Edition no.: 1

Etac Cross 6

– With 3A back support

Clinical assessment guide

etac®

What is best practice? And can assessments be more efficient?

We reached out to Bart Van der Heyden, Independent Physiotherapist and owner of SuperSeating which provides training and education services, for his impartial advice. He has devoted his clinical life to the science of creating best outcomes for postural demands and gives training sessions about seating and seating techniques throughout the world. He is passionate about developing a proven technique, to deliver more efficient wheelchair assessments, by saving time without compromising on clinical outcomes and using best practice techniques in a bold and refreshing way.

This guide represents Etac's methodology which has been adapted and inspired by Bart's developed "SuperSeating" assessment technique within the wheelchair. We hope you will find the guide logical, useful and enjoyable and that you will be inspired to work in this way, just like Bart has inspired Etac.

Bart is an independent Physiotherapist with his own practice in Belgium and is the owner of SuperSeating which provides clinical education on solving seating challenges for clinicians worldwide. He´s world-wide recognised as a leading expert in wheelchair seating mobility and wound care.

Find CV and contact information on page 23.

"There are techniques to perform physical assessment in a highly adjustable wheelchair"

A client centered wheelchair service delivery consists of many components: Referral, Assessment, Equipment Recommendation and Selection, Funding and Procurement, Product Preparation, Fitting, Training and Delivery, Follow-up Maintenance and Repair and Outcome Measurement.

Wheelchair assessment is a key element in the service delivery process and while a uniform, global and standardised method is lacking, many methods exist. Many would agree that a wheelchair assessment should include the client's individual goals and their unique concerns relating to mobility, postural support, health, safety and the ability to function in their environment [1]

There are techniques to perform the physical assessment and how it relates to seating, posture and mobility directly when adjusting the wheelchair and wheelchair components when seated in a highly adjustable wheelchair. While this technique may not be appropriate for all users, it can offer an efficient and time saving alternative for many.

/ Bart Van der Heyden, Independent Physiotherapist

Intended use of this guide

– General guidance for assessments with the user in the wheelchair

Our goal is that this guide will be a practical and chronological guide for clinicians when working with Cross 6. This guide, the general assessment guide, will be useful to majority of users. This guide does not replace the user manual.

This guide is intended for wheelchair users who are self-propelling without complex seating, functional and mobility needs. We refer to separate guides for specific conditions and needs.

Before ordering the wheelchair

1. Define the right wheelchair size

Always use a firm tape measure - not a ‘dress makers’ tape measure; the firm tape measure will not bend as much, resulting in an inaccurate measurement.

1:A Measure hip to decide which seat width

Check the seat width, make sure there is only space to fit one hand each side. A wheelchair that is too wide will compromise posture and propulsion.

Measure from widest point from one side of hip to the widest point on the other hip, this is your seat width. Cross 6 is available in seat width 35– 52,5 with 2,5 cm increments.

Width extension: Adding 10 mm between arm supports.

Decide seat width

Seat width (cm)	35 ☐	37,5 ☐	40 ☐	42,5 ☐	45 ☐	47,5 ☐	50 ☐	52,5 ☐

Widening kit (15 mm)	Mounted ☐	Order as extra ..... pcs

Your wheelchair order can most likely be finished now.

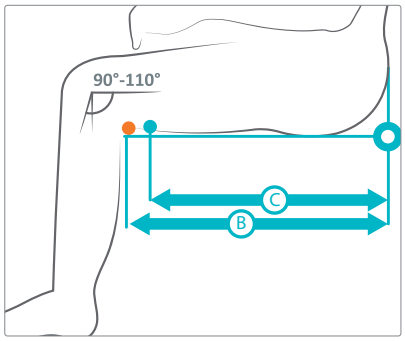
Always Fit.
Right wheelchair. Right now and tomorrow.

To order the right wheelchair, all you most likely need all to know is the hip width. Cross 6 is the most adjustable wheelchair in it's category. On next page we explain how a standard frame length can suit nearly all body heights.

Jo McConnell, occupational therapist with more than 25 years of clinical experience in wheelchairs, positioning and pressure care. Passionate about using an ability based approach to benefit the end user in living a full and inclusive life. At Etac, she is responsible for educating in wheelchairs and pressure care. Jo McConnell lectures internationally and is happy to provide personal education. Locally or digitally.

"Cross 6 is the most adjustable folding wheelchair, because enabling assessment directly with the user in the wheelchair is what we strive towards. This doesn’t mean that a mat assessment is never needed. It means every adjustment is worth it and every user deserves the wheelchair that gives them optimum function independence and seating tolerance over time. Your assessment time is valuable to improve quality for every user. We believe assessments can be more efficient. So, what are your positioning goals?"

Jo McConnell
Education manager at Etac AB



B, Seat depth on human body measured from SRP (seat reference point) to popliteal fold.

C, Above measurement reduced with 2 cm is normally the required seat depth (if not foot propelling).

1:B Decide frame length

Thanks to the extra seat depth adjustment of the 3A-back support, you can in most cases use standard frame length.

