Appendix I

Opinion: Why You Should Reconsider using Therapy Time to Provide Eye Exercises to Clients with Oculomotor Impairment from Acquired Brain Injury

As a clinician I provided eye exercises to my clients with acquired brain injury for many years until I became better educated about the oculomotor system, vision therapy and the educational preparation and scope of practice of optometry. Here's why I now urge OTs to refrain from providing eye exercises and vision therapy to their clients.

Scope of Practice: *"I've been trained in neuromuscular re-education. Eye muscles are striated muscle just as UE muscle is striated muscle so if I can provide neuromuscular re-education to improve UE function, I can provide it to improve the function of the eye muscles."* True, extraocular and UE muscles are both striated muscle but let's follow the rationale for this statement to its far reaching, yet logical conclusion using examples of its application to PT and Optometry practice:

- **PT example**. We receive education in UE neuromuscular re-education during our entry level OT program. Neuromuscular rehab is within the scope of practice of OT, and we can take advanced certification courses in it. One could argue that the rationale used for OT to provide eye exercises would also permit an OT to provide LE neuromuscular rehab. But I doubt an OT would take the stance that being trained in UE neuromuscular rehab enables them to also provide LE exercises or work with the client on ambulation even though walking is a critical component of many important I-ADLS.
- **OD example**. If OT has the right to do what an OD does, then the OD has the right to do what an OT does. Following this rationale, an OD who is trained in eye exercises should be able to provide UE neuromuscular rehab because both are striated muscle.

Scope of Practice: Vision therapy is squarely within the scope of practice for optometry in terms of licensure, but it is NOT explicitly stated as being within the scope of practice for OT licensure. The OD who refers a client to you to complete eye exercises may only be interested in helping the patient, but that OD's professional association might take the view that the OT is working outside their scope of practice. Concern about OTs exceeding their professional role has already led to litigation where optometry worked to legally change a state OT licensure act to limit OT practice. Optometrists were successful in limiting OT practice in low vision in Kentucky, Colorado, and Michigan and attempted it in Nebraska and Washington.

Scope of Practice: *"Its Ok because an optometrist's spouse is an OT and says it's OK."* Like OT, optometry is a large profession. An optometrist is entitled to their opinion but does not represent their profession. To my knowledge, neither the American Optometry Association, the American Academy of Optometry or AOTA have an official written stance on OT providing eye exercises.

Competence: This is the most compelling argument. The visual system is complex and binocular

issues are especially complex. The client may have difficulty coordinating eye movements due to over accommodation, under accommodation, muscle weakness, muscle imbalance, cranial nerve damage, supra nuclear damage, optic nerve damage, superior colliculi damage, a congenital lack of muscle fiber, damage to the pre-tectal nuclei, disparate acuity between the two eyes, vestibular impairment and so on. The OD completes a 4 year post graduate professional degree focused solely on vision and develops a deep understanding of binocular vision. If an OT has acquired the same depth of knowledge as an OD through formal education and holds an equivalent degree or credential, then the OT is qualified to address binocular issues. Without that level of educational preparation, it is likely that the OT lacks the competence needed to fully address a client's binocular issues. We must be able to state that our intervention will result in a positive outcome for the client. The client deserves to have the best professional addressing their needs. No one wants to have a nurse practitioner performing heart surgery or a heart surgeon doing brain surgery.

Ethics: Providing an unproven intervention that is outside of your legal scope of practice in an area in which you have limited formal education, could be perceived as violating as many as eight of the OT *Standards of Conduct* (SOC) listed below. *Source: Table 1, OT Code of Ethics, American Journal of Occupational Therapy, November/December 2020, Vol 74, Suppl, 3.d.*

