

**Direct Healthcare  
Group**

Advancing Movement & Health



A Practical Guide to

**Specialist  
Seating  
Assessments**



“THE CORRECT PROVISION OF SPECIALIST SEATING  
CAN HELP IMPROVE A PERSON’S QUALITY OF  
DAILY LIVING AND INDEPENDENCE.”

Ellie Burcher, Kirton OT ambassador

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AS HEALTHCARE PROFESSIONALS, **WE ARE OBLIGATED**  
TO PROVIDE PEOPLE WITH THE **BEST QUALITY OF LIFE.**

# INTRODUCTION

Prof. Michael Clark, Professor in Wounds Study

Individuals often present with various challenges including medical problems, impaired physical abilities, reduced sensation and cognitive impairments, and communication and behavioural/social issues that require them to have support in sitting to help maximise their functional abilities.

When the human body is not in motion we tend to adopt one of a small range of positions – we stand up, lie down, sit down, kneel or squat. Maintaining each resting position requires the body to be both stable and balanced. Lack of stability or balance will negatively impact upon our ability to carry out even the simplest functions of everyday life that have a critical impact on physical and mental well-being, such as eating and drinking. This practical guide considers the challenges of, and solutions to, maintaining functional ability while sitting down.

# Supporting Quality of Life and Independence

Posture, particularly when seated, plays a significant role in an individual's ability to perform even the most basic activities of daily living. The correct provision of specialist seating can help improve the user's quality of life and independence through:

- Maximising postural and pelvic stability
- Minimising the impact of pressure risks
- Where possible achieving symmetry of the seated position
- Maximising the individual's comfort
- Enabling independent or assisted transfers from the chair
- Reducing the impact or development of postural changes
- Enabling functional movement

Part of improving the quality of life for your client through specialist seating is achieved by using the correct equipment.

This practical guide is focused upon the assessment and identification of correct seating and pressure redistribution for users. The purpose of this guide is to support clinicians in considering the practical aspects of the assessment process.

## Clinically Proven Pressure Care

People requiring specialist seating are particularly vulnerable to pressure damage. Therefore, the integration of clinically proven pressure redistribution within these items of equipment is key to ensure that their pressure care needs are met.

Excessive loading, including pressure and shear, on all contact surfaces whilst seated can give rise to the development of pressure ulcers; as such pressure redistribution is an important element in ensuring the desired outcomes of correct seating are achieved.

