

POSITIONING THE HEAD: STRATEGIES TO IMPROVE HEAD CONTROL AND POSTURE

Head position is a quality of life issue. Good head position and being able to “look someone in the eye” is your first opportunity to connect with another person. It is usually the initial indicator of how a person is truly feeling and creates a first impression. When a person is unable to lift his or her head independently, this opportunity is often lost. A head down position is often mistaken as a “tuned out,” “I’m not interested,” “don’t bother me” type of body posture – when in reality this posture may be a genuine inability to hold one’s head up as a result of weakness, tone or poor seating. But this is just the tip of the iceberg when it comes to the reasons that good head position is so important.

Improved head position means improved breathing, swallowing, heart rate, communication, learning, visual field, and comfort, as well as decreased influences of abnormal tone and reflexes. We will discuss each issue in-depth to really drive home the point that these are not small issues and that just tilting the chair to provide gravity assist is not always the best solution!

Breathing: When there is good anatomical alignment of the neck, the airways are in an optimal position for respiration. Think of CPR – it is not performed in a head down position. Very often a head-down position is accompanied with a rounded back (kyphotic posture) with protracted shoulders. This causes compression of the lungs and **hypoventilation**.

Lower oxygen levels result in the heart having to work harder – increasing heart rate and causing fatigue. When writing your letters of justification validating the need for a more supportive headrest system versus a simple occipital pad, pertinent objective, comparative information can be obtained using a pulse oximeter. Take readings in both head rests, deriving differences in heart rate as well as O₂ levels. It is also relevant to comment on any changes in breath sounds, depth and rate of inspiration.

Swallowing: Inability to safely ingest food and obtain proper nutrition has a very significant impact on medical status, growth, fatigue and function. Aspiration of food can result in aspiration pneumonia, which can ultimately be fatal. Many of our clients lack the ability to smoothly coordinate the rhythmic sequence of suck-swallow-breathe that assures a safe swallow. They have problems with lip closure, coordinated tongue movement and management of their own saliva, resulting in excessive drooling. When the head is down it is difficult for the lips to form a more natural barrier and keep the food or secretions inside the mouth.

The mouth (oral cavity) is the point of ingestion, but also plays a major role for air exchange. Under normal conditions the nose serves as the

primary air entrance. The ports for air and food meet at the throat (pharynx). This is in the area of the **Hypo pharynx**, which serves as the gating zone where respirations and ingestion must alternately use the same space. It is the job of the epiglottis (a piece of cartilage tissue found at the base of the tongue) to stand guard at the entrance of the glottis.

During typical swallowing, the hyoid bone is elevated, which pulls the larynx upward and allows the epiglottis to fold over and prevent food from entering the trachea (windpipe) while it directs the food to the esophagus. When there is poor head and neck position (neck hyperextension, forward flexion, lateral flexion or any combination), the epiglottis is put at a poor mechanical advantage to appropriately function, often resulting in incomplete covering of the trachea and leading to aspiration. Often hypotonic clients are reclined and/or tilted to provide gravity assist for head position.

The trouble is that gravity also assists in having the food quickly fall back toward the pharynx, as well as interfering with more controlled mastication or manipulation of the food. Presenting or receiving food in a head down position can also be difficult and dangerous. Often the swallow is incomplete and food tends to spill out or “pocket” at the sides of the mouth. Once the head is lifted, food may fall to the center of the mouth at a later time resulting in the client attempting to complete the swallow unsupervised and increasing

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aspiration risk. “What you do at the hips, you see at the lips!” was a catch phrase that one of our speech therapists brought home from a conference, reinforcing the fact that poor pelvic position, unsuitable seating choices and improper set-up of a wheelchair can effect trunk alignment, head position and swallow, but that is enough info for another article.

