



EFFECT OF INTEGRATED YOGA THERAPY ON REFRACTIVE ERRORS OF EYES.

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Abstract

The samples of the present Clinical study comprised 15 participants were residing in the same residential society in which trainer is residing. The experimental research Pre-post single group design was followed. There were one group. 15 students were assigned in group. The experiment was conducted for 90 days with Integrated Yoga Therapy do regularly in the morning. Spontaneously self scoring scale was use. In the study we planned and assessed the subjective improvement. After three months of follow up in our study, there was a significant improvement in the subjective self-scoring. Integrated yoga therapy has shown improvement in ocular health in this present study.

Keywords: Yoga Therapy, Refractive Error of Eye.

Introduction: To realize the outer world our body has been provided with five sense organs (Jnanendriayan). Eyes are one of the sense organ whose proper functioning of the eyes is very important for visually perceiving the world around us. Eyes provide us the ability to process visual details of the objects around us, in addition to enable photo response functions not depending on vision. Defect free functioning of eye is very important in sensing the world around us for performing dutiful action (Karmyoga).

The number of people globally with refractive errors has been estimated from 800 million to 2.3 billion^[1]. This figure seems to be subjective, because till today population based study had not been carried out. Myopia is the most common disorder and is estimated to affect 1.5 billion people^[2]. Rates vary significantly in different parts of the world reaching 70~80% in East Asian countries and 25~40% in Western countries.

Growth in prevalence:

There is drastic increase in prevalence of refractive errors is recent decades.

a) In 1971–1972, surveys represent estimates for myopia (a category of refractive error) prevalence in the U.S. to be around 25.0 % (for age group 12-54 years). By the same methodology, in 1999–2004, myopia prevalence was estimated as 41.6%.^[3]

b) Researches suggests the prevalence of myopia(a category of refractive error) in India was only 6.9% in 1988.^[4] Subsequent estimates are 43%.^[5]

c) Table hereunder depicts the results of a study on Eskimos]^[6]



Age	% Myopic
Over 50	0%
41 to 50	Less than 5%
31 to 40	23%
26 to 30	43%
21 to 25	88%

The figure of the above referred studies clearly demonstrate that

1. Prevalence is epidemic proportion
2. Growth in prevalence has happened in recent decades, and newer generations are more affected.
3. The complication start not due to old age, rather complications start in younger ages.

No doubt that adopting yoga as a way of life is restores the balance of biochemistry of the body and all abnormalities gradually disappear in effortless manner e.g. person weight, blood pressure, sugar levels etc. become normalized. Refractive error of eyes is one of the outcomes of disturbed biochemistry. There is strong requirement to identify the convenient, consistent and proven methods for curing the disease. It is well known fact that through yogic therapy is most effective solution for chronic diseases hence yoga therapy can play an effective role in treating the refractive disorders of eyes.

Yogic Literature Review:

Description for eye disorder management as per Yoga literature is as under **Hath Yoga Pradipika** ⁷ chapter 2 has mention of eye disorder management by Shat-Karamas as under

Gheranda Samhita chapter 1 has mention of eye disorder management by two of Shatkarama namely 'Neti' and 'Tratak' as under



अथ नेतियोगः

वतस्तिमानं सूक्ष्मसूत्रं नासा नालेप्रवेशयेत्।
मुखान्निर्गमयेत्पश्चात् प्रोच्यते नेतिकर्मकम् ॥५०॥

Take a thin thread, measuring half a cubit, and insert it into nostril, and pull it out by mouth. This is called Neti kriya

साधनान्नेतिकार्यस्य खेचरी स द्वमाप्नुयात्।
कफदोषा वनश्यन्ति दिव्यदृष्टिः प्रजायते ॥ ५१ ॥

By practicing Neti Kriya, one obtains Khechari Siddhi. It Destroys the disorders of phlegm and produces clairvoyance or clear sight.

अथ त्राटकम्

निमेषोन्मेषकं त्यक्त्वा सूक्ष्म लक्ष्यं निरीक्षयेत्।
यावदश्रुन पतति त्राटकं प्रोच्यते बुधैः ॥ ५३ ॥

Gaze steadily without winking at any small object, until tears began to flow. This is called Trataka by the wise.

