

AQUATEC®

Ocean Ergo

Clinical Guide

Ocean Ergo range of shower chairs



Yes, you can.®



Ocean Ergo range designed to make personal care activities easier for both the user and carer

Contents

Introduction	04
Meet the range	04
Seating	06
Creating stability	08
What is immersion?	10
Off-loading	12
Envelopment	12
Positioning for body systems	13
Positioning for waste elimination	14
The Puborectalis Muscle	15
The importance of the seat angle	15
Positioning and the Autonomic Nervous System	16
The nervous system in waste elimination	18
Ocean Accessories	20
Positioning accessories	21
Safety accessories	23
Seat and backrest accessories	24
References	26

Introducing the Ocean Ergo range

The Aquatec Ocean Ergo range of shower chair commodes have been designed with user comfort, independence and dignity in mind.

Personal care is an important part of a person's life and wellbeing. When personal care activities become difficult, a healthcare professional may recommend using a shower chair commode as part of a care plan. Based on the well-established Aquatec Ocean range, the Ocean Ergo models come packed with a variety of new features and benefits, designed to make personal care activities easier for both the user and carer.

The purpose of this booklet is to give an overview of the importance of seating and accessory selection in relation to the Ocean Ergo range of shower chair commodes.

For ease of reference, this guide has been split into two sections: **Seating and Accessories**

KEY features at a glance



Armrests

Providing increased comfort and support for the user. New optional arm pads for a softer surface area and an integrated locking armrest system.

Tiltstopper

Available as an option, the tiltstopper prevents the frame tilting anteriorly past 0°.

Headrest holder

Multiple axis adjustments offer superior postural support for the head/neck region.

Meet the range

From a standard attendant propelled model through to tilt and recline, meet the flexible range of shower chairs and optional accessories that offer personal care solutions for a wide range of physical conditions.



Ocean Ergo

An entry level attendant propelled model



Ocean Ergo XL

An entry level attendant propelled model with a heavier maximum user weight



Ocean 24'' Ergo

An entry level self-propelling model



Ocean 24'' Ergo XL

An entry level self-propelling model with a heavier maximum user weight



Ocean VIP Ergo

A tilt-in-space model for additional seating and positioning support



Ocean Dual VIP Ergo

A tilt-in-space model with recline for additional seating and positioning support

Seating principles...

Don't change, no matter what seat surface you sit on!

2

It's true, seating principles don't change, no matter the seat surface you are sitting on. Therefore, given how quickly pressure ulcer development can happen, it's important that every therapeutic surface offers a level of skin protection. The new Ocean ergonomic seat plate has been designed with this in mind. When seating a user on the new Ocean Ergo shower chair commodes, the aims of seating remain the same:

- 1 ▶ Normalise tone or decrease abnormal influence on the body.
- 2 ▶ Maintain skeletal alignment.
- 3 ▶ Prevent, accommodate or correct skeletal deformity.
- 4 ▶ Provide stable base of support to promote functions.
- 5 ▶ Promote increased tolerance of desired position.
- 6 ▶ Promote comfort and relaxation.
- 7 ▶ Facilitate normal movement patterns or control abnormal movement patterns.
- 8 ▶ Manage pressure or prevent the development of pressure ulcers.
- 9 ▶ Decrease fatigue.
- 10 ▶ Enhance autonomic nervous system function (e.g. cardiac, digestive and respiratory function).
- 11 ▶ Facilitate maximum function with minimum pathology.

(Jones and Gray 2005).

Key to seating success

An interdependency between:

Seating a user successfully is based on an interdependency between stability, comfort and function. Stability of the pelvis is key to ensuring overall comfort for the user, and only when the user is comfortable will they be able to relax and sit in a position which supports optimal functional performance in activities of daily living (ADL).



Creating stability

Stability is created via the pelvis, for this you need...

3

Pelvic stability is dependent upon three things: immersion, off-loading, and envelopment.

Immersion, off-loading and envelopment are generally thought of in relation to a seat cushion, so how are they created on a shower chair commode?

