



ORIGINAL RESEARCH PAPER

Physiology

TO STUDY THE EFFECT OF YOGA IN MYOPIA

KEY WORDS: Myopia , Yogic exercise, Refractive errors, Retina

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ABSTRACT Nearsightedness is a common problem. Due to early and regular use of television, computer , mobile children are suffering from refractive errors in their early age. Especially myopia is becoming a big problem in our country . Apart from use of glasses, contact lenses and refractive surgery, application of yogic exercise therapy proves to be useful like gazing rising sun, taking water in mouth and washing eyes with clean water ,palming . The aim of my study is to see the effect of yogic exercise in decreasing the refractive error in myopic children and removing their high power spectacles. Present study was planned among 100 subjects with myopic refractive error. All the subjects practiced yoga eye exercise for 6 month and its effect is noted.

Introduction

Nearsightedness or myopia, is the most common refractive error of the eye and it has become more prevalent in recent years. A normal eye should have acuity of distant vision 6/6 and near vision N6. This can happen only when the incident parallel rays of light focus on retina, when accommodation is at rest.(11) When these rays focus in front of retina the condition is known as myopia and the person fails to see the distant object clearly but his near vision is alright. When the rays of light fall behind the retina the condition is known as hypermetropia and the person, therefore, even to see an object which is far away, has to accommodate. For nearer objects he has to accommodate excessively and in spite of that the nearby object may not be clearly seen.(10) Myopia occurs when the eyeball is too long, relative to the focusing power of the cornea and lens of the eye. This causes light rays to focus at a point in front of the retina, rather than directly on retina. It can also be caused by the cornea and/or lens being too curved for the length of the eyeball. In some cases, myopia is due to a combination of these factors. Myopia typically begins in childhood and have a higher risk if parents are nearsighted. In most cases, nearsightedness stabilizes in early adulthood but sometimes it continues to progress with age. Myopia increases the risk of other eye diseases, including glaucoma, cataract, and retinal detachment.(2) The risks associated with myopia are significant even in low myopes (3) Primary symptom include blurred vision for distance and associated other symptoms such as headache, pain in the eye, watering of the eye, eye strain, squinting, heaviness of the eye are also seen. Currently prevalence of refractive error ranges from 8 million to 2.3 billion(1). the prevalence of myopia in India is 45%. Available treatment option for myopia includes optical correction ,pharmaceutical treatment like cycloplegic promoters vision therapy, orthokeratology, refractive surgeries like-radical keratometry, excimer LASER, photorefractive keratotomy, asteroathy, yoga therapy and aerobic exercise (4) . These treatment choice have many problem like post operative complications, cosmetic problem eye infection. The use of spectacles may limit their daily activities such as play dance and even other activities specially in children . The simple eye exercise in form of yoga will be more beneficial for the treatment of myopia in children . Yoga is a good way to cure myopia. The eye exercises strengthen the muscles that are used regularly and even tones up those eye muscles that are misused by faulty viewing habits. Eye muscles, like all other muscle tends to get stiff and this lack of elasticity leads to poor vision. With yogic exercise eye muscles can be tone up with increase the elasticity. Exercise therapy for eyes is

not a new approach . In fact vision workout and treatment approach have been around for years (6). The design of these yoga exercise aids in conquer different visual disorder including binocular function .

Yoga is a process by which we can decrease the refractive error of an individual and we can also remove the spectacles from their eyes, if refractive error is minimal i. e. -0.25 to -0.50. There are asanas for myopia like sirsasana , sarvangasnas(12) but they are difficult to perform for children. There are many forms of yogic exercises for myopia like blinking, rotational viewing, near and distant viewing, preliminary nose tip gazing, gazing rising sun, palming trataka. The simple form of yoga was chosen for children like gazing the rising sun, washing eyes with water keeping water in mouth, palming.(13,14,15)

