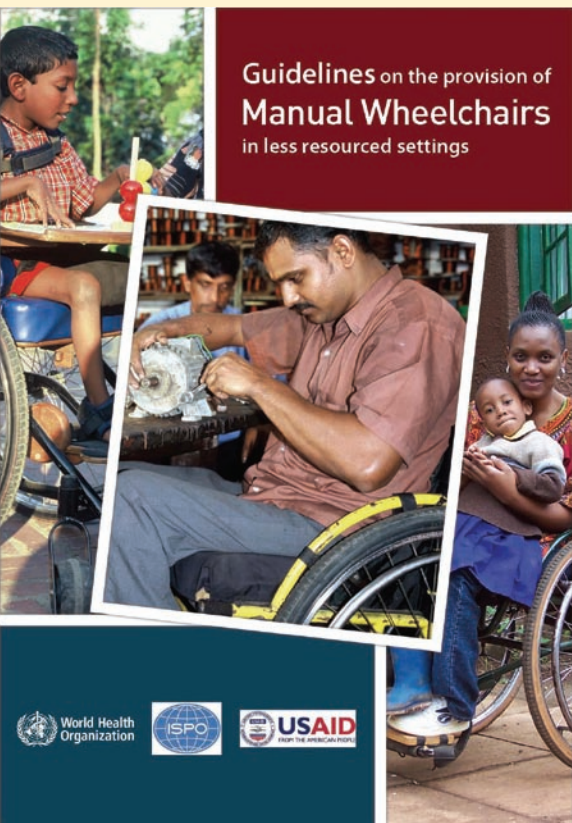
The World Health Organization (WHO), together with the United States Agency for International Development (US AID), International Society for Prosthetics and Orthotics (ISPO) and Disabled Peoples' International (DPI) has long realised that wheelchairs and wheelchair related services were not providing wheelchair users with optimal management, information, products, support or services.

During a ground-breaking consensus conference in Bangalore, India in 2006, experts from around the

world debated all issues related to wheelchairs and wheelchair services and set up international guidelines on design, production, supply and service delivery.

The resulting document is called ***Guidelines on the provision of manual wheelchairs in less resourced settings*** (WHO Wheelchair Guidelines). During August 2008, these guidelines were launched at the 21st World Congress of Rehabilitation International and the complete document is published on the WHO website. The document can be downloaded in PDF format from: <http://www.who.int/disabilities/publications/technology/wheelchairguidelines/en/>

The document is aimed at a large audience which includes government, policy-makers, designers, wheelchair suppliers, donors, wheelchair technicians, clinicians, persons involved in training of wheelchair services, disabled people's organizations, wheelchair users and their families.



## 10. IMPLICATIONS FOR SERVICE PROVIDERS

When considering the *WHO Wheelchair Guidelines* in conjunction with other international documents such as the *Standard Rules on the Equalisation of Opportunities for Persons with Disabilities* (United Nations 1993) and the *United Nations Convention on Rights of Persons with Disabilities* (United Nations 2006) there are important directives for appropriate service delivery. Considering the fact that South Africa has ratified the UN Convention, all service providers must urgently review their current practice to ensure appropriate standards of care and

outcomes. Practice standards and guidelines must not impede wheelchair user rights.

See the following websites:

*UN Convention on the Rights of Persons with Disabilities*

<http://www.un.org/disabilities/convention/conventionfull.shtml>

*The Standard Rules on the Equalization of Opportunities for Persons with Disabilities*

<http://www.un.org/esa/socdev/enable/dissre00.htm>

## 11. MY RIGHTS AS WHEELCHAIR USER

The rights of wheelchair users are summarised in Article 20 of the *UN Convention*. This article which deals with personal mobility states that:

“States shall take effective measures to ensure personal mobility with the greatest possible independence for persons with disabilities, including by:

- Facilitating personal mobility...;
- Facilitating access ... to quality mobility aids;
- Providing training in mobility skills...;
- Encouraging entities that produce mobility aids to take into account all aspects of mobility for persons with disabilities.”

When interpreted with other relevant articles (Article 4 and 26), the wheelchair user therefore has the

following rights:

- **Right to an appropriate wheelchair:**

The wheelchair should meet the users environmental, functional and postural support needs, as well as durability standards and safety and affordability.

- **Right to appropriate services:**

The user require comprehensive rehabilitation services, as well as access to wheelchair maintenance services.

- **Right to be managed by appropriately trained staff:**

All staff should have adequate and appropriate training in all aspects of wheelchair service delivery as outlined in the WHO guideline document.

## 12. HOW DOES THE DEPARTMENT OF HEALTH MEET WHEELCHAIR USERS NEEDS?

The National Department of Health has specific guidelines, in line with the **WHO Wheelchair Guideline document and the UN Convention**, on the issuing of assistive devices. (**Standardisation of provision of assistive devices in South Africa**. April 2003)

### Right to an appropriate wheelchair:

- A complete range of wheelchairs is available on the National Wheelchair Tender. This includes both folding and rigid frames wheelchairs in the following categories: Urban active, dual purpose (indoor and rural use), rural, posture support wheelchairs, power chairs and buggies.
- The specifications of each type and category of chair meets the requirements in terms of environmental, functional and postural support needs.
- Specific durability standards and safety standards are specified
- Billing is done according to The Uniform Patient Fee System, a patient classification system based on income. Certain categories of clients receive free or subsidised health care, including assistive devices.

### Right to appropriate services:

- Different levels and types of care, including referral pathways exist to ensure access to appropriate curative

and rehabilitative services. Department of Health-managed wheelchair maintenance service centres are available at certain centres.

### Right to be managed by appropriately trained staff:

Staff should be trained in the appropriate level of wheelchair services and products to optimally manage your condition.

- The Western Cape Rehabilitation Centre in Cape Town offers training in all aspects of wheelchair service delivery as outlined in the WHO guideline training curriculum. Training is presently limited to professionals and persons involved in wheelchair services. Training packages are outcomes based and are being finalised in partnership with the Empowerment Through Partnership Trust (ETPT) and Motivation Charitable Trust, UK.
- Ten trainers are currently undergoing training. Training is presently only offered in the Western Cape, Eastern Cape and Gauteng.
- The Western Cape Rehabilitation Centre is listed in the WHO Guidelines as one of only 6 training centres worldwide.

Although the guidelines are in place, all services may not yet be aligned accordingly. Users should initiate discussions with the various departments / services to explain their needs and to assist in the drive for the necessary changes.

## 13. REFERENCES AND RECOMMENDED READING:

- Standard Rules on the Equalisation of Opportunities for Persons with Disabilities (United Nations 1993)
- United Nations Convention on Rights of Persons with Disabilities (United nations 2006)
- Standardisation of provision of assistive devices in South Africa (Department of Health, April 2003)
- Guidelines on the provision of manual wheelchairs in less resourced settings (WHO Wheelchair Guidelines, 2008)
- Engström B. Ergonomics: Wheelchairs and positioning: A book of principles based on experience from the field. Posturalis, Hässelby, Sweden. 1993.
- Tomlinson JD. Managing manoeuvrability and rear stability of adjustable manual wheelchairs: An update. Physical Therapy 80(9):904-911. 2000.



**The Department of Health**