



# Clinical & Therapeutic folder



## Walking is important

Walking is an important part of our daily lives. Walking allows us to move around freely and is a principal component of many of the activities we perform in the course of our daily lives. Walking is also considered a major motor milestone in a child's development.

The complexity and strength demands of human walking are reflected in the length of time it takes an infant to start walking and to develop a mature gait.

Demands are not only made of the child's physical abilities in terms of muscles, joints and skeletal strength, but also the sensory system involving the integration of information from balance organs in the inner ear, pressure sensors under the foot, visual information and information from joints concerning their position.<sup>1</sup>

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1 Derek Curtis, Research Physiotherapist, Gait laboratory, Hvidovre Hospital  
Walking and walking aids  
www.R82.com



## Users with motor delays

The Gross Motor Function Classification System (GMFCS) for cerebral palsy is based on self-initiated movement, with emphasis on sitting, transfers, and mobility. When defining a five level classification system, the primary criterion has been that the distinctions between levels must be meaningful in daily life.

Distinctions are based on functional limitations, the need for hand-held mobility devices (such as walkers, crutches, or canes) or wheeled mobility and, to a much lesser extent, quality of movement.

Children who have motor problems similar to those classified in "Level 1" can generally walk without restrictions but tend to be limited in some of the more advanced motor skills. Children whose motor function has been classified at "Level 5" are generally very limited in their ability to move themselves around, even with the use of assistive technology.<sup>2</sup>

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2 GMFCS - E & R © Robert Palisano, Peter Rosenbaum, Doreen Bartlett, Michael Livingston, 2007  
CanChild Centre for Childhood Disability Research, McMaster University  
www.R82.com

## Development through cooperation

R82 works together with both users and experts when developing new products, thus combining know-how and experience from previous walkers.

The Mustang now appears with important features; easy access, tilt-in-space and adjustable support for varying levels of disability. R82 devotes considerable resources on development, which include external gait analyses<sup>3</sup> and functionality tests world-wide.

## Target groups

The Mustang is designed to assist gait in a wide range of abilities ranging from those users with reduced motor skills in need of help with weight-bearing and/or trunk and pelvis support (GMFCS III-V in cerebral palsy) to users able to take full weight-bearing and needing less postural support (GMFCS II-III in cerebral palsy).

<sup>3</sup> Derek Curtis, Research Physiotherapist, Gait laboratory, Hvidovre Hospital  
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Size 1 = max 65 cm

Size 3 = max 100cm

Size 2 = max 80 cm

Size 4 = max 130 cm



## Anterior position

The anterior position is the right choice if the user is not able to take full weight-bearing on the feet or if the motor skills are reduced and the user needs support around trunk and pelvis.



## Posterior position

The posterior position is for users who have improved their walking skills, who are more stable in the trunk and who are capable of bearing their full weight. The open frame makes it possible for users to move close to things and, if they do not use the handles, to carry objects around.



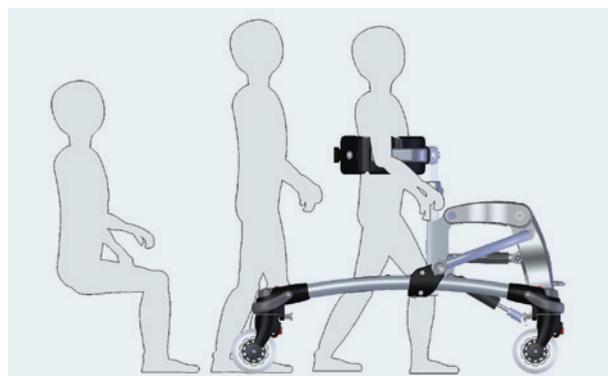
## Choosing Mustang

The Mustang is designed to be as ergonomic as possible, allowing it to be used with a minimum of user lifting or handling. The user can actively participate in the transfer. Often it is necessary to make corrections in height adjustment, which is straightforward thanks to the gas spring.



## Ergonomics

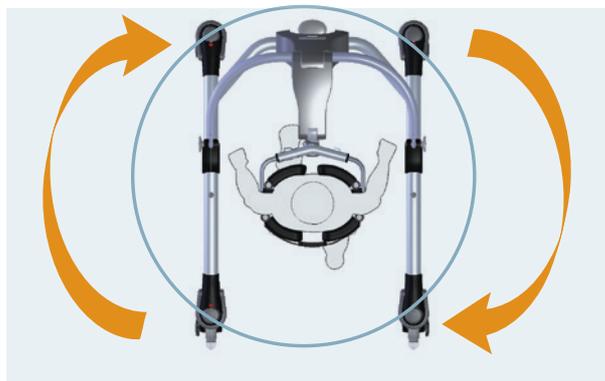
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## Manoeuvrability

Positioned in the Mustang, the user is close to the centre of the frame. This makes it possible for the user to turn around their own vertical axis. Many users with postural asymmetry can have great difficulty in walking straight forward. Others are weak, and to motivate them to walk, the wheels

must be low-friction. Swivel wheels allow maximum manoeuvrability, but in cases where the user's movements are more poorly coordinated or on sloping surfaces, it is possible to use the directional stabiliser and anti-reverse brakes or drag-brakes to keep the walking aid on course.



## Correct walking pattern

Hip abductors, hip and knee extensors, and ankle plantar flexors are key muscle groups in sagittal and coronal plane walking stability.<sup>4</sup> The Mustang can be adjusted to tilt the user's line of gravity forwards. For users with hip flexor contracture, an anterior tilt in the pelvis means that the thigh has a greater range

of posterior motion before the contracture limits it, allowing a greater stride length, walking speed and active mobility. Forward tilting of the trunk can also be used to facilitate stepping and walking in users with difficulty in initiating gait.

