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# Memory Seating

A tool for therapists to increase user compliance with powered Tilt-in-space, and Tilt-in-space and recline seating functions for posture and pressure relief.

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# Introduction

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## Commercial Disclaimer



## About Dynamic Controls

Dynamic Controls designs and manufactures electronic controllers for powered wheelchairs and medical mobility scooters. Headquartered in New Zealand, our technology is used globally to support people's independence, safety, and quality of life. For over 50 years, we have combined engineering expertise with clinical insight to deliver reliable, user-focused solutions for the rehabilitation and mobility sector.

## 01 Author

### Rhona Moot

Rhona Moot is a clinical education specialist with a professional background as a Clinical Therapist within the NHS in Scotland. She has extensive experience developing clinical training materials and supporting product launches across the healthcare sector, with a focus on user-centred education and practice. Now based in the Netherlands, she works as an independent contractor, applying her clinical expertise to training, education, and product adoption initiatives across Europe.

## 02 Introduction

### Gary Dellow

Gary holds a Bachelor of Engineering in Mechanical Engineering and is the Product Manager for LiNX Rehab at Dynamic Controls. He has been involved in the Mechanical, Software and Systems Engineering behind LiNX, pioneered brushless motor control development, and led new technology initiatives that bridge technical innovation with market needs.

## Introduction – Gary Dellow

As someone who has been part of LiNX since its early days, I'm proud of the role it has played in supporting people's independence. From the start, we've built on feedback from clinicians, therapists, and the people who use our technology and LiNX has grown steadily, adding new features and capabilities along the way. This white paper reflects that approach in action. SitSmarter is another step in making powered seating safer, easier to use, and more effective in everyday life.

The clinical insights and evidence shared here from Rhona show how SitSmarter delivers real-world benefits that go well beyond its technical features. And we're not finished yet. We're continuing to plan and develop new features that will make SitSmarter even better. That's why your feedback matters. We'd love to hear from those who use it, so we can keep evolving LiNX in ways that truly make a difference.

## 01 What is LiNX SitSmarter?

LiNX SitSmarter is a collection of advanced memory seating features, available across the entire LiNX control system range. Whether the seating system uses one actuator or eight, and whether the client operates through a joystick, switch, or any compatible input device, SitSmarter adapts seamlessly.

Using either switch or position sensors, SitSmarter maximises the potential of powered seating platforms. It ensures that the right positions are reached consistently, safely, and with minimal effort.

## 02 Benefits for Clients and Caregivers

Prescribing SitSmarter means opening the door to improved health, comfort, and quality of life:

### Confidence through consistency:

Once optimal posture settings are defined, clients can return to them effortlessly. This reduces guesswork and promotes consistent, safe positioning throughout the day.

### Reduced fatigue and discomfort:

Minimising strain from poor posture allows clients to conserve energy for meaningful activities, whether that is work, study, or leisure.

### More time for the things that matter:

With precise, repeatable positioning, less time is spent adjusting seating. This means more time living, less time managing equipment.

### Pressure injury prevention:

Regular, accurate repositioning supports pressure redistribution, reducing the risk of pressure injuries. SitSmarter simplifies adherence to clinical protocols, making pressure care as easy as activating a switch.

### Ease of transfers:

Memory seating can be programmed for efficient transfers to and from beds, vehicles, or other surfaces, reducing risk for both client and caregiver.

### Enhanced independence:

With greater control over their own seating, clients rely less on caregiver support, promoting dignity and autonomy.

### Adaptable to individual needs:

SitSmarter's flexibility means it can be activated through a wide range of control methods, from digital switches to proportional inputs, and even responsive to environmental factors like inclines, ensuring accessibility for diverse user needs.

## 03 Benefits for Clinicians and Therapists

As a prescribing clinician, you want assurance that your recommendations lead to measurable, lasting impact. SitSmarter provides tools that make your work more effective, efficient, and rewarding:

### Satisfaction from better health outcomes:

By setting exact positions and sequencing, you can tailor seating programs to optimise respiratory function, skin protection, comfort, and overall well-being.

### Confidence through familiarity:

SitSmarter is available across all LiNX-powered chairs. This means one configuration tool, one learning curve, and a consistent setup process regardless of chair make, model, or complexity.

### Wider access for more clients:

Thanks to its flexibility, SitSmarter can be prescribed to a broad range of clients with varying abilities, extending the reach of memory seating's clinical benefits.

### Support for evidence-based practice:

The precision and repeatability of SitSmarter support adherence to prescribed therapeutic behaviours, strengthening the link between clinical recommendations and real-world outcomes.

## 04 Why SitSmarter Matters

SitSmarter is not just about comfort. It is about prevention, protection, and participation. The ability to deliver reliable, repeatable positioning means:

- Lower risk of secondary complications, such as pressure injuries or respiratory compromise.
- Improved adherence to therapy plans, because following the program is easy and intuitive.
- Greater independence and confidence for clients, which directly impacts quality of life.

For clinicians, it means peace of mind, knowing that your prescription translates into safe, effective, and sustainable outcomes every single day.