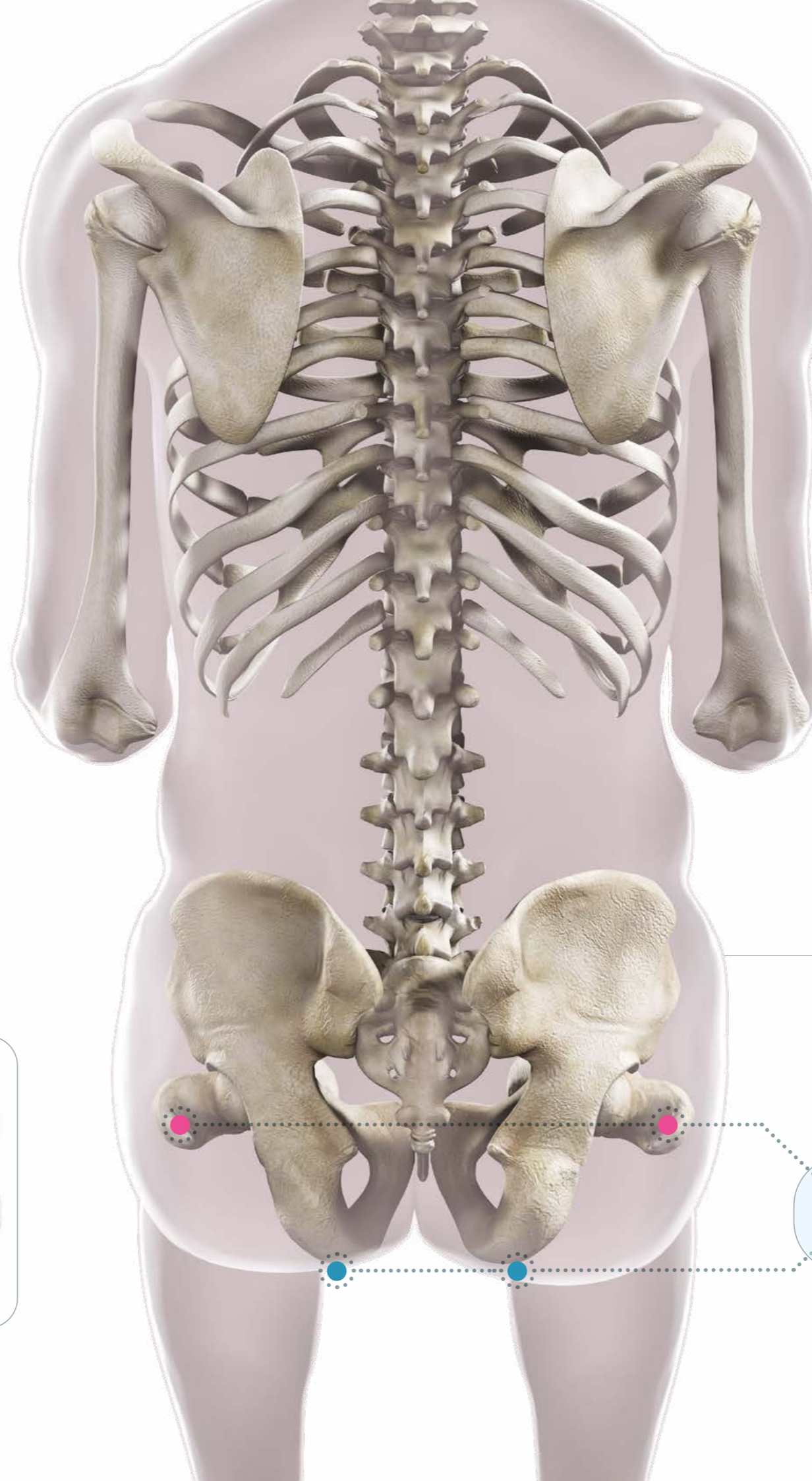
Immersion



Off-loading



Envelopment



Bony landmarks you need to know

We need to also consider the difference in height between the IT's and the hip joints as this is important when it comes to ensuring immersion.

To understand immersion, off-loading and envelopment, it's important to be familiar with the anatomy of the pelvis, specifically the shape and location of the Ischial Tuberosities (IT's) and the hip joints. Important to note is the height difference between these two bony prominences, as this plays an important role when it comes to immersion and off-loading.

- Hip joints
- The Ischial Tuberosities (IT's)

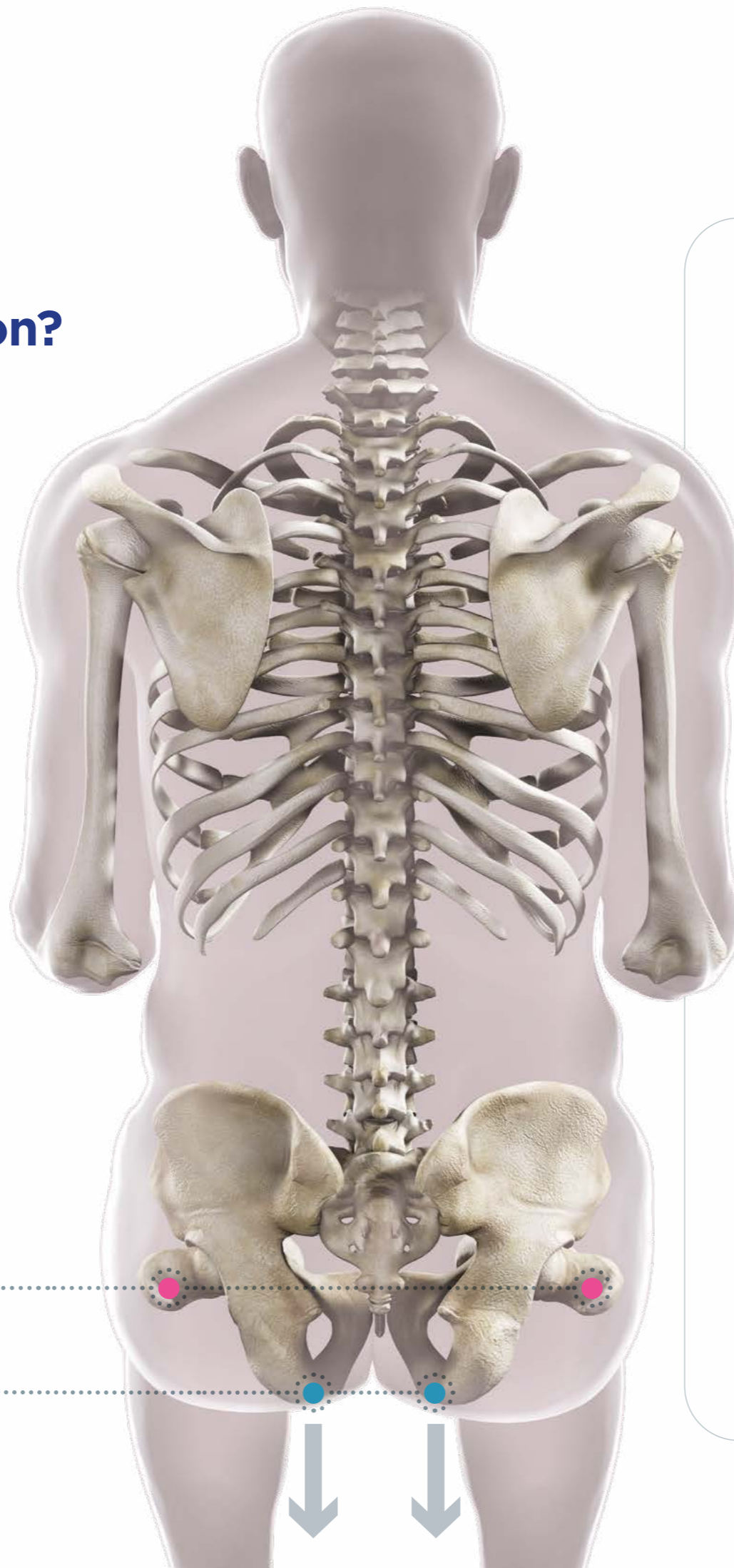
What is immersion?

