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FRIENDS OF NVT

OFFICIAL NEWSLETTER OF INNEURACTIVE

INTRODUCTION

Welcome back to Issue 1 Volume 7 of the Friends of NVT Newsletter! In the main portion of today's newsletter, our author Jon Vincent discusses the Maddox Rod and Thorington Test for detecting phoria – particularly following a concussion.

In our "How To" this week, Dr. Joseph Clark provides methods for planning and performing clinical trials with NVT endpoints.

We encourage you all to leave questions and/or comments below. Thank you for the continued interest and enjoy!

If you missed an issue, please visit https://inneuractive.com where all issues are available for free. Please tweet and share with your friends as we plan to release more great content. @FriendsofNVT.

WHAT'S IN OUR LATEST ISSUE:

@FriendsofNVT

The Maddox Rod and Thorington Test

Concussions, also classified as mild traumatic brain injuries, are the most common form of traumatic brain injuries (TBI). Some studies report that they make up to 70% of the total TBIs annually. Concussions are a difficult clinical problem due to the vast array of symptoms that have been reported to develop. Furthermore, without proper treatment, patients may incur symptoms that last months and even years after their initial injury. Of these multitudes of symptoms, it has been reported that around 80% of patients who incur a concussion report lingering visual symptoms. These symptoms may include issues with eye movements, reading, visual attention, visual motion sensitivity, accommodation, convergence, and others.

A relatively overlooked and potential underlying cause of these above visual-related complaints may be due to phoria abnormalities. In essence, phorias are a misalignment of the eyes. There are two main types of phorias: (1) Esophoria, where the eyes are more converged, slightly deviated inward towards the nasal bridge, than at baseline, and (2) Exophoria, where the eyes are slightly diverged away from the nasal bridge than at baseline. Phorias may occur only in one single eye or occur in both eyes simultaneously. These are common eye conditions that may also result due to head trauma such as a concussion. Despite the prevalence of normal phorias within the general population, acute exacerbation of a phoria from head injury can lead to prolonged visual sequela if not appropriately evaluated or corrected.

Although visual dysfunction usually falls under the clinical purview of an optometrist, screening of phoria abnormalities may be conducted by athletic trainers, occupational therapists, and other non-optically specialized clinicians with the right knowledge and know-how. A cheap and easily accessible tool to conduct phoria screenings is the use of a Maddox Rod paired with a standard pen light. The Maddox Rod can be used to subjectively test and measure horizontal and vertical strabismus (eye misalignment) for both near and far distances. It is important to emphasize both NEAR and FAR distances, as a phoria may manifest only when gazing at something near, or while looking at something far away. The differences between these may be the cause of different visual symptoms such as a near phoria causing issues with reading a book or working on the computer, while a far phoria may cause issues with visual motor sensitivity while driving.

To conduct a phoria assessment/screening with a Maddox Rod, please refer to the following methods adapted from Wikipedia: *Note: The method of assessing near and distance fixation is similar.*

<u>Method for measuring horizontal deviations:</u>

1. When performing the clinical test, the room lights should be dimmed and only one light source should be visible.
2. When testing at near, the patient is to fixate on the light source at 33 cm, which is held at eye level. When testing at distance, the patient is to fixate on a light source at 6 m.
3. The patient is instructed to fixate on the light source with both eyes opened.
4. The Maddox rod is then placed over the fixating eye.
5. To measure the horizontal deviation, the Maddox rod is placed in front of the right eye (it is done on both eyes) with the cylinder horizontal, making the red line vertical. The patient is then asked whether the white light is superimposed on the red line, or if it is to the left or right of the red line.

If the line appears below the light, there will be a hyper-deviation in which base-down prisms are used to measure and correct the deviation. If the line appears above the light, there will be a hypo-deviation and base-up prisms are used to measure and correct the deviation. If the white light is superimposed on the red line, there are no vertical deviations present.

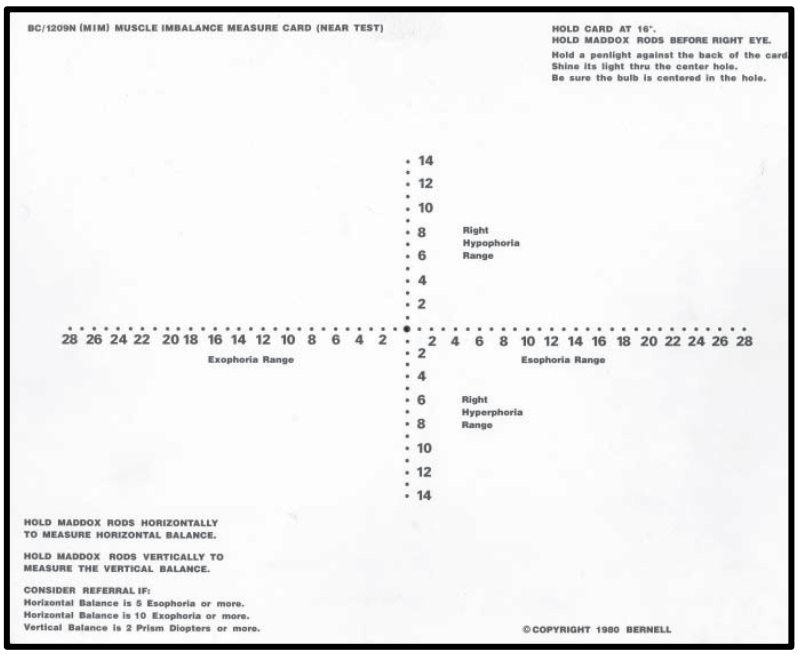

Figure 1. Thorington Test Card.