Standard frame covers seat depth 36 – 49 cm adding the adjustment of the strap back Table 1.1 shows how standard frame length can cover users need from body lengths from 140 – 194 cm (female 185 cm) in normal sitting*

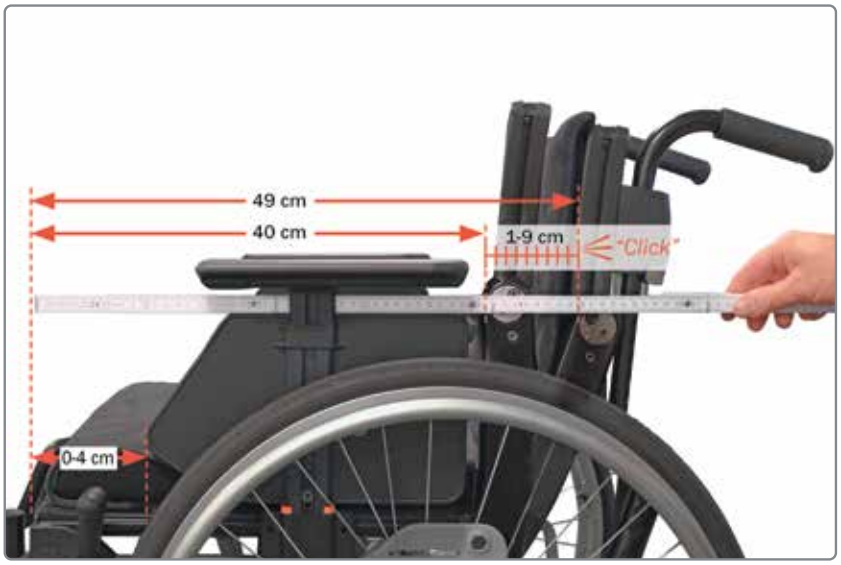
For assymmetries or kyphosis it could be wise to measure already from shorter body length.

Long frame generally considered for body lengths of from: Women: 185 cm. Male: 194 cm. For complex postures consider this also for shorter users.

Decide frame length

Frame length	Standard	Long
	●	☐

● Default selection

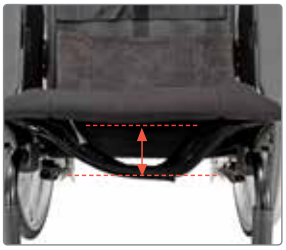


Standard frame: Seat depth is adjustable 40 - 49 cm in 9 steps, measured according to the picture.

In table 1.1, we refer to these steps as seat depth positions 1 - 9. This is adjusted using the bolt for back recline angle.

The most forward seat depth position 1 = 40 cm
The most rear depth the position 9 = 49 cm

(If reducing seat depth by shortening the fabric front 0 - 4 cm, this is reduced from above measurement.)



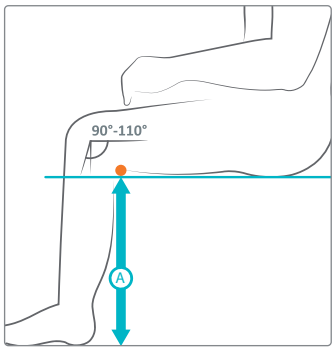
Gain an additional 0–7 cm seat depth by adjusting the strap back.

1.1

User´s bodylength		Frame depth and Seat depth adjustment	
Female	Male	Frame depth	Seat depth adjustment
140 cm	142 cm	Std	**Need: 36 cm or shorter.** Seat depth position 1. Remove fabric front to reduce seat depth.
145 cm	149 cm	Std	**Need: 36 -39 cm.** Seat depth position 1. Adjust fabric front to reduce seat depth.
150 cm	155 cm	Std	**Need: 40-45 cm. Seat depth** support position: 1-5
155 cm	160 cm	Std	
160 cm	166 cm	Std	
165 cm	172 cm	Std	
170 cm	177 cm	Std	
175 cm	183 cm	Std	**Need: 46-54 cm.** Seat depth position 1-9 (depending on lenght of straps) Add seat depth extension.
180 cm	189 cm	Std	
185 cm	194 cm	Measure	**Need: >54 cm.** Long frame. Tall users vary more in leg length. Very often these users will fit into the standard frame.
190 cm	200 cm	Long	

This guide is based on antropometric measurement [2]. The table captures the spread within a normal population from the shortest to the tallest.

2. Pre-requisit



2:A Decide front and rear seat height

Front: Lowest seat height is determined by lower leg length incl. height of everyday shoe, reduced by compressed cushion height. Add 6 cm for ground clearance.

Rear: Majority of users will benefit 2 cm lower posterior seat height (rear seat height reduced by 2 cm). This will create a slight angling to assist user to sit upright and functional, but not to much to obstruct standing transfer.

Some individuals will benefit from having a 22" rear wheel if they are sat in a flexed posture or if they are shorter than average.

If the seat height is adjusted at the front, then the castor housing will need to be aligned to avoid castor flutter. Use the simple spirit level tool for castor angle adjustment to help align castors.

Decide seat height rear/front

20" wheel	32/32 ☐	32/34 ☐	34/34 ☐	34/36 ☐	36/36 ☐	36/38 ☐	38/38 ☐	38/40 ☐	40/40 ☐	40/42 ☐
22" wheel	34.5/34.5 ☐	34.5/36.5 ☐	36.5/36.5 ☐	36.5/38.5 ☐	38.5/38.5 ☐	38.5/40.5 ☐	40.5/40.5 ☐	40.5/42.5 ☐	42.5/42.5 ☐	42.5/44.5 ☐
24" wheel	39/39 ☐	39/41 ☐	41/41 ☐	41/43 ☐	43/43 ☐	43/45 ●	45/45 ☐	45-47 ☐	47-49 ☐	49-51 ☐

● Default selection

2:B Decide rear wheel tyre

If possible we recommend a pneumatic tyre that always gives more energy efficient propulsions than a solid tyre.

Decide rear wheel tyre

Tyre	High pressure ☐	Solid ●

● Default selection

2:C Handrim selection

The distance between wheel rim and handrim can be adjusted to alternate the grip or change to a new handrim according to the user´s needs.
- Aluminium, chosen for weight reasons.
- Stainless, best durability and comfortable grip.
- Titanium, light weight, durability and comfortable grip.
- Coated, for instant grip.
- Cellular, for a larger soft grip with good friction.

