

Using Tension Adjustable Backrests to Improve Posture and Clinical Outcomes in Spinal Cord Injury

Claire Kelly, Specialist Occupational Therapist in Spinal Cord Injury

Background & Aims

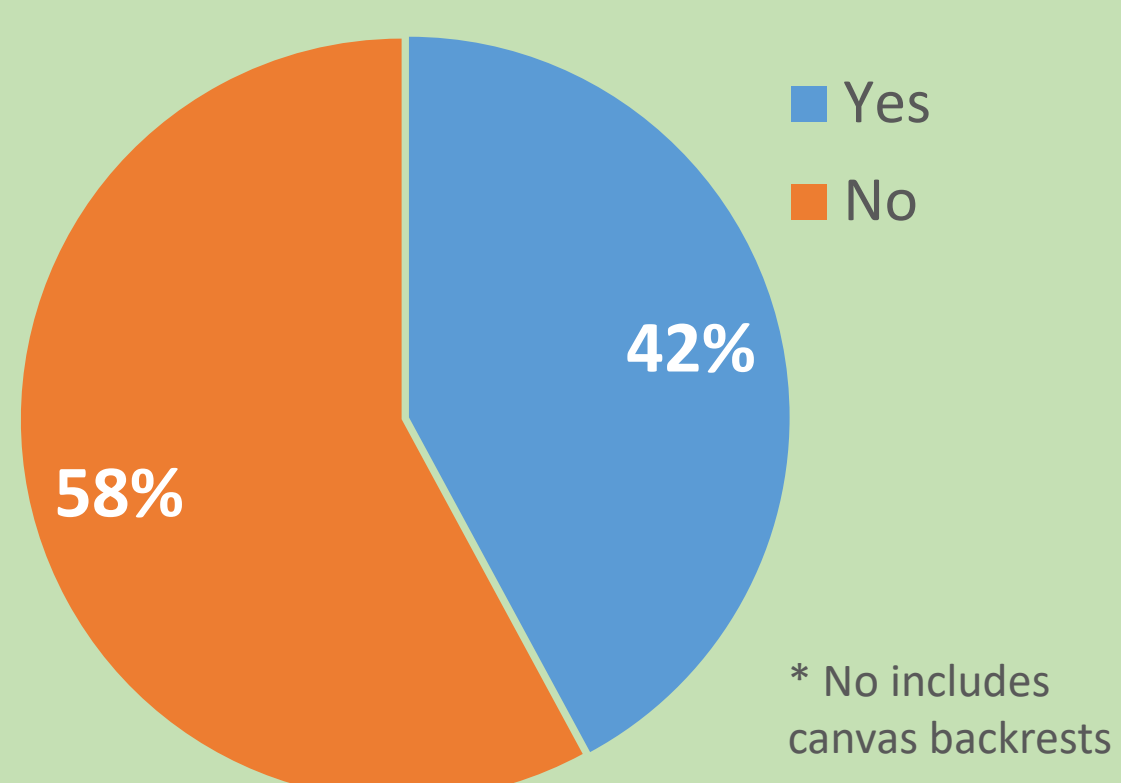
People with SCI have known complex seating needs. Wheelchair appropriateness is key to overall health and quality of life for people with SCI to sustain postural integrity, independence, mobility and participate in activities of daily living (Budai, 2018). Improper fitting wheelchairs lead to secondary complications such as pressure sores and elbow, wrist, shoulder and neck pain (Groah et al, 2015; Liampas et al, 2021; Valent et al, 2019). It is crucial that an individual with SCI receives a wheelchair that is tailored to their needs to facilitate independence and minimise the risk of acquiring injuries. LSCIC OT provide a lifelong service to people with SCI. Referrals can be made by a health care professional or the service user directly if under the care of the LSCIC. The main reason for referral into this service is for posture and seating needs.