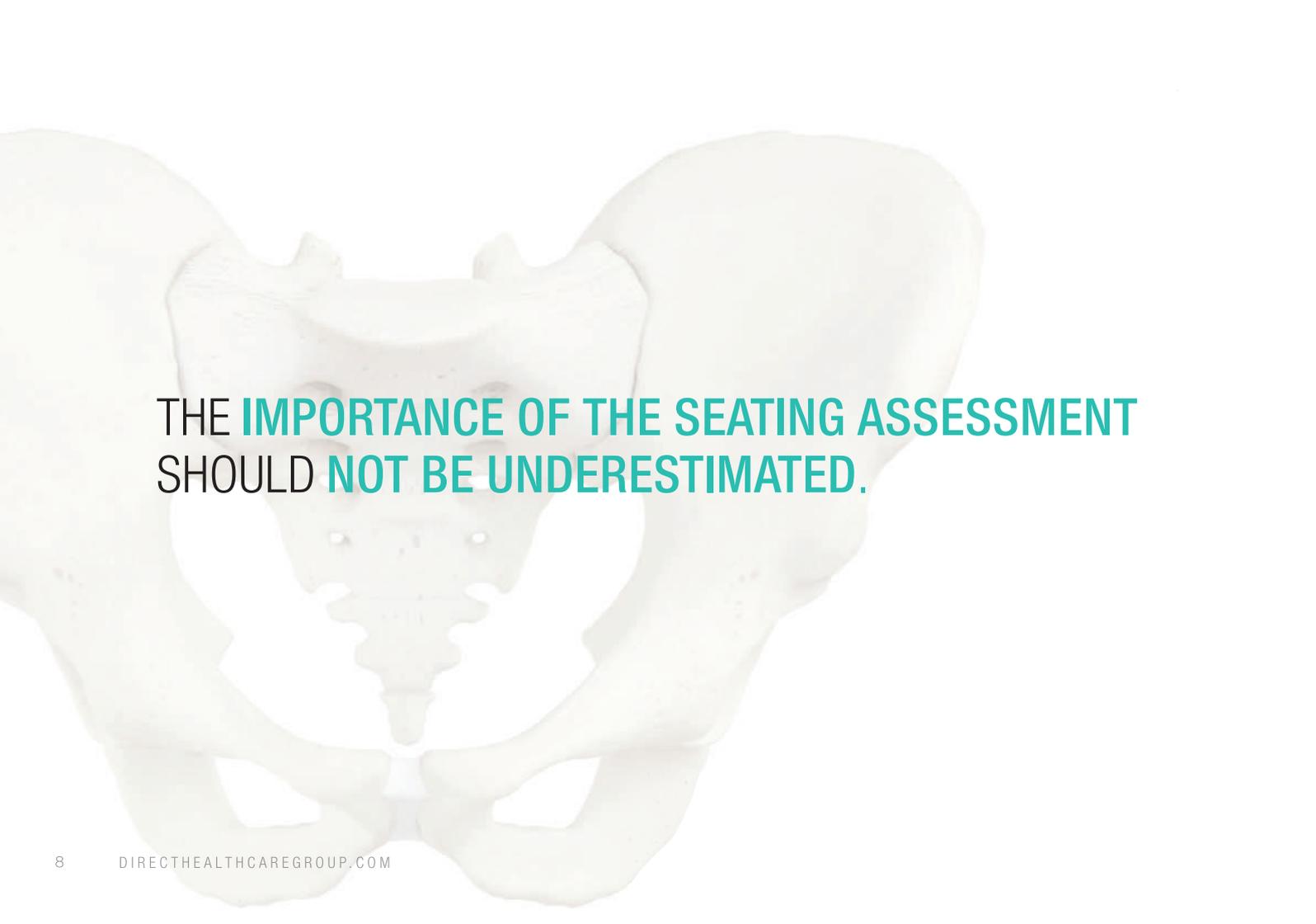
Pressure damage can be caused easily when there is an interruption to the supply of oxygen and nutrients, and can happen within as little as two hours. As well as the more obvious causes of pressure damage, including direct pressure, friction and shearing, it is important to consider other client factors such as continence, nutrition and underlying medical conditions. Therefore, integrated pressure care within specialist seating can be imperative to ensuring the highest quality of care provision.

### Hybrid Technology

**A key innovation within specialist seating is the integration of foam in air hybrid technology into the cushion modules, providing users considered at Very High risk of pressure injury development with a suitable seating solution to meet their care needs.**

Non-powered hybrid seating modules work through the principle of air displacement. When a person repositions his or her weight, air moves within the seating module to surrounding cells to optimise pressure redistribution. The seat conforms to the shape of the person's body as he or she moves, increasing the surface area in contact with the seat and therefore reducing the user/support surface interface pressures.





THE **IMPORTANCE OF THE SEATING ASSESSMENT**  
SHOULD **NOT BE UNDERESTIMATED.**

# HOW TO COMPLETE A SPECIALIST SEATING ASSESSMENT

An assessment for specialist seating involves identifying the source of the user's postural problem within their current chair or bed and recognising how the provision of specialist seating, and its accessories, can help to achieve the person's ultimate goals. A detailed clinical assessment that identifies the user's needs, both now and over the longer term, will make a significant difference to their comfort, pressure ulcer risk and quality of life for the immediate and foreseeable future.

The basis of good posture is a stable pelvis that is efficient for the body to maintain. This posture will allow a person to feel well balanced, assist in the ability to perform daily activities, support independence and put the individual at a lowered risk of developing pressure related injuries.

Typically, people are able to adjust their body in order to maintain the optimal posture, or in response to discomfort. This however, becomes more difficult in individuals with physical disabilities, neurological conditions, the elderly or the immobilised. In these individuals, postural management is extremely important, and support through the correct specialist seating can help to achieve the ideal seated posture so as to increase the user's overall quality of life and independence.

## Specialist Seating Assessment Flow Chart

This flow chart (Figure 1.) is a step-by-step guide of the considerations that should be made when completing a specialist seating assessment for an individual with complex care needs.

In-depth descriptions on accurate measuring and the correct seating requirements and accessories for various postural changes can be found later in the guide.

# Specialist Seating Assessment Flow Chart



Figure 1.

