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Seating Dynamics

Clients Who Demonstrate Increased Postural Control and Function

Where Movement Occurs, What Happens if Movement is not Provided, Dynamic Solutions, and Expected Outcomes

Introduction

Dynamic seating provides movement within a wheelchair. When the client moves, the dynamic seating components move with the client, maintaining alignment with the seating system for postural support, skin integrity preservation, and stability. Clients who move against this resistance in a small and controlled range develop increased postural control, particularly trunk and head control, as well as increased function (Lange, et al, 2017; Lange, 2016).

This document is designed to provide Clinical Guidelines for the use of Dynamic Seating with clients who have the potential to develop increased postural control and function. Please refer to our other Clinical Guidelines for additional Dynamic Seating applications.

Where Movement Occurs: Hips / Knees / Ankles / Torso / Head

What Happens if Movement is not Provided?

1) The client may remain in a static seated position without opportunity to move, develop increased postural control, and improve functional abilities.

2) Loss of desired or optimal postural alignment can occur:

a) Client may move out of a beneficial position, resulting in poor alignment, poor pressure distribution, and decreased function.

b) Poor alignment may specifically reduce trunk and head alignment and control.

(Eason, et al., 2019)

Dynamic Solutions

What Dynamic Components may be used to Address or Reduce the Likelihood of the Above Issues?

1) Dynamic Back support hardware

2) Dynamic Legrest support hardware

3) Dynamic Head support hardware

4) Dynamic secondary support components (i.e. shoulder straps)

Expected Outcomes

1) When client movement occurs, the dynamic component will move, forces will be diffused (Avellis, et al., 2010: Hahn, et al., 2009), and the energy built up in the dynamic component will return the client to their starting position without loss of postural alignment.

2) Due to provision of movement against resistance within a limited range of motion:

a) Increase in muscle strength (McBurney, et al., 2003) without increase in spasticity (Fowler, et al., 2001)

b) Improved overall positioning, including reduced sacral sitting (McNamara & Casey, 2007)

c) Increase in postural control and stability, including increased trunk and head control (Adlam, et al., 2014; Dalton, 2014; Cimolin, et al., 2009; Incoronato, 2007; Crane, et al., 2007; Ferrari, 2003)

d) Increase in functioning (Adlam, et al., 2015; Adlam, et al., 2014; Crane, et al., 2007; Incoronato, 2006)

e) Specific increase in upper extremity control (Dalton, 2014; Cimolin, et al., 2009; Incoronato, 2007; Incoronato, 2006)

f) Improvement in use of Assistive Technology (Adlam, et al., 2015)

Conclusion

Many people use seating and wheeled mobility. It is well documented that wheelchair users spend many hours each day in a seated, and often static, position. People need to move to maintain and develop muscle strength and resultant postural control, particularly trunk and head control. Moving in a small range of motion against resistance has been documented to increase muscle strength and postural control. Research has also shown an increase of functional abilities, including upper extremity control and use of Assistive Technology after Dynamic Seating intervention.

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