Service evaluation methods

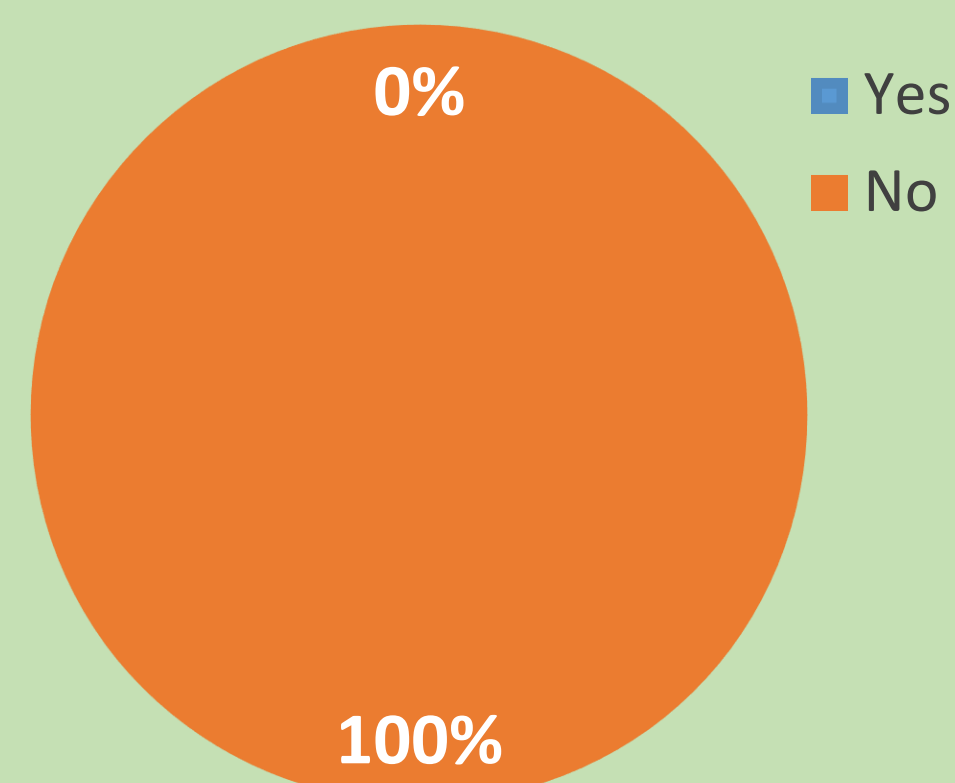
- Service evaluation looking at posture and seating management interventions provided at LSCIC conducted.
- Review of discharge reports for all adult patients readmitted to LSCIC in 2021 and 2022.
- Included in these results: people requiring support for postural stability in sagittal plane only
- 38 people met criteria
- Clinical outcomes coded and collated
- Intervention methods followed local LSCIC guidelines as developed by SCI specialists
- Results below show section on backrest configuration

Results

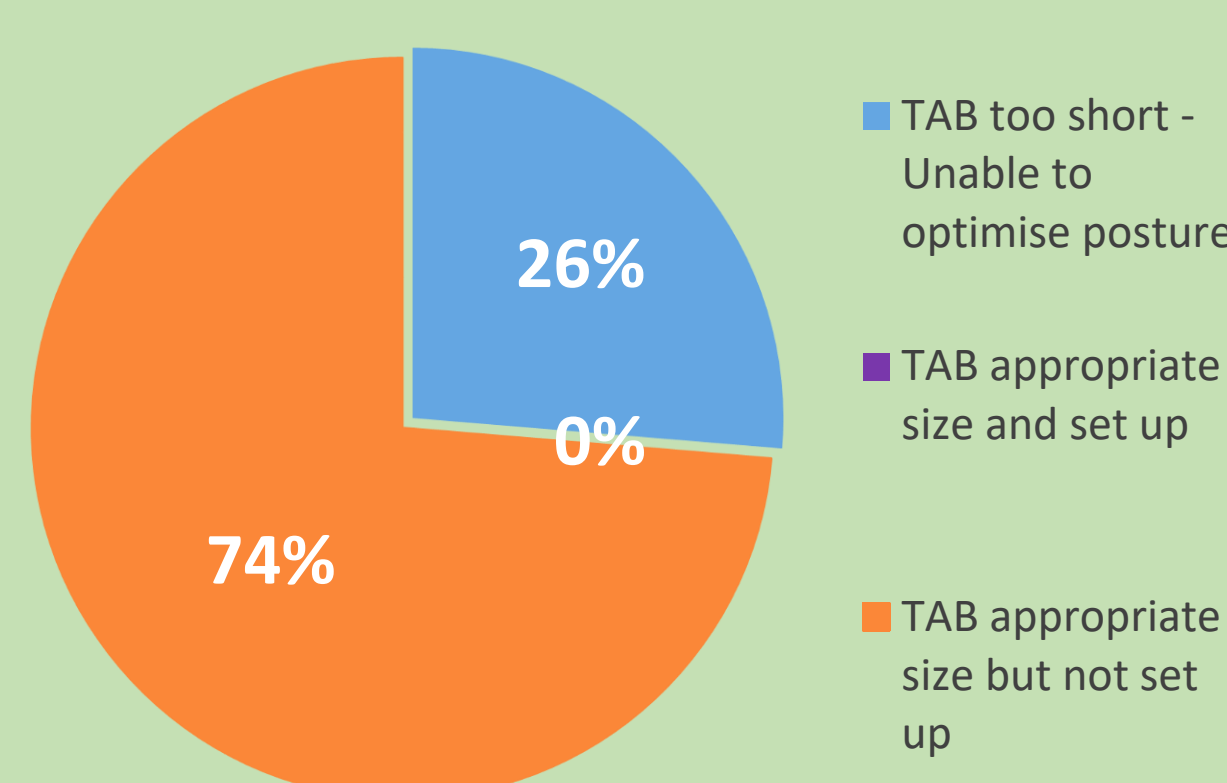
WAS THE BACKREST ABLE TO MEET POSTURAL NEEDS?



