FRIENDS OF NEUROVISUAL TRAINING NEWSLETTER. ISSUE 5, VOLUME 3.

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Introduction.

Happy New Year to everyone and we hope you all had a safe and wonderful holiday season during these unprecedented times! We are fortunate to continue providing you with the latest and cutting-edge content regarding Neuro-Visual Training practices, exercises, and philosophy. As we continue building our brand with Friends of Neuro-Visual Training as well as Inneuractive, we are thankful for each and every one of you. If you enjoy our content, please feel free to send these issues to your friends and colleagues.

With that said, our issue today covers a very important topic that affects the majority of athletes today: phone usage prior to game play. As more and more of us rely on our phones and succumb to mindlessly scrolling through social media to pass time, athletes too are known to do this prior to games. Whether it is to help get them in the zone or to avoid overthinking or feeling the pre-competition jitters, athletes staring at their phones prior to games can negatively impact their performance. We will explore this more in our content section of this issue.

Our “How To” this week provides functionality to what we discussed in Issue 3, Volume 3 of the Friends of Neuro-Visual Training Newsletter by providing practical drills paired with the Zoids for enhancing lower peripheral visual fields and eye-foot coordination. Eye-hand coordination is a commonly discussed skill within sports, and often times eye-foot coordination is overlooked, but equally important, if not more important for certain sports such as soccer.

We also have many important announcements this week! So please check them out at the bottom of this newsletter after reading the NVT content and “How To”. Thanks for staying with us!

Stop Playing on Your Phone before a Game – Op Ed.

From my time playing football at the University of Cincinnati, I can personally attest to the amount of time that athletes spend on their phones while in the locker room. Whether it’s

before practice, after practice, before a lift, after film, or before a game and sometimes even during halftime of a game, some athletes can be found on their phones scrolling through social media. I am not necessarily sure why this is the case, maybe it is to pass time and turn off their mind for a minute with everything they are inevitably thinking about, or possibly to zone in and numb their pre-game nervousness. Despite the justifications, staring at their phone prior to a game can decrease an athlete's on-field performance.

How can being on a cell phone prior to a game negatively impact an athlete's game day performance? One might think because it causes distractions for the athletes when they should be thinking about their battles to come, however, our rationale is a bit more physiological. Our data shows that the average person holds their phone approximately 14 inches away from their face. This becomes the focal length for the athlete's eyes when scrolling on their phone, causing their eyes to converge, and accommodate (focus), at a distance of 14 inches for a prolonged period of time. After approximately an hour of constant phone usage and constant convergence, aftereffects may occur that can cause the athlete's eyes to stay in a slightly more esophoric (turned towards the nose) position that most of the time isn't noticeable when looking into their eyes. However, even the most miniscule effects like this can make a difference, and also can impact a player's neurological reflexes. One important reflex that may be mildly impaired in the short term would be the accommodative-convergence accommodation ratio (ACA) which is a reflex that allows for the adjustment of the accommodation system (eyes focusing ability when transitioning from a near object to a far object or vice versus).

How could an impacted convergence and/or accommodation system cause decreased performance? Well think about a defensive back in football. Their primary role is to guard the offensive wide receiver and to my understanding are coached to keep their eyes on the wide receivers' hips to accurately judge where the wide receiver's route is going. Simultaneously, the defensive backs must know the location of the ball and often times can do this effectively using their peripheral vision. Now, after consistent phone use prior to the beginning of the game, negatively impacting their convergence and/or accommodation systems, possibly moving their eyes more eso, this could change a couple of things: the first being the players peripheral visual field, and the second being slowing of the electrical signals being sent from the retina to the optic nerve to the occipital lobe of the brain where visual information is predominately processed. Both of these issues could cause the defensive back to misinterpret the trajectory of the pass in the air or ever so slightly slowly adjusting to the wide receivers' hips, breaking coverage. Even a slight miscalculation could result in a missed pass break up or interception and why we believe that phone usage prior to a game isn't in the best interest for athletes.

Another way to think about phone usage can be borrowed from muscle physiology. Phone use at 14 inches is a sustained isometric contraction of the vergence and accommodative muscles. Imagine how your legs would feel if you held a half squat for an hour before playing basketball. Would you feel a muscle burn? Would you want to stretch and loosen up the muscles before playing? Would you consider such an activity absolutely ludicrous? Well, that is what you are doing to the vergence muscles while on the phone. No wonder

certain vision-oriented tasks are degraded by too much phone time, especially right before a game or practice.

Another great take on this concept is provided to us by Aaron Kuehn-Himmler, the Assistant Athletic Director for the University of Cincinnati Athletic Sports Medicine Department and Head Athletic Trainer for the UC Bearcat's Football team.

