The use of tilt-in-space wheelchairs:
Two different perspectives

J Casey¹ & E Regan²

¹School of Health Sciences, Ulster University, N.Ireland ²Regional Wheelchair Training Occupational Therapist, Belfast HSCT

j.casey2@ulster.ac.uk  emma.regan@belfasttrust.hscni.net

Background
• Tilt-in-space (TIS) is used with a wide range of individuals of various ages and conditions, and for a variety of activities and purposes¹.
• TIS is a costly design feature in wheelchairs and therefore clinicians should be confident in the reasons for its prescription².
• There continues to be a dearth of high quality evidence on the benefits of TIS upon the user’s function³. Most research continues to focus upon the therapist or the technical reasons for using TIS as opposed to the occupant’s personal reasons for using it.

Reasons for using TIS

<table>
<thead>
<tr>
<th>Reason</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce discomfort and pain</td>
<td>Sonenblum et al 2009; Harris et al 2009</td>
</tr>
<tr>
<td>Assist with transfers</td>
<td>Lacoste et al 2003</td>
</tr>
<tr>
<td>Assist with bowel and bladder management</td>
<td>Lacoste et al 2007; Dewey et al 2004</td>
</tr>
<tr>
<td>Improved breathing</td>
<td>Lacoste et al 2003</td>
</tr>
<tr>
<td>Prevent sliding</td>
<td>Lacoste et al 2007; Dewey et al 2004</td>
</tr>
<tr>
<td>Reduce spasms</td>
<td>Dewey et al 2004</td>
</tr>
<tr>
<td>Positioning to eat/drink</td>
<td>Pountney et al 2008</td>
</tr>
</tbody>
</table>

Personal Accounts: Posterior Tilt

‘I like to use between 10 and 15 degrees of backward tilt when driving my wheelchair. This way I feel more secure and balanced especially if I’m travelling over uneven ground or going downhill’. When driving in compact spaces, I can neutralise the tilt when required to decrease the turning circle of my wheelchair. ‘Being able to change from my tilted driving position to a neutral position also allows me to sit upright to eat and drink when I need to’.

Personal Accounts: Anterior Tilt

‘The anterior tilt allows me to get my feet on the floor so I can remove my footplates which gets me much closer to items in my kitchen’. ‘With my feet on the floor, I am well supported as I reach to lower levels such as my oven or washing machine’. ‘Tilting slightly forward helps me get my feet on the ground so I can stand up from the wheelchair. Although I can’t take any steps, it’s useful so I can reach items at a higher height, or independently use a urinal or toilet’.

‘In public spaces, access to tables can be a problem if they are too low. I can reduce the front ground to seat height of my wheelchair by tilting it forward to get under the surface’. ‘I have used this function in my college and public library to access computer workstations. It’s also useful in cafes and restaurants to get closer to the table’.

Angle of TIS

• Smaller ranges of tilt appear to be helpful to improve posture and balance, comfort, decrease pain;
  • 5-25° posterior tilt for postural stability and or maintain head upright; caution for more than this may compromise function and vision.
  • 45-60° posterior tilt for pressure redistribution; caution with those clients who opt to lean forward to see and adopt an unsupported kyphotic posture.
• Larger angles of tilt appear to be more effective for rest/relaxation; and pressure redistribution.
• Frequency – as often as possible for user.
• Orientation – Posterior, Anterior or Lateral tilt options depending upon activity being performed and/or reason for using.

Conclusions

• Minimal evidence on optimal angle of tilt for what function.
• Use and frequency should be individualised.
• Clinicians should consider using TIS for myriad of reasons, including posture, pain, comfort, pressure management, ease of transfers, and importantly to facilitate activity and social participation.
• Consider manual versus power tilt options.
• For greater manoeuvrability and environmental access in power wheelchairs explore wheel drive technology.

References
6. Pountney et al 2008 9