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ACOUSTICNEUROMA ASSOCIATION

NOTES

FINDING A **NEW NORMAL** AFTER ACOUSTIC NEUROMA

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I was only 38 when I started losing hearing in my left ear and I initially dismissed it as a temporary problem. I had been on multiple flights and thought maybe the pressure was never relieved. Otherwise, it was an enjoyable time of year - it was the summer of 2017 and I spent a lot of time with my wife, Lorraine, and sons Dylan, then 4, and Tyler, 7, in our backyard and pool in Kinnelon, New Jersey.

But when I woke up on November 30, I suspected something more serious was going on. The slight hearing loss had become a very loud ringing sound overnight. If you've ever been to a concert and tried to talk to someone right after, that's what this sounded like. I saw an ear, nose, and throat (ENT) specialist that day

Voyages *continued on page 14*

MEDICAL REPORT:
PHYSICAL THERAPY AND BALANCE DEFICIENCY WITH ACOUSTIC NEUROMA

Luke Iding, DPT & Emily Begley, PTA, Mayfield Brain & Spine

The potential for vertigo and balance impairments is a major concern for anyone diagnosed with an acoustic neuroma (AN). Understanding how your balance systems function can be helpful as you weigh treatment options, possible side effects, and strategies for recovery.

Normal balance function involves three major body systems: vestibular, vision and proprioception. Collectively, they help us sense the body's position in space and how it is moving relative to its surroundings. These systems work independently of each other and together. When one system is impaired, the others will compensate in order for you to maintain balance.

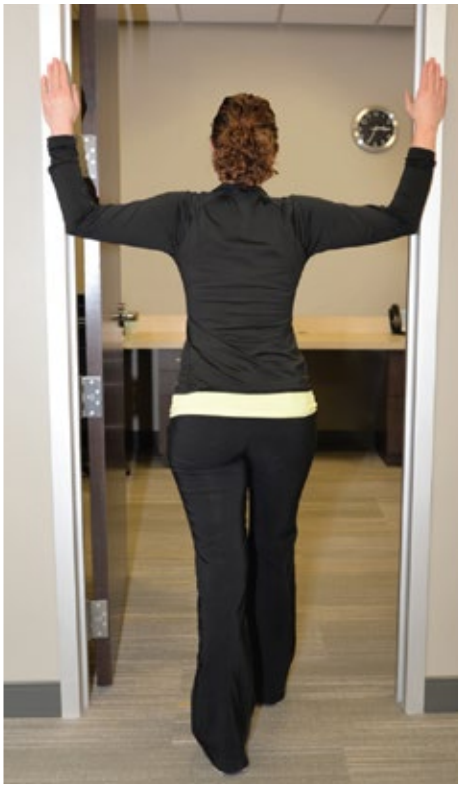
The **vestibular system** involves communication between the inner ear and brain and is the primary system the body uses for balance. It is therefore the most affected of the three balance systems in patients with acoustic neuroma. Sensors involved in this system are responsible for detecting linear movements, turning of the head, and acceleration. Each ear contains a vestibular system and functions together. The vestibular system works closely in this regard with the visual system so that your eyes and head are moving as one,

Medical Report *continued on page 10*

A COVID-Friendly Routine

This doorway stretch is just one of the balance exercises that are safe to do at a stable surface in your home.

See page 10 for more.



LUKE IDING, DPT ***EMILY BEGLEY, PTA***

known as the vestibulo-ocular reflex (VOR). VOR is important for allowing a person to move in space without feeling dizzy or disoriented. After surgical removal of an AN, the VOR can lose its accuracy. This reflex should become steadier while recovering in the months following surgery.

Independently, the **visual system** involves the eyes and how they orient you to your surroundings. This plays an essential role in balance by giving feedback to the brain on how fast a person is moving. The visual system is most accurate when surrounding objects are fixed, regularly shaped, and in close proximity. As light and regularity of surroundings decreases, vision becomes less helpful to balance, thus requiring compensation and increased input from the vestibular and proprioceptive systems.

Proprioception is the sense and understanding of where the body is in space. This is accomplished by joint receptors throughout the body relaying information to the central nervous system. In addition, sensors along the plantar surface of the feet tell the brain whether the body is leaning in a certain direction. The proprioceptive system works best when you are on a firm, flat surface. Balance can be especially difficult when moving or in dim areas for patients with AN due to decreased input from both vestibular and visual systems.

If surgical removal or radiation is advised, the acoustic neuroma's connected balance fibers are removed as well. This leads to decreased balance input to the brain from the ear being operated on. The resulting unilateral input can give a sensation of dizziness, or post-operative vertigo. These symptoms remain until the cerebellum is able to dampen the input from the non-operative ear. In the meantime, the brain will rely on proprioception and vision as the primary systems for balance. For this reason, patients who are beginning to regain their balance are safest when moving about on stable surfaces and in well-lit areas.

Another important piece of post-operative recovery involves addressing muscle guarding around the surgical site. Muscle guarding is the involuntary reaction of muscle tightening in order to protect an area of pain. Neck muscles contain receptors for balance and function as a back-up for vestibular input. Therefore, tightness and dysfunction in these muscles can contribute to, and even cause, dizziness and feelings of imbalance.

A physical therapist who is well versed in complex balance issues can evaluate your symptoms. They will review your history and test your balance, strength, and range of motion range of motion in order to create an individualized plan of care. Expect short periods of exercise with increasing repetitions and time as you tolerate more movement. In addition, current, evidence-based techniques to address muscle guarding and cervical range of motion can also increase blood flow to regions specific to a patient's symptoms.

Balance therapy focuses on strengthening the relationships among the remaining vestibular system, vision, and proprioception. This is optimized by introducing small problems that are relatively easy to correct and by working into real-world situations as the brain develops a new balance strategy.