<sup>4</sup> Thompson N, Stebbins J, Seniorou M, Newham D  
Muscle strength and walking ability in Diplegic Cerebral Palsy:  
Implications for assessment and management  
[www.R82.com](http://www.R82.com)

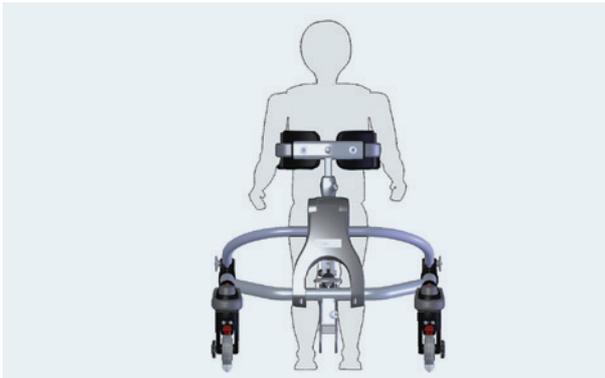




## Stability

The hands and arms can be used to increase postural stability of trunk and head by creating a stable support to the shoulder belt.

The Mustang has an adjustable moulded trunk support to aid trunk stability. Increased trunk stability allows for greater mobility and coordination of the lower body.



## Prevent cross-walking

Users with poor postural control, poor coordination or spasticity, often cross their legs when walking (scissoring). In order to facilitate a normal walking pattern, a seat and a leg separator can be mounted on the walker.

adduction and internal rotation often seen in the user with bilateral spasticity. The leg separator stops the feet from crossing the midline and blocking contra lateral stepping.

The seat increases abduction and the outward rotation of the hip, resisting this mass pattern of



## Adjustable moulded supports

The Mustang chest support is moulded to hold the trunk or the pelvis like a pair of hands. It is important to create symmetry and stability of the trunk to facilitate mobility and to prevent deformities. The support is height adjustable so support can be

given at the correct level. This gives the possibility of adjusting the support to allow the user to enjoy the greatest degree of trunk mobility whilst still maintaining a stable trunk.





## Freedom of movement

The user needs to be stimulated in a walking position in order to discover and learn. Placing the user in an upright position with weight-bearing on both feet often encourages the user to be more active and independent.

Depending on the user, walking can begin from a very early age – initially with the possibility of taking a rest,

for example using a seat or a sling seat.

The walker can be used several times during the day for shorter or longer walks. The duration and frequency of use will always depend on the user. Children and youngsters are provided with ideal conditions to develop their skills – despite their disability. A stationary world is set in movement.



## Gross Motor Function Classification System

The Gross Motor Function Classification System for cerebral palsy referred to on pages 2 and 3 is based on self-initiated movement with particular emphasis on sitting (truncal control) and walking. The focus is on determining which level best represents the child's present abilities and limitations in motor function. Emphasis is on the child's usual performance in home, school, and community settings.

The descriptions of the 5 levels which appear below are broad and are not intended to describe all aspects of the function of individual children. The title for each level represents the highest level of mobility that a child is expected to achieve between 6-12 years of age.

An effort has been made to emphasize children's function rather than their limitations. Thus as a general principle, the gross motor function of children who are able to perform the functions described in any particular level will probably be classified at or above that level; in contrast the gross motor functions of children who cannot perform the functions of a particular level will likely be classified below that level.

Reference: Dev Med Child Neurol 1997;39:214-223  
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### **Distinctions Between Levels I and II**

Compared with children in Level I, children in Level II have limitations in the ease of performing movement transitions; walking outdoors and in the community; the need for assistive mobility devices when beginning to walk; quality of movement; and the ability to perform gross motor skills such as running and jumping.

### **Distinctions Between Levels II and III**

Differences are seen in the degree of achievement of functional mobility. Children in Level III need assistive mobility devices and frequently orthoses to walk, while children in Level II do not require assistive mobility devices after age 4.

### **Distinctions Between Level III and IV**

Differences in sitting ability and mobility exist, even allowing for extensive use of assistive technology. Children in Level III sit independently, have independent floor mobility, and walk with assistive mobility devices. Children in Level IV function in sitting (usually supported) but independent mobility is very limited. Children in Level IV are more likely to be transported or use power mobility.

### **Distinctions Between Levels IV and V**

Children in Level V lack independence even in basic antigravity postural control. Self-mobility is achieved only if the child can learn how to operate an electrically powered wheelchair.



## Mustang by R82

The Mustang is a walking aid for disabled children and youngsters, who need supplementary assistance with their daily walking. It can be used by e.g. CP children and others with lack of balance and impairment of their motor function. The Mustang is developed as a basic anterior walker but can also be used as a posterior gait trainer, depending on the child's level of ability.



## Other R82 Walking aids...

R82 produces standing aids for disabled children and youngsters throughout the world. We aim to support individual needs and to provide the child the greatest possible freedom - in a world in movement. Below is our range of Walking aids - each one to ensure an optimal solution for the individual needs. You can read more about our walking aids and many other products on our website [R82.com](http://R82.com)



Crocodile



Pony



Bronco



## Abreast of the future

As the name suggests, R82 was founded in 1982. Since those early pioneering days in the rehabilitation sector, R82 created simple and user-friendly technical aids and appliances for disabled children and young people.

Flexibility and adaptation to the needs of the individual user were at the heart of the founding of R82.

Thanks to the consistent philosophy of constant development and high-tech production in a healthy working environment, R82 remains a vibrant, dynamic and growing company.

With a well-designed and high quality range of products in all areas of the technical aid and appliance business, R82 keeps constantly abreast of the future – to the benefit of both users and carers.

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