Effect of Yoga Ocular Exercises on Asthenopic Symptoms In Students with Minor Refractive Errors

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ABSTRACT

Purpose: To study the impact of yogic eye exercises on asthenopic symptoms in students.

Methods: This Quasi experimental study involved a data collection proforma that was based on symptoms of eye fatigue and was circulated among the students who had asthenopic symptoms to find out the effect of yoga ocular exercise. Study was conducted at College of ophthalmology & Allied Vision Sciences (COAVS) from March, 2022 till December, 2022. Forty three female students of COAVS having asthenopic symptoms were included in study while male students were excluded. After informed consent, participants filled the proforma followed by yoga ocular exercises for 6 weeks (5 days per week for 30 minutes). Later on the participants again filled proforma to document the difference in symptoms related to eye strain. After consent a proforma containing 12 questions was given to the participant. Asthenopic symptoms were graded as nil, mild, moderate and severe. Data was entered in SPSS and then analysed by calculating the frequencies and percentages of different symptoms before and after exercise.

Results: All forty three participants were female. Almost all participants document decrease or absence of asthenopic symptoms after yoga ocular exercises. Most notabley percentage of participants with complete relieving of blurred vision, headache and sore eyes was documented from 8% to 31%, 7% to 27% and 28% to 39%.

Conclusion: The results support the use of yoga ocular exercises as a non-pharmacologic and therapeutic approach for alleviating the intensity of eye fatigue and minimizing asthenopic symptoms.

Key words: Asthenopia, Photophobia, Vision.

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INTRODUCTION

Eyes are one of the important sensory apparatus, on which a person's daily living pursuits are resting on in one or the other way. Eyes provide us with vision and the capability to receive and process on visual details along with it allowing various light response functions which are not dependent on vision.[1] Eye's capacity to grasp the task's finer aspects determines our ability to accomplish a visual task. In order to do closer work for longer period of time, it requires excessive use of the ciliary (accommodation) and extra ocular muscles (EOMs), which can contribute to eye strain and other asthenopic symptoms.[2] Worldwide, the most widely mentioned conditions in a non-presbyopic population are eye strain and asthenopic symptoms, both of which are very critical.[3]

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Clinical signs of eye tiredness include stinging or pain behind the eyeball and around the eye, double vision, blurred vision, difficulty focusing, aching eyes, redness, sore and watery eyes, headache, and sometimes nausea, pains, and irritable moods.[4] Eye tiredness can be brought on by a variety of factors, including poor visual hygiene (artificial or inadequate lighting conditions), extended exposure of visual displays, mental and emotional status, tension, and ageing.[5] Yoga practices give benefits for both physical and mental well-being by lowering the task of the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis.[6] Yoga improves eye health by increasing blood flow and nutrients for the eyes.[7] Eye yoga practitioners frequently seek to enhance their eyesight, cure dry eye symptoms, and lessen eye strain. Yoga ocular exercise are thought to increase eye movement and aid with asthenopia and eye strain symptoms.[8]

The ten exercises in the order of palming, blinking, sideways watching, front and sideways viewing, horizontal viewing, circular viewing, preparatory nose tip staring, looking from a distance, concentration gazing, and palm-based acupressure point are performed during each yoga ocular exercise session.[9]

In 2016, the author Sang-Dol Kim performed a study on undergraduate nursing students related to effect of yoga on eye fatigue. When compared to the control group, measurements from the exercise group showed a considerably lower eye-fatigue score. These results suggest that yoga eye workouts could lower the eye tiredness score in first-year nursing students.[10]

In the literature, there isn't any thorough research on this. This study was designed, in order to determine whether yoga's ocular exercises could be a useful tool for reducing eye fatigue and related asthenopic symptoms.