Balance exercises are to be done in a safe environment with upper extremity support, such as at the kitchen counter or at a location that is stable. Remember to look out in front of you, not at your feet. Maintain good posture with a strong core, stomach tight, and shoulders back. To increase the difficulty, use less assistance from the counter or less hand pressure. You can also increase the difficulty by closing your eyes to take away the vision aspect of balance, stand on a pillow for decreased stability, and/or move your head up and down or side to side. All of these exercises should be performed slowly and comfortably to avoid injury. Remember to breathe naturally and without holding your breath; exhale during exertion and inhale during relaxation. To begin, have another person with you for safety to ensure future balance exercise regimens are safe to perform alone.

Please check out the exercises shown here, as they are safe alternatives to try at a stable surface in your home.

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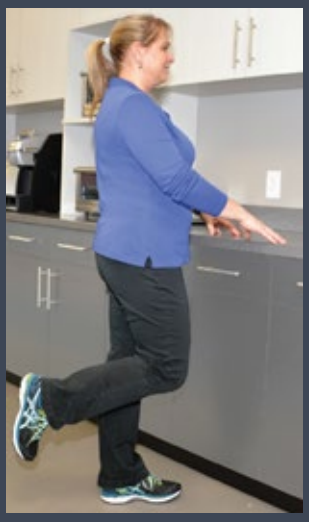
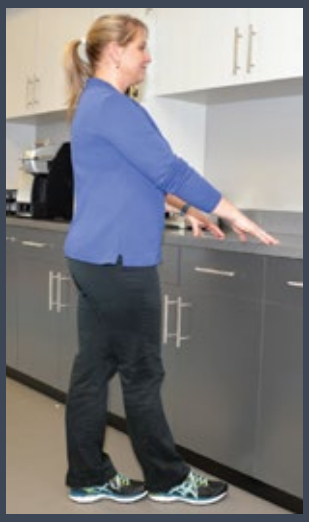
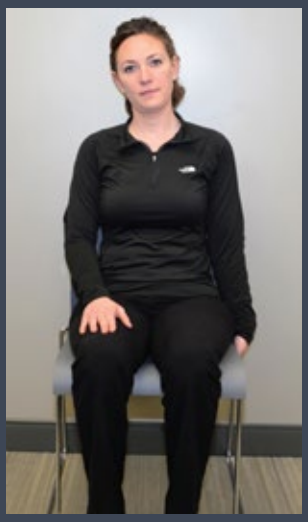


SINGLE LEG STANDING



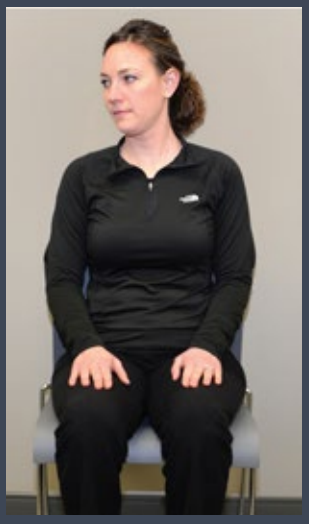
TANDEM STANDING

MARCHING IN PLACE

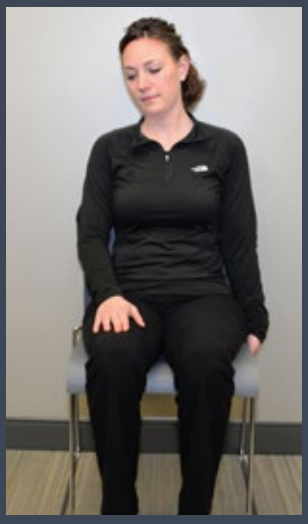


UPPER TRAPEZIUS STRETCH

"Exercising twice a day is preferred for rapid progress; however, exercising once a day will lead to improvement."



NECK ROTATION



LEVATOR SCAPULAE STRETCH

Addressing cervical muscle guarding and range of motion is a vital piece of a thorough balance program. Manual techniques a physical therapist can perform to address muscle guarding include dry needling, cupping therapy, and instrument-assisted soft tissue release. Listed below are some basic neck stretches.

Upper Trapezius Stretch: Sit up tall with good posture, keeping your shoulders down. Grasp the bottom of the seat with one hand. Slightly tip your ear to your shoulder until a comfortable stretch is felt on the opposite side of the neck. Hold that position for 20 seconds. Repeat each side 3 times. Perform this exercise 2 times per day.

Levator Scapulae Stretch: Sit up tall with good posture, keeping your shoulders down. Grasp the bottom of the seat with one hand. Slightly take your chin toward your armpit until a comfortable stretch is felt on the opposite side of the neck. Hold that position for 20 seconds. Repeat each side 3 times. Perform this exercise 2 times per day.

Neck Rotation: Rotate your head gently and slowly from side to side. Do not turn your head completely to either side; keep the motion small. Keep your chin level with ground without letting the chin drop to your chest. Repeat 10 times. Perform this exercise 2 times per day.

Doorway Stretch: *(see page 1)* Stand in a doorway with your hands and arms out to the side as shown in picture. Keep your forearms flat on the door frame. Take one step forward with one leg to feel a comfortable stretch in the chest region. Hold that position for 10-20 seconds. Repeat 3 times. Perform this exercise 2 times per day.

If you experience increased dizziness or nausea more than 15 minutes after completing these exercises, the program may be too challenging. If this is your response, be sure to make the next session less challenging. Exercising twice a day is preferred for rapid progress; however, exercising once a day will lead to improvement. We strongly recommend that you consult with your physician or physical therapist before beginning any exercise program. The above are general exercises. Modifications may be necessary for specific conditions. DO NOT ignore pain. If you feel increased dizziness, pain, or pain spreading, do not continue the activity.

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