

# The Effect of Eye Exercise on Eye Fatigue on Computer Users

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## ABSTRACT

Background: Eye fatigue is a complaint often found in computer users' efforts to overcome eye fatigue are eye exercises. This study aimed to determine the effect of eye exercises on computer users' eye fatigue at the National Land Agency of Sorong Regency office. Research methods: This study uses the Quasi-Experiment method, one group pre-test-post-test design. The sample used 23 respondents. The research instrument used is the observation sheet before and after the intervention. result: This study used the Wilcoxon test and obtained p value = 0.000 ( $p < 0.05$ ), where the average value of eye fatigue complaints before eye exercises were carried out was 12.00, while after the intervention, there was a decrease in the value of 0.00. Conclusions: Based on the study's results, it is known that eye exercises can reduce eye fatigue of computer users at the National Land Agency of Sorong Regency Office, so they can be used to prevent eye fatigue

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## INTRODUCTION

The eye is the primary sensory organ that reacts to light and transmits visual information to the brain. The function of the eye is a sense of sight and is a part of the human body that has a vital role because, with the eyes, one can see everything in the world. One of the eye disorders that is often underestimated is eye fatigue. Eye fatigue can interfere with a person's activities. (Sari Dewi & Novia, 2020).

According to the WHO, in 2018, it was estimated that 188.5 million people worldwide had mild visual impairment, 217 million had moderate to severe visual impairment, and 36 million were blind. The most common cause of visual impairment worldwide is a refractive error; refractive error is caused by increasingly sophisticated optical technology that triggers the sense of sight to work continuously. (Ministry of Health RI 2018).

The results of the Preliminary Study at the Sorong National Land Agency office from 10 people interviewed were found to have complaints of eye fatigue with the characteristics of itchy eyes, sleepy eyes, difficulty focusing, heavy eyes and blurred vision. The development of technology is currently very rapid in all fields, especially in the area of information and communication. Gadgets result from the development of increasingly sophisticated information and communication technology.

Gadgets are intelligent machines that are remarkably multi-functional and have more capabilities. Gadgets make the world in your hands because they have various functions, including a pocket camera, media player, GPS, and document reader. The multi-functions of these gadgets make modern society very dependent on gadgets, especially smartphones and tablets, to communicate and get information quickly. This also makes smartphone and tablet users worldwide continue to increase, especially in Indonesia (Mulita, 2020). Humans use computers more often in the current era of technological development, and computers can also cause occupational diseases, for example, computer vision syndrome (CVS), an eye and vision problem that originates from computer use. CVS can cause physiological disorders in the eyes, head or body in the form of fatigue and discomfort. (Intan Putri 2018) .

Eye fatigue is one of the disorders experienced by the eye caused by the eye muscles being forced to work hard, especially when looking at close objects for a long time. Using a computer for a long time will make the eyes tired and dry because the eyes are constantly used to looking at the monitor screen. (Vanessa, Lery, Francki et al., 2019) The American Optometric Association defines it as several eye and vision problems originating from prolonged use of computers, tablet computers, electronic readers and cell phones. The most common symptoms are eye strain, headache, blurred vision, dry eyes, and shoulder pain (Chita Widia, 2021). Eye exercise or eye yoga exercise was chosen as an intervention to reduce eye fatigue because eye exercise can be done quickly, does not require a special place because it can be done alone at home, does not require a long time, and does not cost money. It is enough to do eye yoga for 10-20 minutes; your eyes will relax, fresh and not dry. Ratna Indah Sari Dewi 2020 and Kim Sang Dol's 2016 research found that eye yoga affects eye fatigue in computer users in the Padang Express Editorial Division and computer users in the Republic of Korea with a pretest-posttest eye fatigue complaint score.

## RESEARCH METHOD

The research design applied by the researcher is a Quasi-Experiment design one group pre-test - post-test where this study tested an intervention on a group of subjects or without a comparison group but was not randomized to include subjects. The sampling technique in this study is total sampling which takes the entire population as a sample. The sample in this study was 23 people. The independent variable is eye exercise, while the dependent variable is eye fatigue. Data collection was carried out at the National Land Agency Office of Sorong Regency while paying attention to the ethical principles of beneficence, respect for human dignity and justice. To analyze the data, the Wilcoxon test was used.

