



**RESNA Position on the Application of Wheelchairs, Seating Systems, and Secondary Supports for Positioning vs Restraint**

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### **INTRODUCTION**

The purpose of this document is to assist practitioners in decision-making and justification by clarifying the concepts of positioning and restraint based on intended purpose and treatment, sharing typical clinical applications, as well as providing evidence from the literature supporting the application of wheelchairs, seating systems, and secondary supports for positioning vs restraint. It is not intended to replace clinical judgment related to specific client needs. Where evidence is lacking, clinical opinion is provided. The authors have significant seating and mobility experience and consensus was obtained through meetings and other correspondence.

The beneficial use of postural supports for people who use wheelchairs is well documented in the literature (Minkel, 2000; Hastings, 2003; Paquet, 2004, Pedersen, Lange 2002, Zollars 2010). Seating systems provide postural support and stability that enable greater function and minimize the risk of secondary medical complications, such as pressure ulcers and joint contractures (Chaves, 2007). These products can result in greater freedom of mobility than would be possible without the support. While this may be inherently reasonable to seating and mobility practitioners, many wheelchair positioning components are perceived as physical restraints, as defined by regulating government agencies, most notably the Centers for Medicare and Medicaid Services (CMS). Although there have been attempts to clarify these issues through an evolution of the operational definition of physical restraint, much uncertainty remains among facility administrators and caregivers, as they endeavor to remain in compliance with federal, state and local regulations governing the care and treatment of people in their facilities. As a result, there has been a tendency to over-generalize and place certain seating supports into the category of physical restraint (Lange, 2011). This issue has moved from long term care, where these regulations apply, to other settings where seating and positioning strategies are complex in terms of goals and desired outcomes (Lange, 2011). It is critical for everyone involved in the discussion to be clear on the most current regulations, as well as the interpretation of those regulations by program surveyors. Only then can facilities and practitioners work to balance an individual's postural support needs with least restrictive mandates enacted by regulating agencies. Regardless of the clinical evidence and expertise documented regarding the benefits of seating intervention and the well-meaning of health care worker's intent to assist individuals in safety or positioning, compliance with federal regulations is mandatory and assures that the rights of individuals are being met.

This paper is intended to give equipment providers and practitioners information, guidance, and recommendations regarding the appropriate use of postural supports in settings where physical restraint policies are in effect. Seating assessment is emphasized as optimal seating may reduce the need for secondary supports, which can be perceived as a restraint. The use of seating components in transportation is included to clarify the definition of restraints in the context of transportation. Finally, clinical indications and contra-indications for the use of seating

components with the specific intent to limit movement, rather than influence posture, are presented.

## DEFINITIONS AND REGULATIONS

One of the most complex aspects related to the understanding of a restraint might actually be the definition of the word itself, which is “an act or the quality of holding back, limiting, or controlling something” (Encarta Dictionary: English-North America). Additionally, a restraining entity (or device) is defined as “something that controls or limits somebody or something.” While this core definition of the word itself is fairly straightforward, there are numerous regulations and policies that define a restraint and subsequently either require or limit the use of these devices in healthcare and long term care settings. This paper will focus on United States regulations and policies. These stipulations are typically intended for a specific context or application, which is where complications arise. The definition of a restraint will vary depending on the context: community vs institutional setting, hospital setting vs long term care setting, pediatric vs adult setting, and so forth. It is important for practitioners to understand the relevant definitions and regulations that may apply in their specific work setting. Although a practitioner may have an appropriate therapeutic or functional justification for the application of a postural support, he or she may find that if the support satisfies the definition of a restraint in the specific environment where it is being applied, it will be regulated as such.

In wheelchair seating systems, assistive technology practitioners often use postural support devices (PSD) such as pads or straps to limit or control a specific movement of the body. In this way, postural support devices may be perceived as restraints. However, PSDs are typically much more complex and their major role is to provide support to increase function rather than to restrain and limit functional movement. For example, an anterior pelvic support (e.g. pelvic belt or subASIS bar) is used to limit a specific movement of the pelvis or buttocks – typically migration forward on the seat. The static position of the pelvis supports the function of the upper extremities and trunk for improved reach and propulsion of the wheelchair. A support is defined as “to hold up or serve as a foundation or prop for” (Merriam-Webster Dictionary). This definition varies greatly in intent from the dictionary definition of restraint.