Again when writing your letters of justification, pertinent objective, comparative information can be reported regarding the time spent consuming a meal, amount of food consumed within a certain time frame, anxiety level, any observed coughing, choking, etc. If safe swallowing is questionable for your client, I can’t stress enough the importance of a referral to a **qualified speech therapist** who will make appropriate recommendations. There is no catch-all recipe for the many clients who present so uniquely and have very specific needs. Should your client require a **video fluoroscopy**, be sure the testing site will allow the study to be performed in the client’s personal wheelchair with all of the secondary supports routinely used during mealtime. This can make a big difference in the findings.

Communication: As we all know, communication occurs through many avenues. Since many of our clients are non-verbal, it is even more imperative that we be able to read their body language and facial expressions. Often eye gaze is used with a low tech communication system (such as an E-Tran) or with eye gaze systems on speech generating devices to indicate needs or wants by looking at specific areas. When using augmentative equipment it is often helpful to face the user for improved interpretation. If someone is verbal, an erect head position encourages increased chest expansion and breath support, as well improved projection in the right direction. When the head is down the client projects into the chest or lap which diminishes volume and intelligibility.

Vision: Our client’s **visual field** may be grossly limited if we have not assisted them in achieving neutral head alignment. Instead, a head down results in looking at the floor and a hyperextended head results in looking at the ceiling. We have taken away another avenue of learning, social interaction and inclusion. If the remedy is tilting back or reclining the client to provide gravity assist, this encourages downward gaze or leaves them with an unstimulating view of the ceiling (unless they are at the Sistine Chapel!). Reclined **leisure sitting** encourages passivity as compared to an upright forward lean, **active sitting** posture.

Caregiver/Social Aspects: When a client’s head is upright, appearance is improved, with resulting positive comments and improved self-esteem. If the caregiver does not have to spend half of his or her day helping to reposition and the other half of the day constantly reminding the client to “fix your head,” there is decreased energy consumption and a much less stressful environment for everyone involved. It is especially important during transportation that the client’s face is visible to the caregiver, allowing monitoring of medical status, seizures, etc.

Comfort/Contractures: Over time, a static position will result in over lengthening of one group of muscles and shortening of the opposing muscle group. Lost range of motion can interfere with basic ADL needs including hygiene and dressing. The activities can become painful for the client to perform even with assistance due to contractures. The over lengthened muscle group is put at a decreased mechanical advantage, making it even more difficult to develop any strength or control.

Influences on Tone and Primitive Reflexes: Excessive tone and repetitive spastic patterns of movement can make it very difficult for the client to comfortably maintain a well aligned seated position, impacting every quality of life issue listed above and then some. **Primitive reflexes** are intricate patterns of movement in response to sensory stimuli to the head and neck that cause major changes in muscle tone and posture throughout the entire body.

Now comes the “If” section! If the client has retained obligatory **primitive reflexes** or the reappearance (frontal release sign) of these, a **poorly supported head and neck can contribute to the facilitation of these reflexive patterns of movement.**

If there is no intervention to help maintain neutral head and neck alignment, merely allowing the chin to rest on the chest may facilitate a **Symmetrical Tonic Neck Reflex, STNR**, resulting in flexion of the upper extremities and extension of the lower extremities, setting the scene for a more kyphotic, tight upper torso. Conversely, if the neck is allowed to hyperextend, it will facilitate extension of the upper extremities and flexion of the lowers. Both impact pelvic position.

