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ATP Series

ASYMMETRY IN BALANCE

Do you intervene? Accommodate? Or do both?

By Laurie Watanabe | Sep 01, 2017

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ATPs and clinicians who are recommending, determining and building the seating systems for wheelchair users are not starting on a symbolically level playing field. That's just the nature of the seating and mobility calling.

Instead, seating teams must contend with a range of clinical challenges, including client histories, diagnoses and prognoses, and balance all of that with the client's daily goals and

environments.

THE ASYMMETRICAL POSTURE

One such wheelchair seating challenge is the asymmetrical posture — common due to the number of conditions that can cause its presentation.

“Asymmetry can be defined by the presentation of the body either not appearing to be identical on the left and right side, or an imbalance between the body halves,” said Lee Ann Hoffman, OT, MSc. Rehabilitation: Posture Management, Solutions Specialist/Seating & Positioning, Invacare Corp. “It’s a deviation from the symmetrical presentation — even-sided or equal presentation of the left and right side.”

“Clinical reasons for an asymmetry could include a pelvic obliquity, scoliosis or a leg-length discrepancy,” said Sam Hannah, ATP, Symmetric Designs. “Some of the causes can stem from a consumer trying to offload pressure, [or having] low muscle tone and/or poor seating.”

Steve Cousins, Ph.D., R&D director for Matrix Seating Ltd., said asymmetrical postures could be caused by “cerebral palsy, brain injury, multiple sclerosis, spinal muscular atrophy, muscular dystrophy, spina bifida and other disorders. [Or by] simple biomechanical issues, like using a canvas sling seat in a wheelchair so the pelvis can slip and sideways tilt, inducing a spinal curve, or slipping forward (too

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open a seat/back angle, no shaping to the seat/cushion) in a wheelchair seat so that the pelvis tilts posteriorly, affecting the natural spinal lordosis (which helps to protect the back from developing scoliosis). Causes related to the underlying clinical issues are abnormal muscle tension (pulling asymmetrically) and collapse under gravity due to muscle weakness.”

Kirsten Davin, OTDR/L, ATP/SMS, added that an asymmetrical posture can develop over time.

“In some cases, what was a minor asymmetry or a non-emergent diagnosis at one time may progress into a significant postural issue, and could eventually present with vital organ structure compromise,” she explained. “For example, a child who presents with minimally invasive scoliosis at age 3 may experience spinal stenosis, continued progression of scoliosis, and perhaps as a result of poor positioning or clinical progression, may experience pelvic involvement in the form of posterior pelvic tilt or pelvic obliquity, thus leading to issues of kyphosis or increased cervical or thoracic spine asymmetry.”

And the impact, Davin said, can be dire: “This now-significant postural asymmetry can easily cause respiratory impairments as a result of decreased lung volume capacity (from the compressed or flexed position of the trunk), thus preventing adequate air exchange. In addition to respiratory impairments, clients may experience decreased bowel and bladder function, decreased digestive function, or reduced visual field and/or functional performance of activities of daily living, as a result of continued progression of asymmetry.”

“Asymmetry can both be the result of instability or the cause of instability,” Hoffman said. “Consider if the individual experiences weakness due to a neurological condition — the weakness may result in an imbalance, and the body will no longer be able to maintain symmetry, against gravity. One side may collapse or seek support from the environment, resulting in instability.

“Asymmetry also has the ability to cause instability. If the individual is in contact with a non-shape conforming surface, then contact points between the individual and the supporting surface are reduced, resulting in potential peak pressure points and instability — e.g., a kypho-scoliotic spine, with a posterior asymmetric fullness (aka, rib-hump) positioned on a flat back seating system, is unstable, as the surface is not conforming or offering support. Therefore, the trunk will rotate (and roll) until it meets with a surface of the body which has less fullness to gain stability.”

“FIXED” VS. “FLEXIBLE” ASYMMETRIES

Until fairly recently, asymmetrical postures were often described as fixed or flexible, to supposedly denote whether they could or could not be changed.

As it turns out (see below), those terms weren’t optimally precise, since even “fixed” asymmetries can be capable of change under certain circumstances.

ASYMMETRIES: NO LONGER FIXED VS. FLEXIBLE

As complex rehab seating evolves to better serve clients with asymmetrical postures, so does the terminology used to refer to the types of those postures.



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In other words, such terminology is flexible rather than fixed.

Kirsten Davin, OTDR/L, ATP, SMS, explained: “There are two types of asymmetries. Prior to about four to five years ago, these two types of asymmetry were referred to as ‘flexible’ versus ‘fixed.’



“Recently, the preferred terminology has shifted to the terms ‘correctable’ versus ‘non-correctable,’ respectively. The reason behind the shift in terminology is due to the fact that many asymmetries were not truly fixed — rather, were flexible to a point, and fixed after a certain point. The term non-correctable is a more appropriate and widely accepted term, as it does not suggest the finality and rigidity that ‘fixed’ implies. A correctable (aka, flexible) asymmetry is an asymmetry which appears to be notable and significant when not in a supported position, although with the application of the appropriate seating supports, can be corrected to a near neutral or neutral position, thus significantly reducing or eliminating the once asymmetrical client presentation.”

Cousins said, “In the event the deformity has progressed (and symmetry has been lost), muscle length changes occur, limiting movement and subsequent correction. ‘Bony’ changes may also occur with time, limiting subsequent correction. If the bony changes have fused the bone segments, then, of course, fixed means fixed; the correction in these cases will be quite limited. My opinion is, however, that because most deformities are not fixed, then with strong enough corrective forces (assuming these are tolerated by the individual, for example, applied over large surface areas), a fixed deformity can be corrected over time, although maybe not fully. These forces have to exceed the gravitational or muscular forces that are causing the asymmetries in the first place.”

So, even “fixed” asymmetries could be at least somewhat “flexible” regarding eventual outcomes, which is why correctable and non-correctable are the preferred descriptions for asymmetries today. And a great number of factors can determine whether and how much an asymmetry can be changed.

“The clinical cause of the client’s asymmetrical posture can definitely have an impact as to whether the asymmetry has correctable or non-correctable tendencies,” Davin said. “For example, a client who presents with severe thoracic scoliosis may have rods placed surgically to aid in the prevention of continued scoliosis as he or she ages. In the event of surgical intervention and rod placement, the client will now face a definitive point at which further correction is not only be impossible (due to the surgical intervention), but harmful to the client. On a side note, this is why it is imperative to obtain a thorough medical history while performing the seating and positioning evaluation.”