Practitioners usually refer to these devices as “supports” rather than “restraints,” for two reasons:

1. “Supports” are used to achieve a very specific position or posture of a body part in addition to minimizing migration in a specific direction.
2. “Restraints” typically refer to devices that are used to limit harmful motion during vehicular transportation, or a device that is carefully controlled in many settings.

### *Federal Definitions*

The following definitions will assist the practitioner in understanding the varied definitions and regulations as they relate to restraints. In the United States, settings that receive federal funding are subject to regulations that contain a number of important definitions relating to the use of restraints. Both the Food and Drug Administration (FDA) and the Department of Health and

Human Services (HHS) have defined the word “restraint” in their program regulations. The FDA defines a “protective restraint” in 21 CFR Section 880.6760 as

*“a device, including but not limited to a wristlet, anklet, vest, mitt, straight jacket, body/limb holder, or other type of strap that is intended for medical purposes and that limits the patient’s movements to the extent necessary for treatment, examination, or protection of the patient or others.”* (FDA, 2013).

This definition applies specifically to devices that attach directly to the person for the specific intent of controlling the movement of a person or a part of the person in the context of medical treatment. The FDA **regulates products when restraint is a specific intent of a product**, but does **not** define as restraints any other products or devices that may be adjacent to a person and also used to control movement of a person. As such, the FDA regulations do not apply to wheelchairs, seating systems and secondary supports when the **intent** is to provide postural support, stability, pressure distribution and pressure relief.

The Department of Health and Human Services includes a definition of a restraint in 42 CFR Section 482.13 that pertains to the regulation of restraint use in hospitals and other health facilities, including long term care. (GPO, 2013). CFR 42 Part 482.13 (e) (Patient Rights) states:

*“All patients have the right to be free from physical or mental abuse, and corporal punishment. All patients have the right to be free from restraint or seclusion, of any form, imposed as a means of coercion, discipline, convenience, or retaliation by staff. Restraint or seclusion may only be imposed to ensure the immediate physical safety of the patient, a staff member, or others and must be discontinued at the earliest possible time”*.

As such, this definition does not apply to wheelchairs, seating systems and secondary supports when used to provide postural support, stability, pressure distribution and pressure relief, as opposed to a means of “coercion, discipline, convenience, or retaliation by staff.”

Further,

*“A restraint is any manual method, physical or mechanical device, material, or equipment that immobilizes or reduces the ability of a patient to move his or her arms, legs, body, or head freely”* (CFR 482.13(e)(1)).

However, 482.13(e)(1)(i)(C) clarifies that “a restraint does not include devices, such as orthopedically prescribed devices...” (typically used for medical surgical care). As such, this definition does not apply to wheelchairs, seating systems and secondary supports when used to provide postural support, stability, pressure distribution and pressure relief, as opposed to intentionally immobilizing or reducing movement. Movement may be limited by this seating technology; however the intent is postural support, stability, pressure distribution and pressure relief for improved function, not limitation of movement.

The Interpretative Guidelines for this standard further clarify that a mechanical support used to achieve proper body position, balance, or alignment so as to allow greater freedom of mobility than would be possible without the use of such a mechanical support is not considered a restraint (CMS, 2013). As such, wheelchairs, seating systems and secondary supports are used to achieve proper body position, balance and alignment. Depending on the complexity of the client’s needs, mobility may not be improved, however the intent is not to limit movement (Rader J, 1999).

The issue of physical restraint regulation and interpretation becomes further complicated when some agencies continue to use definitions that are not current. Until 2007, a physical restraint was considered to be “any manual method or physical or mechanical device, material, or equipment attached or adjacent to the resident’s body that the individual cannot remove easily which restricts freedom of movement or normal access to one’s body” (Omnibus Budget Reconciliation Act of 1987, P.L 100-203). The language of “adjacent to” and “cannot remove easily” can certainly raise concerns among facility administrators when extensive supports are added to a wheelchair, despite the documented postural support benefits. It should be noted that these regulations do not address the issue of specific wheelchair components as potential restraints.