Decide type of handrims

Handrims	Aluminium ●	Stainless steel ☐	Cellular rubber ☐	Vinyl coated ☐	Titanium ☐

● Default selection

2:D Decide foot support angle

Take time to choose the optimum leg support angle for the user. The angle of the knees and feet will have a direct impact on the overall seated posture if not correctly adjusted.

The 70 degree angle is an easy option for avoiding castor collision, but this angle will not be optimal positioning for all users.

When possible select the narrow leg support to achieve an angle close to 90 degrees. When selecting the narrow leg support usually the widened castor housing will have to be selected.

Widened castor housing allows optimal foot positioning with foot, ankle and knee not compromised.

Select this when ordering your wheelchair to avoid castor collisions.

Castor colliding with foot plate can occur in combination of 90° leg supports and wheels larger than 5" or by selection of longer front fork.

Decide foot support

	70°	90°
Angle	●	☐

	No	Yes
Lockable	●	☐

● Default selection

Decide castor housing

	Standard	Widened
Castor housing	●	☐

● Default selection

2:E Arm support

Short arm support, 25 cm.

Arm support is adjustable to cover any height needs.

Short is default to allow maximum access. Long arm support can be used for transfer assistance or be rotated to cover gap between 3A back support and arm support.

For additional comfort add soft arm cover.

Long arm support, 38 cm, assembled for transfer aid.

Reversed long arm support, 38 cm, assembled to cover gap of adjustment.

Decide arm supports

	R	L
Arm supports		
Arm support L 25 cm	●	●
Arm support L 25 cm with finger screw	☐	☐
Arm support L 38 cm	☐	☐
Arm support L 38 cm with finger screw	☐	☐

● Default selection

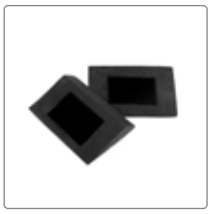
3. What else is needed to shape up for an ability-based approach?

Etac has a lot of accessories for various needs. In this guide we just focus on typical needs and no specific conditions.

To fully leverage the potential of the 3A-back support, we do recommend to keep a small selection of foam accessories within easy-to-reach distance. Now, the most important in the assessment room is you. Ready to meet positioning goals.

Wedges, soft

15 cm (6") and 30 cm (12") long. Soft wedge that attaches with velcro under the cover. Combine with side stop straight or with width extending.
Upholstery: dark grey plush.



Wedges, cell foam

Cell foam with Velcro attachment. Sold in pair. Available in sizes Small, Medium and Large.
Length x Width x Height
S: 13 cm (5”) x 9,5 cm (4”) x 2 cm (¾”)
M: 19 cm (7½”) x 12 cm (5”) x 2 cm (¾”)
L: 20 cm (8”) x 17 cm (6½”) x 2.5 cm (1”)

Cover, arm support

Padded with cold foam or gel, detachable. Available in short 25 cm (9¾") or long 38 cm (15") model. Cover in dark grey plush or black Dartex.

Side support cushion

Reduces the seat width with 25 mm. To be attached on the side guards.

Pressure distributor

Easy tools to create perfect shape, instantly.
Length: 20 cm (8”)
Width: 15 cm (6”)
Height: 1 cm (½”)

Side cushion

Embracing support. Rotate to choose between two different shapes. Supported by the arm support and/or side stop straight.

Other smart accessories for better preparations

- Brake extension
- Add-On foot plates (See page 12, 3.1)
- 90° leg support hanger

Make sure you have the right tools.

- Allen key no. 5 (lumbar angle, arm support attachment and anti-tipper)
- Allen key no. 3 (Arm support without finger screw)
- Spirit level tool (front castor housing)
- Allen key no. 6 (Castor housing)
- Spanner no.13 (Pelvis to thigh angle)
- Spanner no.24 (Rear wheel position)

"With simple foam accessories you can make a huge difference to the posture of each wheelchair user.

Simply take these foam accessories to every assessment and every review and you will always have the tools you need to create supported posture and to increase independence ."

/ Jo McConnell, Education manager at Etac AB

Cross 6 Clinical Assessment - Checklist

☐ – Tick the check box to make sure the step is completed = ☑

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Clinical assessment

1. Before transfering the user into the wheelchair

1:1 Set assessment target

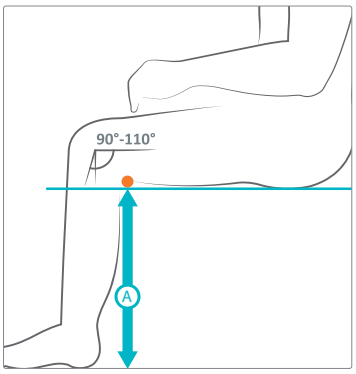
What are your positioning goals? The most important preparation is to define a target, and how to follow-up. Cross 6, with 3A back support is designed for an ability based approach. Seek opportunies what can be improved? Did I succeed? Follow-up and adjust again. See step 8, here you will find inspiration about positioning goals and follow-up from Bart van der Heyden, *independent physiotherapist.*

This guide does not include cushions. The cushion choice will impact on the seated posture so it should be carefully assessed to meet the individual seating targets and ensuring optimum pressure redistribution. Etac also give guidence on aircell cushions in separate guide.

Find more information about the StarLock cushions on our website, www.etac.com.

1:2 Set seat height front

The lower leg length, including shoe, determines the lowest possible seat height. Reduce this measurement with cushion height. Add 5 - 6 cm for ground clearance of foot supports.



Measure the lower leg length (A) including everyday shoe. Reduce with height of compressed cushion.

5-6 cm ground clearance of foot support is usually high enough for ground clearance and low enough to not compromise a standing transfer.

This type of seating block or a height adjustable plinth would be ideal for taking measurements before moving into the wheelchair.

1:3 Seat height rear and seat angle (rear wheel size)

Seat angle has an impact on posture. For greater stability and less energy consumption seat needs to be angled. We advise minimum 2 - 3 cm difference between back and front. The slight angling will improve the seating tolerance over time.

