

CUSTOM MOLDED SEATING: BACK TO THE BASICS

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Custom molded seating can be an intimidating option in the provision of seating and wheeled mobility services. Bottom line, it is only as good as the shape captured; it requires a certain level of knowledge and creates accountability for the seating team. Because of this investment in the process, it is often overlooked or thought of as a last resort for individuals with varying postural needs. Recent developments in the ease of capturing shapes have simplified the process however basic knowledge of posture and the ability of the team to execute a successful mold remain basic to the process.

To clarify, the type of seating being addressed is indirect molded custom seating. The desired shape is created from the consumer's body with some type of simulator and then captured through some type of medium (plaster cast, digital systems, scanning cameras, etc). This differs from direct molded seating as the actual cushions are created against the consumer's actual body (foam in place type components).

Traditionally, custom molded seating has been reserved for individuals with limited movement and significant skeletal asymmetries. This trend is shifting as custom molded seating can benefit those with varying presentations including those who sit independently with minor asymmetry to those who rely on the provision of imposed external support for the maintenance of an upright posture. Consideration of its use should include those who are independent in their activities of daily living as well as those who have varying degrees of need. In addition to providing postural support, the provision of external custom molded support can facilitate one's ability to actively participate in functional tasks. Other key benefits can include improved visual orientation, oral motor and respiratory function as well as the maintenance of skin integrity. On the other side, custom molded seating should never be restricting to active movement and function.

Cost is another deterrent for the use of custom molded seating. This, however, is not a valid reason to avoid it. If an involved, multi-component system is required for postural support, once all necessary components are added, the cost for a modular system can exceed that of custom molded.

When evaluating for custom molded seating, there are many custom molded seating manufacturers to consider. Features need to be matched based on client evaluation and specific product features. Although each manufacturer has specific techniques and procedures, there are many commonalities when capturing the shape. The actual molding process, no matter which manufacturer is selected, should be a simple process. The seating team needs to have familiarity with the selected manufacturer, and preferably be certified in the process. Most manufacturers offer certification processes to insure proper use of their systems.

Regardless of the manufacturer, the process for molding needs to follow a similar progression. Success relies on proper orientation and alignment of the consumer's pelvis as a basis for support. Information gathered during the evaluation process reveals the desired orientation, the need for correction or accommodation and the need for total contact versus key points of control. Angles and orientation also have to be gathered at this time, looking specifically at the consumer's goals for seating. From an anterior/posterior perspective, the pelvis to thigh angle traditionally dictates the seat to back angle. But consider that the pelvis to thigh angle might be different than the trunk to thigh angle; neglect of this impacts upper trunk and head/neck orientation. If these angles are not considered, successful positioning will not be gained. From a different perspective, a pelvic obliquity that is not corrected or properly supported will impact upper trunk and head alignment or the frontal trunk angle (correlation between the pelvis and the sternal notch). If the balance between correction and accommodation is not respected, issues will remain unsolved. This is where custom seating

tends to “fail”; when correction cannot be maintained or tolerated, the consumer will find a way to move into his “personal posture” for comfort, giving the appearance that the custom seating is not right. Instead, it was the process that failed, not the actual cushions.

The process for capturing a shape needs to begin at the pelvis and move upward then downward, medially to laterally. Once the pelvis is stabilized, the shaping needs to work up the consumer’s body with key areas of support in mind. If support or contact does not offer a benefit, reconsider its use. Consider the lateral supra-pelvic region: If contact is provided here, lateral bending of the trunk is significantly limited. If contact is not provided here, an individual with poor trunk control will have no choice but to lean into whatever support surface they can find, usually the lateral thoracic supports. Once leaning starts, concern is voiced and the lateral thoracic support is lowered, only to find the leaning to exaggerate. Again, if key areas are provided with contact and support, the posture above and below that point can benefit.

The orientation of all body segments needs to be considered before the shape capture is completed. As previously mentioned, if there is a support surface that does not offer support or benefit, does the surface need to be there? Surfaces should not be included for the sake of symmetry. On the other hand, a surface might be needed that does not offer postural support but has another function. For example, with an individual with a surgically stabilized spine, a right lateral thoracic support might be beneficial not as a support but vital as a prop for enhanced upper extremity function. All supports need to be discussed during the evaluation process as well as the molding process, insuring a need is being met.

Once the shape capture is completed, the shapes need to be analyzed to make sure they are properly contoured. Rounded shapes are desired instead of more squared, angular shapes. Evaluation of the seat shape should reveal matching anatomy including ischial tuberosities, greater trochanters and rounded shaping from the seat portion into the molded lateral thigh supports. The seat to back transition needs to look like a body, not a disjointed system. In the back, key areas to check include the lateral supra-pelvic region, insuring contour that matches the client’s body. As previously noted, contact here is often key to a successful upper trunk and head position. A back that is relatively flat with lateral thoracic supports will not provide the contact and support needed.

Obviously, custom molded seating needs to be properly installed in a mobility base. Without respect for angles and dimensions, success will not occur. Key angles include thigh to pelvic angle as well as thigh to trunk angle. Seat depth and back height need to match mat evaluation findings. Documentation during the evaluation and clinical reasoning at the time of delivery is mandatory.

Conclusion

Custom molded seating is only as good as the shape that is captured. Ultimately, the key to successful shape capturing is in the hands of the seating team. Instead of thinking it is a last resort, the use needs to be carefully matched to clients during the evaluation process, insuring that all information is gathered for success. It should be considered for varying levels of clients with varying presentations. If used before asymmetries are non-reducible, could it decrease problems down the road? A fine line is needed between accommodation and correction with respect to the client’s “personal posture”. While concern for cost is always a consideration, comparisons need to be made with component seating systems prior to making a final decision. Often times the custom molded seating is no more expensive and can offer improved function. During the molding process, care needs to be given to where and what type of support is provided, making sure that support surfaces are effective and necessary. The pelvis, as in most seating evaluations, is the point of origin with contact moving towards the client’s head and toes, medially to laterally. Once completed, the shapes need to be examined to insure that the result will meet the client’s goals as outlined in the evaluation. Ultimately, the key to successful shape capturing is in the hands of the seating team that is involved.

Resources

Hetzel, T., Hetzel, M.C. (2017) Early Vs. Late Intervention with Custom Molded Seating: 33rd International Seating Symposium Proceedings.

Laurence, S. (2007). Custom Seating – Who, What, Where, When and Why Not. 23rd International Seating Symposium. Retrieved from http://www.iss.pitt.edu/ISS_Pre/ISS_Pre_Doc/ISS_2007.pdf

Sparacio, J. (2014, May 12). Clinical Considerations of Custom Molded Seating. Lecture presented at Canadian Seating and Mobility Conference in Toronto, Ontario.

Waugh, K. (2013). A Clinical Application Guide to Standardized Wheelchair Seating Measures of the Body and Seating Support Surfaces. Denver, CO: Assistive Technology Partners.

Speaker Bio

Jill Sparacio is an occupational therapist in private practice in Chicago, Illinois. Her practice includes the provision of seating and wheeled mobility services as well as traditional OT services to individuals with intellectual disabilities, multiple impairments and medical fragility. Jill has presented throughout North America and internationally. She is actively involved with funding issues on both the state and national levels.