As regulations have evolved over the last decade, there has been a shift conceptually from discussion of a particular device (a bedrail, for example) and its intended use—to a discussion of the device’s overall effect on the individual. For example, there may be significant functional improvements from the use of a device; however it may also have the effect of restraining the individual unnecessarily.

### *Federal Regulations*

The **Omnibus Budget Reconciliation Act of 1987 (OBRA)** regulations cite that the individual’s preference regarding use of a restraint must be met, if possible (Social Security, 1987). An individual may prefer specific seating interventions (that may be perceived as a restraint) for functional purposes or to minimize the risk of injury. If the individual requests such intervention it can be used despite other policies that may be in place. For example, an adult with cerebral palsy who has significantly increased muscle tone may be able to drive his power wheelchair with his chin mounted joystick if his/her arms are strapped to the arm support. He/she does not consider these straps to be restraints and has requested their use. Removing the arm straps, in this case, could have a restraining effect, as the individual would no longer be independently mobile in his/her powered mobility device.

OBRA regulations state:

“Restraints may only be imposed, 1) to ensure the physical safety of the resident or other residents, and 2) only upon written order of a physician that specifies the duration and circumstances under which restraints are to be used” (OBRA).

OBRA regulations apply to facilities receiving federal funding, although other settings may adopt these regulations, interpret them, and add to them. If a wheelchair or seating component is intentionally used as a restraint, documentation must clearly state why a secondary support is being used as a restraint and that documentation must then be signed by a physician. Following these guidelines will also reduce clinician liability.

The clinician should use good judgment when asked by caregivers in a home setting to restrain an individual intentionally using a wheelchair component. Such interventions, in addition to requiring physician authorization, often require review by the provider’s human rights committee, or there may be other team processes in place to protect the interests of the

individual. Once these assurances are in place, the clinician should document the intervention and provide appropriate caregiver training (Agens, 2010).

Finally, many settings add their own interpretation to current regulations. In this case, it is critical for the practitioner to be familiar with the original federal definitions and regulations. Documentation may need to address setting-specific requirements as well.

### *Occupant Restraints in Motor Vehicles*

The word restraint when it is used in motor vehicle transportation has a very different and specific definition. Restraints, or in this case “occupant restraints” are used to minimize the risk of serious injuries during normal and emergency driving maneuvers as well as in motor vehicle accidents. Occupant Restraint is defined as “*a system or device designed to restrain a motor vehicle occupant in a crash by keeping the occupant in the vehicle seat and minimizing contact with the vehicle interior, other occupants, or objects outside the vehicle.*” The pelvic-torso belt restraint is used in addition to traditional postural supports which are defined as “*a padded component and/or belt used to help maintain a person in a desired position during normal wheelchair use. In general postural supports are not designed to provide effective occupant restraint in a motor vehicle crash.*” (RESNA, 2012). When postural supports enable upright posture, injuries from transportation restraints may be significantly decreased. Key information on the use of secondary postural supports in transportation is available from the RERC on Wheelchair Transportation Safety.

To be deemed a proper restraint in a motor vehicle environment, devices need to be tested and approved under very specific force conditions. These conditions, as well as specific definitions, of occupant restraints are documented in both national (ANSI/RESNA) and international (ISO) standards (Schneider, 2008). Please refer to the following web site for step-by-step pictorial guidance regarding proper restraint in motor vehicles: <http://www.travelsafer.org>. It is important for practitioners and consumers to understand the differences between occupant restraints and postural supports in this environment as they become critical when a person using a wheelchair for mobility and postural support also uses this equipment for transportation in a personal or public vehicle. For more information on this subject please refer to the RESNA Position on Wheelchairs Used as Seats in Motor Vehicles (Buning, 2012).