METHODS

Ethical approval of this Quasi experimental study was obtained from ethical review board of COAVS vide no.1617/22. This study was conducted at COAVS from March, 2022 till December, 2022. Forty three female students of COAVS having asthenopic symptoms with minor refractive error in the range of (+1.5 dioptre to -1.5 dioptre) were included in study while male students and female students with refractive error above 1.5 dioptre were excluded. Study involved a data collection Performa that was based on symptoms of eye fatigue and was circulated among the students who seem to have asthenopic symptoms to find out the effect of yoga ocular exercise. A Performa containing 12 questions was given to the participant. After informed consent, participants filled the proforma followed by yoga ocular exercises for 6 weeks (5 days per week for 30 minutes). Later on the participants again filled proforma to document the difference in symptoms related to eye strain. After consent a proforma containing 12 questions was given to the participant. Asthenopic symptoms were graded as nil, mild, moderate and severe. Data was entered in SPSS and then analysed by calculating the frequencies and percentages of different symptoms before and after exercise.

RESULTS

It was observed that before exercise 20% people had insignificant burning in eyes issue and after exercise 60% people had insignificant burning issue. Likewise all the symptoms of eye fatigue were improved after exercise. The number of people with severe eye symptoms decreased after the exercise. The frequency of sore neck, sore shoulders, sore eyes and headache was reduced significantly from 60% to 20%.

Table 1: Age Distribution

Sr No	Age in years	Frequency	Percentage
1	20.00	1	2.3
2	21.00	2	4.7
3	22.00	9	20.9
4	23.00	10	23.3
5	24.00	10	23.3
6	25.00	9	20.9
7	26.00	2	4.7
	Total	**43**	**100.0**

Table 2: Comparison of Asthenopic Symptoms before and After Exercise

Symptom	Before Exercise n (%)				After Exercise n (%)			
	Nil	Mild	Moderate	Severe	Nil	Mild	Moderate	Severe
Burning/ Itching	9 (20.9)	18 (41.9)	12 (27.9)	4 (9.3)	27 (62.8)	14 (32.6)	1 (2.3)	1 (2.3)
Watering	7 (16.3)	17 (39.5)	13 (30.2)	6 (13.9)	27 (62.8)	16 (37.2)		
Foreign body sensation	18 (41.9)	15 (34.9)	9 (20.9)	1 (2.3)	34 (79.1)	9 (20.9)		
Blurred Vision	8 (18.6)	22 (51.2)	11 (25.6)	2 (4.7)	31 (72.1)	11 (25.6)	1 (2.3)	
Headache	7 (16.3)	12 (27.9)	15 (34.9)	9 (20.9)	27 (62.8)	13 (30.2)	3 (7)	
Sore neck	10 (23.3)	13 (30.2)	12 (27.9)	8 (18.6)	29 (67.4)	11 (25.6)	3 (7)	
Sore shoulder	11 (25.6)	10 (23.3)	12 (27.9)	10 (23.3)	29 (67.4)	13 (30.2)	1 (2.3)	
Photo-phobia	8 (18.6)	16 (37.2)	10 (23.3)	9 (20.9)	28 (65.1)	14 (32.6)	1 (2.3)	
Sore eyes	28 (65.1)	9 (20.9)	3 (7)	3 (7)	39 (90.7)	4 (9.3)		
Unable to keep eyes open	15 (34.9)	15 (34.9)	8 (18.6)	5 (11.6)	30 (69.8)	11 (25.6)	2(4.7)	

DISCUSSION

Eye tiredness and visually generated motion sickness are two health issues that are of particular concern.[11] The display technologies have several advantages over conventional systems, but there is a noticeable strain placed on the eyes of the viewer as a result of the closer proximity of the screen to eyes.[12] The condition of asthenopia is well reported in the literature. When eye fatigue sets in, prompting the user to relax his eyes is an efficient technique to solve the problem. Numerous visual complaints, such as strain, headaches, and eye pain, are associated with eye fatigue.[13] The bulbo motor muscles are constantly and optimally stretched while performing yoga ocular exercises, which significantly raises the metabolic requirements (oxygen consumption) of muscular tissues.[14]

The goal of this study was to examine that if yoga ocular exercises are effective in reducing eye fatigue. Yoga movements aid with awareness and strengthen the tone of weak muscles. Yoga can also be helpful in treating near-sightedness and farsightedness which is usually treated by glasses otherwise. Yoga helps to relax the muscles of the eyes which reduce symptoms. Yoga helps to relax the muscles of the eyes which reduce symptoms. The results from the current study reveals that there was a significant reduction in eye fatigue score after yoga exercises. After 6 weeks, there were reduced eye fatigue symptoms in exercise group.