WAS THE BACKREST ADJUSTED TO SUPPORT SPINAL ALIGNMENT?



TAB SIZE



IMPROVEMENTS POST BACKREST ADJUSTMENT



Aims of LSCIC OT Intervention in setting up a Tension Adjustable Backrest



- All straps have been tightened or not adjusted
- Unstable pelvis, flattened lordosis, using arms to stabilise, flexion of cervical spine
- Hinges over the top of the backrest
- Lack of freedom for arm function
- Can lead to anterior or posterior pelvic tilt for stability

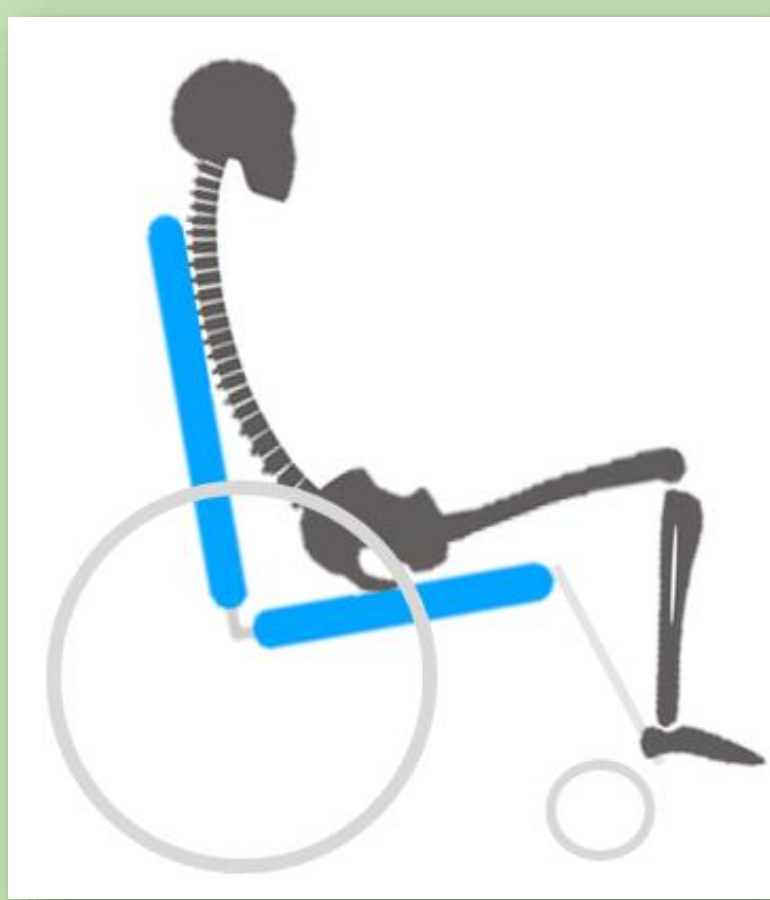


- Straps adjusted to support natural spinal curves
- Neutral pelvis, supported lumbar curve, optimal shoulder alignment
- Top of backrest 2cm below inferior angle of scapulae, free of back posts.
- Freedom of scapulae movement



- All straps loosened
- Canvas backrests always have this set up
- Posterior pelvic tilt, flattened lordosis, exaggerated thoracic kyphosis, cervical hyperextension, protracted shoulders
- High risk of pressure injury
- High risk of shoulder injury

Quick guide to setting up a TAB to optimise spinal alignment in SCI



Out-sling to make room for the bottom

Reposition pelvis to neutral and level

Tighten at lumbar spine

Mildly loosen off at thoracic spine



References:

- Budai, M., Farrell, E., Michael, E., 2018. Manual Wheelchair Configuration and Seating Considerations in the Spinal Cord Injury Population. *Curr Phys Med Rehabil Rep* 6, 204–211.
- Groah, S.L., Schladen, M., Pineda, C.G. and Hsieh, C.H.J. (2015) 'Prevention of pressure ulcers among people with spinal cord injury: a systematic review', *Physical Medicine and Rehabilitation*, 7(6), pp.613-636.
- Liampas, A., Neophytou, P., Sokratous, M., Varrasi, G., Ioannou, C., Hadjigeorgiou, G.M. and Zis, P. (2021) 'Musculoskeletal pain due to wheelchair use: a systematic review and meta-analysis', *Pain and Therapy*, 10(2), pp.973-984.
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SCAN ME