Immersion is the depth to which a body penetrates (sinks into) a seat from an uppermost plane, for example, a seat cushion.

4

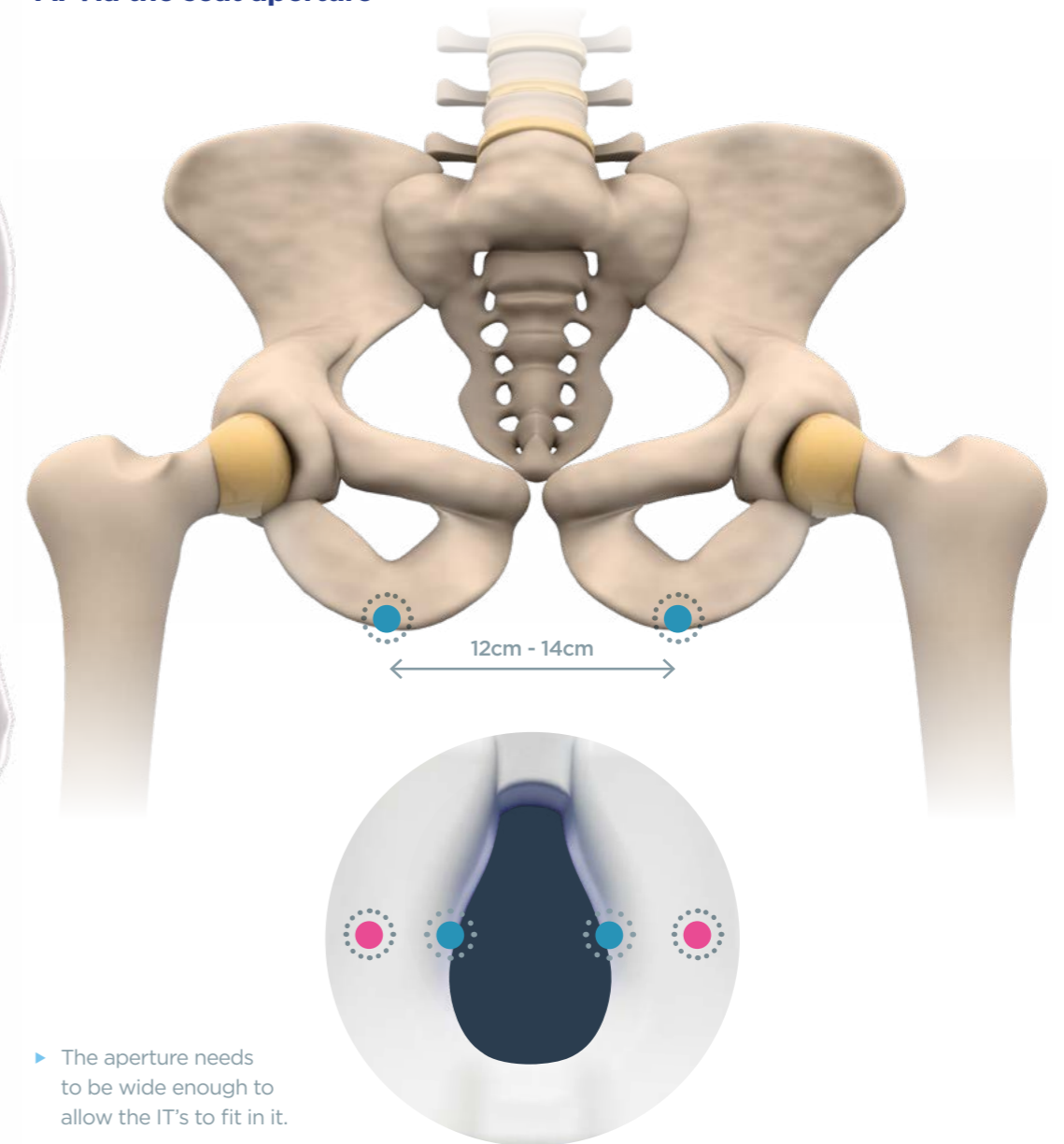
- ▶ The body can only do this if the material upon which it is seated permits it.
- ▶ The IT's are the first bony prominence to come into contact with any seat surface.
- ▶ Humans are not designed for sitting, our IT's are small and fairly pointed, which quickly leads to the build up of pressure and discomfort.
- ▶ As a result, we constantly change our position to relieve pressure and make ourselves more comfortable.

- Hip joints
- The Ischial Tuberosities (IT's)



Q. How is immersion created on a firmer surface such as the Ocean ergonomic seat plate?

A. Via the seat aperture



- ▶ The aperture needs to be wide enough to allow the IT's to fit in it.

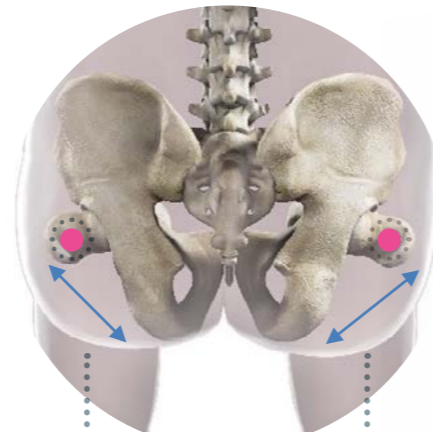
Unlike on a seat cushion where the IT's can immerse into the foam or other material, on the Ocean ergonomic seat plate, immersion of the IT's is created by allowing them to fit within the aperture of the seat plate.