The following has been stated as the potential scientific explanation for how yoga eye exercises work: The extraocular muscles are rejuvenated and relaxed while palming also increases the flow of aqueous humor; The sideways gazing relieves the stress of the extraocular muscles strained by persistent near activity, preventing and correcting the squint (mainly phoria); blinking exercise empowers the blinking response to become spontaneous, causing relaxation of the muscles of eyes; The medial and lateral recti muscles are encouraged to work together when viewed from the front and the sides; The muscles of the superior rectus, inferior rectus, superior oblique, and inferior oblique are balanced by diagonal viewing; Rotational gazing enhances the coordination of movement between the eyeballs and its muscles and restores balance to the extraocular muscles around the eye; looking at the tip of your nose first encourages the flexibility and precision of the ciliary muscles. Eye fatigue is relieved and good eye health is promoted by acupressure on a spot in the palm.[15]

In a previous study by Gupta SK and Aparna S, the effect of yoga ocular exercise was evaluated on eye fatigue. It was concluded that a significant reduction occurred in eye strain after yoga. Following a baseline complete eye exam, 32 undergraduate optometry students were enrolled who showed symptoms on an authentic eye strain Performa. Based on the eye strain symptoms score, they were divided equally into two groups with sixteen people each: a control group and an exercise group. The eye fatigue symptoms were reviewed after six weeks. The result of this study showed that exercise group had a marked decrease in eye fatigue level i.e. ($p = 0.003$). Likewise in current study significant reduction occurred in eye fatigue symptoms after yoga ocular exercise i.e. ($p \leq 0.05$).[10]

Another study was conducted by Tuteja S & Singh B in which impact of integrated yoga therapy was observed on refractive errors of eye. In this clinical trial, 15 people

were included. In this experimentation-based study, the single group pre-post design was used. Integrated Yoga Therapy was used consistently in the mornings throughout the duration of the experiment, which lasted 90 days. A self-scoring scale was used spontaneously. In this study, the subjective self-scoring markedly increased after three months of follow-up. In this study, integrated yoga treatment showed an improvement in ocular health. The results of this study correlated with the current study in decreasing the eye fatigue.[16]

Yoga Ocular exercises have proven to influence thickness of macula17 and beneficial in controlling or reducing the progress of digital eye strain and refractive errors.18,19,20 Eye strain is preventable condition which can be relieved by regular yoga ocular exercises. Hence yoga exercises have proved to be significant in reduction of eye fatigue according to current study and various other researches discussed above. People with eye fatigue symptoms and continuous computer work should perform yoga exercises of eyes routinely to maintain their ocular health. Being a single centre study and a small sample size of single gender are main limitations of this research study.

CONCLUSION

Yoga eye movements improve the ocular strain by escalating ocular muscles effectiveness and lessen Asthenopia by reducing the prevalence and frequency of eye tiredness. The study results support the use of yoga ocular exercises as a non-pharmacologic and therapeutic approach for alleviating the intensity of eye fatigue and minimizing asthenopic symptoms.

Conflict of Interest: None to declare

Author Contributions: Mawra Riaz: Concept, Design, Data Collection, Manuscript Preparation
Muhammad Shaheer: Literature Search, Data analysis, Critical Review
Nabeel Yaseen: Literature Search, Data Collection

REFERENCES

1 Grandjean E. Fitting the task to the man: an ergonomic approach: London: Taylor & Francis; 1980;86(1):1-5.

2. Wajuihian SO, Hansraj R. A review of non-strabismic accommodative-vergence anomalies in school-age children. Part 1: Vergence anomalies. Afr Vis & Eye Health. 2015;74(1):10-41.