### *Primary Support Surfaces and Secondary Support Components*

Another important distinction in this discussion of postural supports and restraints is the difference between primary support surfaces and secondary support components. The most common and critical primary supports are the wheelchair seat and back supports which are used to enable sitting (Presperin Pedersen & Lange, 2001). This might differ if the postural support device is in something other than a wheelchair (i.e. the person is not in a seated position). Depending on the postural control and mobility of the occupant, these primary support surfaces may also include foot, leg and arm supports. Although primary supports do limit movement (typically movement down toward the ground), these are rarely perceived as restraints and there is little doubt that these are essential to maintaining the person in the body support system (Presperin Pedersen & Lange, 2001). Primary support surfaces may therefore be considered the

“bare minimum” of postural supports, since without them the person would likely fall out of the wheelchair or other mobility device and sustain injury.

Secondary supports are typically those used to help maintain a very specific posture or position of a certain body part or area, such as a person’s upper torso, extremities or head, while the basic seated position is maintained by the primary supports. Secondary support components are most commonly used to limit specific movements or postures which are maladaptive, nonfunctional, or unsafe for the user. For example, an anterior pelvic support is frequently used to minimize forward migration of the pelvis which could result in a pelvic position that places the user at risk of skin breakdown (Hunt Herman & Lange, 1999) (Presperin Pedersen & Lange, 2001). The number and type of secondary support components will vary widely depending on the voluntary and involuntary movement characteristics of the person using them. Individuals with a significant lack of voluntary control will require a very different body support system than a person with voluntary, functional movement. Individuals with poor postural control may require increased use of secondary support components, particularly if their lack of voluntary control is combined with increased involuntary movements. Again, because of their common use to control specific aspects of movement, secondary support components can frequently be perceived as a restraint, depending on the setting in which they are used.

## **SEATING ASSESSMENT AND DOCUMENTATION**

A comprehensive clinical assessment of seating and positioning needs is essential to ensure that the most appropriate supports are used with the intention of achieving proper body position (Giesbrecht, 2012). This includes identifying other therapeutic interventions that could positively impact an individual’s seated position, in order to minimize the use of secondary supports as much as possible (Zollars, 2010). These interventions might include, but are not limited to, contracture management, muscle strengthening, tone management, and pain management. Intervention can also be provided to address behavioral issues or sensory seeking. Ideally, the assessment should be performed by an interdisciplinary team to provide a comprehensive evaluation of needs (Rappl, 2000).

When recommending seating interventions, the decision-making process should include consideration of the least restrictive secondary support devices that still meet the individual’s needs. Trial with the recommended seating system may help to determine if the level of intervention is adequate for postural support, stability, and function while minimizing restriction of movement (Wilson, Lange 2009) (Presperin Pedersen & Lange, 2001).

If seating components are recommended that could be perceived as a restraint, it is important to document the clinical justification and intended purpose of this component (i.e. to maintain a neutral pelvis). If the seating component is indicated clinically to intentionally limit movement, this needs to be documented as well, including why this is recommended and why other interventions will not address the identified problem. The desired outcome of limiting movement should also be documented (i.e. to minimize risk of falling and subsequent injury)(Agens, 2010).

If a seating component is intentionally recommended to limit movement, training is critical for the individual and all caregivers. The component should be used as infrequently as safely possible (Lane, 2011, Agens, 2010). The individual must have times when he/she is released and repositioned (i.e. positioned outside of the wheelchair). Other complementary strategies should be encouraged to reduce the need for limitation of movement (i.e. sensory stimulation to reduce self-injurious behaviors). A psychologist or behavioral specialist may serve as a consultant to the seating team in these situations.

