



SEATING EXAMINATIONS IDENTIFY OPTIONS FOR THE SENSATE BODY

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The following rehab case studies are excerpts from the webinar, “Seating Problems, Let’s Fix ‘em!” presented by Karen Kangas, OTR/L, which is currently available on-demand at www.nrrts.org through the Learning Portal.

Please note: the names of the individuals within each case study have been changed to protect their confidentiality.

I've been involved in seating and mobility and positioning all my career. I primarily have been known as a pediatric therapist, but I also work with a lot of adults through our Office of Vocational Rehab, particularly in rural areas of Pennsylvania. Of all the issues I could talk about today, I really wanted for us to consider the problems not being addressed from an understanding of “seating for the sensate body.”

Why does sensation matter? The reason it matters is because the “sensate” body cannot tolerate remaining still. And in today’s current seating systems, “to say still” appears to be a primary consideration. This “seating position” is what is considered “correct” or the “right” seating. But, the fact of the matter is, in a sensate body, the body must be accommodated to manage a range of movements, because movement must be able to occur. As a seating specialist, you’re not just giving someone a mobility system, meaning that system is going to allow them to be more mobile within their environment. The individual with a sensate body also needs to have movement within their seating system. The word “mobility” simply means movement. Individuals with “sensate” bodies need to move within their chair.

Sensate bodies cannot remain still even if movements are very subtle, and at times, may be more dramatic. There is no possible way a sensate body can tolerate being still. If I right now came to you, whatever position you happen to be sitting in at this exact moment in time, no matter what it is, and I then held you firmly in this exact position, you would find it intolerable in less two minutes.

With a sensate body, one can feel, and one cannot tolerate being totally still for long periods, even if the position is initially chosen by the person. In contrast, an insensate body, such as one with a spinal cord injury, lacks the sensory feedback that helps maintain skeletal integrity. Without this feedback, the skeleton (of a desensate body)

can sink into the soft tissues, actually causing bruising and damage within those tissues, because the body does not “feel” how it can adjust its position.

CASE ONE

I want you to meet Luke. Luke has a traumatic brain injury, and he also had bilateral femoral resections. (This means the heads of both femurs were surgically removed.) This surgery occurred more than 10 years before this assessment. Post-surgery, Luke had pain in both lower extremities, possibly because the femurs are now “floating thigh bones” as they are no longer located within the hip joint. Consequently, that thigh bone can “dig” or “push” into the surrounding tissues. Luke’s body is sensate. He feels pain. Although his body is now extremely limited in voluntary control, it is still fully sensate.

Luke only has limited lateral head movement and limited grasp in one hand. He can't drop his chin or drop his head back, but he can move his head from side to side. And he has an active grasp within his right hand. He uses a single mechanical switch attached to a buzzer to communicate. He is able to push that buzzer and make it buzz once for yes, and twice for no.

Luke is very adept with this buzzer and figured out he could hold it for a long period of time, or he could hit it repetitively, if he was trying to make a point.

When we were looking at seating, I wanted him in a powered chair with powered seat functions. I wanted him to be able to be up and about all day. He loved going out in the community, but he couldn't tolerate being in the same position all the time in his chair, as the leg pain would become intolerable. And when he was in this pain, he needed to be repositioned and that meant he had to be transferred to his bed.

So, we wanted to look at powered seat functions on a chair we could alter subtly throughout the day to cope with this pain including a full recline, so a



Patient with TBI, driving forward with use of hand switch in power chair with multiple seat functions, which allow for many small alterations throughout the day by his nurse attendant, rather than being put back to bed. This was due to residual bilateral hip pain.

resting position could be managed. When Luke was in his bed, his knowledgeable nurse (who had been with him for years) used small pillows to assist in positioning to decrease pain. We needed to use those within his seating system as well. With pain, in sensitive bodies, no single position reduces pain, instead, the “changing” itself, reduces pain, and these positions can vary during the day. So, powered seat functions and the little pillows were needed.

We did have some days when he needed his right knee to be higher. Some days it needed to be dropped down; it couldn't be fixed in one position. Sometimes we needed to alter the left side, so the right side would remain stable. This was the leg that had the most pain. The little pillows were kept in his backpack, so they were readily available for his nurse to use at any time.

The hip guide is also important to use. You can see his right hip guide is farther back and his left hip guide is farther forward and then we have the little pillows which can be added as needed. You can see the right arm is dropped a little bit farther down than his hand. He has disuse atrophy in his left upper extremity so that arm rest functions as a prop for that arm.

Life changed for Luke. His nurse said “it's been so unbelievable. He is so much of a happier person because we can literally go out and go shopping in the afternoon. We can go around the facility and we can stay throughout a whole activity. Luke is a social person, so he is so happy to be out of bed.” Luke lived in a retirement community where his bedroom was in the skilled care section. He could now join community activities and tolerate them because he could look at his nurse, she could change his position a little bit, not only with the powered seat functions, but add little pillows if needed.

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Closer view of use of hip guides, left one more forward, right one farther back, both supporting legs to diminish residual pain, and small pillows used and altered throughout the day for pain relief. This allows him to be “up” all day and in the community, not having to go back to bed.

REHAB CASE STUDY
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CASE TWO

Next, let's look at Chris who has amyotrophic lateral sclerosis. This is how he looked when I met him, and he could barely manage this powered chair any longer.

