

# Seating: Positioning the Head

Michelle L. Lange

One of the most challenging areas of positioning can be the neck and head. How many times have you seen clients sitting with their chins touching their chests, looking at their knees? Or balancing their heads over hyperextended necks while trying to breathe and swallow?

Head support is usually the last element addressed in a seating system because control depends heavily on the position of the pelvis and trunk. However, poor support of the head can lead to overstretched neck extensors, poor visual field and attention, poor socialization, poor swallowing and feeding, and impaired respiration. The goals of supporting the head include

- aligning the neck to provide a slight chin tuck with no hyperextension,
- distributing pressure (especially if the client is tilted a great deal of the time with the head in constant contact with the headrest), and
- providing adequate pressure distribution between the trunk and the head.

## POSTERIOR HEAD SUPPORT

Posterior headrests and neck rests are designed to assist with head control, not to keep the head upright. Decreased head control can be caused by overstretched neck extensors, flexor tone, hypotonia, low or no vision, compensation for a tilted position in space, and muscle weakness. Posterior headrests are also used to minimize or prevent neck hyperextension. Hyperextension is often a compensation for forward trunk flexion or part of a total extensor pattern.

Posterior headrests always include a pad that is designed to contact the back of the skull. This pad may be flat

or contoured. Some headrests add an occipital ledge or contours that provide some upper cervical support and help hold the head in correct alignment. Neck rests lack a pad above the occipital ledge and are rarely used without additional head support because they can elicit extensor tone and provide inadequate pressure distribution during tilt or recline. A neck rest should not be used to correct hyperextension because the head merely rolls over the top of the pad.

Headrests and neck pads can be made from a variety of materials. Using softer materials in the headrest (e.g., as in the Whitmyer Plush) is important when pressure is an issue (e.g., when the client is tilted back frequently). Custom carved or molded foam headrests can be very effective posteriorly and laterally for clients who require more support or to limit head movement (i.e., to inhibit reflex activity). I look for covers that allow

the hair to move with the head. Vinyl covers often lead to bald spots on the back of the head. Common posterior headrests include those manufactured by Otto Bock, Whitmyer, and Adaptive Engineering Lab (AEL).

Simply changing the client's position in space can eliminate enough gravity to allow more head control. Even a fraction of an inch can make the difference between the head resting on the headrest versus falling forward. For example Paul, who is 15 years old, used a flat headrest in which he tended to hyperextend his neck. We switched to an AEL headrest with an occipital support to better align his head. This slight change in his neck position resulted in improved functional vision and swallowing.

## ANTERIOR HEAD SUPPORT

Anterior headrests and neck rests are designed to keep the head upright when the client has very little or no head control (see Figure 1). Lack of head control can be due to the reasons listed in the previous section as well as to paralysis. Anterior solutions include support under the chin (e.g., collars)



Figure 1. The Headmaster collar is an anterior head support for clients with little or no head control.



Figure 2. The Mulholland Halo provides anterior support at the forehead.

and around the forehead (e.g., straps or halos) and are used in combination with a posterior support. When providing anterior head support, anterior trunk support is crucial. If the client's trunk moves forward, the head is restrained, which can lead to neck injury.

Many collars are available, and they vary in the degree of support provided; materials used; and the ability to be used in the seating system, out of it, or both. Collars can pose a choking risk if used inappropriately (e.g., a very soft collar, if used with a client who has a lot of neck flexion, can fold and create pressure against the throat). Often, the collar choice is determined by aesthetics. Common collars include Danmar's Hensinger, Snug Seat's Heads Up, and Symmetric's Headmaster.

Forehead support is provided by a strap, halo, or even a baseball cap attached to the back of the chair. Straps must be monitored because a poorly adjusted strap could slip down around the client's neck. Some clients get out of straps or halos by hyperextending their necks. This is often intentional! Having one's head restrained is not fun, and many of our clients do not understand the advantages. If the client repeatedly "escapes" a forehead support, try a collar. This is often better tolerated. Some forehead supports (i.e., the Mantis) also limit head rotation. Although not usually necessary, occasionally rotation is purposefully limited to inhibit reflexes, such as an asymmetrical tonic neck reflex (ATNR). Common forehead supports include Whitmyer's forehead strap, Symmetric's Mantis halo, and Mulholland's halo (see Figure 2 on page 19).

Mark is 6 years old and used a forehead strap, but he was constantly getting out of it by hyperextending his neck. He tried a Hensinger collar, but this was too bulky and hot for him. Finally, he tried the Headmaster collar, which supports his head well. Most importantly, he tolerates it!

Anterior supports are sometimes attached to a trunk support, such as the S.O.M.I. (Sterno Occipital Mandibular Immobilizer, by United States Manufacturing Company), which allows the support to be used in positioning away from the wheelchair.

## LATERAL HEAD SUPPORTS

Lateral head supports are designed to prevent or limit neck rotation and lateral flexion. Rotation and flexion can be caused by visual compensation, poor head control, compensation for lateral trunk flexion, increased tone, torticollis, or ATNR. Some headrests have optional lateral components (e.g., Whitmyer, AEL). If the surface area of a lateral pad is not large or adequately padded, pressure can be an issue because many clients push into this lateral pad rather than simply rest on it. A custom carved or molded foam headrest may be indicated—this type of headrest requires three points of control to correct lateral challenges (e.g., if the head is flexed laterally to the right side, support is required bilaterally along the lower skull or jawline and at the upper right side of the head).