## **CLINICAL GUIDELINES FOR SECONDARY POSTURAL SUPPORT DEVICES**

Secondary postural support devices can be perceived as a restraint. The following guidelines clarify the clinical uses of PSDs. All secondary postural support devices are actually intended to block or limit movement – either movement which is a result of the force of gravity (postural collapse), or active movement (voluntary or involuntary). The use of any secondary postural support component, or PSDs, is indicated only when it is necessary to:

1. Minimize the risk of body postures which impair safety or health, such as those that:
  - a. Increase the risk of skin breakdown.
  - b. Increase pain.
  - c. Increase the risk of orthopedic complications/deformity/contractures (Hsieh, 2011).
2. Restrict and stabilize one body area in order to allow/increase functional movement in another body area (Clark, Morrow, & Michael, 2004).
3. Support or maintain a specific posture or alignment which the individual cannot achieve or maintain on their own, but which is necessary to optimize their health, comfort or overall functional abilities (Gregory, 2013) (Zollars, 2010) (Presperin Pedersen & Lange, 2001) (Ryan 2005).

If a postural support device is necessary for a particular individual to meet the indications 1, 2 or 3 above, provision of this is very specific to individual client needs and a specialty clinical evaluation is necessary. Proper use and placement of any support device is critical to assure safety and optimal benefits of the intervention.

Many secondary postural support devices are perceived as a restraint as these components may limit an individual from getting up and out of the mobility base. However, many individuals using seating and mobility equipment are unable to safely rise, stand, and walk away from the mobility base. Some individuals may lack the cognition and/or judgment to understand or remember this, resulting in the potential for falls and injuries (Chaves, 2007).

It should be noted that some practitioners have used seating systems with individuals who do not necessarily require postural support. For these individuals, the seating can provide proprioceptive input and facilitate sustained sitting. For example, seating systems might be used to position children on the autism spectrum with the goal of increasing focus and attention to task. While seating systems can be used appropriately to help a child understand boundaries and facilitate modulation, this must be done in a therapeutic environment only. Again, the goal of the seating



system is to provide proprioceptive input and facilitate a seated posture, not to restrain the individual.

Seating and mobility bases are also sometimes used in the community with ambulatory individuals who lack judgment and may otherwise stray from their caregivers, possibly into a dangerous situation (Yonkman, 2013). In both of these scenarios, although the goal of the seating system is not primarily postural control, it still may have clinical goals.

## **CLINICAL GUIDELINES FOR TILT AND RECLINE**

Tilt and recline technologies can be perceived as a restraint. The following guidelines clarify the clinical uses of these technologies. Tilt and recline technologies change the orientation of some or all of the wheelchair occupant's body relative to gravity. Manually operated tilt or recline systems are typically operated by a caregiver, while power operated systems provide an individual in the wheelchair with independent control. Manually operated systems are available on both manual and power wheelchairs. Power operated tilt is available on some manual wheelchairs and on many power wheelchairs, while power operated recline is generally available on power wheelchairs only.

The purpose of tilt and recline technologies is not that of restraint, but rather re-orienting or repositioning the body for any of the following reasons: pressure redistribution, pressure relief, postural control, pain and fatigue management, post-seizure management, catheterization, dressing, transfers, feeding, and passive range of motion (Dicianno, 2009). There have been cases when these technologies, particularly tilt, have been perceived as a restraint due to the fact that it is more difficult for an individual to get out of the wheelchair if it is tilted rearward. It is true that attempting to exit a wheelchair when it is tilted is very difficult and may result in a fall. However, when tilt or recline is used for any of the purposes stated above it should not be considered a "restraint" despite its limiting effect on the person's ability to exit from the wheelchair. In this case, the clinical benefits may still outweigh independent exit.

For more information on the clinical indications for tilt and recline seating systems, please refer to the RESNA Position on the Application of Tilt, Recline, and Elevating Legrests for Wheelchairs ([www.resna.org/resources/position\\_papers.dot](http://www.resna.org/resources/position_papers.dot)).

