

Effect of Vision Therapy on Post Concussion Metrics on The Graded Symptom Checklist

Justin Pasquale

Joseph Pasquale

Eden Hunt

Lehigh Valley Health Network, eden.hunt@lvhn.org

David Clark

Lehigh Valley Health Network, david.clark@lvhn.org

Daniele Shollenberger

Lehigh Valley Health Network, Daniele.Shollenberge@lvhn.org

See next page for additional authors

Follow this and additional works at: <https://scholarlyworks.lvhn.org/research-scholars>



Part of the [Medicine and Health Sciences Commons](#)

Let us know how access to this document benefits you

Published In/Presented At

Pasquale, J., Pasquale, J., Hunt, E., Clark, D., Shollenberger, D., & Cipolle, M. (2022). *Effect of vision therapy on post concussion metrics on the graded symptom checklist*. Poster presented at Research Scholars, Lehigh Valley Health Network, Allentown, PA.

This Poster is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact LibraryServices@lvhn.org.

Authors

Justin Pasquale, Joseph Pasquale, Eden Hunt, David Clark, Daniele Shollenberger, and Mark Cipolle MD

Effect of Vision Therapy on Post Concussion Metrics on The Graded Symptom Checklist

Justin Pasquale, Joseph Pasquale, Eden Hunt MD, David Clark MS-II, Danielle Shollenberger CRNP, Mark Cipolle MD, PhD, MS

Background

- More than 1.5 million traumatic brain injuries occur every year in the United States and as many as 75% of them can be further classified as a mild traumatic brain injury (mTBI), or sometimes a concussion.
- While most patients recover from a concussion in 3 months, it is not uncommon to report symptoms that persist beyond 6 months.
- Both visual and vestibular therapies have shown promise for the treatment of concussion symptoms, especially vestibulo-ocular dysfunction.

Objectives

To further explore the effectiveness of these therapies for the mTBI patient.

The goal of the study is to determine whether the addition of visual therapy can make a significant difference in the score the of the post concussion graded symptom checklist.

Methods

- The study design is retrospective, cross-sectional observational study, which collected data from the LVPG Concussion and Head Trauma center to populate a REDcap database created prior to the study.
- Patient data was obtained from online records such as mechanism of injury, presence of TBI, graded post concussion symptom checklists, types of therapy, etc.
- The study included 260 patients between 2019 and 2021, but 7 patients were excluded due to lack of information about their concussion/mTBI.
- In 2020, it became standard procedure to refer patients to neuro-optometry for visual therapy post concussion. Therefore, The study includes patients that had and had not received visual therapy.
- Patients that did not receive therapy in the network were recorded, but will not be included in future analysis due to lack of documentation.

Lehigh Valley Health Network, Allentown, Pennsylvania

Results

Variable	Total	Post-Concussion Checklist	
		Post-Concussion Checklist Score	Post-Concussion Checklist Total
		0 = None, 1-2 = Mild, 3-4 = Moderate, 5-6 = Severe Symptoms	
		1	2
		3	4
		5	6
		7	8
		9	10
		11	12
		13	14
		15	16
		17	18
		19	20
		21	22
		23	24
		25	26
		27	28
		29	30
		31	32
		33	34
		35	36
		37	38
		39	40
		41	42
		43	44
		45	46
		47	48
		49	50
		51	52
		53	54
		55	56
		57	58
		59	60
		61	62
		63	64
		65	66
		67	68
		69	70
		71	72
		73	74
		75	76
		77	78
		79	80
		81	82
		83	84
		85	86
		87	88
		89	90
		91	92
		93	94
		95	96
		97	98
		99	100

Figure 1: Demographics and Concussion Info

Figure 2: Post-Concussion Checklist

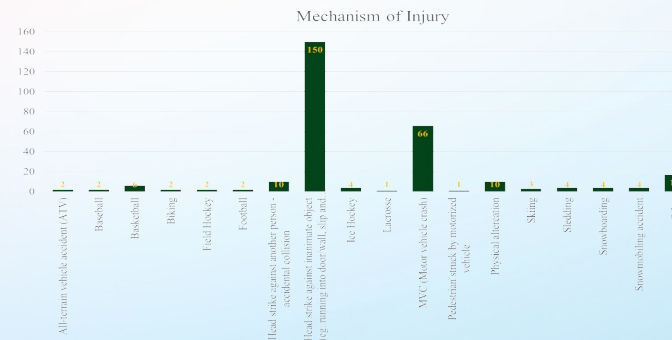


Figure 3: Mechanism of Injury Data Chart

Results

- In the physical/vestibular and occupational therapy, the average starting checklist scored was 46 which improved to 15 at therapies' conclusion.
- In the physical/vestibular, occupational therapy, and vision therapy the average checklist score was 66 which improved to 42 at therapies' conclusion.
- Primary mechanism of injury was head strike on inanimate object and second largest was a result of motor vehicle crash (MVC).

Discussion and Conclusion

Due to extensiveness of this research, the data results remain inconclusive as the project is still in the data-gathering phase.

Although the result are limited, there were still key findings in the project as lightly touched in the results section. There is still a need to further explore and improve the treatment of mTBI/concussion patients. The end goal is to show positive correlation with vision therapy being added to treat post-concussion patients, which is starting to slightly shape.

Aside from the current project, the REDcap database developed will allow for physicians and researchers to continue studying concussion diagnostics and therapies to better understand and treat those who experience concussions.

Limitations to this project varied. Many patients who were seen at LVHN were prescribed therapy and completed treatment elsewhere, which provided incomplete treatment research. Also, many patients were involved in MVCs, which included insurance claims that can affect patient treatment decisions and introduce bias towards their symptoms.

Literature

1. Ellis MJ, Leddy JJ, Willer B. Physiological, vestibulo-ocular and cervicogenic post-concussion disorders: An evidence-based classification system with directions for treatment. *Brain Injury*. 2015;29(2):238-248. doi:[10.3109/02699052.2014.965207](https://doi.org/10.3109/02699052.2014.965207)
2. Barton JJS, Ranalli PJ. Vision Therapy: Ocular Motor Training in Mild Traumatic Brain Injury. *Ann Neurol*. 2020;88(3):453-461. doi:[10.1002/ana.25820](https://doi.org/10.1002/ana.25820)