

EYE EXERCISES IN SIMPLE MYOPIA – AN REVIEW ARTICLE

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ABSTRACT

Myopia or shortsightedness is a type of refractive error in which parallel rays of light coming from infinity are focused in front of the retina when accommodation is at rest.^[1] Some common etiology of Myopia includes varying in Axial length, Curvatural type, Myopia due to excessive accommodation, Congenital cause, Traumatic cause leads to reduced distant vision, Asthenopic symptoms, Headache.^[2] Refractive correction, contact lens and surgical treatment are some of practiced management for Myopia. Eye exercises are some protocols performed to Relax the Asthenopic eyes which include Palming, Long swing, Short swing, Circular swing, Candle practice with proper Eye education which can reduce the symptoms of myopia.^[3]

KEYWORDS: Myopia, Eye exercises, palming, Eye education, Swing.**1. INTRODUCTION**

Myopia or short-sightedness is a type of refractive error in which parallel beam of light travelling from infinity are focused in front of the retina when accommodation is at rest.^[1] Simple or developmental myopia is the commonest variety which is considered as a physiological error not associated with any eye pathologies. Prevalence of myopia is 20-40% of population. Symptoms include Poor vision for distant which may associate with headache.^[2] Refractive corrections are the common treatment is practiced to some extent rather also include surgical management such as Laser refractive correction, Lenticular correction and Lenticular Replacement is performed.^[4]

Eye exercises are some protocols performed to the Asthenopic eyes to relax the eyes after long time of accommodation which can reduce the risk of increasing power of Myopia by relaxing the strainful eyes and also decrease the cause such as increasing axial and curvatural length, Dry eye, and Computer vision syndrome. It can also avoid the occurrence of Myopia if it practiced from childhood. Eye exercises include Palming, Long swing, Short swing, Circular swing, Candle practice should be practiced with proper Eye education.^[3]

2. OBJECTIVE**2.1 MYOPIA**

Myopia derives from Greek word “muopia”^[4], which means close to the eyes which is type of Ametropia where parallel beam of light travelling from infinity passes are focused in front of Retina when accommodation is at rest.^[1]

2.1.1 Etiology

Axial myopia results from increase in the anteroposterior length of the eyeball which is commonest form, normal axial growth of the eye in children is 14–24 mm, but in the case of myopia, the axial length increases from 24 mm to 28 mm at the age of 14.^[4] Curvatural myopia occurs due to increased curvature of cornea, lens or both, Index myopia results from increase in refractive index of crystalline lens. Myopia can also cause due to excessive accommodation or excessive strain of eyes cause due to excessive exposure to Ultraviolet radiations emitted from the digital devices. Congenital cause present since birth usually diagnosed by the age of 2-3 years.^[2] Myopia due to any retinal pathological cause and any Traumatic cause. While numerous studies have shed light on the causes of myopia, the exact cause of myopia remains unknown.^[4]

2.1.2 Prevalence of Myopia

The Myopic prevalence in the age of 5–17 years varies globally with its highest in Asians (18.5%), followed by Hispanics (13.2%), African Americans (6.6%), and

Caucasians (4.4%) at last. Overall reported prevalence is 20-40% of the population.^[5] According to the World Health Organization (2015), the prevalence of myopia in 2000 was projected to be 22%, and by 2050, it is expected to affect 52% of the global population.^[5]

2.1.3 Grading of Myopia

There are three gradings of Myopia according to American Optometric Association (AOA). Low grade myopia when the error is below or equal to -3D and moderate if it is between -3D to -6D, if the error is above -6D it grades under Severe or High myopia.^[2]

2.1.4 Features^[2]

Signs- Myopic person will be having a prominent and large eyeball with slight deeper Anterior chamber and Mid dilated Pupil. During wet funduscopy Optic disc seems to be crescent with varying Cup disc ratio. Dry eye signs also be visualized when the person is more exposed to ultraviolet radiation emitted from digital devices.

Symptoms- Poor distant vision is the main symptom which can be associated with Asthenopic symptoms. Complaints may or may not be associated with headache based on the grade of the disease progressed.

2.1.5 Management

Myopia is not completely curable but based on the power the management protocols varies. There are non surgical and surgical type of intervention followed by determining the variety and grade of the disease.

Non surgical intervention

Myopia can be treated with refraction by adjusting the Diopters with spectacles or contact lenses which is the first treatment option preferred for near sightedness. But the power of spectacles go on increases by advancing disease rather contact lens have chance of infection if hygiene is not maintained properly.

Pharmaceutical agents for myopia

Development of axial eye growth can be minimized with topical muscarine antagonists. Drugs such as atropine and pirenzepine can be used. Atropine blocks the muscarinic acetylcholine receptors and inhibits acetylcholine from attaching to these receptors. Atropine slow down the development of myopia and axial elongation. Pirenzepine is selective M1 muscarinic antagonist. It slow down the development of myopia in children. Carboxymethylcellulose is preferred if the person present with Dry eye. But these drugs have significant side effect with minimal benefit.^[4]

Surgical intervention

Surgery such as Photo refractive keratectomy (PRK), Laser epithelial keratomileusis (LASEK), Laser in situ keratectomy (LASIK), Lenticular replacement can be performed to reduce the increased axial length in

Myopia.^[5] But there are risk of complication due to this surgeries.

