



# Effect of Yoga Eye Exercise on Medical College Students With Refractive Error

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## ABSTRACT

Yoga eye exercise is supposed to improve various ocular symptoms and even vision. The study was planned among 30 medical college students who had refractive error. All the subjects practiced yoga eye exercise for 6 weeks. A questionnaire of ocular symptoms, Near point of accommodation (NPA), Near point of accommodation (NPC), fusion range (FR) and refractive error were evaluated before and after 6 weeks of yoga eye exercise. FR improved from  $11.630 \pm 7.946$  to  $17.10 \pm 9.019$  and NPC from  $8.00\text{cm} \pm 1.819$  to  $5.07\text{cm} \pm 1.461$ . The difference was statistically significant. NPA and status of refractive error showed no change. Yoga eye exercise for 6 weeks showed significant changes in ocular health.

**KEY WORDS:** Yoga, Eye exercise, Asthenopia

## Introduction

Yoga is an ancient Indian science which includes the practice of specific postures, cleansing practices, regulated breathing and meditation. A combination of yoga practices reduced symptoms of visual strain in persons with progressive myopia [1]. Yoga eye exercises are supposed to strengthen all the extraocular muscles and help prevent eye strain. Yoga has been shown to improve ocular symptoms in people who use computers for prolonged

hours [2]. Even a short program of yoga of six weeks was found to be effective for enhancing emotional well-being and resilience to stress among employees of a workplace [3]. Telles et al showed improvement in mirror tracing tasks after one month yoga training [4]. Various websites indicate simplified yoga eye exercise and their benefits on eye including claims like improvement in vision. But definitive studies regarding this are not available in literature. We planned this study to evaluate the effect of six weeks of regular yoga eye exercise on students with refractive error with regards to asthenopic symptoms, accommodation, fusion and any effect on refractive error.

## Materials and Methods

Thirty MBBS students who were using refractive correction in the form of spectacles were included for the study. Those who used contact lenses and those who were already practicing eye exercise were excluded.

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A questionnaire was given at commencement and end of study (6 weeks) regarding asthenopic symptoms and aggravation of symptoms by near work. The questionnaire was not validated statistically. (Appendix 1)

All students underwent cycloplegic retinoscopy to evaluate their refractive error. Near point of accommodation (NPA) and Near point of convergence (NPC) was measured using RAF (ROYAL AIRFORCE) ruler. Fusion range (FR) was evaluated by synoptophore. All the tests were repeated at end of the study.

Eye exercise was taught and also provided in printed format. All subjects did pranayama for 10 minutes followed by yoga eye exercise (trataka) which involved two sets of eye exercises. (i) Shifting the gaze (by moving the eyes alone) in eight directions. During this exercise, practitioners were asked to use their right thumb (and when gazing to the left, their left thumb) as a cue to direct their gaze. The directions were up, down, up to the left, down to the left, up to the right, down to the right and rotation of the eyes clock-wise and anti clock-wise. (ii) During the second exercise, subjects gazed at candle flame at eye level without blinking and while gazing they were instructed to focus and defocus. Throughout the practice practitioners were to sit upright and avoid moving their head to shift their gaze [2]. Both the exercises were performed for 5 minutes each.

After this palming for five minutes was done as instructed in [www.medindia.com](http://www.medindia.com) and [www.sriarobindoashram.org](http://www.sriarobindoashram.org)

[1] Rub your palms till they are charged with heat and gently place the palms over the eyes.

[2] While cupping the palm over the eyes, take care not to apply direct pressure on the eyes. The eyes should relax in the darkness and stillness.

The yoga eye exercise was taught by a yoga instructor. The students included in the study were asked to perform the eye exercise in the presence of one of the investigators for the six weeks duration of the study to ensure compliance.

## Observations and Results

A total of 30 medical college students of 6th semester were included in the study after informed consent. All the 30 completed the 6 weeks of yoga eye exercises. Fifteen of them were males and 15 of them were females with mean age of 20 years.

Analysis of symptoms by questionnaire before yoga exercise and after yoga eye exercise showed statistically significant decrease in their asthenopic symptoms such as headache, tiredness of eye, burning sensation and aggravation of symptoms by near work. (Table No.1)

NPC before yoga was 8.00cm  $\pm$ 1.819 and after 6 weeks of yoga eye exercises was 5.07cm  $\pm$  1.461. The improvement in NPC was statistically significant. (Table 2)

Fusion range before yoga eye exercise was 11.630 degrees  $\pm$ 7.946 and after 6weeks of yoga exercises was 17.10 degrees  $\pm$  9.019. The difference was statistically significant. (Table No.2)

NPA before and after eye exercise were similar and the difference was not statistically significant. (Table 2)

Study of Refractive error showed 19 students had myopia, 1 had hypermetropia and 10 had astigmatism. There was no change in refractive error or unaided visual acuity after 6weeks of yoga therapy.

**Table No.1 : Comparison of asthenopic symptoms before and after yoga eye exercise**

Symptoms	Before yoga	After yoga	p-value
1. Headache	12	3	0.0073
2. Tiredness of eye	15	7	0.0321
3. Burning sensation	9	2	0.0195
4. Watering	2	0	0.1503
5. Redness	1	0	0.3132
6. Aggravation of symptoms by near work	15	7	0.0321

Legend-Statistical analysis by paired t test

**Table No. 2 : Comparison of NPC, NPA and FR**

	Before yoga exercise	After yoga exercise	P value
NPC	8.00±1.819	5.07±1.461	0.000
FR	11.63±7.946	17.10±9.019	0.000
NPA	7.20±1.937	6.93±1.799	0.211

Legend-Statistical analysis by paired t test

NPC-Near point of convergence in cm, NPA-Near point of accommodation in cm,FR-Fusion range in degrees

### Discussion

Visual discomfort in medical college students can be attributed to prolonged reading effort, viewing LCD projectors for long distance, increased utilization of computer, microscope, etc. Yoga eye exercise has been shown to improve the ocular symptoms in a randomized prospective trial of 291 persons in a software company [2]. But the study utilized evaluation of self-rated symptoms. Most of the studies available in the literature have assessed only the subjective improvement [2, 3, 5]. In this study we planned and assessed the subjective

improvement as well as objective criteria like NPC, NPA and FR.

At the 6 weeks follow up in our study, there was a significant improvement in the subjective self-scoring as in the other studies. Fusion range and NPC were significantly altered. NPC became shorter and fusion range increased ,which will aid in improved and sustained near effort.NPA did not show any alterations suggesting a possible implication of yoga eye exercise acting only on the extra ocular muscles whereas ciliary muscles may not be affected. Various websites claim the effect of yoga eye exercise on improving visual acuity. In our study there was no effect on refractive error or unaided visual acuity by the 6 week course of yoga therapy. Kiser et al studied patients with Retinitis pigmentosa and found significant percentage of them have tried complementary and alternative medicine including yoga [6]. Clinical studies on yoga are needed to validate its role in ocular diseases [6]. Further studies like the present one will help us to understand the role of yoga on ocular health.

### Conclusion

Yoga eye exercise has shown objective as well as subjective improvement in ocular health in this present study. Clinical studies on yoga are needed to validate its role in ocular diseases. Further studies like the present one will help us to understand clearly the role of yoga on ocular health.

### Questionnaire

1). Do you have any of the following complaints during or at the end of the day

- Headache
- Tiredness of the eyes
- Burning/Gritty sensation

- Watering
- Red eyes

(Please tick whichever is appropriate)

2) If you have ticked anyone of the complaints in question 1, does continuous reading or writing work for more than one hour aggravate the complaint?

(Please answer YES/NO)

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