

CHOOSING THE BEST BACK SUPPORT

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Abstract

Choosing the best back support system for the wheelchair user is a complex and often confusing process. Most standard wheelchairs with fabric or vinyl upholstery provide inadequate support and can contribute to poor posture and impaired function.

There are a wide variety of add-on back supports to choose from ranging from simple curved backs for the active wheelchair rider to complex custom shapes for the person that has significant postural asymmetry. The simple fact that there are dozens of back supports to choose from makes the job of determining the best match a daunting task. Choosing the best back support requires careful evaluation and a clear focus on the outcome goals.

Biomechanics

When evaluating the need for a back support, the first place to start is to understand the biomechanics of the pelvis and back in the seated posture. Humans are not designed to sit. We are bi-pedal with pelvic and spinal anatomy perfectly suited for walking and running. The human shape in standing places the torso in balance over the pelvis allowing us to stand upright and not fall over. In general, however, most people spend more time sitting than standing. This is certainly the case for people that use a wheelchair as a primary mobility aid.

The pelvis and back are linked both in a physically and postural sense. The postural alignment of the pelvis and spine is quite different in the standing and sitting postures. In standing, the pelvis is rotated forward into a posture that would be considered a severe anterior pelvic tilt if the person was seated. As a person transitions from standing to sitting, the pelvis rotates (posterior), the lumbar curve flattens and the center of trunk mass shifts to the rear. This change in alignment requires matching back support angles if torso balance against gravity is to be maintained.

Support Needs

The needs for additional back support vary widely. Perhaps the easiest way to provide back support to selected areas is the use of adjustable tension upholstery. The contour of the backrest can be changed by adjusting straps and can make an otherwise inadequate back support work quite well for some people.

Short, firm back supports work well for many active users that do not require much support above the pelvis. Others need a mid-height to full-height back support to provide adequate support and stability. Full custom back supports are usually required for individuals with significant postural asymmetry. This is often accomplished with the use of a shape capturing technology where the person is molded into a seat simulator and the resulting shapes are copied, scanned or otherwise processed into a fully custom, intimate fit back support.

If a full custom system is not needed, there are many systems that allow moderate contouring using removable support elements or through the use of foam in place technology.

Summary

Providing the best back support requires a thorough evaluation to determine need and establish outcome goals. Not a simple task but understanding the equipment features and support needs makes selection of a backrest a much easier challenge.