Humans vary in different shapes and sizes, however, the average distance between the IT's on an adult human pelvis, irrespective of how much adipose tissue someone has, is between 12-14cm, and less in children.

5 Off-loading

Off-loading is the clinical practice of reducing or removing pressure from one area of the body to another, in an effort to reduce the risk of injury.

When the IT's immerse into the seat aperture, the hip joints come into contact with the seat surface, off-loading weight away from the IT's to these larger bony weight bearing surfaces. Without the seat aperture, this would not happen and the user would be left balancing on their IT's, creating peak pressure build up under these bony prominences.



Weight transferred away from the IT's to the hip joints

Envelopment

Envelopment is the ability of a seat surface to conform, fit or mould around the irregular shape of the body.

6

The reality is that creating envelopment on a firmer surface is difficult. However, by incorporating a precontoured shape into the seat plate design based on the shape of an average adult pelvis, envelopment is improved as the contours of the seat plate respect the anatomical shape of the hips, trochanters and femurs, creating improved contact (envelopment) between user and seat.

- ▶ Envelopment is essential for pressure redistribution as it increases surface contact area between the user and the seat surface.
- ▶ Precontouring based on moulds taken of average adult pelvises respects the anatomical dimensions of the trochanters and femurs helping maximise surface contact area.
- ▶ This improves pressure redistribution, comfort, positioning and overall stability whilst seated.



Pressure =
 $\frac{\text{FORCE}}{\text{AREA}}$

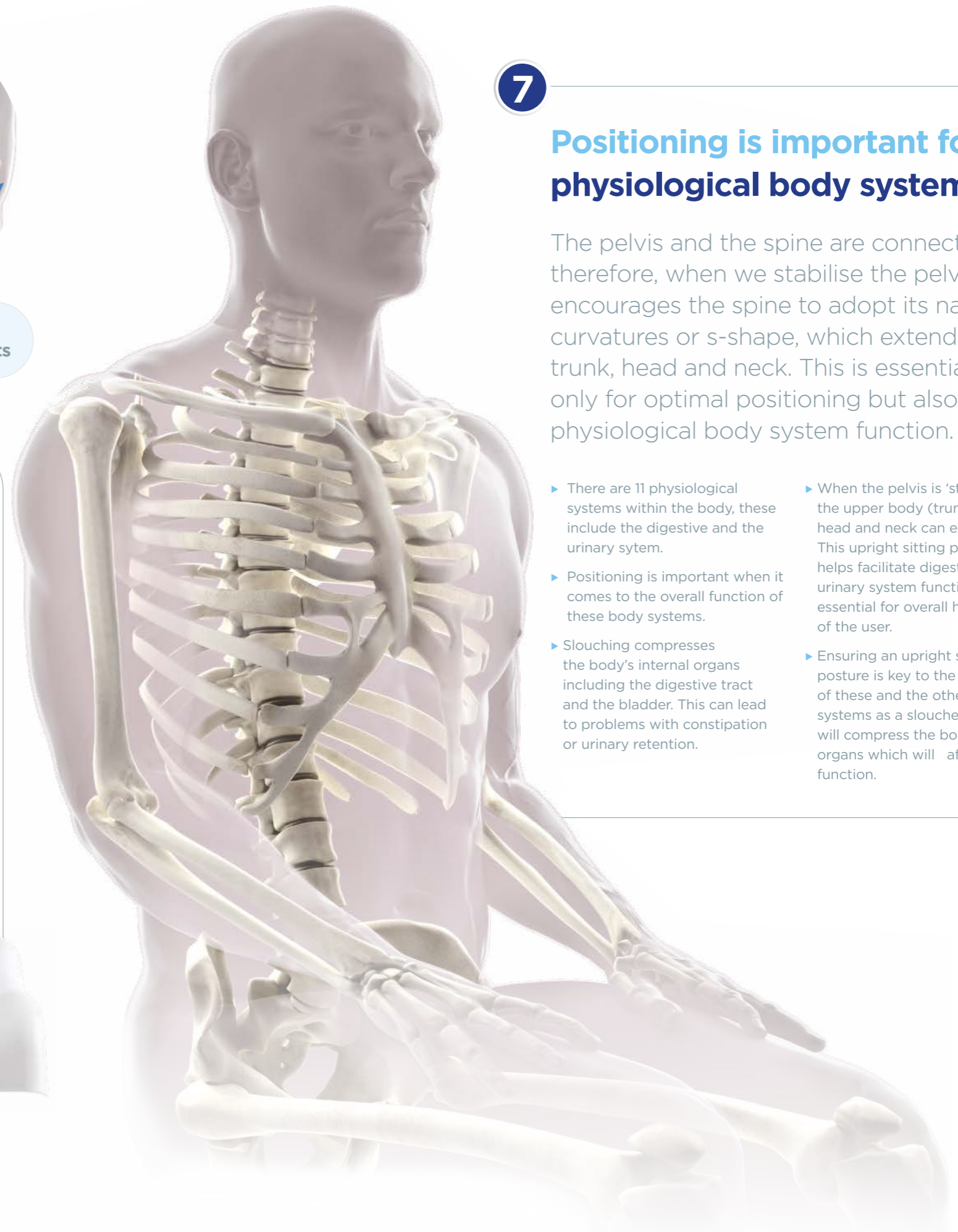


7

Positioning is important for physiological body systems

The pelvis and the spine are connected, therefore, when we stabilise the pelvis, this encourages the spine to adopt its natural curvatures or s-shape, which extends the trunk, head and neck. This is essential, not only for optimal positioning but also for physiological body system function.