For users who are shorter, or a user who sits in a slouched posture, consider the 22" wheel size instead of the more commonly used 24" wheel.

1:4 Front castor housing aligned

Any changes of seat angle or seat height needs correction of front castor housing. Ensure that front castor housing is vertical by using the spirit level tool.

1:5 Secure brake efficiency

Distance should be 10-20 mm between tyre and brake. Always secure that brake applies properly, and that user can apply brake.

Brake extension can be added if user has difficulties to access or operate the brake.

1:6 Adjust anti-tipper

Distance for ground clearance should preferably not be less than 3 cm to climb small tresholds. Never place higher than 7 cm from ground.

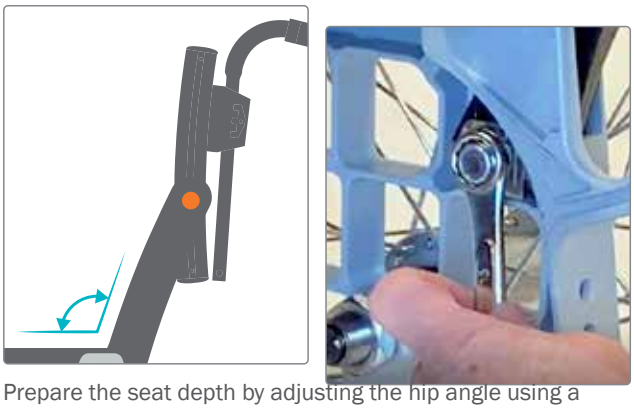
Anti-tipper should always be behind the rear wheel.

Ensure that anti-tipper is on the most rear point by reversing chair against the wall. Anti-tipper shall touch wall first. You may need to remove push handles.

1:7 Prepare foot support height

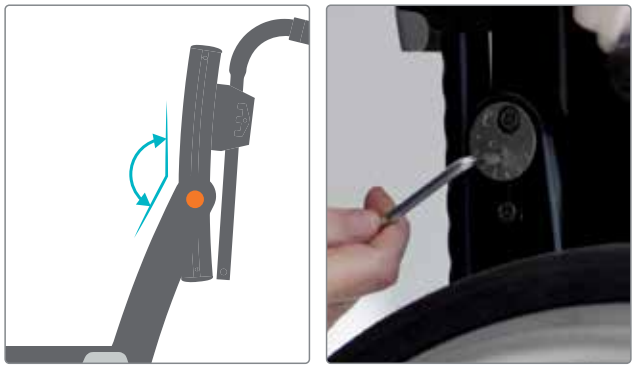
Adjust foot support height according to the lower leg length as measured in previous step. Don't forget to add on the height of the chosen cushion. To make the adjustment quicker leave the nut out for easy set up. Preset the foot support to a neutral angle.

1:8 Preset seat depth



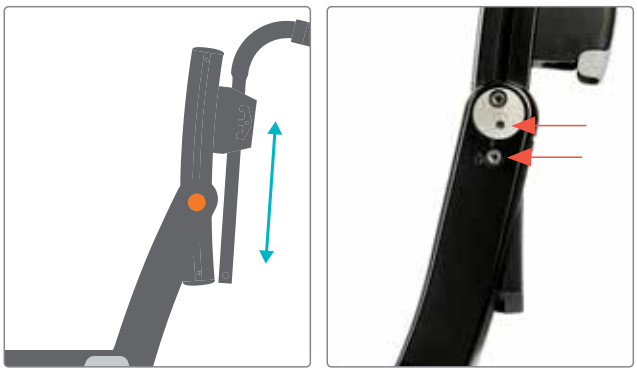
Prepare the seat depth by adjusting the hip angle using a spanner no. 13.

1:9 Preset lumbar angle



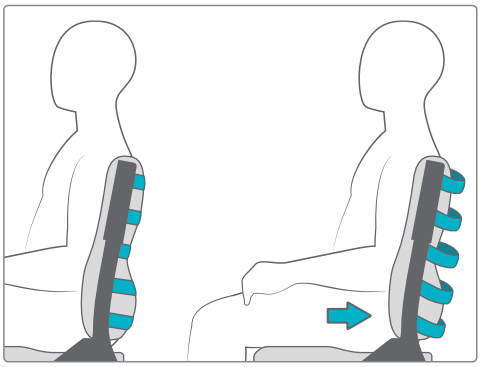
If the seat depth was extended in previous step, use allen key no. 5 to raise the lumbar support back up again. Unlock the screws indicated by lock symbol. Rotate by inserting the allen key in the small hole (marked with arrow). Tighten the locking screws now or after next step.

1:10 Preset back height



Loosen the locking screws with an allen key no.5. Slide the back height to the desired setting. 40 cm back height can often be a good starting point for the typical user (this will be fine-tuned at step 4.1).

1:11 Loosen all the straps



Loosen all the straps. Make sure there is sufficient space for the buttock and the cushion.

You may find it´s easier to work without the cover during the assessment and add cover later.

1:12 Space for buttock

Create a pocket on the back cover to allow space for the buttock.

1:13 Secure that anti-tippers and brakes are applied.

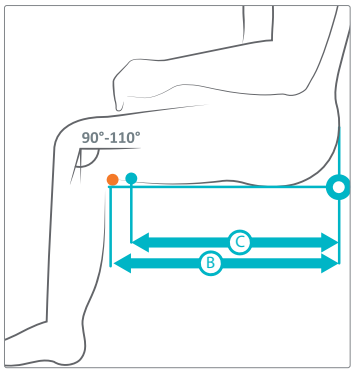
Ensure that anti-tippers and brakes are applied before transferring to the wheelchair.

– Now ready for transferring the user into the wheelchair.

