

Benefits of natural materials in controlling skin microclimate

Abstract to follow

Solving the mystery of why a wheelchair seat is comfortable in clinic, but not at home!

Summary

Drawing on clinical and ergonomics research, this paper explores the concept of seated discomfort, asking “can comfort be objectively evaluated?” A multifactorial model for wheelchair seated discomfort is presented enabling us to consider comfort in more objective terms. Possible methods for assessing wheelchair seated discomfort are also explored.

Aims & Objectives

1. Define comfort in objective terms
2. Explore seated discomfort as a clinical problem
3. From published research...
 - a) Identify the key factors influencing seated discomfort
 - b) Propose a modified model of seated discomfort
 - c) Explore best practice for assessing wheelchair seated discomfort

Background

Wheelchair users often sit for more than 8 hours (Maeda et al. 2003), often with a restricted ability to change positions. This makes seated comfort a critical issue that directly influences well-being, sitting tolerance and performance (Watanabe et al. 2014). However, comfort remains difficult to define or quantify, creating the perception that it is purely subjective experience. As a result sourcing the funding to address issues relating to wheelchair seated discomfort is often difficult (Watanabe et al. 2014).

Conversely, there is an abundance of ergonomics research into seated discomfort, which is considered a key factor in vehicle seat design. Can examining this research help us to better understand the multiple factors contributing to wheelchair seated discomfort, and thus guide us towards a more evidence based best practice?

The Oxford Online English dictionary defines comfort as “a state of physical ease and freedom from pain or constraint”, while the Collins Online English Dictionary describes it as a “state of ease or well-being”. These definitions, however, reinforce the perception that comfort is a subjective experience. Mansfield (2005) proposes that comfort is more objectively viewed in terms of the resulting behaviour. We could therefore consider comfort as...

A situation where in individual, given the opportunity, would choose not to move in order to reduce pain or other unwanted sensations.

The link between increased voluntary movement and seated discomfort is supported by research by Cascioli et al. (2011).

However, the above definitions do not provide us with a clear understanding of the contributory factors which cause the seated discomfort. Ebe and Griffin (2000) conducted research into vehicular comfort proposing a model for seated discomfort which describes the role of both static and

dynamic factors, highlighting the role of shock and vibration on seated comfort when a seat is in motion. These dynamic factors are also critical to wheelchair seating, as wheelchairs are subject to shock and vibration which can be higher in magnitude than those experienced by car drivers. Mansfield et al. (2004) continued this research, suggesting a modified model to explain the influence of temporal factors, where discomfort accrues with time.

Discussion

Existing models of seated discomfort are useful in understanding the influence of vibration and shock on seated discomfort. They also help to explain why one seat can be considered more comfortable than another when stationary, but less comfortable when compared in motion. However, they do not describe all the contributory factors in enough detail to form the basis of objective seated comfort evaluations.

In this paper these factors are broken down further, examining the role of pressure, micro climate, postural stability and other factors in the role of wheelchair seated discomfort based on a mix of research and clinical experience. This examination is combined with the earlier models, and a multifactorial model of wheelchair seated discomfort is proposed. This more detailed model enables us to examine comfort more objectively.

A visual analogue scale developed for assessing vehicular seated discomfort is presented (Gyi and Porter 1999). The author then asks “can this approach better empower us with the clinical evidence we need to proactively tackle wheelchair seated discomfort issues?”.

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Prescribing wheelchair back supports – tension adjustable upholstery (TAU) versus solid manufactured

Summary

Little research exists on wheelchair back supports to aid prescription of tension adjustable upholstery or solid manufactured. The benefits and limitations of each are examined in relation to common postural abnormalities. A flow chart is presented which can help determine the specific features required to meet common back support goals.

Aims & Objectives

Identify and list three common postural presentations which require the provision of either a TAU or solid back support to meet client back support goals;

Identify and list at least two clinical benefits and limitations of both tension adjustable and solid back supports;

Describe a clinical reasoned process for the use of both tension adjustable and solid manufactured back supports.

Background

No clinical guidelines or standards exist to aid the prescription of back supports for wheelchair users. The use of conventional TAU and solid manufactured back supports for common client presentations are analysed with case study pictures to highlight specific features required to meet common postural problems. Specifically, the benefits and limitations of each back support type are examined in relation to common flexible and fixed spinal deformities such as kyphosis and scoliosis.

Discussion

Following analysis of each postural presentation a generic set of back support goals are identified. These commonly include reduce back/neck pain, improve comfort and sitting tolerance, improving trunk stability and functional ability, and correcting or accommodating postural deformities (Stone 1996). To address these goals, specific features are required which may be provided by either TAU or manufactured back support. Case studies are presented to help demonstrate how the flowchart may be used to identify the specific back support features required and ultimately guide non brand specific product selection.

The implication for practice focuses on clarifying the common goals associated with different postural problems, and then enabling prescribers to use the flowchart as an aid to clearly match the back support type to the user's needs. This will lead to improved clinical outcomes and reduce the cost to the wheelchair service or equipment provider.

References

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