# Measuring the Client

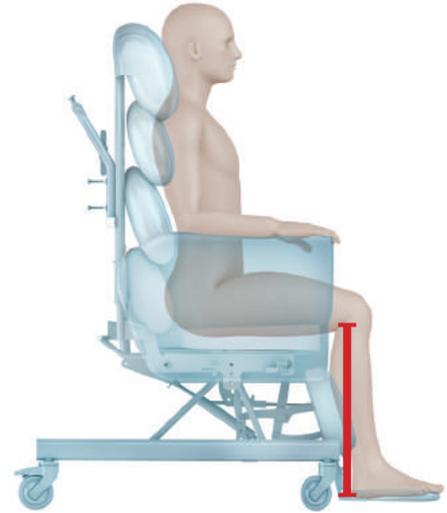
Accurate measurement is essential to providing a well fitted chair, with five key measurements required to ensure that the client is fully supported and their postural needs are met.



1

## Seat Width

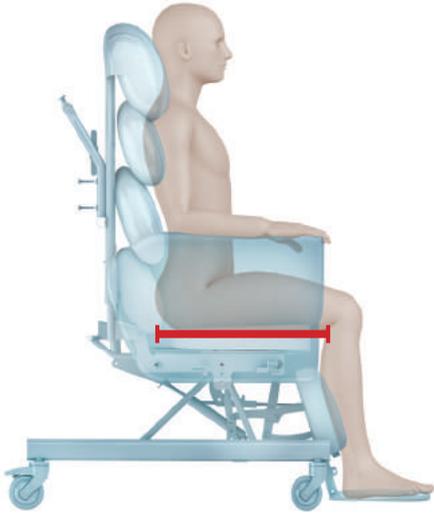
Seat width is measured from the user's two widest points, which may not necessarily be at the hips. Any postural changes such as pelvic rotation, scoliosis originating at the pelvis, or windsweeping should also be considered. **Two inches should be added to the overall seat width.**



2

## Seat Height

Seat height should be measured from the back of the heel to the back of the knee, ensuring the knees are at 90°.



3

### Seat Depth

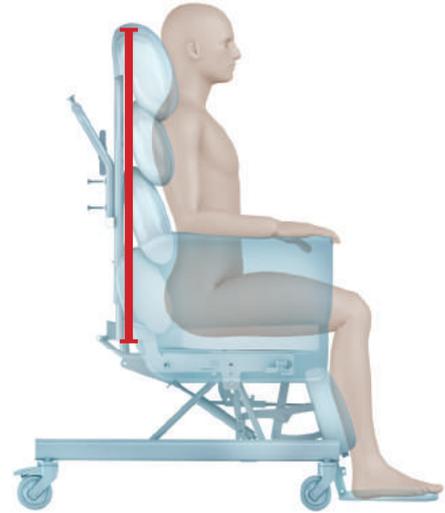
Seat depth is measured from the back of the buttock to the back of the knee. Both left and right sides should be measured to ensure any discrepancies in leg length are captured. One inch should be subtracted from the overall seat depth.



4

### Armrest Height

The arms should rest at a height at which the user's shoulders are not pushed upwards, whilst still being supported adequately for the user to feel secure within the chair. The armrest height of both arms should be measured to ensure any discrepancies are noted.



5

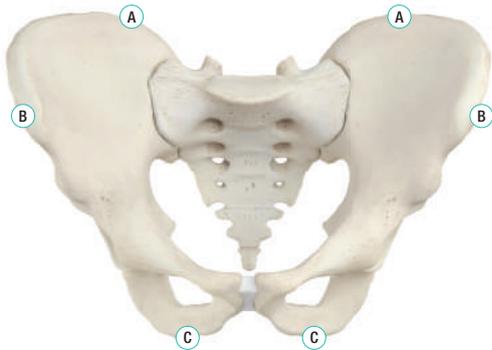
### Back Height

Back height is measured from the seat of the chair to an appropriate height to adequately support the head of the user.

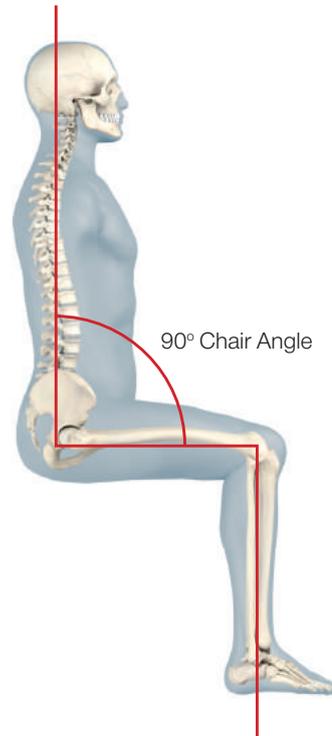
# What is the Ideal Posture?