- ▶ There are 11 physiological systems within the body, these include the digestive and the urinary system.
- ▶ Positioning is important when it comes to the overall function of these body systems.
- ▶ Slouching compresses the body's internal organs including the digestive tract and the bladder. This can lead to problems with constipation or urinary retention.
- ▶ When the pelvis is 'stable', the upper body (trunk), head and neck can extend. This upright sitting posture helps facilitate digestive and urinary system functions, essential for overall health of the user.
- ▶ Ensuring an upright seated posture is key to the functions of these and the other body systems as a slouched posture will compress the body's internal organs which will affect their function.

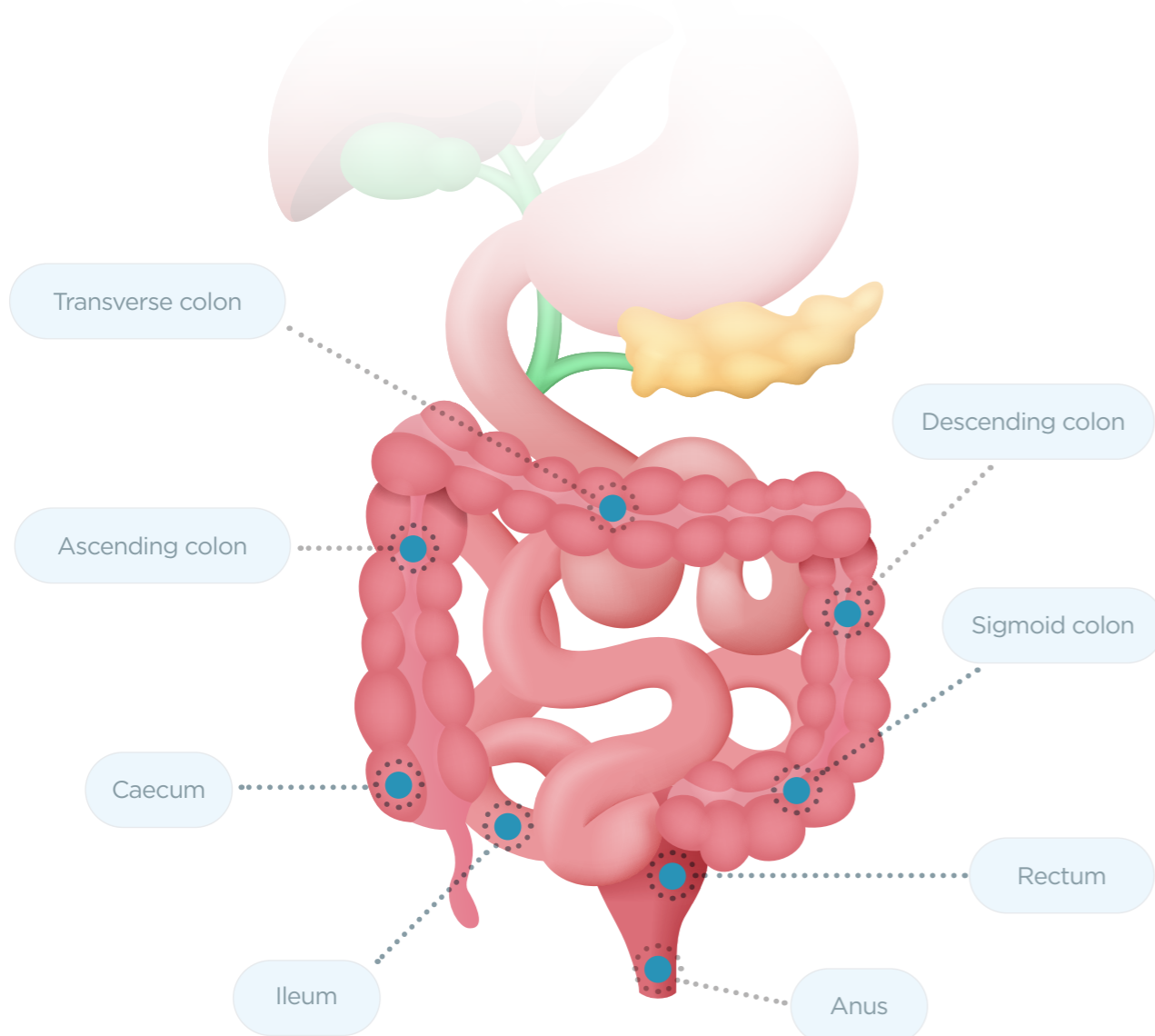


8

Positioning for waste elimination

Positioning is also important when it comes to elimination of waste products from the body.

Waste is stored in the colon where it should be free to move through to the rectum and anus where it is eliminated from the body. A slouched posture may compress the colon causing interruption to the function of this organ.



9

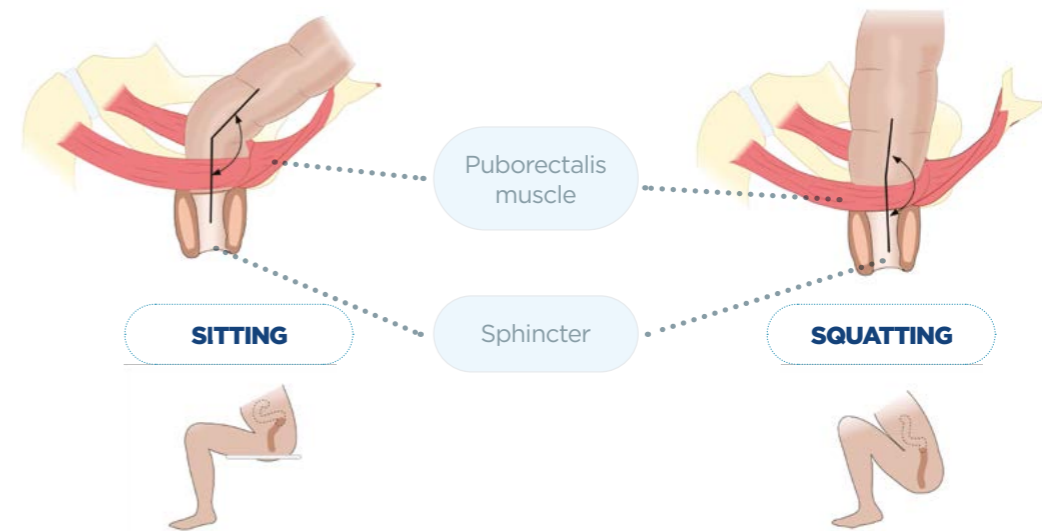
The Puborectalis Muscle

Positioning is important when it comes to the muscle which controls bowel continence, the puborectalis muscle.