## **CLINICAL GUIDELINES FOR THE USE OF SECONDARY SUPPORT COMPONENTS AS A RESTRAINT**

There are situations when the intentional use of secondary support components as a restraint could be clinically indicated for safety reasons, either to minimize the risk of falls or to limit self-abusive behaviors (Pierz, 2013). Some of these situations are described below. In this case, the term "restraint" refers to limiting movement, but not to 1) minimize the risk of body postures which impair safety or health, 2) restrict and stabilize one body area in order to allow/increase functional movement in another body area, or 3) support or maintain a specific posture or alignment which the individual cannot achieve or maintain on their own. The purpose of using a secondary support component intentionally as a restraint is also not for "coercion, discipline,

convenience, or retaliation by staff”. The goal is to minimize the risk of injury to the individual in the wheelchair and/or others. Per OBRA regulations, use of a “restraint” is acceptable under these circumstances in a long term care setting.

A large percentage of people who require a wheelchair for dependent or independent mobility are unable to stand independently and ambulate (Hsieh, 2011). Many of these individuals are at risk of falling if they attempt to rise and step away from their wheelchair. In this case, the use of an anterior pelvic support (even if not otherwise clinically indicated) could improve safety by limiting the individual’s ability to rise from the wheelchair until assisted. Some of these individuals may be able to independently transfer from the wheelchair to another surface, such as a bed. This ability typically requires good arm strength and control, which increases the likelihood that the individual can independently release an anterior pelvic support and/or move footplates out of the way as needed. In this case, the use of an anterior pelvic support would not be considered a restraint since the individual is able to release the support independently. This ability to release the support was often a concern under OBRA using guidelines published before 2007.

For individuals who are not independent in transfers, attempting to transfer alone can result in injury. Some of these individuals may also be unable to independently release an anterior pelvic support. In these cases, the secondary support components of the seating system not only provide postural support, but can also minimize the risk of falls by requiring a caregiver to release or move the appropriate components. This same caregiver can also then assist with transfers.

Falls can lead to serious injury including bruises and fractures. This is especially true for many non-weight bearing individuals who may be osteoporotic. Some individuals may be unable to remember or understand their risk of falling due to cognitive or judgment limitations. These individuals are at high risk of falling without appropriate seating supports. This risk may be significantly increased if they are able to release an anterior pelvic support independently. In these cases, a special buckle or buckle cover may be recommended that is intentionally difficult or even impossible to open by the individual. The purpose of this anterior pelvic support is “restraint” to minimize the risk of falling.

Self-abusive clients attempt to injure themselves, often by hitting themselves in the face with a hand or biting their own hand. This may be due to self-stimulation or compulsive (beyond the person’s control) behavior. Compulsive self-abuse is seen in individuals with conditions such as Lesch-Nyhan syndrome and Cornelia de Lange syndrome (Jinnah, 2010). In these extreme situations, it may be necessary to completely “restrain” the individual in the wheelchair seating system to reduce the risk of serious self-injury. In less extreme situations, simple restraints such as elbow splints, gloves or intermittent arm strapping may be required. The purpose of these interventions is not a behavioral restraint, as the behavior is typically not willful or intentional. The purpose is to reduce the risk of injury to self.

A secondary support should not be used for the purpose of restraint in a number of situations. Each individual situation requires evaluation by a qualified seating specialist. These situations may include (but are not limited to) the following:

## *Inability to understand the purpose of the secondary support(s)*

If an individual perceives a product as a form of restraint, behavior with potential to cause harm may ensue. If the purpose of the belt or device is explained and it is placed properly and comfortably on the individual, but the individual responds by trying to remove it, those very movements (such as squirming, twisting, and attempting to remove the item) could result in harm or injury.

Using a wheelchair upper extremity support surface (tray) to support a person's arms or provide a surface for participation in activities may cause the person to feel hemmed in or "cut in half." The individual may try to remove it, throw it, or crawl under it, causing harm to self or others.

## *Tactile sensitivity*

If an individual is tactually sensitive to secondary support, agitation may result.

## *Skin lesions, tube sites, or implanted devices*

In general, secondary supports should not contact any skin area that is broken, a nutrition tube, shunt site, or the site of a surgically implanted appliance. This could exacerbate the condition of the skin and/or the components of the secondary supports could "catch" on the tube site or cause general irritation.