As previously mentioned, the basis for good posture comes from the pelvis. The key indicators for the ideal posture during a seating assessment will be the **A** Posterior Superior Iliac Spine (PSIS) and the **B** Anterior Superior Iliac Spine (ASIS), with their position relative to each other determining the posture of the seated individual.

The ideal seated position will see the ASIS and PSIS level, ensuring minimal anterior tilt, to promote even distribution of weight through the **C** Ischial Tuberosities (ITs). The head and spine will then be balanced and aligned above the hips. The ideal posture will help to enable social interaction, increased comfort, reduced pain and enhanced function.



## Ideal Sitting Posture





## What to do if the Ideal Posture is not Present

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### Anterior Pelvic Tilt

Identified by the PSIS becoming higher than the ASIS, which may be as a result of increased lordosis. Users with an anterior pelvic tilt will present with retracted shoulder blades which may result in reduced upper limb function. An anterior pelvic tilt will lead to increased pressure risk through the ITs.

Anterior pelvic tilt can be corrected for using **tilt-in-space** and **back angle recline** to minimise the risk of pressure damage and increase comfort.



### Posterior Pelvic Tilt

Identified by the PSIS becoming lower than the ASIS and often referred to as sacral sitting.

Increased loading and shear stresses, alongside the individual attempting to stop themselves sliding forward, will lead to increased likelihood of pressure ulcers at the sacrum, spinal apex and heels.

Posterior pelvic tilt can be aided by **tilt-in-space** of 15°-30°, a **negative angle footplate** to accommodate leg contractures, an **adjustable footplate** to help adequately support the feet, or a **ramped seat module** to help prevent the user sliding forward in the chair.

Further, posterior pelvic tilt can be avoided by assessing for the correct **seat depth** and **arm rest height**.



### Pelvic Obliquity

Pelvic obliquity occurs when one side of the pelvis is higher than the other. Due to uneven weight distribution through the ITs, there is an increased likelihood of pressure damage occurring on the loaded side.

This postural abnormality can be caused by the chair being too wide, or the user's body being unevenly supported through poor armrest height.

Pelvic obliquity can be corrected through adequate clinical assessment of **seat width** and **armrest height**, or via **lateral supports** to support the user in achieving a midline position.



### Pelvic Rotation

Pelvic rotation is identified by the right ASIS being in front of the left ASIS, or vice versa, and is often present alongside pelvic obliquity.

This posture may occur through the seat being too wide, not providing lateral support to the trunk or not supporting the posterior pelvic.

As such, pelvic rotation may be corrected through **lateral supports**, alongside accurate measurement of **seat width** and **seat depth**.



### Windsweeping

Windswept hip deformity is characterised by both legs pointing right or left away from the midline and may present alongside scoliosis or pelvic rotation.

The adequate and accurate measurement of **seat width** and **seat depth** will provide some postural correctness for windsweeping, whilst the provision of **lateral supports** may also help to achieve midline alignment.



## Lordosis

Lumbar lordosis is identified by an increased, excessive curvature in the lumbar region of the spine, causing an inward curve of the spine. Lordosis will typically occur alongside an anterior pelvic tilt.

**Tilt-in-space** and **back angle recline** will help to alleviate pressure risk in lordotic users, whilst ensuring comfort and support.



## Kyphosis

Kyphosis is presented by an excessive outward curvature of the spine, causing forward flexion. This posture will also be associated with posterior pelvic tilt and as such the individual will experience increased loading and shear stresses, leading to an increased propensity to pressure damage at the spinal apex, sacrum and heels.

In order to accommodate for kyphosis **tilt-in-space** is recommended to reduce pressure on the user; whilst a **ramped seat module** and **adjustable footplate** will help to prevent the user sliding forward in the chair.

Further, assessment for correct **seat depth** and **arm rest height** will help to reduce the pressure of a kyphotic user.

Alternative backrests, such as a **waterfall backrest** or an **articulating backrest**, should also be considered to increase user comfort and reduce the risk of pressure injuries.



## Scoliosis

In individuals with scoliosis the spine compensates by twisting to get back to midline, producing an exaggerated S-shaped lateral curvature of the spine. This may also be associated with pelvic obliquity and pelvic rotation; therefore, it is important to check if the spinal changes originate at the pelvis or the spine when prescribing an appropriate chair.

Accessories such as **lateral supports** can be prescribed to help support a midline posture.