Historically, humans adopted a squat position in order to eliminate their bowels. Over the centuries, however, more civilised ways were developed with the introduction of the toilet. The position adopted on a toilet, however, became more similar to that of sitting on a chair and the squat position became lost.

When examining the impact positioning had on the shape of the rectum and the puborectalis muscle, it was clear that the squat position was most effective in helping relax the puborectalis muscle, allowing the rectum to straighten and bowel elimination to become easier.

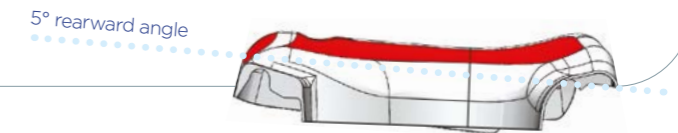
- ▶ When standing, the muscle tightens around the rectum, maintaining continence
- ▶ When sitting, it partially relaxes
- ▶ When squatting, it fully relaxes allowing the rectum to straighten, making elimination of waste easier



10

The importance of the seat angle

In order to try and achieve more of a squat position, for more effective bowel elimination, the new ergonomic seat plate has been designed with a 5 degree rearward angle which encourages the knees to come slightly closer to the chest helping to relax the puborectalis muscle.



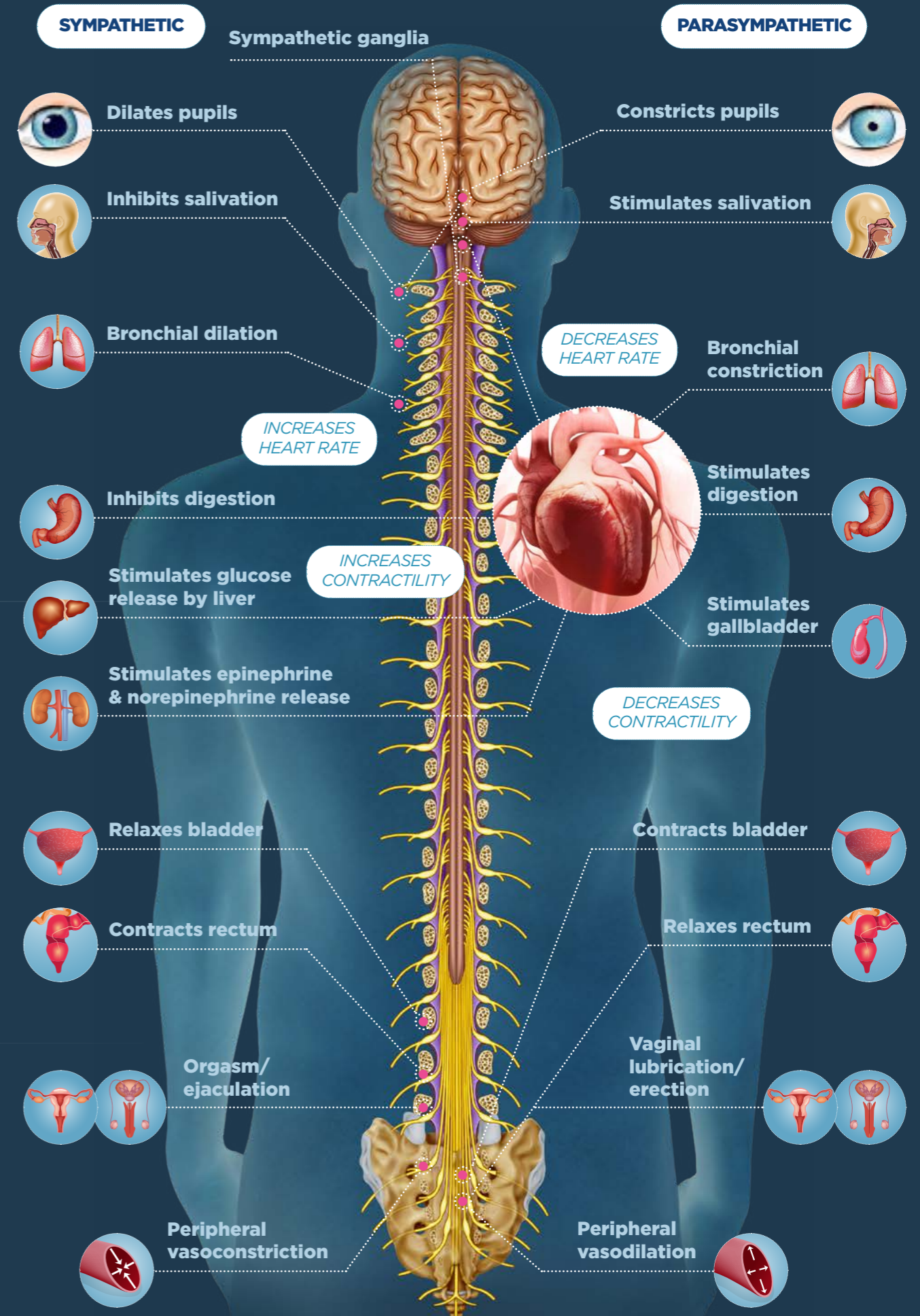
Positioning and the Autonomic Nervous System (ANS)

The ANS which consists of the Sympathetic Nervous System (SNS) and the Parasympathetic Nervous System (PNS) is responsible for controlling the rectum and the bladder.

