Research Paper

Volume : 2 | Issue : 12 | December 2013 • ISSN No 2277 - 8179

Effects of Yoga on Discomfortness of Vision in Regular Users of Computer in Population of Western Uttar Pradesh

Medical Science

KEYWORDS :

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ABSTRACT

Yoga is an ancient Indian Science which includes the practice of specific postures, cleansing practices, regulated breathing and meditation..The most important benefit of yoga is physical and mental therapy. To get the maximum benefits of yoga one has to combine the practices of yog asanas , pranayama &meditation. Regular practice of asanas, pranayama and meditation can help to cure diverse ailments such as computer vision syndrome, diabetes, blood pressure. The present study aimed to evaluate the effect of a combination of yoga practices on symptoms of visual discomfort in regular users of computer.

Introduction:

The work environment has changed drastically, today work has become more specialized with the pace being determined by the office machinery especially computers, rather than by themselves . In addition, long periods of sitting and intensely focusing work causes physical and mental strain to those who uses computers at their work place or at home[1]. This physical and mental strain manifests as musculoskeletal, emotional and visual problems. One of the most common complaints associated with computer users i.e. a visual display terminal (VDT) is 'eye strain'. The 'eye strain'[2] may take the form of 'tired eyes', 'dryness of eyes', irritation, burning sensation, redness, blurred vision and double vision[3]. However these visual problems cause inconvenience to the individual, reduce work efficiency and increase physical fatigue and mental stress[4]. A combination of yoga practices have been shown to reduce visual strain in persons with progressive myopia[5]. According to yoga, a lot of eye problems are due to a loss of muscle tone in the eyes. The loss of elasticity in the eyes reduces the ability to focus at different distances resulting in weaker eyesight[6]. Eye exercises are important as they reduce tension in the eye muscles[7].

Material and Method:

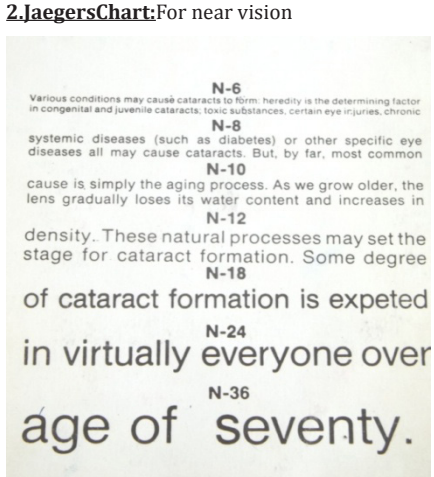
The present study was carried out in **Department of Physiology,Teerthanker Mahaveer Medical College & Research Center, Moradabad (U.P)**Male and female of Moradabad working in banks , reservation counters , Ultra sonography centers ,computer training institute were requested to volunteer for this study.A group of 30 subjects were participated in the study .These include 19 males and 11 female in the age group 20-57.The criteria were that all were professionals, working at a computer for at least 6 hrs. each day,5days in a week. Screneeing was done on subject those who :- were consulting a specialist for their visual symptoms.,had any errors of refraction.,had any clinical condition such as 'Kerato Conjuctivitisicca',using any medication associated with dryness of eyes(eg antihistaminics),backache.All participants completed a health history questionnaire along with details about these factors :-Nature of work,Timing of work,Sitting posture in the office,Visual angle with respected to computer screen-Presence of the air conditioning in the office ,Distance of chair from screen .The subjects will be categorized into two groups :-Before Yoga group. (YG).After Yoga group. (AYG). Both group were assessed on day 1 and after 90th days for visual discomfort. During these 90 days the YG was be practicing 1 hr. daily for 5 days in a week.

Assessment was done by using:-

1.Snellen's Chart :- For far vision



2.JaegersChart: For near vision



3.Blinking rate,

INTERVENTION (YOGA) ;The yogic practices were conducted for 90 days for about one hour every morning between 6:15 am to 7:15 am.The 60 minute yoga program included yoga postures (asanas, 5 minutes), regulated breathing (pranayamas, 10 minutes), exercises for the joints (sithilikarana vyayama, 20 minutes), visual cleansing exercises (trataka, 20 minutes), and guided relaxation (5 minutes).All the yogic practices had a definite purpose. The focusing exercises and trataka improve the ability to make visual adjustments, the accommodation re-

flex and concentration, and help to stimulate as well as relax the eye muscles. The palming, blinking and splashing exercises relax the eye muscles. The preparatory eye practices of sideward, diagonal, circular, upward and downwards viewing were performed, and palming was done after each practice.

