An Evaluation of Pressure and Comfort

CareFlex WaterCell Technology® in Specialist Seating

CareFlex

Maximising Comfort

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The success of any chair is proven by the physical comfort it offers. We at CareFlex recognise that it's the main priority for users and we know that the majority of issues with seating are caused by the discomfort generated by bad posture or fatigue.

CareFlex WaterCell Technology® Responsive Contouring

CareFlex WaterCell Technology is at the heart of our specialist seating. Our patented system provides a reliable and continuous low-pressure solution for people at medium to high risk of pressure damage.

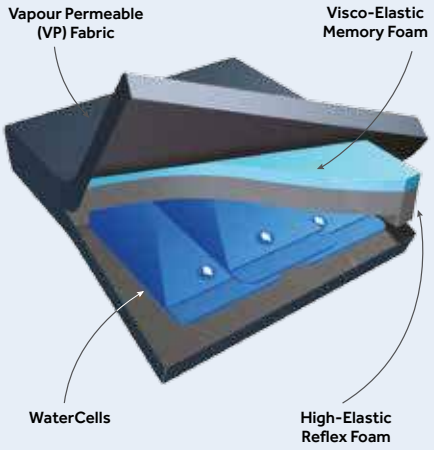
All CareFlex adult specialist seating solutions have WaterCell Technology built in as standard, enabling the user to achieve a stable and functional posture with continuous pressure relief and comfort.

The water cells work by allowing the seat cushion to contour naturally around the person's body.

The layer of Visco-Elastic Memory Foam moulds to the shape of the buttocks and thighs, distributing weight over a large surface area and minimising pressure build –up under bony areas. The fluid in each water cell is highly dynamic and responds instantly to changes in movement to ensure full contact is maintained between the body and the seat cushion. At CareFlex we have earned an outstanding reputation for the quality of our products and service. Independent testing has demonstrated the effectiveness of WaterCell Technology®* which means that we are confident that in a managed and trained care environment, as part of a 24 hour postural and pressure management solution, our water cells will suit users of all risk categories.

*MDA Evaluation PS5, 1998, Armchairs with special features to reduce interface pressure. Alternating pressure cushions and supplementary cushions. A comparative evaluation.





WaterCell TECHNOLOGY

Rationale for the Project

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In everyday life most people make postural changes instinctively. We shift our buttocks, stretch our legs out, move our head, neck and shoulders... we're constantly on the move to keep ourselves feeling good... we manage our own comfort, posture and stability... without a second thought.

But when a person's abilities are reduced or compromised by illness or disability, frequently they cannot make these voluntary movements themselves. Their lying and seating positions need close attention to maintain comfort and stability, and to ensure pressure ulcers do not occur.

Poor posture when seated can exacerbate changes in body shape due to adaptation of tissues and might impact on body systems. The forces of pressure are further worsened by moisture, and the factors relating to mobility, poor nutritional status, medications and underlying medical conditions.

*Consider whether an individual is chronically or acutely at risk of pressure ulcer development while seated**

People with kyphosis and many elderly people sit in chairs with their head slumped forward or to the side – chin to chest. Gravity can trap people in these destructive postures. This impairs their breathing, their ability to speak, so communication is poor, and their ability to eat and drink. Their whole quality of life will be compromised.

The pelvis is the foundation for building a stable seating posture. Get the pelvis position correct, or, at least, the best you can, and everything above and below has a better chance of improving.

*Avoidance of pressure ulcers is a key outcome for the seated acutely ill individual**

Of course, 'prevention is better than cure' and CareFlex seating, when used correctly as part of a 24 hour postural and pressure management solution, can help prevent pressure ulcers forming.

*Assessing an individual's needs for seating can be complex and assessment should be carried out by an appropriately trained individual**

The importance of correct specialist seating is gradually becoming recognised by healthcare professionals as an essential part of the 24 hour posture and pressure care management programme however there is limited robust research data.

CareFlex has over 20 years' experience developing high quality seating and can be relied on for expert, impartial and ethical advice.

For this reason, CareFlex approached The University of Salford to carry out a study to look at the benefits of using CareFlex Specialist Seating and the effectiveness of WaterCell Technology and to look at how people report their comfort in the chairs.

This is extremely important to help stop the high levels of 'equipment abandonment' which many health care professionals throughout the country witness daily.

*TVS Seating and Pressure Ulcers: Clinical Practice Guideline

Background: Aims of the Study

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**To explore the use of WaterCell Technology®
in the redistribution of pressure.**

The researchers wanted to know how comfortable/ uncomfortable users found the chairs and why. They wanted to find out whether there was a correlation between self-reported comfort (feeling comfortable) and pressure redistribution.

Three chairs were used: HydroTilt, SmartSeat and SmartSeatPro.

There were 12 participants between the ages of 19 and 84, male and female, ambulant and non-ambulant. Five in the group were wheelchair users.

Ethical approval was granted by the University of Salford Ethics committee and the involvement from CareFlex was purely to provide and deliver the chairs.

Research period: September - December 2015

Data collection tools

- Interface pressure measurements collected using the XSensor® PX100 pressure
- Clinical observations of respiratory rate, pulse rate, and blood pressure were collated to gauge physiological responses in relation to comfort and discomfort
- A validated comfort and discomfort rating questionnaire (Barbara Crane 2004) was completed by each participant to evaluate the comfort, discomfort
- A semi structured interview - digitally recorded



SmartSeatPro™



SmartSeat™



HydroTilt®

Literature Review

Economic Health Burden of Pressure Ulcers (Guest et al. 2015) £5 billion per annum.