## Leg Contractures

Leg contractures occur following a tightening of the joints, with particular attention on the hip and knee joints in seating. Contractures may lead to the user being pulled out of the chair or into a posterior pelvic tilt, which in turn will increase the risk of pressure damage.

Leg contractures can be accommodated for using a **negative angle legrest** to ensure full support of the legs and help seat the user in a comfortable position.

A **ramped seat module** may also be prescribed to prevent the user sliding forward in the chair.

# Prescribing the Appropriate Chair

## Chair Function

Chair functionality can play a major role in supporting the level of dependence or independence that the user has. Whilst there is a balance to be struck between current and future needs, the aim should be to provide the greatest possible level of independence to the user.

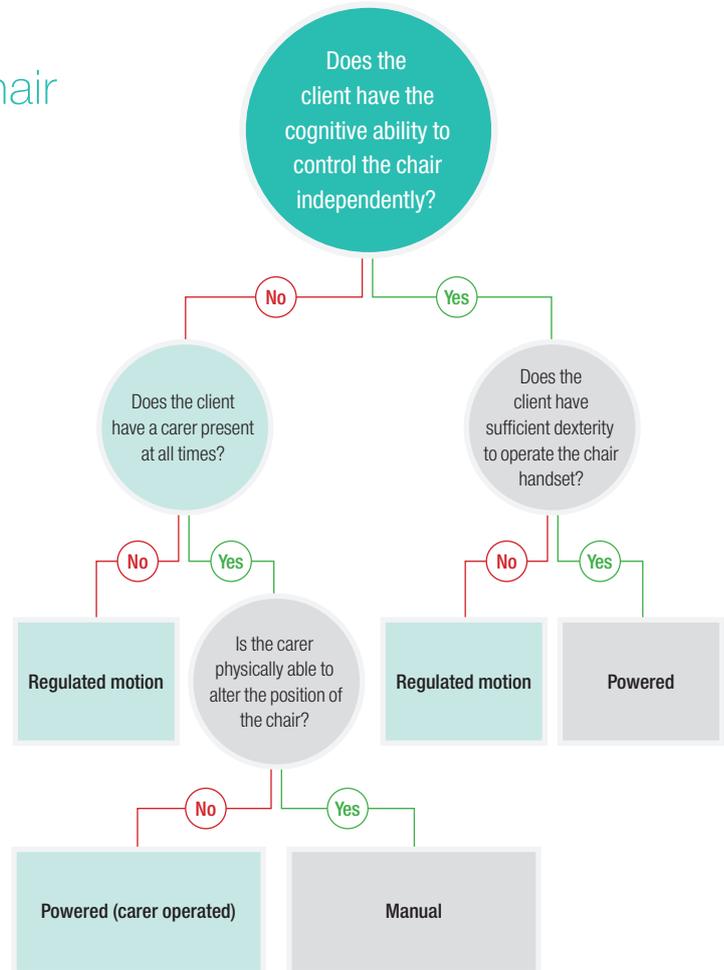
Kirton specialist seating has one of the following three operations:

**Manual** – Tilt-in-space and/or back angle recline is controlled at the back of the chair by the user's carer.

**Powered** – Tilt-in-space and/or back angle recline is controlled via a handset by either the end user or the user's carer.

**Regulated motion** – Tilt-in-space and/or back angle recline is controlled via a handset by either the end user or the user's carer with the further ability of the chair automatically adjusting its tilt-in-space. In this setting, the chair will move 1/3rd of a degree every 20 seconds across a range of 15°. This setting provides a constant change in pressure redistribution and is highly effective for users with high pressure care needs.