एवमभ्यास योगेन शाम्भवी जायते ध्रुवम् ।
नेत्ररोगा वनश्यन्ति दिव्यदृष्टिः प्रजायते ॥ ५४ ॥

By practicing this Yoga, Sambhavi Siddhis are obtained; and certainly diseases of the eye are destroyed and clairvoyance is induced.

Various researches on Efficacy of 'Tratak' for improvement of eyesight have also been conducted in recent past. Gupta SK & S Aparna⁸ (2020) have reported Effect of Yoga Ocular Exercises on Eye Fatigue and find significant effect. PP Badwaik⁹ (2016) have reported 'Efficacy of Trataka in Improvement of Vision in Myopic and Hypermetropic Children' his team were found effective result in Far vision difficulty level. G. Gopinathan et al.¹⁰ (2012) have conducted 'A clinical study to evaluate the efficacy of Trataka Yoga Kriya and eye exercises (nonpharmacological methods) in the management of Timira (Ammetropia and Presbyopia). All the studies had been of short duration (1 to 3 months) and indicated negligible to mild improvement. However encouraging is the fact that in all the studies it is observed that there is objective as well as subjective improvement in ocular



health. Detailed clinical trials with large sample size and longer duration are required to validate the results.

Objectives of the Study:

The overall objective of the study is to find out an effective therapy for treatment of refractive error of eyes. For a solution to be effective therapy must have following characteristics:

- Convenient to practice. (e.g some of Shat-Karms are believed to highly effective but extremely difficult to learn and perform in present day life style)
- Not much time consuming
- Harmless and no risk of complication
- No side effect
- Low cost

The solutions is effective if it can be demonstrated that

- It cures completely or partially OR
- It stops or slows down further progression, OR
- At least it restores the balance of biochemistry of the body to some extent (whereas defective vision is one of the several outcomes of disturbed biochemistry).

Research Methodology:

The scope consists of observing changes in quality of vision and related aspects on subjective and objective basis on small group.

- **Sample & Sampling:** The desired group size is 15 persons. On personal basis the trainer had approached numerous persons in her contact network who are suffering from refractive disorders of eyes; are living in the vicinity of her residence; and who are voluntary interested to participate in the study. The trainer was successful in getting 15 persons to voluntary participate in the program. All the participants were residing in the same residential society in which trainer is residing. (i.e SWAGAT RAINFOREST-2, KUDASAN, GANDHINAGAR)
 - All sort of refractive errors attributable to shape of eye i.e. myopia, hyperopia or astigmatism.
 - Irrespective of history of duration of use of glasses
 - Irrespective of power of glasses
 - Both Male & Female
 - Ages 7-15 years
 - Persons suffering from age related refractive disorders which are attributable to hardening of lens or loss of accommodation power. (i.e Presbyopia)
- **Assessment:** The researcher does not possess the qualification of ophthalmologist/optometrist and the studies are in preliminary stages with very short



assessment period hence subjects were left to themselves in deciding when to checkup with specialist in case they find any significant changes in vision. As a low cost alternate without involving requirement of any resources, participants are asked to rate the severity of various problems during various stage of evaluation. These included

- Difficulty in seeing from far
- Headaches
- Tiredness
- Redness of eyes or burning or any itching sensation
- Without spec

The severity of the problems was assessed on scale of 0 to 3 as under

- 0- No Problem
- 1- Slight Problems
- 2- Moderate Problems
- 3- Severe Problems

- **Design of Intervention module for Integrated Therapy**

As there is a multiplicity of potential reasons for refractive error, with most of these reasons having close interactions with each other, it is extremely hard to find out for individual patients, where exactly the unbalance of their biochemistry is located. What can be done, however, is to follow overall recommendations to eliminate potential weak points with respect to refractive error and related issues.

Working on all five sheaths i.e. Annmay Kosha, Pranmaya Kosha, Manomay Kosh, Vijnanmay Kosha and Anandmaya Kosha eliminates all weak points and restores the perfect health.

The module for integrated yoga therapy for refractive errors of eyes has been designed to include components from Asans, Pranayam, Shat-karmas, eye-relaxation, meditation, & reinforcement of belief.