2.2 EYE EXERCISES

Eye exercises are protocols performed to relax the asthenopic eyes. Vision is a process of mental interpretation of retinal images. Correct seeing must be a perfectly co ordinated action between mind and eye through relax. In simple myopia the axial length and curvatural length can also increases due to Straining of eyes.^[3] Eye exercise help to calm the eyes and mind which avoid the further increasing of axial length which leads to progression of Myopia. Eye exercises include Palming, Long and Short swing, Circular swing, Candle practice with proper eye education and prophylaxis will maintain the increasing extent of diopters and also it can reduce the power in myopia.

1. Palming- Palming is the method where eyes should be closed and it should be gently covered with both palms in such a way as to avoid any pressure on the eyeballs. When all the light is shut out by palming, one should experience a perfect dark before the eyes if one were in perfect dark room. If some other colour appears it indicates eyes and mind are under a strain. To relieve this strain imagine something perfectly black or some pleasant objects like tree, flowers. Palming may be done for two to five minutes. After palming open the eyes and practice central fixation on Snellen chart for myopia.^[6]

2. White line- The white space in between the lines of print is called the white line. Shift the sight on the white line just below the line of letters, from one end to another. Blink gently at each line. And there should not be any effort to see the letters. It may be observed that the letters above the white line appears more distant than before. Practice of white line improves the reading sight and relieves the pain and discomfort of the eye.

3. Long swing- Stand with the feet about 12 inches apart, turn the body to the right- at the same time lifting the heel of the left foot. Do not move the head or eyes or pay any attention to the apparent movement of stationary objects. Then place the left heel on the floor, turn the body to the left, raising the heel of the right foot. Alternate. Long swing is a great help to relieve discomforts and induces good sleep.^[3]

4. Short swing- When the swing is less than an inch, it is called short swing which helps to improve the sight. It may be practised fifty to one hundred times.

5. Long swing before bars of a window- Stand with the feet about one foot apart, move the body like a pendulum to the right while raising the heel of the left foot, then move the body to the left while raising the right heel. Alternate fifty to hundred times.^[7]

6. Circular swing- Place the hand against an immovable surface or on the thigh. Place the ball of the thumb lightly in contact with the forefinger. Now move

the end of the thumb in a circle about one quarter of an inch diameter.^[8] When the thumb moves in one direction, the forefinger should appear to move in the opposite direction although in reality it is stationary. Notice that the movement of the thumb is slow, short, continuous and restful, the relaxation is felt in all parts of the body.^[9]

7. Candle practice- When reading of fine print in candle light is properly done, it proves extremely beneficial. It relieves discomforts of the head and eyes and strain and improves from myopia. Also concentrating the candle light from the distance of 1 inch with minimal blinking allows for tear formation and secretion as well as relax the mind. The flame stimulates the retinal cells and improves the blood circulation and gives a feeling of comfort, rest and relaxation.^[11]

2.3 EYE EDUCATION

Eye education is advised to do with Eye exercises for better result.^[12]

1. Palming – It should be performed regularly, whenever reading or while using smart devices with a lapse of 2-3 times per hour will reduce the excessive straining of eyes and also reduce the dryness formation in eyes by secreting the tears.
2. Swaying -Person should stand with their feet about one foot apart and sway the whole body from side to side. When this is practised, the stare, strain or effort to see is prevented and the vision always improves.
3. Blinking- The normal eye with normal sight blinks frequently, easily and rapidly, without effort or strain. If person do not blink frequently, but stare and try to see things with the eyes open continuously, the vision will be impaired. Blinking should be done for minimum 12-15 times per minute for proper neutralise the tear and helps to relax the eyes from continuous straining.
4. Fine print- Fine print at the distance from their eyes at which they see it best, the eye strain is relieved as fine print cannot be read with an effort. Reading fine print in candlelight proves extremely beneficial.
5. Shifting^[12]- It may be done consciously with improvement in the vision, or it may be done unconsciously with impaired vision. Shifting is moving the head and eyes so far away that the first letter of the chart or object is too far away to be seen at all clearly. When Shifting is slow, short and easy the best result in vision are obtained.

3. DISCUSSION

Myopia is a type of refractive error in which parallel rays of light coming from infinity are focused in front of the retina.^[14] It has the prevalence of 20-40 % over the population with the common symptom as difficult in distant vision can be corrected by spectacles or contact lens priorly but it can not able to control the progression of the stage.^[13] Eye exercises with eye education is a group of protocols which can relax the straining of the eyes. Palming, Long swing, short swing, Circular swing are various types of eye exercises.^[3] Eye exercises can

able to control the progressive diopters of Myopia by controlling the eye strain.

4. CONCLUSION

Eye exercises with proper eye education if practiced regularly relief the straining of eyes and mind. By relaxing the strain it will reduce the dryness, increasing axial length, curvatural length of eyes. As the etiology of Myopia is reduced the progression of the diopters will be minimum. And if this Eye exercise performed from childhood it will prevent the development of Myopia in Children. But Eye exercise is not the treatment for Myopia it is the Prophylaxis which can be done for Myopia with proper treatment.

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