He was using a joystick driven chair, but he wasn't able to manage it any longer. He was also very concerned about all the chairs that he was shown. They were much bigger, and he didn't think they could fit within his home.

He's also a very slender guy and all these bigger chairs also had much bigger seating systems, with higher backs and many other large parts. He then got a chair, which was simply drop shipped to him at his home. (This is where I joined the situation). He was supposed to get in it, and make it work. He was also expected to manage a joystick, which he couldn't anymore. But, he still had the energy to be able to use a mouse and still work from home. He was home during the day between four and six hours on his own.

We were able to move to a head array. I also needed to ensure the back was not too high. We had to use an extended mount, because he's a tall guy. I wanted the head array to be small, and we also wanted him to be able to get close to his computer.

This is the chair where I added one hip guide. Why did I add that hip guide? After the hip guide was added, when he was dropped into his seat and transferred, he could feel stable. And he's an easy transfer. He's so lightweight. But in the past, he would



Patient in new power chair, with a lower back, left removable hip guide and driving with a head array, using a single red switch at left hand for reset/select switch. Head array allowed him to use his mouse and get close to his computer.



Patient with ALS in scooter and current seating, which he could no longer manage due to his progressing weakness.

realize after you left him for an hour and a half, he was seating in the wrong spot. We use the hip guide here as a guide and a "locator" so his body could be placed next to the hip guide. He could then feel the side of his leg solidly against the hip guide. This supported his pelvis enough that he's in the position to be able to not only manage to drive but do things during his day.

Just looking at his seating system, it seems simple, you can also see that the hip guide is removable. That's because sometimes it is taken off when he needs a transfer from the side of the chair. His wife takes him out from the front, but the attendants do better taking him out from the side.



Patient's wheelchair, with hip guide off, for ease of transfer, and showing lower back, which was needed for limited but needed trunk movement.

IN CONCLUSION

When you are dealing with a patient who has intact sensation, that's what sensate means. Even with a patient who has had a stroke, she has sensation on the non-affected side and often, she may still have some sensation in the affected side. Their paralysis still can maintain sensation as their injury was in the central nervous system (vs. in the spinal cord).

We all need to recognize for patients with sensate bodies that movement within the system is critically important. The supports we provide are not simply functioning as restraints, but they may also be functioning as cues, sensory cues for information to them regarding their current body position. This then also allows for more function and rotation in the trunk to support the extremities and provide a more upright posture and support respiration.

We need to carefully look at the seat cushion, specifically its relationship to the front hangers or the legrests and where the relationship of these positions affects that person's ability to transfer.

We also want to make sure we are observing our patients' bodies very carefully over time. It's very hard to do a seating assessment on a sensate person in a one-shot situation. Since their bodies need movement, and their bodies need to change positions throughout the day. These individuals are frequently going to be tired at different times and their expectations of their chair's supports will vary, as well.

Consequently, we need to build into our assessments that when we fit and deliver the system, we may need to have to change some parts. We may need to add some parts. That's why I choose the many parts I am recommending. I want them to be as flexible as possible, and I want them to be adjustable and removable.

I have many patients who will say to me during an assessment, "I'm not going to need that part." But when I go see them at another time of the day, I can easily point out to them, that they do need that part now. In short, sensate bodies need change. This change cannot be pre-determined, or predicted, but it must be accommodated.

We also need to recognize how important it would be if we could add pre-tilt as a powered seat function. Pre-tilt is the ability of the recline to come forward 90 degrees into an anterior position, and this allows

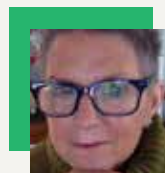
the body to move slightly forward, and to offer increased support to that person's body into a more active position. This powered function allows the position to alter and not to be used all day, but to be able to be used so there is the ability to always move between relaxation and active control. The pelvis is non-weight bearing when the body is relaxed, and it is weight bearing when the body is active. Moving between this range is what the rest of us do all day, every day, subtly, and more dramatically, depending on what activity we are currently engaged.

I also want us to recognize how important leg positioning is to the pelvis and to the trunk and to the body. And recognize how high the back is and how these relationships of the equipment can prevent or support movement within seating systems. The parts we most frequently add are headrests, armrests, legrests. These are all signals to the body to rest. Yet, if we want to support our patients' bodies to be active, we can't have their bodies in positions of rest and then somehow expect those bodies to be more active... especially when that body is already coping with a disability. A body can have limited energy, limited range or limited movement. We need to ensure we are providing systems which support activity, function and accommodate the disability, but support movement.

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Karen Kangas, OTR/L, is an occupational therapist actively practicing for 50 years, a seating and mobility specialist for over 40 years, an AT specialist over 30 years, an adjunct faculty member at Misericordia University for seating in pediatric practice for over 10 years. Currently, she has been in private practice in Pennsylvania (for over 25 years) specializing in individuals with complex bodies for seating, mobility and access to AT (including AAC devices, computer access, powered mobility and environmental control), and she is a clinical educator, teaching workshops throughout the U.S. Kangas also has taught in New Zealand, Sweden, the UK, Scotland, Ireland, Israel and Canada. She is currently involved in a multiyear, statewide pilot project supporting students with complex bodies supporting the use of AT for inclusion and is working on a book focusing on children.