## 05 A Tool for Better Lives

At its core, LiNX SitSmarter is about more than seating technology. It is about giving people the freedom to live with less pain, fewer risks, and more time and energy for the things they love. It is about making your clinical expertise easier to deliver and more impactful. It is about aligning technology with your therapeutic goals.

*Thank you for taking the time to explore this white paper. LiNX SitSmarter represents our ongoing commitment to supporting your work as clinicians and therapists, and to improving the daily lives of the people who use our technology. I am grateful to Rhona for her time to evaluate the impacts of advanced seating, and I am excited to see the impact SitSmarter will continue to have in the community.*

***— Gary***


**Gary Dellow**

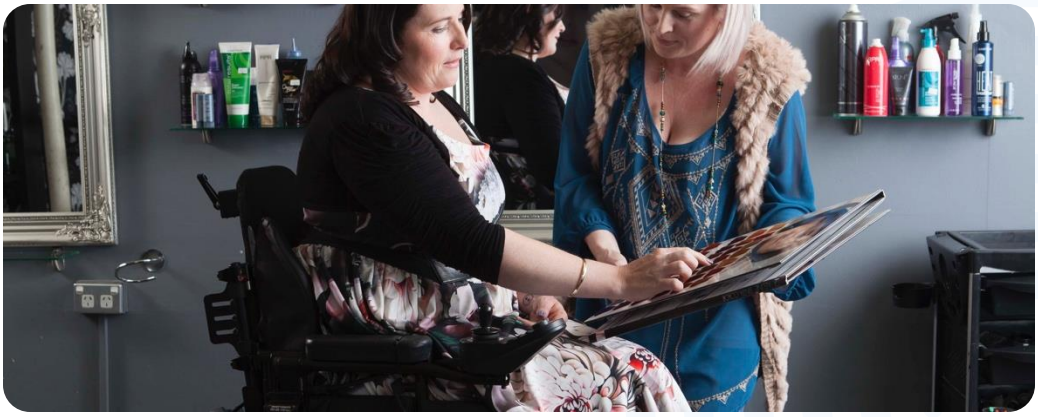
Product Manager – LiNX Rehab

# Memory seating – A tool for therapists to increase user compliance with powered Tilt-in-space and Tilt-in-space and recline seating functions for posture and pressure relief

## 01 Abstract

Therapists routinely prescribe powered tilt-in-space and tilt-in-space and recline seating functions to assist with

- Gravity assisted positioning
- Pressure relief.



Lack of postural control and/or postural deviation(s) affect an individual's seated stability, not only affecting the user's functional capabilities, but also impacting upon the body's physiological functions including the development of pressure ulcers.

"While users perceive their seat functions to be integral to their functional needs and comfort they do not always adhere to regimes aimed at improving outcomes such as pressure relief" Schofield et al (2013). This paper therefore looks at the benefits of memory seating as a tool for therapists to increase user compliance with tilt-in-space and tilt-in-space and recline powered seated functions for posture and pressure relief.

02

# Why use Tilt-in-space and Tilt-in-space and recline functions?

Therapists prescribe powered seating systems with Tilt-in-Space or Tilt-in-Space and Recline functions primarily for two reasons - 1. Gravity Assisted Positioning & 2. Pressure Relief.

Gravity assisted positioning can help improve stability, postural alignment and function plus access to the environment, while both stationary and mobile (indoors & outdoors). Users who are well positioned and comfortable in their seating systems can sit for longer. When not well positioned, posture can affect a user's functional performance and the body's physiological system function, for example (breathing, respiration, digestion) and put the user at greater risk of pressure ulcer development.

The main difference between Tilt-in-Space and Tilt-in-Space and Recline is how they change the user's position. During tilt-in-space the angle between the user's back and seat (the seat to back angle) remains the same, while the whole seat tilts backwards.

Tilt-in-space and recline on the other hand changes the seat to back angle. Recline opens the backrest angle, moving the user from a seated position to a more supine (lying) position in the chair.

One of the main risks therapists face when prescribing tilt-in-space and recline on both manual and power wheelchairs is tilt and recline being done in the wrong order by carers or family members.

The correct order in which to tilt and recline a wheelchair is to firstly tilt the chair backwards and then recline the backrest. This prevents the user from sliding down and forward in the chair. When returning to a more upright position first the backrest should be returned to upright and then the chair tilted upright. Done incorrectly not only affects the user's posture, comfort and function, it can also lead to pressure ulcer development.

Even though pressure ulcers are preventable, the number of hospital admissions due to pressure ulcers remains high around the world. (Sonneblaum et al, 2011) identified that individuals prescribed tilt-in-space and recline seating systems for pressure relief carried out on average 1 pressure relieving tilt every 7 hours. The recommendation for pressure relieving manoeuvres being every 30 minutes. Further research has proven that tilting alone must be greater than >25 ° to achieve significant pressure relief and/or tissue perfusion at the IT's and tilting between 45°-60° is most effective for pressure relief.