2. Seat depth

2:1 Secure front seat depth

Seat depth does not need to be premeasured, it can simply be adjusted when in the wheelchair. Secure front seat depth with 2 - 3 cm from the front of the cushion and back to the popliteal fold.



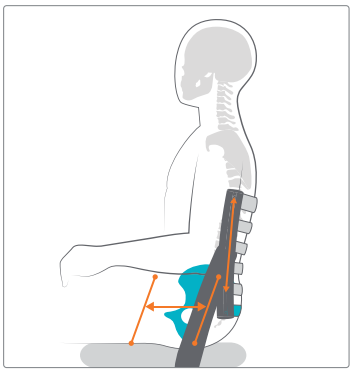
Measured from the user's posterior buttock, along the lateral thigh to the popliteal fold (B). Usually, a space of about 2 - 3 cm is preserved to avoid pressure from the front edge of the seat against the popliteal space (C).

You should be able to fit two fingers between the front edge of the seat and the calf.

To create the space, the front seat upholstery can be adjusted or even removed for the shortest users.

2:2 Secure rear seat depth

The tension adjustable strap in level with users mid sacral (blue on illustration) will define the rear seat depth i.e how far back into the seat, the user can sit.



The lower straps (lowest or 2nd lowest depending on back height) shall allow enough space for buttocks and prevent that users sit too far back into the seat.

N.b. this is the strap/straps below the pelvic support. Check that pelvis is not influenced at this stage. Pelvic support and remaining strap will be adjusted at later steps.

2.3 Stability is sufficient to continue assessment

Check that seat depth is sufficient and that the user is sitting adequate to continue the assessment.

3. Foot support

3:1 Foot positioning

Aim to position the feet as neutral as possible. Check that support is adequate under the foot.
See pictures at bottom of page.

Increase support surface with Add-On foot plates, and/or move feet for a more narrow knee position.

3:2 Foot support shall be weight bearing

To ensure correct foot support height, place one hand on distal femur and the other under the foot to check that weight is on both hands. If there is insufficiant weight from the foot, raise the foot plate. Or insufficiant pressure from the thigh, lower the foot plate.

Choose the widened castor housing to avoid conflicts with castors.

3:3 Pelvis should not be influenced

Make sure that the pelvis is not influenced by the foot support height. Put one hand on the users left side of pelvis and the other hand on the foot plate, under the left foot. If you feel movement in the pelvis you have reached the end of the range. Adjust the foot plate to a height where the pelvis is not influenced. Repeat for users right side.

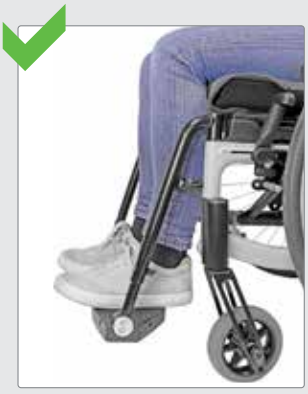
Make adequate adjustments and put the nut back in and lock the foot support.

Foot support too high.

The knees and hips are too flexed and there is no support under the front of the femur, an excessive pressure on the sitting bones (I.T's) resulting in posterior pelvic tilt.

Foot support too low.

The feet are not supported, if user feels unstable it leads to forward sliding in the seat, the pelvis moves away from the back support and ends in a posterior tilt.

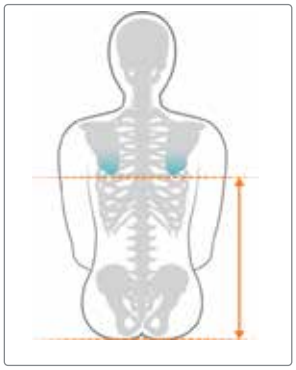


Foot support in correct height.

4. Back height adjustment

The typical user will not use a very low back, that would be too active for them. Some users with greater postural needs, may require a higher back support when they are propelling less. Some users can use a lower back support for more freedom and activity.

4:1 Adjust back height



Adjust the back to the desired height according to users needs. Typical adjustment would be two fingers below scapula. See 4:3 below.

4:2 Free arm movement

Check free movement of arm, and that scapula is free for propulsion.

Adjust to desired height by untighten the screws marked with lock symbol and adjust both sides to parallell height.

4:3 Sufficient stability

Stability needs to be sufficient. Not too stable, not too active, depending on users needs.

Further stability will be added in next step.

Back support too high.

The higher back support will hinder propulsion. Instead add wedges or other light support solutions. Some people will need a slightly higher back for greater stability. This will be observed in the coming steps.

Back support too low.

Too low back support makes it tirering for the user to maintain an uppright posture. Sitting tolerance will be decreased.

User´s often compensate this by slouching, leaning heavily against the top of the back support.

Back support correct.

5. Shape up

Maybe the original position was to upright? Maybe the user can be more active, if opening up for thoracic spine by using 3A-lumbar adjustment and adding wedges? Learn how easily you can adjust the 3A and you can easily find-tune during your assessment

Ability Based Seating™

By an ability based approach we seek to strengthen the user´s abilities. Providing a supportive position in balance, improves the activity level. Ability is precious. Use it or lose it. Enable it and improve it.

Achieving proximal stability is core

Creating a sufficient pelvic support is the first step towards proximal stability. The seat to back angle and lower back straps are the core settings to stabilise the pelvis.

Instant fit

Side supports, pressure distributors and wedges are examples of easy tools to create the perfect shape, instantly.