We were recently contacted by a former college athlete of ours who was playing professional baseball. He complained that after 2 full season playing professional baseball his abilities were slipping and felt that his timing and mechanics were sound but questioned his vision. He had done regular vision training with us and had been warned of the pitfalls of too much screen time related to performance. Through a series of remote QnA as well as some simple tests we came up with a simple fix to get him on track. It appeared that he was on his phone a lot more now than when he was in college with increased long-distance travel requirements and that he may had been over exercising his Adductor muscles. We recommended less screen time, especially before play or practice and a few 'relaxation' exercises to loosen up the Adductors and strengthen the Abductors. After a short while, he returned to his prolific hitting ways and to this day keeps the battery of exercises we gave him, as a part of his routine.

"How To" – Zoids, NVT for Your Feet.

Discussed as the focal point of Issue 3, Volume 3 of the Friends of NVT Newsletter, Zoids are a great tool to use for agility training that we use to also incorporate NVT with the goal of strengthening the neural processing of an athlete's lower visual peripheral field, along with their eye-foot coordination. As Blake Bacevich discussed the value in lower extremity injury prevention regarding foot placement while on the field, another aspect of injury prevention through NVT with the Zoids allows the athlete to strengthen their neural processing associated with reacting to sensory information coming from their feet and quickly adjusting. If you have ever sprained an ankle before, you probably can recall exactly how your ankle rolled, and how you could in a way "sense" that step was most likely awkward. Well, NVT involving the lower peripheral visual field along with eye-foot coordination provides an athlete with quicker neural processing, thus when that sensory information of, "oh that step was awkward", to reach the brain more quickly, interpret that message more efficiently, and then make a more effective decision on how to correct the issue, whether it be to quickly pick the foot up or to tense up a little bit more than usual reenforcing the joint, etc. As this would be a great benefit, it also may provide an athlete with performance enhancement through being just a bit more agile through the improvement of their neural processing, possibly allowing them to cut more quickly to break a what would have usually been a sure tackle.

Some more common NVT drills that we use with the Zoids are typically paired with Marsden Balls (I1V2), the Dynavision D2™ device (I4V2), Tri-Colored Batons (similar to the pitch and catch philosophy of the Marsden Balls), and more.

Zoids with Marsden Balls:

If you recall in I1V2 of the FoNVT Newsletter, Marsden balls are white whiffle ball like materials with colored shapes on them (one shape and one color per ball). Usually the shapes include squares, circles, and triangles, whereas the colors routinely used are green, red, and blue. The goal with the pitch and catch with the Marsden balls is usually to catch the ball with the correct hand paired with the correct color (Red=Right, Green=Left, Blue=Both), while also calling the shape out loud prior to the catch while the ball is still in the air.

Now, when paired with the Zoids we keep this same concept but add a twist. There are usually three Zoids lined up on the ground with the green Zoid to the left, the yellow Zoid in the middle, and the red Zoid on the right. The athlete is standing in the middle of the yellow Zoid. Once a ball is thrown up in the air, the athlete must recognize the color while in the air, catch it with the proper hand correlated with that color, continue calling the shape out loud while its in the air, but also now match where they are lightly jogging in place to the color of the Zoid. To make it even more difficult, one could even switch the colors of the Zoids around to not make it as similar to the rules that govern which hand to catch with. (This is a similar concept with the Tri-Colored Batons that are colored Red, Blue, & Green).

Zoids with Dynavision D2™

The Dynavision D2 device was discussed in I4V2 and one of its most coveted features for NVT was the T-Scope (mini display screen) on it as well as the real-time programming capabilities to make the T-Scope flash whatever words, numbers, math problems, or symbols you would want shown. We customized a Zoid program that while the athlete was jogging in place in the center of the middle Zoid, they would be hitting buttons on the Dynavision. This program would last for 1-2 minutes. Every 6 seconds, two colors would flash on the display and the athlete would have to move their feet within that color of the Zoid. For example, if the T-scope flashed Red-Green, while the athlete was jogging in place and hitting Dynavision buttons, they would then adjust one of their feet jogging in place into the center of the red Zoid and the other into the center of the green Zoid.

These two drills work well to address lower peripheral visual field training because the primary task is up in the air or directly in front of the athlete, away from the ground like most sports. However, they still had to be away of what their feet were doing, training their brain’s processing abilities to gain a deeper sense of their lower peripheral visual field.

Announcements.

Please check out this article https://pubmed.ncbi.nlm.nih.gov/32476458/, linked to a paper entitled; The Influence of Binocular Vision Symptoms on Computerized Neurocognitive Testing of Adolescents With Concussion - PubMed (nih.gov).

Also please visit Dr. Antonucci's website https://www.drantonucci.com/more-about-me. Dr. Antonucci is an accomplished clinician who regularly employs NVT techniques to treat TBI and other neuro deficiencies.

As always, if there are any questions, comments, or concerns please feel free to reach out to Dr. Joe Clark at clarkjf@gmail.com or info@inneuractive.com and please visit www.inneuractive.com for more information on NVT, available NVT products, and NVT services.

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