Although this is thought of as a subjective test, to quantify the "amount" of eye misalignment or the phoria, you can pair the Maddox Rod with a Thorington Test Card (Figure 1). This simple screening assessment is useful in providing quick insights into what may be the underlying cause of many potential visual-related symptoms resulting from a concussion. In addition, this screening may provide quantitative data for the clinician to use in both symptom diagnostics and rehab management.

“How To” – Clinical Trials with NVT Endpoints

Picture, if you will, you are a person who does NVT. You might do NVT for sports performance enhancement or perhaps for post brain injury rehab. There are a host of reasons to do NVT. What would you do if you wanted to validate that what you did was having benefits? Consider for a moment you wanted to do a clinical trial to prove your methods worked. Alternatively, maybe you want some data to convince yourself and your clients that what you do is having benefits. How do you go about designing a study and/or data collection to demonstrate the benefits of NVT? That is a great question.

There is a lot to consider if you are planning a clinical trial. You need to consider patient safety, control subjects, randomization, inclusion criteria, exclusion criteria, power calculations for the number of subjects and endpoints. All those topics and others are of extreme importance, but in the spirit of 'begin with the end in mind,' let’s focus this ‘how to’ on endpoints. Choosing endpoints for your study is a good beginning and a critical step in any clinical trial. You want your endpoints to be quantitative, reliable, relevant, doable, and reasonable. In this case reasonable is concerning cost and time to get the information.

Since we are talking about NVT you will want to ask yourself what NVT tests fit some of those categories? There are actually a bunch and we'll hit some below. But you should also ask, is / are the NVT endpoints what you want to examine? Maybe you want patient outcomes like quality of life or performance proficiency.
n fact, you want both; the NVT endpoints and the patient outcomes. Some of us refer to proximal endpoints (the NVT endpoints) and distal endpoints (the patient outcomes) when talking about the outcomes we examine with clinical trials. In the opinion of this author and many in the NVT field proximal and distal outcomes are important for demonstrating that an intervention is working.

Let's talk about some history concerning proximal and distal benefits for clinical trials. In the 1990s the stroke trial using TPA to treat ischemic stroke collected proximal and distal data to document TPA as a stroke treatment. The proximal data was recanalization. This is where the blood clot was degraded, and blood flow restored to the brain. They also collected data concerning patient outcomes. The patients got better, was a distal effect. Having demonstrated proximal and distal effects TPA is now a gold standard for treating stroke.

If you are doing NVT related rehab or research, you already have several proximal endpoints in your toolbox. Acuity, saccadic eye movement, accommodation, phorias, depth perception, and binocularity are all quantifiable - proximal - endpoints you can collect, examine and report. Many of us will have patients and clients fill out surveys such as symptom surveys, or quality of life surveys. Those are distal endpoints.

Also, if you are working with an athlete for performance enhancement you can use statistics from their sport as some possible distal endpoints.

From a data collection perspective, including endpoint data, you likely already keep some of those records. What you need to do is to collate and examine those data. Pour over the data to conclude what the data says. If you are wanting to do a clinical trial with a control group, you'll need to figure out how to collect data from controls. This is where ethics and institutional review boards (IRBs) become a partner in what you are doing. Notwithstanding having those data, proximal and distal benefits, and being ready to discuss them with colleagues and clients will allow you to confidently claim the benefits of NVT and particularly your brand of NVT.

Announcements

Congratulations and good luck to all the UC Bearcat football players from the 2021 season who made it onto the 53 man roster with the NFL: Coby Bryant (Seattle Seahawks), Jerome Ford (Cleveland Browns), Darrian Beavers (New York Giants), Curtis Brooks (Indianapolis Colts), Alec Pierce (Indianapolis Colts), Bryan Cook (Kansas Chiefs), Desmond Ridder (Atlanta Falcons), and Myjai Sanders (Arizona Cardinals). We truly appreciate their support and participation throughout the NVT program at UC.

Join UC Berkely’s School of Optometry & Vision Science annual Sheldon M. Golden Conference on Sunday October 2nd, 2022. This year’s focus is on Traumatic Brain Injury. Register at https://berkeley.us11.list-manage.com/track/click?u=8c355119e9a7439cebff3912a&id=aaccda349b&e=44195bbb66

As always, if you’re interested in learning more about Inneuractive our mission, our products and service offerings, or just Neuro-Visual Training in general, please click the following link: www.inneuractive.com.

Have suggestions for a future issue? Please reach out to clarkjf@gmail.com or info@inneuractive.com and we will do our best to include your request in the future.