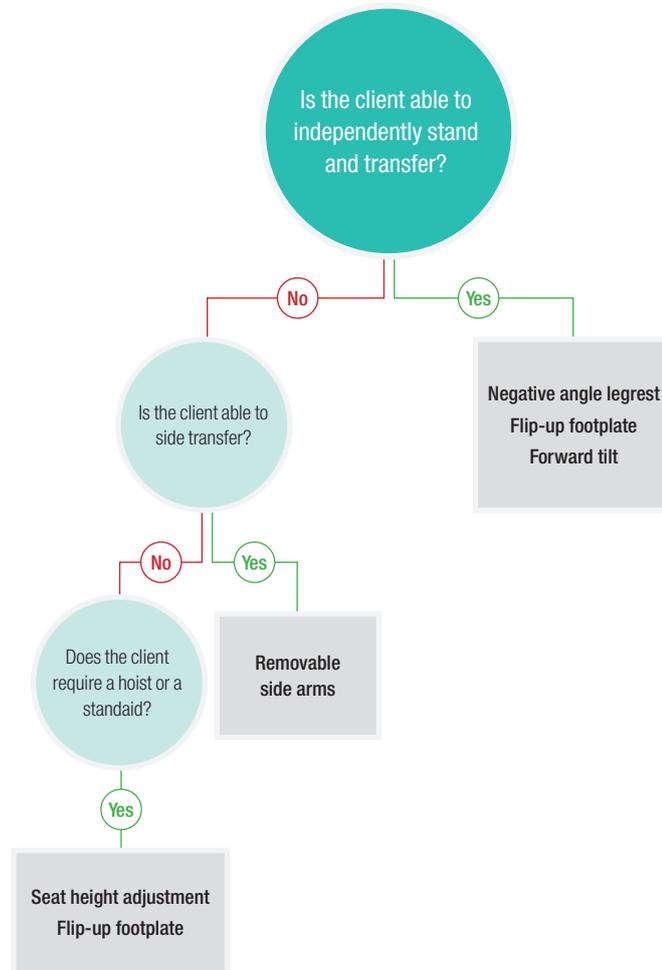
The following decision tree will help you choose which function may be best suited for the user.



## Transfers

Correct assessment for the user's transfer needs may be critical in ensuring that the user can be adequately and comfortably sat in the chair. Further, in the ambulant/semi-ambulant user, providing a chair that matches the person's needs can be the difference between the user independently standing out of, and sitting into, the seat.

There are various features within our specialist seating range that accommodate for different methods of user transfer. The following decision tree will help you choose which features may be best suited for the user.



## Pressure Care

Integrated pressure care is an important consideration, particularly as people who require specialist seating are typically at an increased risk of pressure damage. A detailed assessment of pressure risk management should be made to determine the level of risk for the user. It is also important to consider the individual's pressure care needs in the future to ensure the person's seating solution remains relevant for them.

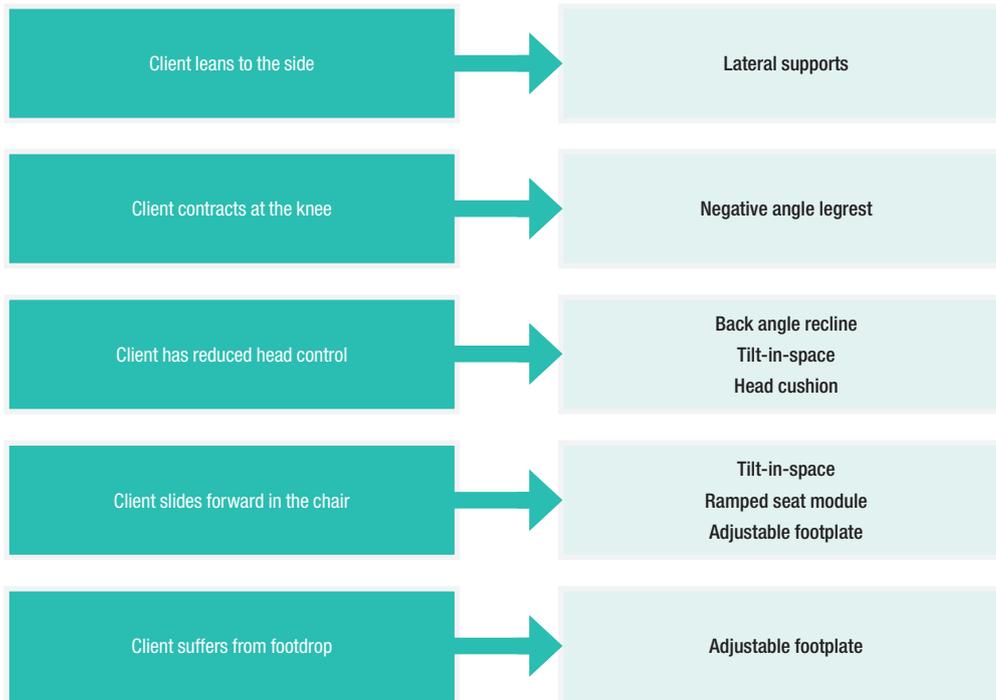
Use the following table to determine which of the four integrated seat modules may be best suited for the user.