How to Shape Up

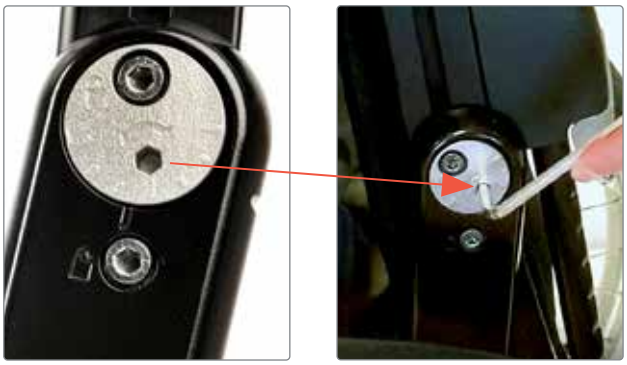
To cope with being active, being seated in a wheelchair requires proper back support. Learn the basic techniques of the 3A-back support system. Let the 3A-adjustments, the tension back strap and the foam accessories be your canvas. Let´s shape up!

5:1 Pelvic to thigh angle

Hip angle is adjustable between –5° to +20°

We know this adjustment already from adjusting sufficient seat depth. (Section 1:8) Use also the hip adjustment to shape your back profile. Use spanner no. 13.

5:2 Adjustable lumbar angle



Lumbar angle is adjustable between –16° to +16°

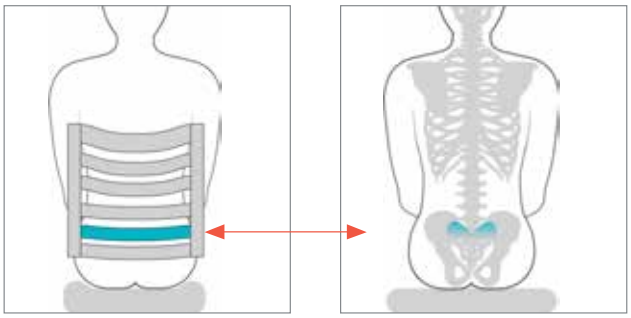
By adjusting the lumbar angle alone you achieve a great change. By combining the hip and lumbar adjustment. You can reshape the profile.

Untighten the two screws symbolised with a lock. Now you can fine-tune height and lumbal adjustment to support individual needs. With the user leaning on the back support you might need to adjust with allen key no. 5 in the small hole. If user is not heavily leaning the adjustment can be made by hand. When satisfied lock the screws marked with a lock.

5:3 Adjust the upholstery

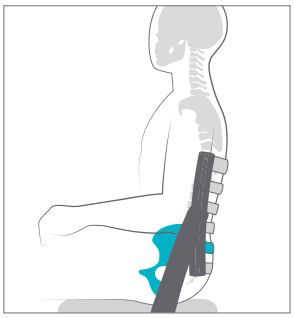
The straps will have been pre set and prepared for fine tuning before the user transferred into the Cross 6. Keep the lowest strap loosened to allow space for the buttocks and the cushion. Now it is time to fine tune the back straps for the user.

5:4 Identify strap for pelvic support



Locate iliac crest and follow it's line to locate the PSIS. Choose strap behind the PSIS, this is where the pelvic support shall be applied by tightening the strap. This strap will control the pelvic alignment.

5:5 Add pelvic support



Add sufficient force when tightening strap so that it provides support for the pelvis and holds it in a position that is obtainable for the pelvic mobility of the client. When possible avoid allowing pelvis to roll back into posterior position.

5:6 Check end of range

Hold one hand on front of users knee when pulling the strap. When knee starts to move, this would indicate end of range. Do not over tighten the strap.

5:7 Slackened top strap

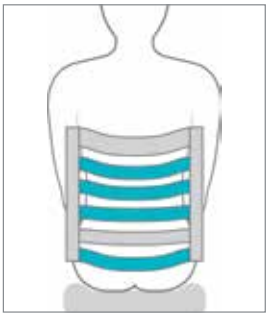
The top strap needs to be slackened to allow the thoracic spine to move back into the contours of the back and to give lateral support to the trunk. This helps to provide stability to the trunk and prevents sliding forwards.

Head falling back and neck overextended, this suggests that the user is struggling to feel stable. They are leaning too heavily on the top of the back support to find stability. Adjust the back support again until the user feels secure.

Head too far forward, thoracic and cervical spine flexed and head falling forwards. This indicates the user may not feel balanced. The back height may need adjusting and the straps may need loosening at the top. Adjust and review.

Head is in relaxed position and the user looks well balanced. The back height and back straps are supporting the user in an optimum position for activity and function.

5:8 Remaining straps



Fine tune the remaining straps to create the contours to suit the users spine.

When the cover is removed it is clear to see how much the user can sink into the back straps to follow the contours of the trunk and provide a secure seated posture for activity.

5:9 Lateral and distal stability

Check lateral and distal stability and control, can the user reach out of their base of support? Do they need any adjustments and/or accessories adding support to the 3A back support?

5:10 Forward stability

The pelvis needs to be supported to give a stable seated base for optimum security for activity when propelling and when performing everyday functions such as leaning forward to reach an object.

Can the user lean forward? Do they feel secure in the set up? Check and review.

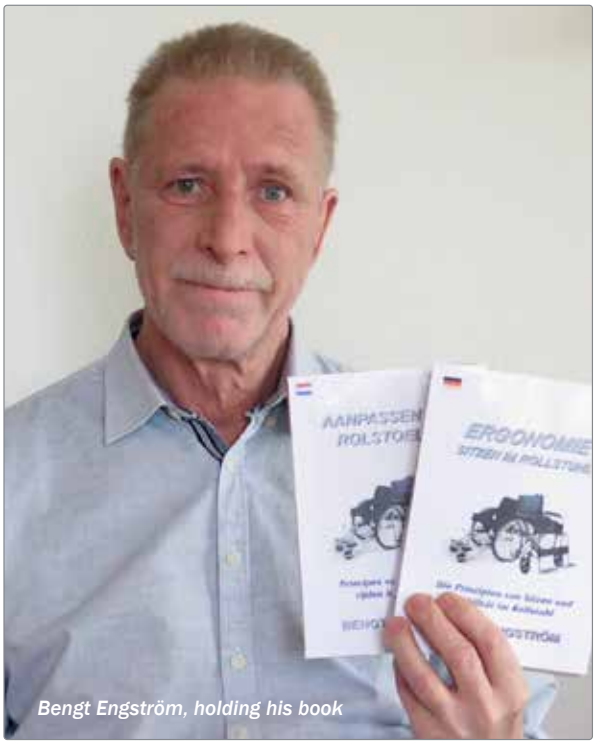
When checking forward stability it is advisable to check in front of a wall or a table in case the user has variable sitting balance.