## **ALTERNATIVE OPTIONS TO MANAGE BEHAVIORAL/FALL CONCERNS**

A variety of alternative options other than a restraint can be used to manage behavioral issues and minimize the risk of falls. Undesirable behaviors, such as hitting or biting oneself, can sometimes be addressed through specific behavioral management plans, provision of alternative activities for distraction and to reduce boredom, and sensory stimulation to improve self-calming and focus. Frustration may be reduced by increasing the individual's independence in communication, mobility, and control of devices in the environment (Chaves, 2007).

Fall concerns can be addressed in several ways. Seat sensor alarms can be used to alert caregivers that an individual has moved off of the cushion. However, it should be noted that, in some cases, by the time the alarm is triggered the individual may have already stood up from the wheelchair and fallen. One-on-one supervision can certainly minimize the risk of falls, although this is not always possible (Lane, 2011). As mentioned in the assessment discussion, various seating strategies can be used to eliminate or reduce the need for secondary supports while minimizing fall risk.

## **CONCLUSION**

Practitioners providing services in the area of seating and mobility have available to them assessment knowledge and tools to thoroughly evaluate an individual's need for appropriate body supports in his or her wheelchair. These practitioners are well acquainted with the need to minimize the use of secondary supports through the use of other therapeutic interventions. They can assist individuals, caregivers and facilities with a careful, evidence-based analysis of the least restrictive supports available to meet positioning needs. All devices that are designed to be

used as postural supports on wheelchairs are well described in academic texts and in the literature. Each device has clear indications for use—as well as its intended outcomes and potential effects on the user. It should be also noted that each of these devices may be contra-indicated for a number of reasons. For example, anterior trunk supports are designed to facilitate an upright trunk for functional upper extremity use, increase an individual’s vision, breathing, and effective feeding and digestion for individuals who pull or fall forward. This same support might be contra-indicated in the absence of associated supports for the pelvis and lateral trunk.

Seating and mobility practitioners also recognize that some secondary supports may have the effect of restraining a person for reasons other than postural support. These applications may be appropriate and necessary, but only after a thorough medical evaluation and all less restrictive alternatives have been evaluated, and all facility policies and procedures for managing the physical restraint are in place.

For seating and mobility practitioners to be effective in environments where restraint guidelines can be misinterpreted, particular attention must be paid to documenting the clinical indications as well as risks and benefits for each seating intervention provided. Practitioners would be prudent to include exact language from existing regulations that exempt mechanical postural supports from consideration as physical restraints. Finally, it is important to communicate the beneficial effects of postural supports which distinguish them from physical restraints that are used only in the most regulated circumstances. Seating and mobility practitioners should be viewed as a resource people who not only support the health and well-being of individuals, but also as partners in regulatory compliance.

## CASE STUDIES

### *Case Study #1: Managing self-injurious behavior*

Devon (client name has been changed to ensure privacy) is an 18 year old visually impaired student with spastic cerebral palsy and a long history of hitting himself in the head with his left hand, causing self-injury. He lives at home with his parents and attends high school. He is seated in a tilt in space wheelchair with a contoured back and a positioning and skin protection seat cushion with a viscous fluid pad for pressure distribution. He has a dislocated right elbow and maintains his upper extremity with fixed elbow flexion tightly against his body. He has good volitional movement of his left arm and persistently hits himself in the head or eye with his hand. At a previous living situation, this self-injurious behavior was managed by placing Devon's left upper extremity under his wheelchair tray and the right upper extremity above the tray. While this stopped him from hitting himself, his trunk tended to lean forward and to the left side due to the asymmetrical upper extremity positioning. As an alternative, two ankle huggers were adapted and used to position his left upper extremity in a weight bearing position on the tray. This allowed sufficient movement of the left upper extremity for him to activate switch devices placed on his tray and to manipulate objects but stopped him from reaching his head and causing injury. It also improved his posture by allowing him to use the tray for upper extremity weight bearing.

The modified ankle huggers could be considered a restraint as movement of the left upper extremity is now limited. However, by limiting his self-abusive tendencies, his functional use of the left upper extremity increased. The intent is not to restrain the upper extremity, but to limit self-abusive tendencies and to improve function. It is important to document the clinical justification and intended purpose of this component.

