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Are You Sitting Comfortably?

A client's seating system has to prevent the development of secondary injuries or difficulties over the years. A way to assess a seating system to ensure that it will not create these problems is to find out how comfortable it is to use. Comfort is subjective and hard to quantify, therefore its' objective components need to be recognized and addressed in order to measure it. The objective components that affect the comfort of a seating system include pressure distribution, vibration transmission, ergonomic settings, and the weight of the system.

The issue of comfort in a seating system has increased in importance because today people are using wheelchairs for longer periods of time. It is critical that the seating system is comfortable during every activity of the client's daily life in order for him/her to use it with correct body mechanics and thus prevent secondary injuries or difficulties.

The comfort factor

Ironically, even though comfort is one of the most important starting points when assessing a seating system, it is often overlooked. Comfort in a seating system is essential but is not always given as much importance as, say, the functional performance level of the individual. Often there is a fine balance between achieving optimal functionality and maximum comfort. For example, a tilt-in-space system may be the most comfortable for the individual but it is also the least functional position.

The comfort factor is a valid predictor of problem areas and an indicator of the client's compliance with the system. A seating system can only be effective when it is used, and it has to be comfortable for the client to use it. Obviously, comfort level can only be assessed when the client has sensation. However, it should not be assumed that assessing comfort is limited to clients who are able to verbally express their feelings; clinical observation and interviewing the caregiver are also methods of measuring the client's level of dis/comfort in the seating system.

Indicators of discomfort caused by a seating system include:

- Decreased sitting tolerance
- Increased agitation
- Development of red areas on the skin
- Decreased functional performance
- Difficulty maintaining optimal position

Pressure distribution for comfort

Pressure distribution has long been recognized as a key element to provide comfort, and there are plenty of excellent products on the market that successfully address this need. However, it must be realized that pressure distribution alone will not provide the most comfortable or functional seating system available.

Dampening the vibration

One area that has not been given the attention it deserves in creating a comfortable seating system is vibration transmission from the wheelchair to the individual.



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The role that vibration transmission plays in causing discomfort in a seating system and creating repetitive strain injuries of the individual is gaining recognition. DiGiovine et al. (2000) state that “Whole-body vibration experienced during manual wheelchair propulsion can decrease an individual’s comfort and increase the rate of fatigue.” This can further the risk of secondary injuries due to subsequent poor body mechanics. “Cushions designed for static pressure relief may not perform well in other areas potentially related to secondary injuries such as vibration.” (1)

There is a growing number of new products that are now available, including wheelchair casters, cushions and spokes that specifically address vibration transmission reduction.

Consider the ergonomics

An individual who is using a wheelchair performs the same repetitive motion for a wheel push over and over again, creating the potential for repetitive strain injuries to the shoulder region. Unfortunately, all currently available manual wheelchairs are designed to require this motion as a means of propulsion; therefore the risk for repetitive strains is something that cannot be totally avoided. However, a repetitive strain can be exacerbated by an awkward posture, which **can** be avoided in a seating system by applying knowledge of ergonomically correct postures when initially designing or changing a client’s seating system.

The lighter the better

The use of lightweight seating systems and mobility bases has traditionally been focused toward the very active client; however, a lightweight system has benefits for everyone who uses a manual wheelchair. As mentioned earlier, people are using wheelchairs for longer periods of time- just imagine the number of wheel pushes and curb hops that will be performed in a lifetime. If each one of these activities can be made to be more efficient by decreasing the load being moved, this will have a tremendous effect on the client’s comfort, safety and overall compliance with the system.

By addressing all of these issues you will have created a seating system that is efficient, comfortable, and safe, and that will prevent secondary injuries and ensure that both the client and the system will sustain long-term use.

References:

(1) DiGiovine CP, Cooper RA, Wolf EJ, Hosfield J, & Corfman T, (2000). Analysis of Vibration and Comparison of Four Wheelchair Cushions During Manual Wheelchair Propulsion. Proceedings of the 23rd Annual RESNA Conference, Orlando, FL, 429-431

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