



# Postural Case Study

Subject: Michael Kerr

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# OVERVIEW

Goal: to improve Michael's seating position.

## BACKGROUND

Michael Kerr joined our team early 2023, from the outset we identified that Michael's posture could be improved.

Michael has a spinal injury which he acquired in 2000. He is an active user who has used a self propel wheelchair since his accident. He's used his current wheelchair for approximately 5 years.

During Michael's training we discussed posture and the importance of supportive seating to improve function for end users. We suggested trialing some options with Michael to improve his wheelchair set up.

# CHALLENGES

The most significant challenge was Michael's seated posture, which he's adopted over the last 20 years to allow him to function in the chairs prescribed to him during this period.

His understanding was that all Tetraplegic users had to sit in a deep bucket. (created by building a chair with a radically lower rear seat height in comparison to the front seat height). The aim of which is to attempt to give the subject stability. This perception was reinforced by the chairs he used during his sporting career. Sports chairs are built with aggressive buckets to hold the athlete in chair however this would be for short durations.

Michael's **GTM** wheelchair was built with a welded backrest fixed at a 90° angle; in combination with the deep bucket that forced Michael's pelvis into anterior tilt (forward tilt). He found the position unsustainable, compelling him to slide his pelvis away from the lower backrest and adopt a sacral sit to gain stability. This position in turn negatively impacts his ability to both effectively propel and pressure relieve.

As a result of the body adopting a sacral C shape the subject's internal organs are put under pressure restricting digestion and breathing. Bowel and bladder function are also impacted as neither is emptied effectively leading to UTI's and urgency sensations.

Over the years Michael has never had the opportunity to explore supportive products including postural backrest and cushion combinations and he was interested to find out what affect they may have.

## **Back position**

The **GTM** chair has a welded backrest fixed at 90° angle with oversized tension adjustable upholstery which offers minimal lateral back support

## **Seat depth**

The seat depth is approximately 4inches too short. Providing no support under Michael's thigh resulting in pressure being forced into his bottom instead of being distributed across his thighs and bottom

## **Sacral seating**

As a result of the aggressive bucket on the seat Michael had to adopt a sacral sit to allow him to function in his **GTM** wheelchair. Adopting this position relieves the pressure building on his lower back . However the sacral position compresses the internal organs of his abdomen and has left Michael susceptible to pressure sores

## **Ergo seat**

The consequence of the welded backrest angle is that Michael is forced to sit forward of the ergo seat on the **GTM** and therefore gains no effective benefit from this feature

# OBJECTIVE

To reduce the adopted sacral position by offering as much support as we can with the seating and postural backrest.

## HOW WE'LL ACHIEVE THIS?

- Back position** Providing angle adjustment both in the wheelchair back & the postural backrest granting us infinite adjustment
- Seat depth** Increase the seat depth to support his thighs relieving the pressure on his bottom
- Sacral seating** Open the back angle and reduce the seat bucket with the intention of deterring Michaels habit of adopting a sacral sit. Addition of postural backrest to support the trunk and pelvis
- Ergo seat** If Michael no longer adopts a sacral sit he can now benefit from the ergo seat feature

# FIRST STEPS

Initially Michael tried a range of cushions with postural support features in his **GTM**.

The Stimulite was selected it offers stability, high pressure relief and it was comfortable too .

## JAY VICAIR STIMULITE



## JAY ROHO PHYSIO ADI



Next he tried several postural support backrests to find the most beneficial position for him.

The ADI backrest offered him the best support and at around 400g it doesn't need to be removed from the chair when lifting.

Throughout the trial it was essential to simultaneously test the effect of changing the wheelchair backrest angle in combination with the adjustability in the postural backrest. We had to consider the angle of the supportive back within the back posts- their angle, and the optimum height.



It was crucial that the addition of the back provided support and improved function to maintain Michael's comfort and stability throughout the day.

From our range of Market leading wheelchairs Michael chose the Ti Lite **ZR**.



The titanium frame is hard wearing and by customising the frame options Michael has selected the lightest configuration of this chair.

The **ZR** has been manufactured with a bespoke fluted backrest canes to accommodate the postural backrest whilst maintaining a narrow seat width.



# THE HANDOVER

During the pre-delivery inspection our Technician fitted the ADI backrest, Stimulite cushion and push rim covers to the **ZR**.

At the handover we observed Michael's seated posture and adjusted the backrest to offer full contact down his whole back; the cushion and back support now hold him in an open and upright posture. He no longer feels the need to slide forward into the the sacral sit as he is supported from the pelvis up.

The change in his seated position was immediately visible, and by reducing the seat bucket Michael doesn't have an uphill climb to transfer out of the seat, in turn reducing fatigue.

# AFTER HANDOVER

Compare Michael's seated posture in his old chair vs his new chair in the images below.

Its clear to see how open his new seated position is and noticeably he appears far more relaxed in the **ZR** wheelchair



**BEFORE**



**AFTER**

# MICHAEL'S REACTION

Michael has experienced quite a number of benefits as a result of adjusting the way he sits in his new chair.

He reports

- Not feeling the urge to sacral sit
- Less stomach pain and cramps
- Experienced less pressure on abdomen
- Less urge to visit the bathroom
- Transfers are easier as he doesn't have to get out of a deep bucket. He said: "Before I felt like I was disappearing into the bucket"
- More stable seated position
- "The backrest is so much more comfortable; more than I've ever experienced"

# THANK YOU!

We want to take this opportunity to thank Michael for taking the time to contribute to this case study and for allowing us to share the positive results he has experienced. We hope that this study can help more people to function better, live more comfortably and enjoy a better product.



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