Material and methods

Before starting the title project permission was taken from the head of the department physiology and head of department ophthalmology, Patna medical college, Patna to conduct the work. Prior to the study subjects parents were explained in brief how and why the study will be carried out and their written consent were also taken from the parents of all concerned. Visual acuity of the subjects were taken from snellen s chart kept at a distance of 6 meters in proper illumination . Subjects having visual acuity 6/9 ,6/12,6/24 were included in this study. The retina of all subject were examined by retinoscope after full dilatation with atropine to exclude any retinal abnormality. Subjects having retinal abnormality, corneal opacity, lenticular opacity were excluded from this study. Total 100 myopic subjects were taken in this study from out door of ophthalmology department of Patna Medical College between the age of 8 to 18 years, 30 having their visual acuity 6/9 in both eyes, 30 having 6/9 in one eye , 30 having 6/12 and 10 having 6/24 in both eyes. Yoga were demonstrated to the parents of each individuals and direction were given to do it daily for one month . In yoga the subject have to see the rising sun with naked eyes till it is red daily. The subject should discontinue it when even slight brightness is seen in the rising sun. After that the subject have to take water in his mouth and wash his eyes with clean water . Every time fresh water in the mouth is taken and the the eyes are washed. This process is repeated 6 times. Then the subject is asked to sit comfortably and rub his palm against each other, vigorously until he can feel heat radiating from them . Place the palm over his closed eyes and feel the warmth spreading till the palms are warm (palming).(17) This process is repeated 6 times.

After one month interval the refractive error were re-examined repeatedly. The nutrition of the subject during this period were vitamin A rich diet like.. carrot, spinach, tomato, egg, fish etc.

Snellen's chart consists of white board on which nine rows of black letters are printed. The letters are smaller in size from above downwards. The basis of the size of the letters is the fact that two points which subtended an angle of 1 minute at the nodal point of the eye can be seen discretely. The biggest letters of the first row form an angle of 1 minute at the nodal point when placed on a distance of 60 meters and the number 60 is written below this row of letters. The letters in the lower rows form an angle of 1 minute at a distance of 36,24,18,12,9,6 and 5 meters respectively in descending order and the respective numbers are written below the concerned row. The chart is so designed that each letter a normal individual can read at a required distance subtend a visual angle of 5 minutes. The width of each stroke of the letter being 1 minute and the line in the letter are also separated by 1 minute of arc. Thus the minimum separable in a normal individual corresponds to a visual angle of approximately 1 minute. (8) Visual acuity is recorded according to the formula $V=d/D$, where V is the visual acuity, d is the distance at which the letters are read, and D is the distance at which the letters should be read. (9) Subject sit at a distance of 6 meters (20 feet), read the chart with one eye at a time at proper illumination. (8) The subject sit 6 meters away from such a chart, if he can see a letter of top row (which a emmetropic eye can see from 60 meters) but no more than this his vision is 6/60. This means he can see an object, only when he stands at 6 meter distance which one should normally see from a distance of 60 meters. (10). Normal visual acuity is 6/6.

Yoga is the science of harmony. It helps the integration of mind, senses and the subjects of senses by increasing the power of concentration. There are self discipline techniques like Yama and Niyam, breathing exercise pranayama that regulates the oxygen metabolism in the body, etc. The eye exercise Trataka helps the musculature of eye and thereby indirectly helping the lens against focusing/imaging problems like myopia. (16)

Palming is warming up your eyes for better circulation. It is a quick and easy way to relax your eyes. It improves blood circulation and keeps tiredness and puffiness at bay. (17)

Eye exercise can help in a number of ways: Increase eye function and help your focus better. Reduce eyestrain. Reduce sensitivity to light. Increase or strengthen your eyes. Help with other aspects of vision such as hand eye coordination, depth perception, peripheral vision, etc. (18)

Result

In 100 myopic subjects 60 were having visual acuity 6/9 (30 in one eye +30 in both eyes). After one month of yoga and proper diet the visual acuity were 6/6p in most of the subjects, and after 3 months the visual acuity were 6/6 in 55 of them. In 30 subjects the visual acuity were 6/12 in both eyes. After 2 months of yoga and proper diet the visual acuity were 6/9 in most of them and after 4 months the visual acuity were 6/6p in 25 of them which were 6/6 after 6 months. 10 of them having visual acuity 6/24 in both eyes, after 2 months of yoga and proper diet the visual acuity were 6/18, after 4 months 6/12p and after 6 months 6/12 in 6 of them.

Discussion..

Visual acuity of 6/9 after yoga get corrected early in 3 months. Visual acuity of 6/12 have taken 6 months time to be corrected. Visual acuity of 6/24 get corrected upto 6/12 in 6 months. Best and early correction was for visual acuity of 6/9. It means early the diagnosis of myopia better will be the result after yoga.

Conclusion.

Minor myopia (-0.25D to 0.50D) in children if diagnosed early can be corrected by yoga. Myopia more than this can also be partially corrected by yoga.

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