Since we originally started, we have built our wheelchairs according to the theories of Bengt Engström.

We are proud that Bengt Engström has validated and approved the content in this guide.

To gain deeper understanding for seating and positioning in general, and Etac wheelchairs in particular, we recommend you to read his book.

The extended version of his book in english will soon be available.



Bengt Engström, holding his book

5:11 Shape up with accessories

Every individual and every body is unique and with small accessories at hand you will have tools to shape up for every body shape, and reach the goal to what we call Ability Based Seating™.

Maybe the user has a large body, broad hips, broad shoulders, a tall upper body, a leaning posture or maybe a kyphosis. Now, the most important in the room is you and the user and it´s time to shape up. Ability is precious.
– Use it or loose it. Train it and improve it.

In our body shaping guide and on etac.com, we show how to shape up different body shapes.

Example from the body shaping guide - How to shape up a leaning posture

Leaning posture

If the pelvis is oblique, use an adjustable seat cushion or add a large cell foam wedge (1) under the cushion on the lower side. Create as much space as possible for the upper trunk with the Velcro straps.

Place side cushions (2), supported by straight side stops (3) if necessary.

6. Wheels and propulsion

What was your mobility target? – Time to fine tune, to meet users individual need. Each recess has four positions, which creates a possibility of 44 rear wheel position options in total to choose from.

6:1 The reach for propulsion

Distance to the push rim can be too short or too long, depending on users length or ability to maintain an upright posture.

The user's finger tips should be at the same level as the wheel hub/axel to determine the correct height.

A smaller wheel size or higher seat height can be choosen to give a better propulsion angle.

6:2 Balance according to ability

Moving the rear wheel forward will make the wheelchair lighter to propel. A rearward move will make it more stable, but harder to propel.

Everyone independently propelling the wheelchair will benefit from a lighter balance. But anti-tippers need to be activated.

Evaluate the risk. Can the user or relative take responsibility to secure that anti-tippers always are applied after being deactivated?

6:3 Make sure that the castor housing is vertical.

Any changes of seat angle or seat height needs correction of front castor housing. Make sure that front castor housing is vertical, see section 1:3.

6:4 Ensure that brake and anti-tipper are effective

See section 1:5 and 1:6 for detailed information about how to secure the safety of the brake and anti-tipper.

6:5 Mobility level

Depending on mobility target, evaluate if mobility level is reached.

6:6 Hand placement and grip

The choice of handrim and the setting of the handrim can make a significant difference to the outcome of self propulsion.

Depending on ability and condition some user´s require more space between the wheel rim and the handrim for a more functional handgrip when propelling the wheelchair.

Majority of users will require the narrow mounting of the handrim and this will also make the wheelchair slightly narrower for environmental limitations inside a house. The Cross 6 handrims can easily be adjusted from narrow to wide to meet individual needs.

7. Arm support

7:1 Adjust height

Check that the shoulders are relaxed. If the arm supports are too high the shoulders will be raised causing pain in the neck and shoulders. If the arm supports are too low, the user may lean to reach them. A leaning posture can lead to the habit of sitting kyphotic and asymmetric.

7:2 Posture and comfort

Many users rely on arm supports to assist them in sitting and this may vary throughout the day and from day to day. By adding the padded arm cover, the arm support becomes softer which improves comfort, resulting in increased sitting tolerance and participation in the daily life.

The long arm support can be used to assist the user when performing a standing transfer.

The long arm support can also be shifted from left to right side and there by used to close the gap between back support and arm support. Side guard needs to be shifted.

The arm support bracket can be moved vertically and horisontally.

Measure the outcomes

"Outcomes can be measured by comparing the goals for the interventions with the results of the intervention. It helps to assess the effectiveness of the seating solution, to identify change in the seating configuration over time and to compare wheelchair set ups.

Many validated outcome scales exist. Questionnaires, like *Functioning Everyday with a Wheelchair* (FEW), allow measuring perceived user function related to wheelchair/scooter use.[3] "

/ Bart Van der Heyden , independent physiotherapist

8. Positioning target and plan the follow up positioning goals.

8:1 Positioning target

Write down your targets. And how to follow up in an easy and straight forward way.

Target to improve: .....

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Way to follow-up: .....

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8:2 Outcomes

What results did you observe and what is the next step?

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Seeking Abilities and delivering possibilities