Risk Category	Seat Module	Material	Pressure Ulcer Grading	Key Features
At Risk	<b>Reflexion™ Foam</b>	Visco elastic and CME foam	Grade II	<ul style="list-style-type: none"> <li>• Moulds to the contours of the user</li> <li>• Distributes weight evenly</li> <li>• Promotes improved circulation</li> </ul>
High Risk	<b>Intelli-Gel®</b>	Elastomer	Grade II	<ul style="list-style-type: none"> <li>• Retains its core temperature preventing heat retention</li> <li>• Columns distribute weight evenly for greater pressure redistribution</li> <li>• Adjusts to individuals needs</li> </ul>
High Risk	<b>Dyna-Flex®</b>	Visco elastic and CME foam	Grade III	<ul style="list-style-type: none"> <li>• Temperature sensitive memory foam moulds to the user's shape</li> <li>• CME underside prevents the foam from bottoming out</li> </ul>
High Risk	<b>Dyna-Tek® Posture Visco</b>	Visco elastic and CME foam	Grade III	<ul style="list-style-type: none"> <li>• Uniquely sculpted ischial tuberosity well design for exceptional posture management</li> <li>• Visco elastic surface provides pressure redistribution and user comfort</li> <li>• CME underside prevents bottoming out</li> </ul>
Very High Risk	<b>Dyna-Tek® Intelligent Air</b>	CME foam in air cells	Grade IV	<ul style="list-style-type: none"> <li>• Unique Reactive Airflow System provides instant pressure readjustment</li> <li>• Foam-in-air design provides greater patient comfort and improved micro-climate</li> <li>• Contoured interface and castellated foam for maximised pressure redistribution and postural support</li> </ul>

## Accessories & Features

In addition to the correct chair, the right accessories may help to manage the user's posture and will serve to enhance the chair's comfort and effectiveness. Accessories can also be added at a later date as the user's needs change or develop. Similarly, the built-in features of a specialist seat can help to manage the person's postural needs.

The following information will help you to choose which accessory or feature may be best suited for the user.



## Kirton Seating Matrix

Combine the decision trees (pg 20 & 21), pressure care information and accessories & features guidance with the following matrix to choose the correct chair for your client.

	Duo	G-2	Florien Elite	Florien Fife	Florien II	Encora	Omega
Integral Pressure Relief	✓	✓	✓	✓	✓	✓	✓
Regulated Motion Tilt-in-Space	✓	✓	–	–	–	–	–
Powered Tilt-in-Space	✓	✓	–	–	–	✓	–
Manual Tilt-in-Space	✓	✓	✓	✓	✓	✓	–
Seat Width Adjustment	User adjustable	–	User adjustable	Adjustable seat width available via removable arms	Adjustable seat width available via removable arms	–	–
Seat Depth Adjustment	User adjustable	User adjustable	User adjustable	Specified at time of manufacture	Specified at time of manufacture	User adjustable	–
Seat Height Adjustment	Powered only	–	Specified at time of manufacture	–	–	✓	–
Back Height Adjustment	✓	–	–	–	–	–	Specified at time of manufacture
Manual Back Angle Recline	✓	–	✓	–	–	✓	–
Legrest Elevation	✓	✓	✓	✓	✓	✓	–
Negative Angle Legrest	*	*	–	✓	✓	–	–
Footrest Height Adjustment	✓	✓	✓	✓	✓	✓	–
Adjustable Footplate Angle	✓	✓	✓	✓	✓	–	–
Built in Lateral Support	*	✓	*	*	*	✓	✓
Waterfall Backrest Option	✓	–	✓	✓	–	✓	–



# Case Study 1

## Background

Mr W had a diagnosis of Parkinson's disease. Upon assessment, his sitting balance was considered to be generally good, but his wife reported he was fatigued across the day which resulted in him leaning to his left. He was able to transfer independently in the morning, however, often required the assistance of a stand-aid later in the day. Mr W had no history of pressure ulcers but has reported patches of red skin in the past. He was keen to remain independent and has full insight into his needs.



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## Clinical Provision

Due to the client's variable transfers the **Encora** was prescribed as the height adjustability of the seat would continue to support his independence with standing, whilst enabling good access for any moving and handling equipment.

The side wings on the chair, and immersive backrest, provided support in his sitting tolerance and reduced the postural lean that he was experiencing due to fatigue. An integrated cushion suitable for a user considered to be at high risk of developing pressure ulcers, such as the **Dyna-Tek® Posture Visco**, supported his ongoing skin integrity.

Mr W was also provided with a powered chair, which enabled him to alter his seated position himself, providing an increased sense of independence and greater quality of life.