- Section 1: SOC 1A-Professional Integrity, Responsibility, and Accountability: "*Comply with current federal and state laws, state scope of practice guidelines, and AOTA policies and Official Documents that apply to the profession of occupational Therapy"*
- Section 1: SOC 1E-Professional Integrity, Responsibility, and Accountability: *Respect the practices, competencies, roles, and responsibilities of one's own and other professions to promote a collaborative environment reflective of interprofessional teams.*"
- Section 3: SOC 3B-Documentation, Reimbursement, and Financial Matters: *"Ensure that documentation for reimbursement purposes is done in accordance with applicable laws, guidelines and regulations."*
- Section 3: SOC 3D-Documentation, Reimbursement, and Financial Matters: *Do not follow arbitrary directives that compromise the rights or well-being of others including … inaccurate coding."*
- Section 4: SOC 4C-Service Delivery: *"Use to the extent possible, evaluation, planning, intervention techniques, assessments and therapeutic equipment that are evidence based, current, and within the recognized scope of occupational therapy practice."*
- Section 4: SOC 4F-Service Delivery: "*Provide occupational therapy services, including education and training, that are within each practitioner's level of competence and scope of practice."*
- Section 4: SOC 4K-Service Delivery: "*Refer to other providers when indicated by the needs of the client."*
- Section 5: SOC 5B-Professional Competence, Education, Supervision and Training: "*Represent credentials, qualifications, education, experience, training, roles, duties, competence, contribution and findings accurately in all forms of communication."*

The OD Prescribed Eye Exercises: *"I have to provide eye exercises if the consulting OD in my clinic prescribes them because they are doctors."* OD's have a clinical doctorate in optometry, but they are not classified as physicians. Instead, they are classified as licensed health care providers along with OTs, PTs, Nurses, SLPs who may also hold clinical doctorates in their profession. The only exception is a narrow CMS ruling that classified ODs as low vision physicians for the purpose of referral and medical oversight for Medicare beneficiaries receiving low vision rehabilitation. BUT that classification of physician is ONLY for Medicare recipients and ONLY for low vision. Oculomotor deficits are not classified as a low vision condition. This means that providing eye exercises prescribed by an OD is the equivalent of providing LE exercises prescribed by a PT. As the OT you may decide to complete the exercises, but you are not *obliged* to do so. In addition, vision therapy, which focuses on restoring function to the binocular visual system, is not currently covered by medical insurance. It has been explicitly excluded because there is not yet clear evidence that it is effective. Optometry is working hard to develop the required level of research evidence to support the efficacy of vision therapy. They are making great strides that should enable them to eventually gain coverage. When this happens, they will likely and rightly provide vision therapy within their practice and no longer refer to OT. ODs refer to OT now because they can't financially afford to provide a free service to their patients. But ODs also refer to OT because we are willing to accept the referral and provide the services. Our challenge in providing vison therapy to improve binocular vision is that an insurance company could view this as fraudulent billing because the intervention we are billing for is outside of our scope of practice.

Vision Scanning vs. Eye Exercises: *"I provide vision scanning training to my clients with hemianopia and neglect to help them search the environment more thoroughly, how is this different?"* Or put a different way "*How do the eye exercises ODs use to restore binocular function differ from the visual scanning exercises OTs teach clients to compensate for hemianopia and neglect?*" It's important to remember that the cortex, cerebellum, and brainstem all exert influence on eye movements to accomplish their goals. The cortex uses eye movements to search the environment for resources and threats. Cortical lesions disrupt visual attention, which in turn limits the use of eye movements to locate these resources and threats. BUT cortical lesions DO NOT impair eye movements per se. The same is true for hemianopia. Hemianopia limits visual input on the blind side and alters eye movements towards the blind field during visual search, but the client's ability to make eye movements is intact. For either condition, the OT teaches the client to use compensatory head and eye movement strategies to improve the comprehensiveness of their visual search towards the affected side. The focus of the OT intervention is **not** on improving eye movements but on improving *attention*. Intention is an important consideration when selecting an intervention. For example, the intent of providing eye exercises to address convergence insufficiency is to **restore** binocular function while the intent of visual scanning training is to **compensate** for hemianopia or neglect to minimize the effect of these conditions on daily occupations.