3. Wajuihian SO, Hansraj R. A review of non-strabismic accommodative and vergence anomalies in school-age children. Part 2: Accommodative anomalies. Afr Vis & Eye Health. 2015;74(1):7-41. http://dx.doi.org/10.4102/aveh.v74i1.33

4. Rizanti AP. Yoga Ocular Exercises to Maintain Eye Health During Work and Distance Learning in the New Normal Era. J Berita Ilmu Keper. 2021;14(1):1-9. https://doi.org/10.23917/bik.v14i1.13363

5. Saraswati SS, Hiti JK. Asana pranayama mudra bandha: Yoga Publications Trust Bihar, India; 1996;15(1):148-5.

6. Beets MW, Mitchell E. Effects of yoga on stress, depression, and health-related quality of life in a nonclinical, bi-ethnic sample of adolescents: A pilot study. Hisp Health Care Int. 2010;8(1):47-53.

7. Desai R, Palekar T, Patel D, Rathi M, Joshi R, Shah A. Effects of yogic eye exercises for myopia among students. J Dent Res & Rev. 2020;7(5):69-71.

8. Kumar MA, Rajalakshmi A, Kumbhat M. Effect of yoga eye exercise on medical college students with refractive error. J Curr Trends Clin Med Lab Biochem. 2014;1:1006.

9. Saraswati SS, Janez Kristijan, H. Asana pranayama mudra bandha. Bihar. India: Yoga Publication Trust. 1996;54(1):674-98.

10. Gupta SK, Aparna S. Effect of yoga ocular exercises on eye fatigue. Int J Yoga. 2020;13(1):76-79. https://doi.org/10.4103%2Fijoy.IJOY_26_19

11. Drew SA, Borsting E, Escobar AE, Liu C, Castellanos E, Chase C. Can chronic visual discomfort measures accurately predict acute symptoms? Optom & Vis Sci. 2013;90(10):1149-55. DOI: 10.1097/OPX.0000000000000006

12. Wang Y, Zhai G, Chen S, Min X, Gao Z, Song X. Assessment of eye fatigue caused by head-mounted displays using eye-tracking. Biomed Eng. 2019;18:1-19. https://doi.org/10.1186/s12938-019-0731-5

13. Benedetto S, Drai-Zerbib V, Pedrotti M, Tissier G, Baccino T. E-readers and visual fatigue. PloS one. 2013;8(12):e83676. doi.org/10.1371/journal.pone.0083676.

14. Dimitrova G, Trenceva A. The short-term effect of yoga ocular exercise on intra-ocular pressure. Acta Ophthalmol. 2017;95(1):81-2. doi: 10.1111/aos.12850.

15. Gupta SK, Aparna S. Effect of yoga ocular exercises on intraocular pressure. Yoga Mimamsa. 2019;51(2):48-53. DOI: 10.4103/ym.ym_13_19.

16. Tuteja S, Singh B. Effect of integrated yoga therapy on refractive errors of eyes. Int J Soc Sci. 2020;10(8):246-5.

17. Galina D, Etsuo C, Kanno J, Antonela L, Olivera L, Ana G, et al. Immediate effect of Yoga exercises for eyes on the macular thickness. Int J Yoga. 2020;13(3): 223. https://doi.org/10.4103%2Fijoy.IJOY_28_20.

18. Nigam B, Tyagi D. Effect of Yoga and Physical exercise in Ophthalmology. Int J Yoga & Allied Sci. 2023;12(1):109-114.

19. Mahadik S, Khare S, Diwan V. YOGA eye exercises and Refractive Errors. Cent India J Med Res. 2023;2(02):1-3. https://doi.org/10.58999/cijmr.v2i02.130.

20. Rathi S, Chaudhary V. Effect of Eye Yoga and Mindful Relaxation Practices on Management of Digital Eye Strain in a Tertiary Care Hospital: A Comparative Interventional Study. J Reattach Therap & Dev Div. 2023;6(8s):40-4.