



# Tilt-in-Space

Clinical Benefits of Tilt-in-Space



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### Provides a change in position for clients who cannot independently shift their body weight

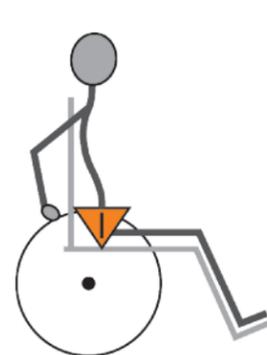
When an individual is unable to independently shift his/her weight or change positions while seated in an upright position, he is at a very high risk for skin breakdown and sitting tolerance is compromised due to his inability to redistribute pressure.

Tilt-in-space manual mobility bases:

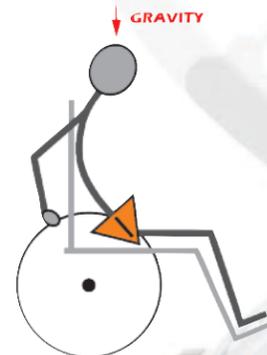
1. Provide a means for weight shifts and position changes.
2. Reduce the risk of skin breakdown by redistributing pressure from the pelvis to the back.
3. Provide a safe and easy way for a caregiver to provide a weight shift for the end user. .

### Provides a change in position for clients who cannot maintain pelvic, thoracic, or head position and/or balance against gravity for prolonged periods of time.

- While sitting in the upright position, gravity pushes down on the body.
- If muscle strength or overall endurance is compromised, clients will be unable to maintain proper upright posture, which can lead to postural deviations such as a posterior pelvic tilt, thoracic kyphosis, and/or lateral lean.
- Tilt in space helps promote proper seating alignment and decreases potential for postural deviations.



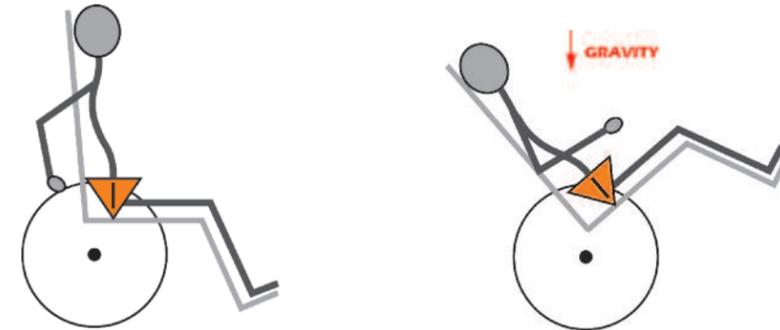
Upright posture is maintained against gravity in standard back



Poor posture results when fatigue occurs over time

- They are now at risk for fixed orthopedic deformities and skin breakdown on the sacrum and spine

- Tilting clients when they fatigue helps maintain them in an upright position, facilitates thoracic extension, and a neutral pelvis



Tilt in space re-oriens the body in space to reduce the effects of gravity and promote upright posture

### Provides appropriate position for clients who are at risk for respiratory complications

If the client cannot maintain upright posture and falls into postural collapse as above, the respiratory system can become compromised:

- The diaphragm has less room to drop as it contracts, so lungs do not fully expand
  - Can result in the collapse of lower parts of the lung (atelectasis)
  - Secretions are not mobilized – can result in pneumonia
  - It becomes more difficult to take a deep breath
  - Breathing is shallower and therefore faster
- Tilt can often be used to promote thoracic extension and reduce the risk of respiratory complications

### Provides appropriate position for clients who are at risk for digestive complications

If the client cannot maintain upright and falls into postural collapse as above, the digestive system can become compromised:

- Food cannot pass as easily down the gastrointestinal tract – this can result in gastritis, gastric reflux, esophagitis and/or bowel impaction
- Head and neck position are not optimal
  - Can cause aspiration with swallowing
  - Can set off primitive reflexes such as the gag reflex or tongue thrust
- Tilt can be used to promote postures that reduce the risk of g.i. complications

### Provides appropriate position for clients who are at risk for postural hypotension —

A condition in which the blood pressure drops when client is in the upright position, leading to dizziness or loss of consciousness

- Could lead to dizziness or loss of consciousness – a potentially dangerous event
- Dynamic tilt encourages blood to flow above heart level to assist client if this condition were to occur.

### Provides appropriate position for clients who are at risk for autonomic dysreflexia

A condition in which the blood pressure increases due to an event or condition that the body interprets as “noxious”

- This is a potential life threatening warning sign produced by the body to let client know something is wrong
- Could be caused by an overfull bladder (kinked catheter), an impacted bowel, a constriction of blood flow, a change in position, etc.
- Dynamic tilt allows the client to be brought quickly into the most upright position to try to assist lowering of the blood pressure

### Provides a change in position while minimizing the risk of extensor spasticity

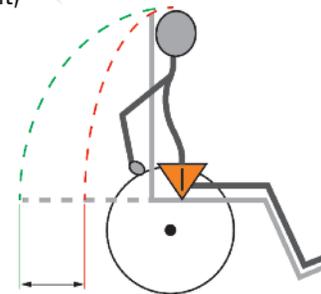
- A slight opening of the hip angle at the beginning of a weight shift can sometimes cause an extensor spasm
- Tilt maintains the optimal hip angle throughout the weight shift

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- When a client is reclined and then brought back to upright, there is some forward sliding of the pelvis on the seat that occurs (shear displacement)

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Shear displacement – recliner with a standard pivot point

- This is because the client's pivot point (hip joint) does not exactly match the pivot point of the chair (seat to back junction).
- In contrast, when the client is tilted and then brought back to upright, there is no movement of the body relative to the chair

## Additional Benefits of Tilt-in-Space

The curved rocker-arm allows the seat frame to rotate on the base frame, while maintaining the user's COG in near perfect alignment with the chair's center of rotation. This alignment is maintained throughout the tilt away and return-to-upright cycle. Because the user's COG remains constant and there is virtually no horizontal shift, the IRIS has the following advantages over other tilt in space systems:

- Can use the shortest wheel base on the market without compromise to the mobility base stability. This can significantly increase maneuverability for the care-giver and/or for the user capable of independent propulsion
- COG and Center of Rotation (COR) alignment significantly reduces potential of front-loading the casters and no compromise to maneuverability or safety for the care-giver or client
- With the user's COG and the chair's center of rotation in optimal alignment, the amount of effort it can take a care-giver to tilt the chair and bring back to upright position is drastically reduced allowing for smooth and effortless activity
- A constant COG has the potential to eliminate the problems associated with the horizontal shift that occurs in other tilt systems, such as:
  - Triggers or disturbances that could result in spasticity
  - Agitation in clients with cognitive issues
  - Protective extension reactions.