Influence of Oculomotor Impairment on ADL Outcomes: This is the central consideration for whether not OT should devote limited therapy time to providing eye exercises. The OT Practice Framework explicitly states that primary role of OT is to address ADL limitations and the

primary outcome for OT intervention to enable the client to participate in daily activities. Visual stress from impaired focusing and eye misalignment is a primary challenge and barrier that prevents the client with oculomotor impairment from engaging in occupations. Visual stress causes the person to avoid participation in activities and environments that are visually stressful or resort to unhealthy/unproductive ways of managing the visual stress to complete daily occupations. Therefore, the focus of the OT intervention should be on reducing and minimizing visual stress so that the client will engage in activities. As OT's we need to find ways for our clients to complete occupations without the side effects caused by stress-fatigue, headache, eye pain, eye strain, and blurry vision. This is the rationale for using occlusion and other tools in the OT toolkit that reduce visual stress. Key OT interventions include modifying tasks and environments to eliminate or minimize stress-provoking features such as insufficient lighting, glare, clutter, pattern, and low contrast; adding structure to create predictable environments, simplifying tasks, and eliminating visual steps so that the person does not need to rely so completely on vision and teaching a client how to establish habits and routines that reduce visual stress. These intervention strategies are well within the OT wheelhouse and scope of practice.

Expected Recovery: This is another key consideration in whether OT therapy time should be devoted to providing eye exercises. Park et al., 2008 examined the charts of 4,278 patients with cranial nerve lesions and found that 85% had at least partial recovery and 67% had full recovery by 6 months; none of these individuals had received vision therapy. This study and others like it suggest that the odds favor recovery without vision therapy and suggest that managing the effects of oculomotor impairment until recovery occurs may be the best OT approach. Research on veterans of the Iraq war produced similar findings. Those studies have shown that the most persistent oculomotor impairments include light sensitivity, headache, and blurred vision. These co-impairments occur in conjunction with the oculomotor impairment; they can persist over a year and reduce participation and quality of life. This suggests that OT should focus on improving participation in occupations by minimizing the effect of these co-impairments using an occupation-based approach.

Park, U. C., Kim, S. J., Hwang, J. M., Yu, Y. S. (2008). Clinical features and natural history of acquired third, fourth and sixth cranial nerve palsy. *Eye, 22*, 691–696.

Magone, M.T., Kwon, E., Shin, S. Y. (2014). Chronic visual dysfunction after blast-induced mild traumatic brain injury. *Journal Rehabilitation Research & Development,* 51(1), 71-80.

Evidence of Effectiveness: Currently there is limited evidence that vision therapy is beneficial in improving oculomotor function in adults with acquired brain injury. A Cochrane Review published in 2018 concluded that there was *"insufficient evidence to inform decisions about treatments specifically for eye movement disorders that occur following acquired brain injury…. The evidence on the benefits and harms of treatment for eye movement disorders due to acquired brain injury is currently very low certainty."* Optometry is diligently conducting randomized control trials to produce evidence that vision therapy is effective in adults with

acquired brain injury, but more research is needed. If, at this time, the effectiveness of eye exercises is unproven, then we need to think carefully about taking therapy time away from other OT interventions to provide eye exercises.

> Rowe, F.J., Hanna, K., Evans, J.R., Noonan, C.P., Garcia-Finana, M., Dodridge, C.S.,…Rodgers, H. (2018). Interventions for eye movement disorders due to acquired brain injury. *Cochrane Database of Systematic Reviews*, Issue 3. Art. No.: CD011290. DOI: 10.1002/14651858.CD011290.PU2.

What Should be the OT stance on Eye Exercises? Instead of learning to provide vision therapy to our clients, I believe that OT should advocate for the addition of an optometrist to the rehab team. Our profession grew because physical therapy advocated for adding us to the rehab team; SPLs and neuropsychologists were added to the rehab team because OT and PT pushed for their services. Now it's time to add optometry to the team to ensure our clients receive the best services to achieve an optimal rehab outcome.