## RESULTS AND DISCUSSIONS

The data of research results at the National Land Agency of Sorong City are as follows:

**Table 1 .** Distribution of Respondents Based on Age, Gender, Monitor Distance, Eye Fatigue Pre-Post Test at the National Land Agency of Sorong City

Variabel	Amount N	Percentage %
Age		
<32 years old	15	65
>32 years old	8	35
Gender		
Man	9	40
Woman	14	60
Monitor Distance		
<50cm	6	26
>50cm	17	74
Eye Fatigue (Pretest)		
Light	5	22

Currently	13	56
Heavy	5	22
<b>Total</b>	<b>23</b>	<b>100</b>

**Table 2.** Data Analysis of Eye Fatigue Bivariate Before and After *Eye Exercise Intervention*

Eye Fatigue	Eye Exercises		p value	95% CI
	Pretest	Posttest		
Light	5	23	0,000	5.8-8
Currently	13	0		
Heavy	5	0		

Based on age characteristics, most of them were <32 years old, as many as 15 people (65%). Meanwhile, the characteristics of respondents based on gender showed that most of the respondents were female, as many as 14 people (60%). Characteristics of respondents based on monitor distance showed that most of the respondents used computers with 50 cm, with as many as 17 people (74%). The distribution of the frequency of the level of fatigue before being given eye exercise intervention was mostly in the moderate category of 13 people (56%), while the level of fatigue after eye exercise intervention was entirely in the light category, namely 23 people (100%).

The table shows that the  $p\text{-value} = 0.000 < 0.05$ , so  $H_0$  is rejected and  $H_a$  is accepted. It can be concluded that there is an effect of eye exercises on eye fatigue in computer users.

Women are found to use computers more than men, who spend more time in the field, according to Nielsen's (2017) theory, where women access gadgets more than men. Characteristics of respondents based on gender showed that most of the respondents were female, amounting to 14 people. Characteristics of respondents based on age are mostly <32 years, as many as 15 people. The study results show that the respondents' age is productive; this is Susanti's 2018 opinion about age in terms of activity.

Irma & Kurniawan (2019), regarding Factors Associated with Subjective Complaints of Eye Fatigue in Computer Users, a monitor distance < 50 cm is not recommended by computer users. The measurement of the distance from the monitor to the worker using a ruler is taken from the edge of the eye of the worker in a straight line with the computer screen that is being used. According to Husda (2020), the eye sight distance to the monitor screen should not be too far or too close because it causes the eyes to get tired quickly. Setting the proper eye distance will make the workforce comfortable working and maintain eye health. Suppose a person works to continuously see a luminous object on a coloured base at a close distance for a certain period. In that case, it causes the eye to have to accommodate for an extended period, resulting in a decrease in the accommodation power of the eye. When the eye accommodates maximum, the eye lens thickens (more convex). As a result, the focal length of the eye lens increases, making the suspensory muscles in the eye tired.

This research is also by the theory of Anggun Musallimah (2020), which suggests that the factors that cause eye fatigue in computer users are not only from individual refractive errors but also from internal factors, namely age, and external factors, namely distance from the computer monitor. Based on the research results at the National Land Agency office in 2021, 17 people used computers at a distance of > 50 cm. Workers who use computers away from their eyes will squint and make their bodies lean forward, which will change the lens's focal length, causing eye strain.

According to the researchers, the decrease in eye fatigue scores for computer users occurred because one of them was eye exercises. This shows that before the eye yoga exercise was performed, the respondents had a high eye fatigue score. After the eye exercise, there was a decrease, where the average eye fatigue of computer users was in the moderate category and decreased to the mild category.

## CONCLUSION

There was an effect of eye exercise on eye fatigue of computer users at the Office of the National Land Agency of Sorong Regency in 2021 with a  $p = 0.000$  ( $p < 0.05$ ). The results of this study are expected to be applied in overcoming eye fatigue after using a computer as a preventive effort to prevent eye health disorders in old age. For further research, it is expected to be input and inspiration to develop this research, such as eye exercise in myopia and hypermetropia sufferers

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