11

Going to the toilet is a private activity which we normally do in the comfort of our own bathrooms or WC's in our own homes, away from other people.

Consider, however, if you are seated on a shower chair commode and you are not positioned well. You may feel as if you are slipping down the chair or falling forward. If this is the case, you're not likely to be relaxed and comfortable which will prevent you from being able to eliminate your bowel or bladder. This is due to the functioning of the sympathetic and parasympathetic nervous systems.



12 The role of the body's nervous system in waste elimination

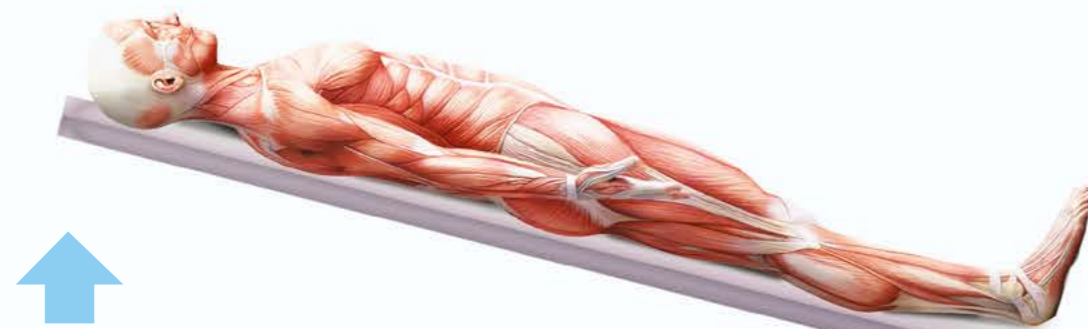
The PNS controls the body at rest, it is responsible for the body's "rest and digest" functions including contraction of the bladder and relaxation of the rectum, essential for waste elimination.

- ▶ The SNS on the other hand, controls the body's response to a perceived threat and is responsible for "fight or flight" reactions. When this system is activated, like in the case of feeling unstable or insecure whilst seated, the bladder relaxes and the rectum contracts, preventing waste elimination.
- ▶ The parasympathetic nervous system (PNS) controls homeostasis and the body at rest and is responsible for the body's "rest and digest" function.

Homeostasis

is a dynamic balance between the autonomic branches

- ▶ We can eliminate our bowel and bladder when the parasympathetic nervous system (our rest and digest system) is activated, which contracts the bladder and relaxes the rectum allowing us to urinate or pass faeces. If we are nervous or afraid, our sympathetic nervous system is triggered which relaxes the bladder and contracts the rectum, preventing us from passing urine or faeces.



▶ **Parasympathetic**

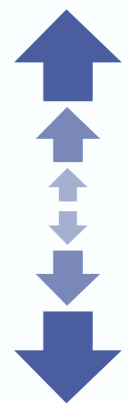
Rest and digest

Parasympathetic activity dominates

▶ **Sympathetic**

Fight or flight:

Sympathetic activity dominates



Ocean Accessories

Creating optimal positioning,
stability, comfort and function...

...but above all else, safety!



13

a

Positioning accessories Lateral supports

Lateral supports are available
with all Ocean Ergo models.

- ▶ Delivered individually, however, two laterals should always be ordered and fitted to ensure optimal positioning and support for the user.
- ▶ Three points of height adjustment situated on the backrest cane.
- ▶ Additional height and depth adjustment on the lateral itself.
- ▶ The pad is broad and padded to ensure comfort and pressure redistribution when in use.



b

Positioning accessories Standard head support

Included in all tilt-in-space
models.

- ▶ The headrest provides mild positioning and support.
- ▶ Height and depth of the pad is adjusted via the blue screws.



c

Positioning accessories

Ergonomic headrest holder

The ergonomic headrest holder is available as an option for all tilt-in-space models.

- ▶ The accessory offers various adjustment possibilities and is easily positioned via the handscrews.
- ▶ Available with the standard headrest or ergonomic head/neckrest.
- ▶ The ergonomic head/neckrest offers more aggressive contouring/correction/support.



d

Positioning accessories

Calf and amputee support

The calf and amputee support offers both height and angle adjustment, with a contoured calf pad for added positioning and comfort.

- ▶ The calf and amputee support is also available with a foot support for users who may need their lower limb(s) to be elevated for medical reasons or comfort.
- ▶ All adjustments can be easily done by hand by loosening and tightening the handscrews.



e

Safety accessories

Pelvic strap and chest strap

The single pull pelvic strap offers additional security and can also be used for positioning purposes should the user have any postural tendencies.

- ▶ The pelvic strap is made from soft fabric and is broad to ensure comfort and reduce the risk of pressure build up.
- ▶ Positioning the belt between 45-60 degrees will help prevent sliding due to a posteriorly tilted pelvis, whilst attachment higher on the backrest canes will help to control the pelvis if anterior pelvic tilt is a problem.
- ▶ The strap has three points of adjustment and can be shortened or lengthened when the user is seated.
- ▶ The pelvic strap can also act as a chest strap in situations where anterior support is required. When using the chest strap, it should always be done in combination with the pelvic strap. It is essential that the pelvis is stable and well positioned before fitting any type of anterior support, to prevent risk of injury to the user.



f

Safety accessories

Anti-tip levers

Anti-tip levers can be fitted to Ocean Ergo models*, for added stability and safety during transfer or when the chair is in tilt.

- ▶ In addition the anti-tip levers provide extra stability when used in showering situations where the floor surface is cambered for water drainage.