The practitioner discussed this intervention with Devon and his parents, who understood and agreed to the recommendations. The practitioner also documented the intent of this seating technology in the evaluation report.

### *Case Study #2: Fall prevention*

Cassie (client name has been changed to ensure privacy) is a 24 year old female with spastic cerebral palsy, severe scoliosis, severe hamstring limitations, a limitation in hip flexion, and a 3 inch leg length discrepancy. She lives at home with her parents and attends a local day program. Cassie uses a wheelchair with tilt and recline features to accommodate her limited hip flexion and limited trunk control. She is non-ambulatory and is not able to bear weight on her feet because of the severity of her knee flexion contractures. Cassie also seeks out vestibular input and at times will rock strongly from side to side when seated in her wheelchair or when she is positioned on a mat. She requires an anterior pelvic support to minimize her pelvis moving forward on the seat due to her tendency to extend her hips, insure that she maintains alignment with the custom molded seating system, and minimize shear forces on her skin. Cassie is capable of releasing all types of belt buckles which in the past caused her to slide out of her wheelchair and fall. A plastic buckle cover placed over the anterior pelvic support buckle reduces the risk.

The anterior pelvic support could be considered a restraint, however Cassie can release this independently. The tilt and recline may also be considered restraints, as these may limit her ability to get out of the wheelchair independently. The addition of a buckle cover may be considered a restraint, as it is intentionally designed to limit access to the buckle and subsequent

release of the belt and exit from the wheelchair. In this case, the buckle cover is necessary to minimize her significant risk of falls and subsequent injury. The ability to independently release the anterior pelvic support does not provide any increased functional ability for this individual, but instead, leads to potentially serious adverse consequences.

The practitioner discussed these interventions with Cassie and her parents at the evaluation and the full team were in agreement with the recommendations. She then documented the intent of the seating interventions in her evaluation report. The practitioner contacted the day program staff to explain the intent of this equipment and to address any concerns. The day program staff documented this information and incorporated any regulatory mandated documents pertaining to restraints.

### *Case Study #3: Fall prevention and managing agitation*

Ernie (client name has been changed to ensure privacy) is a 76 year old male with profound intellectual disability secondary to phenylketonuria. He lives in a long term care facility. Ernie demonstrates moderate thoracic kyphosis and progressive weakness associated with aging. He is no longer able to stand or walk with any type of supports. Ernie was using a standard manual wheelchair for mobility. He has had numerous falls after independently removing his anterior pelvic support and attempting to stand, as well as from attempts to get out of bed without assistance. A sensor alarm was placed on his wheelchair seat cushion and also on his bed mattress. He continued attempt to release the anterior pelvic support and stand up from the wheelchair. Unfortunately, his caregivers were unable to respond to the alarm before he fell. With a tilt in space wheelchair, Ernie is able to balance his head over his pelvis. This improves his trunk and head control as his kyphosis is now accommodated. Ernie also exhibits less agitation, is more relaxed and attentive, and does not attempt to get out of the wheelchair.

Although the anterior pelvic support could be considered a restraint, (as it limits Ernie's ability to exit his wheelchair) Ernie was able to release this independently. The tilt in space feature could be considered a restraint as this limits Ernie's ability to get out of the wheelchair. However, he is unable to safely stand or walk, so his function is not limited.

The practitioner documented that the anterior pelvic support was being used for postural support, rather than to limit movement and that Ernie could release this independently. The practitioner documented the clinical indicators for the tilt in space feature and noted that although Ernie's ability to get of the wheelchair was limited, he could not stand or walk without assistance, so no functional limitation was created. Regulatory documentation and monitoring of use of the tilt in space wheelchair and anterior pelvic support was implemented.

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RESNA is an interdisciplinary association of people with a common interest in technology and disability. RESNA's purpose is to improve the potential of people with disabilities to achieve their goals through the use of technology. RESNA serves that purpose by promoting research, development, education, advocacy and provision of technology; and by supporting the people engaged in these activities.