27000 people affected per month. 6000 newly acquired each month (NHS England 2014), leading to a dramatic effect on health and wellbeing.

Dramatic impact on health and wellbeing (Langemo et al. 2000) Pressure Ulcers are defined as '... localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear.

There are a number of contributing or confounding factors also associated with pressure ulcers; the significance of these factors is yet to be elucidated.' (European Pressure Ulcer Advisory Panel [EPUAP] and National Pressure Ulcer Advisory Panel [NPUAP] and the Pan Pacific Pressure Injury Alliance [PPPIA] 2014).

Pressure ulcers occur when soft tissues are damaged or injured due to compression between two surfaces (Krouskop 1983; Schubert and Héraud 1994).

60 - 70 mm Hg for 1-2 hours may lead to soft tissue pressure injury (Kosiak 1959)

Adults with limited mobility, who are in a seated position for long periods are particularly at risk, because their weight is borne over a smaller surface area than when lying, with consequent higher interface pressure in the gluteal region (Barbenel 1991, Defloor and Grypdonck 1999).

Neutral sitting i.e. sitting upright the majority of the body weight is borne over the area around the ischial tuberosities with 75% distributed over the buttocks and thighs, 19% feet, 2% arm

Interface pressure mapping is now an accepted method used by researchers to evaluate seating pressure redistribution, as interface pressures have been shown to be higher in wheelchair users than those who do not (Brienza et al. 2001).

Lung et al. (2014) report on common measurements taken such as: average pressure, peak pressure, peak pressure index, peak pressure gradient, peak pressure ratio, and dispersion index.

Evidence based guidelines do exist (EPUAP, NPUAP, PPPIA 2014;

National Institute of Health and Care Excellence (NICE) 2014.

Level of guidance for people whilst seated is significantly less detailed than for people cared for in bed (Stockton, Gebhardt, and Clark 2009).

NICE (2014) noted a lack of comparative data on the effectiveness of such seat cushions in reducing pressure and risk of pressure ulcers.

Crane and Hobson (2002) highlight that effectiveness of pressure redistributing products may also be due to a lack of end user collaboration in product design and evaluation.

Results Overview

Conclusion

Results Overview

"The researchers found that CareFlex chairs were reported to be comfortable and the effectiveness of WaterCell Technology is comparable with other studies in the field in regards to pressure redistribution properties for people with a disability who need to sit for prolonged periods of time."

Comfort vs Discomfort

92% of participants reported the chairs as being comfortable, They described this by reporting positive feelings, ie falling asleep in the chair (50%), the chair being at the right temperature, feelings of stability and their body feeling more at ease, ie shoulder, eye level, etc.

Occupations

While they were seated in the chairs, 80% of participants reported being able to do more than they would usually do in terms of activities and leisure pursuits, ie watching TV, reading, knitting, etc.

Average Pressure

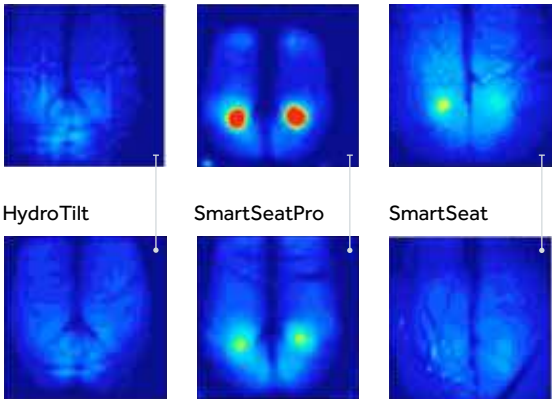
Between the three chairs, the average pressure was considerably lower than those in a comparable study - Kim and Chang (2013 - 60.95mmHg to 61.mmHg.

Peak Pressure Index

Across all three chairs, the peak pressure index was comparable to a study by Gil – Agudo et al (2009).

Examples of the pressure mapping results.

Own seats - wheelchair users



NB the thigh alignment

What the participants had to say...

"I'd forgotten what it felt like to sit somewhere comfortable... for the past three years I've literally either been in bed or in a wheelchair."

" I very, very rarely sit anywhere else because it's not comfortable. I have sat in this chair...and done things that I wouldn't normally do... for longer periods of time than I would anywhere else."

"It's novel being able to wear jeans with pockets on them again! On the settee I just end up with pocket marks on my bum!"

"I just find the chair so relaxing. I don't need my 'hotty' anymore."

"It was like my whole body had had a transformation really because the comfort is good."

"It's got to be down to the chair... It's a strange feeling... because I've not experienced that in such a long time (8-9 years)."

"I feel like I'm sitting better than I normally would which is enabling me to do things more comfortably."

" I'm just very comfortable and I can sit and cloud watch and I can sit for quite a while watching clouds!"

"... I didn't expect to doze in it.... I was quite surprised when I woke up. I might have missed a goal as well!"

Overall Conclusion

The research suggests that comfort is extremely important and that HCP's involved in assessing and prescribing seating should consider the individual's perception of their own comfort; how they feel about their own posture and their view of the aesthetics of the equipment, because often these factors will affect whether a pressure redistribution devise will be used.

Call us to arrange a free, no obligation assessment or demonstration

Call us now free on
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A full report is available on The University of Salford USIR, or you can contact the researchers direct:

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