

# Effectiveness of Eye Exercise on Asthenopia among Selected School Children

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**Abstract:** *The present study has been conducted to evaluate the effectiveness of eye exercise on asthenopia among school children in selected areas at Chennai. A pre-experimental design with purposive sampling technique was used, data collected from 30 school children age between 8 to 15 years. Blink test was used to select the study samples. Pre-test level of eye fatigue was assessed by Five-point Likert scale about ocular fatigue, followed by eye exercise was implemented then the post-test level of eye fatigue was conducted after 6 weeks with the same questionnaire. The pre-test eye fatigue mean score was 13.4 with standard deviation of 7.57 and the post-test eye fatigue mean score of school children was 10.8 with standard deviation of 6.615 and the mean difference between the pre and post-test was 2.6. The calculated paired "t" test value is  $t = 2.7$  at  $P > 0.05$  level and there was a significant association between pre-test eye fatigues with Hobbies. The result concluded that the eye exercise was effective in reducing the eye fatigue among school children.*

**Keywords:** Eye Exercise, Asthenopia, School children, Effectiveness.

## 1. Introduction

Asthenopia is also known as Eye Strain. It is derived from Greek word a-sthen-opia which means weak-eye-condition. Asthenopia is an eye problem that identified by non-specific symptoms like pain in and around eye, blurred vision, head ache, double vision. It can classify as Refractive asthenopia and Muscular asthenopia, during continuous focusing on book or computer the ciliary muscles and extra ocular muscles are strained and create soreness and discomforts on eye balls. In this current era computer technology is the essential part of the educational system. According to the National institute for occupational safety and health (NIOSH) about 70.6% of workers who used Computer were suffering from eye strain (1). Asthenopia is a frequent clinical problem of child hood with the potential consequences of learning (2). Review of different studies in children shows that the prevalence of asthenopia was (49.4%) among school children. The asthenopia prevalence increased from (21.4%) in 12 years old to (63.9%) in 18 years old with the associate symptoms of tearing (20.3%) and eye pain (19.88%) during near work and reading (3).

Since the asthenopia in school children is high and treatment merits is very importance in school children in order to secure their Eye Health.

**Mridula V. Amarnath and Francesc March De Ribot (2021)** Conducted a cross sectional study among 300 students between 7-16 years of age. The children along with the help of parents filled the online survey form. The questionnaire was about computer vision syndrome. The questionnaire was evaluating the total duration of the digital device used and the symptoms of DES and its severity. The study results show male with the mean age of  $13 \pm 1.75$  years. The mean duration digital devices used during the pandemic era were  $4.1 \pm 1.3$  hour which was nearly three times more than pre Covid era ( $1.5 \pm 1.7$  hours). 42% (n=

126) were using digital devices for more than five hours compared to 2.7 % (n=81) before the covid era and the most common digital device used to be the smart phone (n=186 (62%). the prevalence of DES in cohort was 51% (153/300) of these, 26 was mild, 13 was moderate and 11 were severe. The most common symptoms were itching and headache (54% and 53%) respectively. Multivariate analysis revealed age >14 years (p=0.04), male gender (p=0.04), smart phone use (p=0.04), use of device lesser than 5 hours (p=0.006) and mobile games for more than one hour per day (p =0.05) as independent risk factor for DES in children. The study concluded that the prevalence of DES among children in the Covid era is increased. The study emphasizes the side effect of prolonged use of device, type of device and the distance from digital devices that can harm the ocular surface. Hence, both the parents and children need to be aware of this, try reducing the screen time.

**Sathish Kumar Gupta and S Aparna (2020)** was conducted the prospective study among thirty-two under graduate students in Bangalore. After comprehensive eye examination they were equally assigned to control group and experimental group with sixteen participants in each. The exercise group performed yoga ocular exercise for up to 6 weeks after which the eye fatigue symptoms were reassessed in both groups. The study results shows that the exercise group had a mean baseline eye fatigue score of 16.38 which significantly reduced up to 9.88 after 6 weeks periods (p=0.003). The control group had Mean baseline eye fatigue score of 16.19 which significantly increased up to 19.06 after 6 weeks of period (p=0.044). The study concluded that yoga ocular exercise reduces the eye fatigue symptoms score by increasing the efficacy of extra ocular muscles. Hence the yoga ocular exercise is considered as therapeutic and non-pharmacologic intervention for reducing the eye fatigue and asthenopia symptoms.