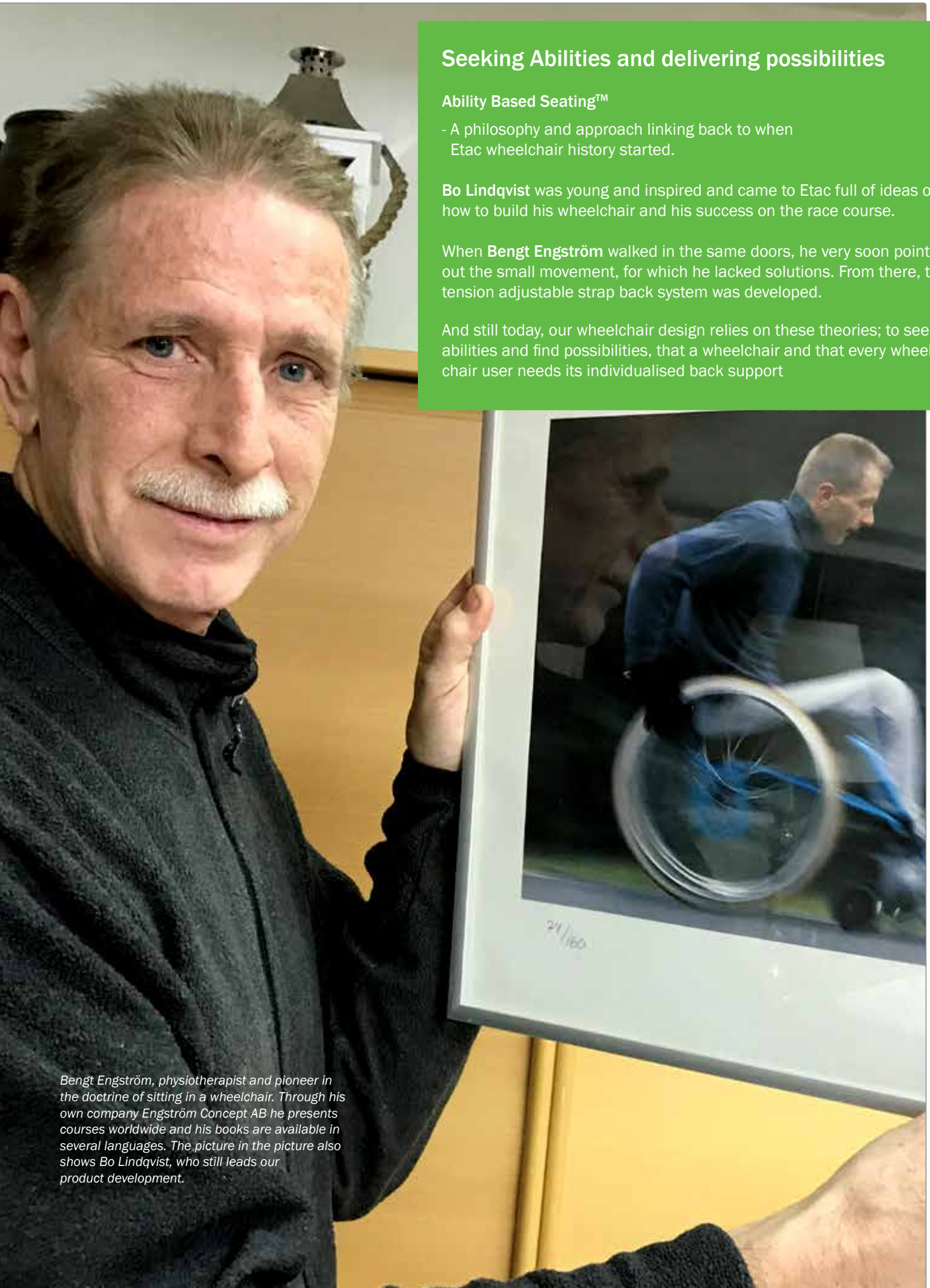
Ability Based Seating™

- A philosophy and approach linking back to when Etac wheelchair history started.

Bo Lindqvist was young and inspired and came to Etac full of ideas of how to build his wheelchair and his success on the race course.

When **Bengt Engström** walked in the same doors, he very soon pointed out the small movement, for which he lacked solutions. From there, the tension adjustable strap back system was developed.

And still today, our wheelchair design relies on these theories; to seek abilities and find possibilities, that a wheelchair and that every wheelchair user needs its individualised back support



Bengt Engström, physiotherapist and pioneer in the doctrine of sitting in a wheelchair. Through his own company Engström Concept AB he presents courses worldwide and his books are available in several languages. The picture in the picture also shows Bo Lindqvist, who still leads our product development.

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4. Van der Heyden, Bart. (2020) SuperSeating wheelchair assessment techniques, practical training program.

Bart has specialised in the field of seating, wound care and mobility for the past 25 years. After studying physical therapy in Gent, Belgium, he gained experience in Germany providing seating and therapy for children with Cerebral Palsy. Then he worked in a rehab setting in the US, offering clinical consultations to wheelchair users, clinicians and manufacturers worldwide. He started a physiotherapy practice with his wife in Belgium and founded SuperSeating, providing Training and Education on seating, mobility and wound care interventions for clinicians throughout the world.

Bart has developed multiple training courses and workshops on skin management, seating assessment, seating techniques & interventions for different user populations. He has presented for seating specialists all over the world and he developed a seating approach for clinical problem solving and maximising outcomes.

Bart is known as a skilled and experienced clinician and presenter with a global, hands-on and multi-disciplinary view on clinical practice and seating.

More info: www.super-seating.com

Original English version is checked and confirmed by:

Bart Van der Heyden, Physhiotherapist, Belgium
Bengt Engström, Physhiotherapist, Sweden

This guide is subject to change. and translated. Continues updates and changes are not be confirmed.

Responsible editor: Etac AB through Jo McConnell, Occupational therapist, United Kingdom.

June 2022

Maintaining and even improving a wheelchair user´s functionality requires an optimally adjusted wheelchair based on the individuals abilities. With the Etac wheelchairs, shape and support are simply created by the rehab professional, with the user seated in the wheelchair. With an ability based approach we can strengthen the user´s activity level.

We call it **Ability Based Seating™**.

"Everyone should be able to live a free and independent life and pursue their dreams regardless of any physical circumstances"

For the latest news and continuously updated product information – visit: www.etac.com

Etac AB
Kista Science Tower
SE-164 51 Kista, Sweden
Tel +46 371 – 58 73 30
Fax +46 371 – 58 73 90
info@etac.se www.etac.com

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Creating Possibilities