Daily practice module of yogic therapy consisted of activities as per following table:

Sl No	Activity	Duration (Min)
1	Chanting of 'OM' Mantra three times with longest possible exhalation	1
2	Prayer	2
3	Light Jogging with varying action i.e. normal jogging, focus on moving knee up, focus on moving ankle to back, sideward movement of legs etc.	5
4	<i>Surya-Namaskar</i> 12 Posture x 5 Cycles	3
5	<i>Vrikshasan</i>	1
6	<i>Tadasan</i>	1
7	Brain gym activities involving simultaneous movement of left and right body parts in opposite positions/directions.	4
8	Eye movements Left to right and vice versa movements (5 Cycles) ,Up to down and vice versa movement (5 Cycles),Oblique Left-up to right-down and vice versa Movements (5 Cycles) , Oblique right-up to left-down and vice versa Movements (5 cycles),Clockwise rotation (10 Cycles), Anti clockwise rotation (10 Cycles), Quick Eye blinking (50 times) , Alternating near focus(On nose tip) and far focus (10 Cycles)	10
9	Nadi Shuddhi Pranayam 5 Cycles	3
10	<i>Bhramari Pranayam</i> (5 Cycles)	2
11	Bindu Tratak	5
12	Palming	5
13	View Snellen Chart	2
14	Mediation in Shavasana under the voice instructions from the trainer.	10
--	Relax or at ease position in between various activities	5
15	Chanting OM thrice in the end	1
Total		60

Plan of Data Analysis: Group size being extremely small, the data is not further segregated in various sub categories like age, sex, history of usage of glasses, glass power. Since data of same



subjects before and after are analyzed hypothesis will be accepted or rejected based on probability associated with a Student's Paired t-Test.

Result Table & Analysis: Far vision difficulty level of participants Observations based on subjective assessment with respect to far vision difficulty are as under:

Group	M	SD	DF	t-value	Significance Level
Pre-Test	2.4	0.63	13	12.22	0.01 Level
Post-Test	0.8	0.56			

NULL

HYPOTHESIS (Ho): Integrated yoga therapy has no significant impact on far vision difficulty.

ALTERNATE HYPOTHESIS (HA) : Integrated yoga therapy has Significant impact on far vision difficulty.

Since t- value is less than statically significant level (0.01) hence null hypothesis is rejected and alternate hypothesis is accepted in this case.

Discussion:

The integrated yoga therapy for eyes is designed to work on all the five sheaths of body. Generic yoga approach is quite important (includes Asana, Pranayam, meditation etc.) towards holistic health leading to restoration of biochemistry of the body which helps in good health of all the parts (including eyes) of the body. The generic approach is also helpful in improving concentration level, energy level and immunity level leading to lower level of stresses.

Organ specific therapies (e.g. Tratak, relaxation by palming, relaxation by extra-ocular muscular stretches etc.) result in faster restoration of health of organ. Eye exercises have a great role to play in asthenopic features. For better understanding, asthenopic features can be divided into extra ocular asthenopia and intraocular asthenopia. Extra ocular asthenopia is due to following factors like forcing the medial rectus muscle during convergence, lid squeezing to get stenopic effect, and strain causes fatigue, which in turn leads to brow headache, ocular pain, reflex lacrimation, and referred ophthalmoplegia (G Gopinath, et al , 2012). In the effort of clear vision, the blinking phenomenon also reduces, leading to non replacement of tear film, which leads to blurring of vision. Whereas in case of intraocular asthenopia, ciliary spasm take place, which in turn leads to fatigue, ocular pain, and reflex features of lacrimation like burning sensation and watering. Where as in Trataka Yoga Kriya, and palming imagination power increases, functionally efficiency of extra ocular and intraocular increases by forcing them to work and enhances the metabolism of rods and cones through the mechanism of dark and light adaptation (Tiwari KK et al 2018) ¹¹.



Adopting integrated yoga therapy approach statistically it has been observed that there is positive improvement in all symptoms which can be related to refractive errors of eyes like headaches, tiredness, redness/burning/itching, difficulty for far vision and reluctance to remove spectacles.

Conclusion:

In the study we planned and assessed the subjective improvement. After three months of follow up in our study, there was a significant improvement in the subjective self-scoring. Integrated yoga therapy has shown improvement in ocular health in this present study. It is an encouraging finding that a non-pharmacological, low cost, relaxation technique is able to alleviate the symptoms related to disease, by which it indirectly checks the progression of the disease condition. In this era of changed life style and increased pace, it is the primary duty of Yogic Practitioners to educate the society regarding the healthy use of this sense organ.

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