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**Objective of study**

- 1) To assess the pre-test and post-test level of Asthenopia among school children in selected area at Chennai.
- 2) To determine the effectiveness of Eye exercise on Asthenopia among school children in selected area at Chennai.
- 3) To associate the pre-test level of Asthenopia with the selected demographic variables among school children in selected area at Chennai.

**Research hypotheses**

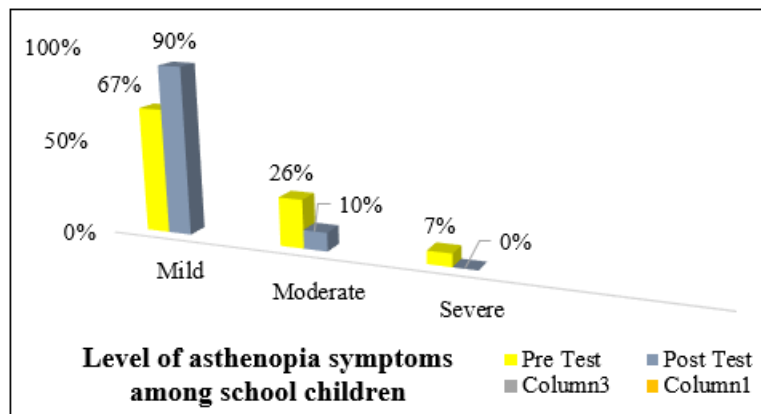
H1: There is a significant difference between the pre-test and post-test level of asthenopia among school children.

H2: There is a significant association between the pre-test levels of asthenopia with selected demographical variables among school children.

**2. Materials and Methods**

In this present study the pre-experimental study with one group pre-test and post-test design was adopted, the study was conducted among 30 school children in Vaishnavi

Nagar at Chennai, Purposive sampling technique was used to select the study samples, The Eye exercise and the structured five-point Likert scale on Ocular fatigue had prepared after an expansive literature review. The tool was validated by nursing experts and Eye Specialist, after expert’s suggestions the tool was finalized. The reliability co-efficient of the tool was elicited by test-retest method and the reliability of the tool was 0.5 which was reliable. Before data collection the purpose of the study was explained to the study samples and their parents’ consent was obtained. The five-point Likert scale on eye fatigue was used to collect the data from study samples. Pre-test level of eye fatigue symptoms was assessed followed by Eye exercise was given for the period of 6 weeks among school children in a comfortable environment. After the 6 weeks of eye exercise training programme the post-test level of eye fatigue symptoms was assessed with the same questionnaire. Collected data was analysed by using both descriptive and inferential statistics.



**Figure 1:** Pre- test and Post- test level of asthenopia among school children

**Table 1:** Pre and Post test level of Asthenopia among School children

S. No	Variable	Pre test		Post test		Mean Difference	‘t’ Value
		Mean	SD	Mean	SD		
1.	Asthenopia	13.4	7.57	10.8	6.61	2.6	2.71 at P > 0.05

**3. Result and Discussion**

Among school children 67% had mild asthenopia symptoms, 27% had moderate and 7% had severe asthenopia symptoms before Eye exercise programme after the Eye exercise programme Majority 90 % had mild symptoms, and 10% had moderate symptoms and 0% sample has severe symptoms. There is a significant association between pre-test level of asthenopia symptoms with hobbies ( $\chi^2 = 17.137$ ).

The obtained pre-test mean value of asthenopia symptoms is 13.4 with standard deviation of 7.57 and the post-test eye fatigue mean score of school children was 10.8 with standard deviation of 6.615 and the mean difference between the pre and post-test was 2.6. The calculated paired ‘t’ test value is  $t = 2.7$  at  $P > 0.05$  level, there by the research hypothesis was accepted. The finding shows that the eye

exercise programme has a significant effect in reducing the asthenopia symptoms among school children. The study was supported by Sathish Kumar Gupta Reported that Eye exercise had a significant effect on asthenopia symptoms among exercise group, eye fatigue which significantly reduced after 6 weeks periods.

**4. Conclusion**

The finding of the study concluded that Regular Eye Exercise is beneficial to reduce the eyestrain as well as improves Eye health. This can be made regular as daily habit in order to safeguard the children’s Eye health.

**5. Implications**

**Nursing service**

Since nurses are the first source of knowledge for the public, so they have to be enhanced their knowledge about health issues due to modern life style changes and educate the general public regarding the managing strategies to overcome from it.

## 6. Recommendations

A similar study can be conducted among college students.

A descriptive study can be conducted to identify the prevalence of asthenopia symptoms among general public.

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