*Ocean Ergo and Ocean Ergo XL, anti-tippers can be fitted to the front. Ocean VIP Ergo and Ocean Dual VIP Ergo, anti-tippers can be fitted to the front and rear.

g

Safety accessories

Armrest locking device

The armrest locking device is a safety feature which locks the armrest into a horizontal or vertical position.

- ▶ Especially useful on the tilting Ocean models to prevent the armrests being lifted upwards unintentionally when the chair is tilted.
- ▶ Also useful if the user experiences uncontrolled spasms or movements.



h

Seat and backrest accessories

Soft seat range

Accessories such as the soft seat which easily fits over the existing ergonomic seat plate, give users with comfort, sensory or skin protection issues added relief and may help increase their sitting tolerance.

- ▶ Redesigned to mirror the contours of the new ergonomic seat plate, users of the soft seat will not lose any of the positioning benefits the seat plate offers.
- ▶ When the commode function is not required, the soft seat insert can be fitted for additional comfort.
- ▶ Also available with a smaller aperture, the small soft seat caters for smaller or thinner users.
- ▶ The universal soft seat is an alternative to the soft seat and soft seat insert when the commode function is not required or if the user has existing skin issues or breakdown which would prevent the use of the insert.



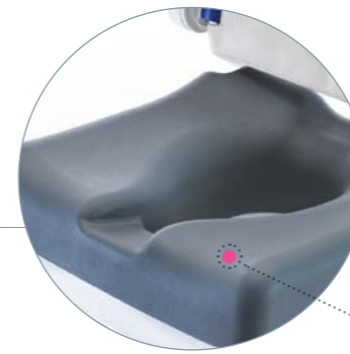
i

Seat and backrest accessories

Ergonomic soft seat

For users with existing pressure ulcers or skin breakdown.

- ▶ Manufactured from a viscoelastic memory foam, allowing greater depth of immersion and a much softer feel.
- ▶ Optimal stability, comfort and positioning of the user due to the increased depth of immersion.
- ▶ As with all the soft seats, if the decision is made to use the ergonomic soft seat, the seat to ground height will increase. This may have an impact on those who are normally able to transfer themselves independently.
- ▶ Seat to ground height, footrest height and armrest height should all be checked when combining the existing seat plate with any of the soft seat accessories.



j

Seat and backrest accessories

Variable soft seat

Optimal access for hygiene purposes or for those who transfer sideways.

- ▶ The aperture of the variable soft seat can be positioned in four different directions.
- ▶ To fit the variable soft seat, the ergonomic seat plate must first be removed.
- ▶ Brackets for the variable seat are easily attached to the seat frame and secured with clips, after which the seat plate is clipped back into the desired position.



k

Seat and backrest accessories

Solid backrest support

The solid back support offers an alternative to the standard tension adjustable backrest when firmer support is required to achieve a more upright posture.

- ▶ When combining choice of backrest support and Ocean Ergo model, clinical reasoning and judgment should be applied to ensure patient posture and pressure needs are addressed.
- ▶ Easy to retrofit.
- ▶ Easily fits into place via the blue clips.
- ▶ Easy to clean.



References

- ▶ **Jones, M. and Gray, S. Assistive Technology:** Positioning and Mobility. Meeting the Physical Therapy Needs of Children. FA Davis Company. 2005.
- ▶ **Lustig, M., Levy, A., Kopplin, K., Ovadia-Blechman, Z. and Gefen, A.** Beware of the toilet: The risk for a deep tissue injury during toilet. Sitting. Journal of Tissue viability. 2017.
- ▶ **Neville, L. Commissioned by James Leckey Design Limited.** The Fundamental Principles of Seating and Positioning in Children and Young People with Physical Disabilities. 2005.
- ▶ **Purves, D., Augustine, G.J., Fitzpatrick, D., Katz, L.C., LaMantia, A., O McNamara, J. and Williams, M.** Neuroscience, 2nd edition. Sunderland (MA): Sinauer Associates. 2001.
- ▶ **Romanelli, M., Clark, M., Gefen, A. and Ciprandi, G.** Science and Practice of Pressure Ulcer Management. Springer. 2018
- ▶ **Wounds International.** International Review Pressure Ulcer Prevention, Pressure, Shear, Friction and Microclimate in Context. A Consensus Document. 2010.

Website References

- ▶ <https://adrenalfatiguesolution.com/fight-or-flight-vs-rest-and-digest/>
- ▶ http://www.dantest.com/dtr_ans_overview.htm
- ▶ https://www.diffen.com/difference/Parasympathetic_nervous_system_vs_Sympathetic_nervous_system
- ▶ <https://mobilitygmt.com/articles/2017/09/01/seating-strategies.aspx>
- ▶ <https://www.sciencedirect.com/book/9780323039307/primary-care-geriatrics>
- ▶ <https://www.sis.se/api/document/preview/918591/fight-or-flight-vs-rest-and-digest/>
- ▶ www.spinalhub.com.au/what-is-a-bowel.../nervous-system-control-of-your-bowel
- ▶ <https://www.squattypotty.com/blog/5-problems-with-sitting-on-your-toilet/>

Biography

Rhona Moot is a qualified Occupational Therapist with 15 years' experience.

- ▶ She is currently Clinical Specialist for Invacare EMEA and has previously worked as Clinical Education Specialist for Seating and Positioning, Invacare EMEA. Prior to working at Invacare, Rhona worked for NHS Greater Glasgow and Clyde in Glasgow where she specialised in Wheelchair Assessment and Provision for Adults aged 16 years and older, whom has a range of physical disabilities.



Tel: +44 61 487 70 70
hqueurope@invacare.com
www.invacare.eu.com

Invacare International GmbH
Neuhofweg 51
4147 Aesch BL
Switzerland

© 2023 Invacare International GmbH. All rights reserved. All information quoted is believed to be correct at time of print. Invacare reserves the right to alter product specifications without prior consultation. EU - 07/23



Yes, you can.®