Kelly is 10 years old and has a metabolic disorder. She has an extreme ATNR that is elicited by head movement and would leave her with her eyes locked to the side. We fashioned a custom-molded head support that allowed no head rotation and thus prevented the ATNR. Kelly was then able to use her eyes functionally.

## CONCLUSION

Determining the best positioning intervention for head control can be quite challenging and requires simulation. If you are interested in this fascinating area, contact some of the companies below and ask to borrow some of their products to try for yourself. Let's not leave our clients "hanging"! ■

## FOR MORE INFORMATION

### The Head Control Dilemma

By S. J. Taylor, June 1999. *Technology Special Interest Section Quarterly*, 9, 3-4.

### Manufacturers:

Adaptive Engineering Lab, Inc.	800-327-6080
Danmar	313-761-1990
Otto Bock	800-984-8901
Mulholland	800-543-4769
Snug Seat	800-336-7684
Symmetric Designs Ltd.	800-537-1724
United States Manufacturing Company	818-796-0477
Whitmyer Biomechanix, Inc.	904-656-9448

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**Table 1. NECK SUPPORTS**

Collar Name	Manufacturer	Price Range
Headmaster Collar	Symmetric Designs Ltd Salt Spring Island, BC Canada (800) 537-1724	\$
Soft Collars	Medical Supply Companies	\$
Newport Collar	Rummer Medical Distributors (800) 880-0434	\$
Philadelphia Collar	Deroyal Industries (800) 251-9864	\$ Extension: \$\$
SOMI	Zinco (800) 228-5448	\$\$\$\$
Motor Neurone Disease Ass'n Collar	Salt & Son Ltd England 011-44-121-359-4449	\$\$

**Price Range:**  
 \$ less than \$100  
 \$\$ \$100-\$200  
 \$\$\$ \$201-\$300  
 \$\$\$\$ \$301-\$400

**N.B.:** This table originally listed a Canadian Dealer for the Headmaster Collar instead of the Manufacturer

When the person has significant neck weakness, these collars are inadequate because they cannot support the weight of the head. They are designed primarily to immobilize and, for the person with ALS, are unnecessarily restrictive and uncomfortable. Their chin components may impede the user's speech and further limit his or her jaw function.

- **Newport Collar:** Because the front of this collar is adjustable and pliable, it is sometimes more comfortable than others. However, the back does little to promote a functional curve in the user's neck. In some cases, it may shift weight to the chin.
- **Philadelphia Collar:** This collar's contoured back supports a functional lumbar curve and encourages support at the back of the head. The front is less suitable because it restricts motion and confines the throat. An extension can be used for additional support, but this leads to more restriction.
- **SOMI (Sternal Occipital-Mandibular Immobilizer):** The SOMI is more expensive than the other collars and provides maximum support. The features we like about this collar are the occipital support and forehead strap. The SOMI can be worn without the chin piece, providing unrestricted jaw movement.
- **The Motor Neurone Disease**



**Figure 2. Client wearing the Motor Neurone Disease Association Collar.**

**Association Collar:** Developed at Mary Malborough Lodge in Oxford, England, this collar consists of a chin pad and a light, spring wire frame that rests on the user's pectoral muscles (see Figure 2). A hook-and-loop strap around the back of the user's neck holds the support in position. This collar allows flexion of the neck and returns the head to its natural position. It was designed for persons who still have some head control but whose neck extensors are too weak to hold their head upright. It is

unsuitable for those who have little or no lateral head control because their head will roll off the chin piece.

With the assistance of an orthotist, we experimented with a custom-made cervical stabilizer that supported the head at the occiput. Other features included a forehead strap and shoulder jacket. Although the brace freed the mandible and anterior cervical region, it proved cumbersome and failed to adequately support the head. Further study of the design is indicated.

The client should take an active role in choosing a neck support. The least restrictive collar that still meets the individual's needs is best. The right kind of support, when combined with appropriate seating, postural training, and exercise, can improve comfort, function, and independence. ■

#### FOR MORE INFORMATION

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By M. Trail, 1990, February 15. *OT Week*, 4, 21-24.
- Brainstorming Used in Treating ALS Patients  
By M. Trail, 1992. *PT Bulletin*, 7, 12-13.
- Comparison of Three Prefabricated Cervical Collars  
By W. Kaufman, T. Lunsford, & B. Lunsford, 1986. *Orthotics and Prosthetics*, 39, 21-28.
- Managing Neck Weakness in Amyotrophic Lateral Sclerosis  
By M. Trail, A. Pati, & M. Callender, 1995. Patient brochure funded by a grant from The Methodist Hospital Foundation. To request a free copy, contact Marilyn Trail, MOT, OTR, BCN, The Methodist Hospital, PT/OT Department, 6565 Fannin, Houston, TX 77030; 713-790-2675.
- Orthotic Management of High Thoracic Low Cervical Fractures  
By S. Lund, 1978. *Orthotics and Prosthetics*, 32, 11-14.
- Principles of Orthotic Treatment*  
By W. Bunch & R. Keagy, 1976. St. Louis: Mosby.
- Seating Considerations: Spinal Cord Injury  
By S. Manser, 1993. *PT Magazine*, 12, 45-51.

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