

Client: R.K.

PT/OT/Supplier: Gavin Horan, PT, Clinical Sales Specialist, LCS, Ltd.

Location: Sligo, Ireland

Client Profile

- **Age:** 15-year-old female
- **Diagnosis:** Cerebral Palsy – **GMFCS Level V**
- **Clinical Presentation:**
 - Significant **extensor tone** affecting all four limbs
 - Repeated **extensor thrusts** when seated
 - **Asymmetrical posture** requiring custom support
 - **Microclimate issues and previous skin breakdown**
 - Reduced tolerance to sitting due to **shear and friction forces**

Seating Challenges

Prior to intervention, the client struggled to tolerate prolonged sitting. Episodes of extensor thrust caused:

- Loss of position within the wheelchair
- Increased shear forces against the seating surfaces
- Skin irritation and breakdown
- Reduced ability to participate in daily activities

Static seating systems were unable to absorb the forces generated by her extensor pattern, leading to discomfort and limiting time in her wheelchair.

Research and clinical experience show that dynamic seating systems allow movement while maintaining contact with support surfaces, helping reduce shear forces and improve stability.

Seating Interventions

Mobility Base

- **Ki Mobility Focus CR** manual wheelchair

Dynamic Components

- **Seating Dynamics Dynamic Rocker Back**
- **Seating Dynamics Dynamic Footrests**

These components provide controlled movement in response to extensor forces. When the client extends, the seating system **moves with the body and then returns to neutral**, absorbing force and protecting the user and equipment.

Custom Seating

- **Carved foam contoured backrest**
 - Accommodates pelvic and trunk asymmetry
- **Custom 3D ventilated cushion**
 - Provides pressure redistribution
 - Improves airflow to manage **microclimate and skin health**

Quick Notes

Challenges:

- ✓ Significant Extension
- ✓ Extensor Thrusts
- ✓ Shear and Friction

Areas affected:

- ✓ Back
- ✓ Legs

Equipment Used:

- ✓ [Dynamic Rocker Back](#)
- ✓ [Dynamic Footrests](#)
- ✓ [Ki Mobility Focus](#)
- ✓ [LCS custom 3D cushion](#)
- ✓ [LCS carved foam contoured backrest](#)



Clinical Rationale

1. Diffusing Extensor Forces

The **Dynamic Rocker Back interface** allows the seat-to-back angle to open during extension, reducing the impact of abnormal tone and protecting the user's body from injury and equipment from damage.

2. Reducing Shear and Friction

Dynamic movement maintains contact between the body and support surfaces, **reducing shear forces that contribute to skin breakdown.**

3. Supporting the Lower Limbs

Dynamic footrests move in response to extension forces, allowing telescoping, knee elevation, and ankle movement while **absorbing force and reducing active posturing.**

4. Maintaining Alignment

The carved foam back and 3D cushion provide:

- Postural correction
- Pressure redistribution
- Accommodation of asymmetries

The pivot points on the Dynamic Back and Dynamic Footrests allow movement without loss of postural alignment, in combination with optimal seating.

5. Microclimate Management

The ventilated cushion improves airflow and reduces moisture buildup, supporting **skin integrity during prolonged sitting.**

Outcomes



1. Improved Sitting Tolerance

The client now tolerates significantly longer periods in her wheelchair with reduced discomfort.

"For the first time in years, she can stay comfortably seated throughout the school day." – Parent

2. Reduction in Skin Issues

The combination of dynamic movement and ventilated cushioning has helped reduce friction and moisture.

"Her skin has improved dramatically – the redness we used to see daily is now gone." – Occupational Therapist

3. Better Postural Stability

The dynamic components absorb extensor thrust forces while maintaining postural alignment.

"Instead of fighting the chair, the chair now moves with her." – Seating Specialist

4. Increased Participation

Greater comfort has allowed the client to remain engaged in social and educational activities.

"She's happier, calmer, and able to stay involved with her classmates." – School Care Assistant

Impact on Quality of Life

The integrated seating solution has provided benefits across several domains:

1. Physical

- Reduced shear and pressure
- Improved posture
- Better management of extensor tone

2. Functional

- Increased sitting tolerance
- Improved participation in school and daily activities

3. Emotional

- Reduced distress during seating
- Greater engagement with peers and family

Dynamic seating systems are designed to **absorb extensor forces, improve postural control, and increase sitting tolerance**, ultimately improving quality of life for individuals with complex motor impairments.

Key Clinical Takeaway

When seating works *with* the body rather than against it, outcomes change dramatically.

By combining:

- Dynamic seating components
- Custom contoured support
- Pressure and microclimate management

this system transformed the client's ability to sit comfortably and safely.

Outcome Summary

- Reduced shear and skin breakdown
- Increased sitting tolerance
- Improved posture and tone management
- Enhanced participation and wellbeing

About the Author

Gavin Horan is a physiotherapist and clinical specialist in complex seating, mobility, and 24-hour postural management with LCS in Ireland. Gavin works closely with therapists, families, and multidisciplinary teams to develop individualised seating and mobility solutions for children and adults with complex physical needs. With extensive experience in custom moulded seating, dynamic seating systems, and advanced mobility technologies, Gavin focuses on translating clinical goals into practical solutions that improve comfort, posture, function, and participation in daily life. His work frequently involves the integration of custom seating systems, pressure management strategies, and advanced wheelchair technologies to address complex postural asymmetries and tone management challenges.

Gavin is actively involved in clinical education and professional training, delivering courses and workshops to therapists, engineers, and seating specialists across Ireland. He is particularly passionate about advancing innovative approaches to seating design, interdisciplinary collaboration, and improving quality of life for wheelchair users through evidence-informed practice.

