

BIO-OPTICAL WITH EYE VISION

A. OBJECTIVE EXPERIMENT

To find out how big or small a person's visual acuity is from the focus of the *retina* in the eyeball

B. BASIC THEORY

Visus acuity (sharp eyesight) is a function of the eye. Visual disturbances require examination to determine the cause of eye disorders that result in decreased visual acuity. Visual acuity should be noted in each eye with eye complaints.

To find out a person's visual acuity can be done with the *Snellen* card and if vision is lacking then visual acuity is measured by determining the ability to see the number of fingers (counting fingers) or light projection.

Usually, a visual acuity test is determined by looking at the eye's ability to read letters of various sizes at standard distances for cards. The result is expressed as a fractional number such as 20/20 for normal vision. In this condition the eye can see letters at a distance of 20 feet that should be seen at that distance.

Average normal visual acuity varies between 6/4 to 6/6 (or 20/15 or 20/20 feet). Maximum visual acuity differs in the *fovea* area, whereas several factors such as general lighting, contrast, various color tests, exposure time and *refractive* errors of the eye can alter visual acuity.

Visus examination can be done using the *Snellen optotype*, *Landolt ring* card, *E test* card, and *Sheridan/gardiner test* card. And what is used in this visualization experiment is the *Snellen optotype*. The *Snellen optotype* consists of a series of letters of different sizes and levels and arranged in horizontal rows. The top letter is large, which is then continued down and the size is getting smaller and smaller.

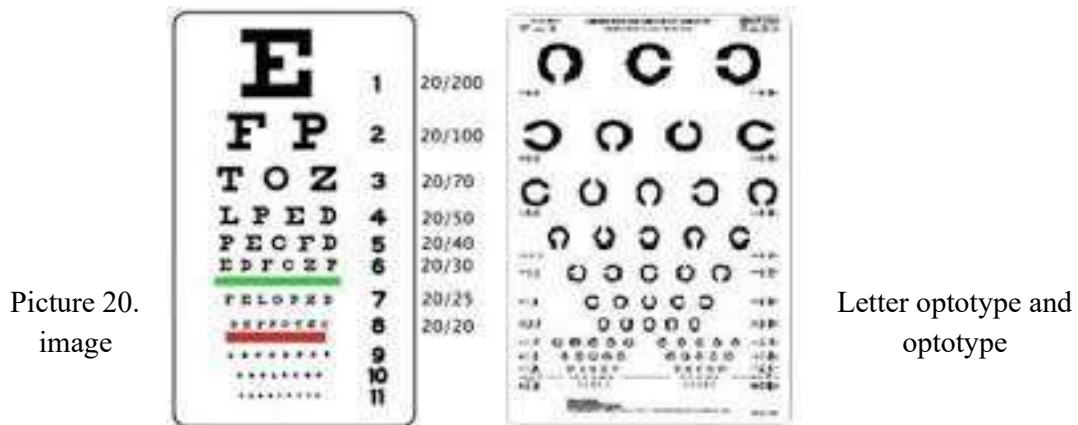
With the image of the *Snellen optotype* card, visual acuity is determined where the eye can only distinguish the two points forming an angle of one minute. One letter can only be seen when all the letters form a one-minute angle. A letter can only be seen when all the letters form a five-minute angle and each part is separated by a one-minute angle. The further away the letter must be seen, the larger it must be because the angle formed must remain five minutes.

Visual acuity examination should be done at a distance of five or six meters because at this distance the eye will see objects in a state of rest or without *accommodation*.

With the *Snellen optotype*, a person's visual acuity or ability to see can be determined, such as:

1. If his visual acuity is 6/6, it means he can see letters at a distance of six meters, which by normal people the letters can be seen at a distance of six meters.
2. If you can only read the letters on the line that shows the number 30, it means your visual acuity is 6/30.
3. If you can only read the letters on the line that shows the number 50, it means that your visual acuity is 6/50.

4. If the visual acuity is 6/60, it means that he can see at a distance of 6 meters which normal people can see at a distance of 60 meters.



The above can be done on people who are adults or can communicate. To find out whether or not the visual acuity of the two eyes is the same, it can be done by closing one eye. If one eye is closed, it will cause a different reaction to the attitude, meaning that he is wearing an eye that is not liked or is less good than the other eye.

If a person is in doubt whether his vision is reduced due to a *refractive* error, then a *pinhole test* is performed. If the vision is better, it means that there is a refractive error that can still be corrected with glasses.

In someone who has disturbed *accommodation* or has *presbyopia*, when you see objects that are slightly closer, they will look blurry. The *accommodation mechanism* is a mechanism that focuses the lens system of the eye for a high degree of visual acuity. Accommodation due to contraction causes an increase in the strength of the lens system and relaxation causes a decrease in strength.

Lens *accommodation* is regulated by a *negative feedback mechanism* that automatically adjusts the focusing power of the lens for a high degree of visual acuity. When the eye has been fixed on some distant object and suddenly fixed on a near object, the lens *accommodates* for maximum visual acuity.

C. TOOLS USED

Optotype from snellen

D. THE WAY OF EXPERIMENT

The experimental person (OP) stands 6 meters from the *optotypes*. The experimenter was shown the *optotypes* one by one starting from the large *optotype* and assigned the lowercase/smallest letters that could still be read by the experimenter (OP). If one letter of one line is read incorrectly, it means that the other letters of that line are also not clearly visible.

WORKSHEET EYES AS OPTICAL TOOLS

Student name :
Student number :
Practicum Date :
Practicum Hours :
Participant Name :
Gender :
Participants' age :
Name of Comparator :
Comparison Gender :
Comparative Age :
Results obtained :

No Image	Seen By Participant	Seen by comparison
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

CONCLUSION

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APPLICATION

Yogyakarta,

Practitioner's Signature