Encora

## Case Study 2

### Background

Mrs S suffered a stroke which affected her right side. Following an assessment, it was noted that she was experiencing low tone in her trunk and right arm causing her to lean heavily to the side.

Since returning to her home, Mrs S suffered from a series of category 4 pressure ulcers on her sacrum, due to her diminished ability to move independently, and was receiving ongoing support from her District Nursing team. Prior to the assessment, Mrs S was sitting in a high-backed armchair, but was requiring several cushions to maintain her alignment. Mrs S was hoisted to manage her transfers, however, moving and handling was proving difficult due to the very limited space within her home.



### Clinical Provision

It was clear that Mrs S required a chair that provided her with additional lateral support to compensate for the low tone within her trunk. The **Florien Elite** provided Mrs S with the postural support required to maintain a stable and comfortable midline position, with the additional benefit of the swivel-back armrests assisting with an improved hoisting technique within a limited space.

Due to her existing category 4 pressure ulcers, Mrs S was provided with an integrated **Dyna-Tek® Intelligent Air** cushion, which uses a Reactive Airflow System to redistribute pressure and provide postural support. This integrated cushion was used to successfully treat her category 4 pressure ulcers, whilst ensuring that any future pressure ulcer risk was mitigated.



Florien Elite

## Case Study 3

### Background

Miss D is a young female with a fixed complex posture due to Cerebral Palsy. She has spinal scoliosis and a very limited range of movement in her knees as a result of developing a degree of contracture. Her hips also have a limited range of movement and is in a posterior pelvic tilt. Miss D was hoisted for her transfers, and previously spent much of her day in a powered wheelchair with a bespoke cushion for her pressure relief needs.

There were concerns that Miss D was exceeding her recommended time sitting out as she was reluctant to return to bed in the afternoon. Miss D also uses an environmental control system to control her position whilst in her home.

Following an assessment, it was clear that Miss D needed a highly adjustable seat with a large degree of postural support, particularly at her head and shoulders. Due to the progressive nature of her condition, Miss D required a chair that could continue to meet these increasing demands as her Cerebral Palsy worsened.



### Clinical Provision

Miss D was prescribed with the **Duo** chair, which is highly adjustable to support her demanding postural needs. The adjustable seat depth was used to reduce her posterior pelvic tilt, whilst the independent back angle recline allowed her hips to be positioned appropriately within her range of movement.

The configurable head and shoulder support was set-up to fully meet Miss D's needs and a negative angle leg rest was fitted to ensure her contracted leg position could be supported. The powered **Duo** provided was linked to her environment control system to maximise her independence in adjusting her position. A flat seat base was also provided to allow Miss D to use her existing, bespoke cushion within the Duo; as this was fully managing her needs.



Duo

## Seating Awareness Days

**“THE DAY HAS GREATLY BENEFITED ME  
IN MY OT CAREER AROUND SEATING ISSUES.”**

Led by Kirton OT Ambassador Ellie Burcher, our free of charge Seating Awareness Day offers expert insight and guidance into the principles of seating, assessing for complex seating needs and the opportunity to discuss clinical cases and try the Kirton range of specialist seating solutions.

We run regular Seating Awareness Days in various locations across the UK.

To register, visit our [website](#), choose the location suitable for you and complete and return the registration form.

*WE ALL NEED TO MOVE TO LIVE.*  
HUMAN MOVEMENT IS FUNDAMENTAL  
TO OUR HEALTH AND QUALITY OF LIFE.

# Direct Healthcare Group

Advancing Movement & Health

## About Direct Healthcare Group

When in poor health movement is vital to our recovery and rehabilitation. Being in poor health can dramatically reduce our ability to move, leading to further health complications and slower recovery. If immobilised, either through injury or long term condition, movement is also crucial for maintaining physical independence and mental wellbeing.

Supporting mobility and independence is essential to maintaining good health and helping us recover more quickly from poor health. No-one better understands the importance of movement and its relationship to both physical and mental health than **Direct Healthcare Group**, especially when the need to move directly affects our quality of daily living.

From effective prevention and treatment of pressure ulcers, to supporting challenging care delivery for a broad patient spectrum including those with complex, long term conditions, we support carers and those they provide care for.

**Direct Healthcare Group** uniquely enables the healthcare challenges associated with reduced patient movement to be anticipated, managed, and in many cases, resolved to support care providers and patients.

*All leading to better health outcomes, accelerated recovery and easier daily living.*

**Direct Healthcare**  
Services



# Direct Healthcare Group

Advancing Movement & Health

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