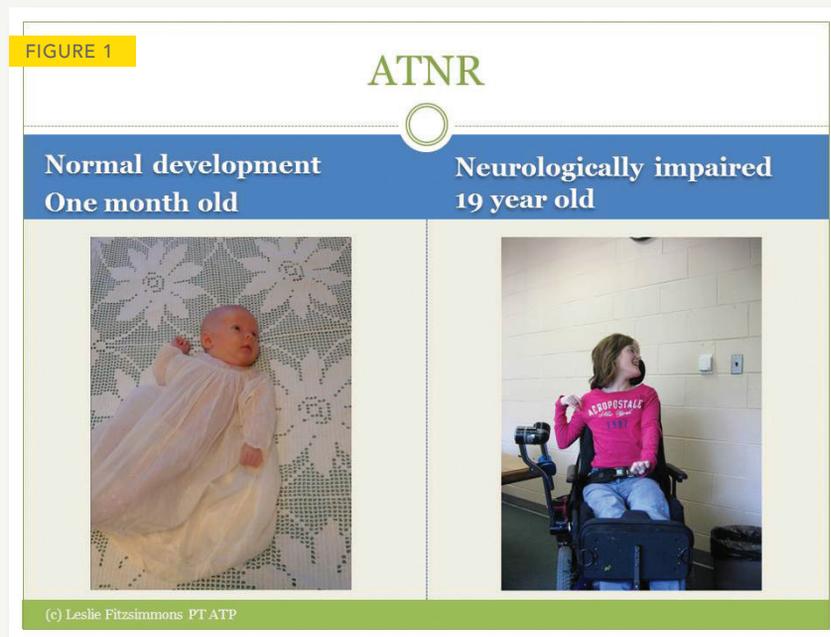
If your client has difficulty lifting his or her head in a linear path due to muscle imbalances, causing them to rotate and turn their head to the side while lifting, this may be the source of getting stuck in the problematic pattern of an evoked ATNR (see Figure 1). An **Asymmetrical Tonic Neck Reflex, ATNR**, is facilitated by active or passive turning of the head to the side, resulting in flexion of the arm, leg and trunk on the skull side and extension of the trunk and extremities on the face side, often referred to as the fencing posture. If it is left unaddressed, it can lead to chronic asymmetrical posturing that may result in scoliosis, pelvic obliquity, windswept lower extremities and hip problems.

If you note changes in tone when you tilt or recline a client in their wheelchair (maybe you are using gravity to assist getting your client back in their wheelchair and it becomes increasingly difficult to secure pelvic positioning belt), it is possible you are eliciting a **Tonic Labyrinthine Reflex (TLR)**. The supine position, TLR, will facilitate extensor tone throughout all four extremities, neck and trunk. The client will often present thrusting or sliding out of their chair, making it difficult to remain comfortably seated.

If there is inadequate head support and poor suspension in the wheelchair, making for a bumpy ride, the sudden drop or backward movement of the head may elicit a **Moro Response** causing extension of the trunk and extremities in a startle pattern, followed by withdrawal into a flexed posture.

If there is stroking of the cheek or perhaps cutaneous stimulation via contact with the headrest or an accessory in that area, the client

may turn their head to that side due to a **ROOTING** response. This can easily lead to an ATNR response as well. Am I saying a head and neck maintained in neutral alignment will directly affect the integration of primitive reflexes? No. **But if we do not** intervene and we allow (or in some cases even encourage through switch placement) the facilitation of these patterns of movement to be repeated numerous times an hour or day, we will likely strengthen the patterns and incur the secondary problems associated with them. If you are interested in more specific information on primitive reflexes, interventions and positioning suggestions please visit the NRRTS website for additional information.



I am hoping by reviewing these reflexes, stimulus and response, we can establish that although the pelvis is the foundation of any seating system and most certainly affects head position, it cannot be ignored that reciprocally, the head and neck are also key points of control and can affect the position of the pelvis and entire body. These prolonged and repetitive postures may contribute to numerous future problems including contractures, scoliosis, pelvic obliquity, rotation, windswept lower extremities, hip subluxation/dislocation, as well as sheering, which can contribute to skin breakdown. These are indeed major quality of life issues.

My goal is to encourage you to be aware of just how significantly headrest and neck support choices impact your client's life. Using tilt as your only solution might further exacerbate problems. It is important to give your client options and opportunities to trial the many different products available to provide them with the support they require to not just cope, but improve his or her life. Thanks for reading and thanks to all the staff and students at NJID whom I learn from every day.

CONTACT THE AUTHOR

Leslie may be reached at lesliejohnsonfitzsimmons@gmail.com.