From studies conducted over the years into Tilt-in-space and Tilt-in-space and recline and their impact on pressure relief the consensus amongst researchers is that the greatest reductions in pressure and increased ischial blood flow are seen when tilt-in-space and recline are used together, either at tilt of 35° with recline of 100° or tilt of 15-20° with recline of 120° (Giesbrecht et al 2011). (Yih-Kuen et al 2010) proved that 40° tilt with 100° recline reduced peak pressure index at the IT's by 40%.

In a study by (Lacoste et al, 2003) more than 70% of respondents said they used their tilt and recline systems for comfort, rest, relaxation, and pain, while only about 50% reported using the chairs for physiological functions, a category that included prevention of pressure ulcers (Sonneblaum et al 2009). (Lacoste et al 2003) also found that large angles of tilts (30-45°) were used for rest and to decrease pain while small angles of tilts (0-15°) were used to increase comfort. Middle angles of tilts (15-30°) were used to increase stability.

While users understand the clinical advantages and perceive tilt-in-space and tilt-in-space and recline seating functions to be integral to their functional needs (Schofield, Porter-Armstrong & Stinton, 2013). Few comply or adhere to therapist recommendations aimed at improving outcomes such as pressure relief.

## 03 Memory seating

Memory seating allows the user to programme and save specific seating positions unique to them and their functional needs which can be accessed quickly and efficiently via the touch of a button/joystick. Memory seating is particularly effective for transfers, pressure relief, or achieving optimal posture for specific activities. Therapists programme the desired positions by adjusting the power seat functions (tilt-in-space and tilt-in-space and recline) to the specific angles and save them as a "memory position". As user needs change the therapist can quickly alter the pre-programmed positions, helping maintain user independence, posture, function and comfort.

# Benefits of memory seating for the user, therapist and carer/family member:

| | Without memory seating | With memory seating |
|---|---|---|
| **User** | ○ Risk of incorrect sequencing resulting in issues with posture and pressure ulcer development.<br>○ Time and energy consuming attempting to position the chair for every transfer in a 24-hour period.<br>○ Depending upon functional level possible reliance on others to help position the chair for Activities of Daily Living (ADL) and Person Activities of Daily Living (PADL).<br>○ Larger care package required, increased costs.<br>○ More time spent at home rather than with friends and family – social isolation<br>○ Unable to reposition oneself independently<br>○ Reduced independence and autonomy | ○ Correct order of Tilt & Recline 100% of the time assisting with posture and pressure relief<br>○ Set up/programming is quick and efficient<br>○ Tilt-in-space and recline used in the correct order as sequencing can be preprogrammed.<br>○ Chair moves into preprogrammed positions at the touch of a button/joystick<br>○ Time and energy saving when it comes to tranfers in a 24-hour period<br>○ Removes guess work, first time positioning accuracy<br>○ Improves access around home, office, school.<br>○ Increased independence and autonomy with Activities of Daily Living (ADL's) and Personal Activities of Daily Living (PADL).<br>○ Increased sitting tolerance/fatigue management<br>○ Social inclusion, more quality time with family and friends<br>○ Improved driving experience indoors and outdoors (touch of a button for indoor and outdoor mobility)<br>○ Can help improve daily compliance with treatment goals/aims<br>○ More confidence with the chair capabilities |

| | Without memory seating | With memory seating |
|---|---|---|
| **Therapist** | ○ Risk of misuse carers/family members tampering with tilt and recline functions<br>○ User/carer/family not sure of how far to tilt or recline the seating system<br>○ Multiple care givers or no routine care giver unable to provide training & education to everyone<br>○ Frequent re-referrals for positioning/pressure relief issues.<br>○ User abandoning seating systems | ○ Positions can be locked<br>○ Positions can be added<br>○ Caters for changing postural needs related to diagnosis/prognosis.<br>○ Reduces the risk of error in settings with multiple care givers/families<br>○ User more confident with equipment<br>○ Promotes user independence and autonomy<br>○ Increased safety with equipment use. |
| **Carer/ family member** | ○ Time required to get chair into the correct position for when assisting user with ADL and PADL activities<br>○ Difficulty applying hoist slings<br>○ More than one carer required for repositioning<br>○ Time spent positioning user reduces quality time care and user could have together<br>○ Needing to change angles for indoor and outdoor mobility | ○ Single carer working<br>○ Increases quality time spent with user, less demand on carers/family's time<br>○ Correct use of Tilt & Recline due to preprogrammed functions, reduced error.<br>○ Pre-programmed setting optimized for each user, less to remember – ease of use, every time with every user<br>○ Positions can be updated.<br>○ Can help with the application of a sling.<br>○ Can help with hoist transfers<br>○ Can improve user independence, ability to assist with their own Activities of Daily Living (ADL) or Person Activities of Daily Living (PADL) |

## 04 Conclusion

Memory seating is a tool which removes the “guess work” for users as it allows for positional changes at the touch of a button/joystick which are 100% tailored to the users’ functional and physiological needs.

Memory seating eliminates the chance of operation error for users, carer and family members. It is a simple, quick and effective way for therapist to encourage and increase user compliance. Most interesting are the possibilities memory seating offers in relation to pressure ulcer prevention.

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