STATICAL ANALYSIS

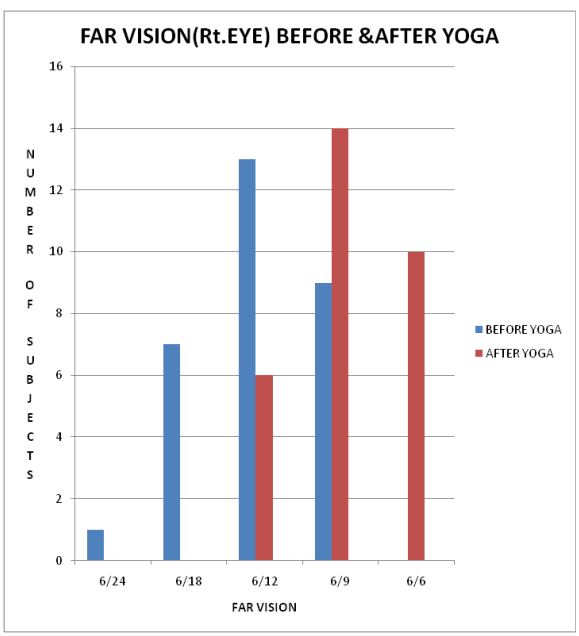
- General descriptive statistic for the for the Far vision ,Near vision ,Blinking rate were carried out by using ANNOVA TEST .

OBSERVATION

Source of variation	Sum of square	Degree of freedom	Mean square	F ratio
Between samples	0.82	1	0.82	30.49
Within samples	1.50	58	0.03	

TABLE NO.1- FAR VISION: Rt. EYE

In 5% of level of significance (variance) critical value of F is 3.98, but here it is 30.49 for Far vision of Rt. eye. So, there is large variance occur before and after yoga. Graph 1 shows that no. of subjects having 6/6 Far vision of Rt. eye is zero before yoga , but after doing yoga regularly approximately 10 subjects were having Far vision 6/6.



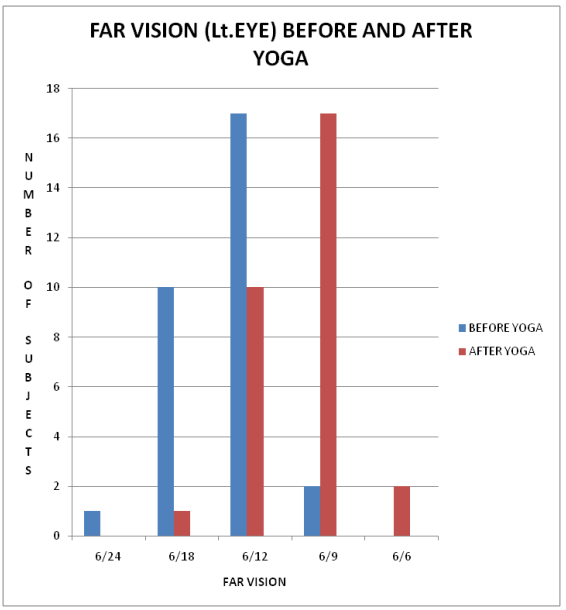
GRAPH 1

OBSERVATION

Source of variation	Sum of square	Degree of freedom	Mean square	F ratio
Between samples	0.5	1	0.5	62.5
Within samples	0.45	58	0.008	

TABLE NO.2-FAR VISION :Lt. EYE

In table no. 2 , it is shown that the significance (variance) critical value of F is 62.5 for Far vision of Lt. eye which is very than before yoga group.So, there is large variance occur before and after yoga.Graph 2 shows that no. of subjects having 6/6 Far vision of Lt. eye is zero before yoga , but after doing yoga regularly approximately 2 subjects were having Far vision 6/6.



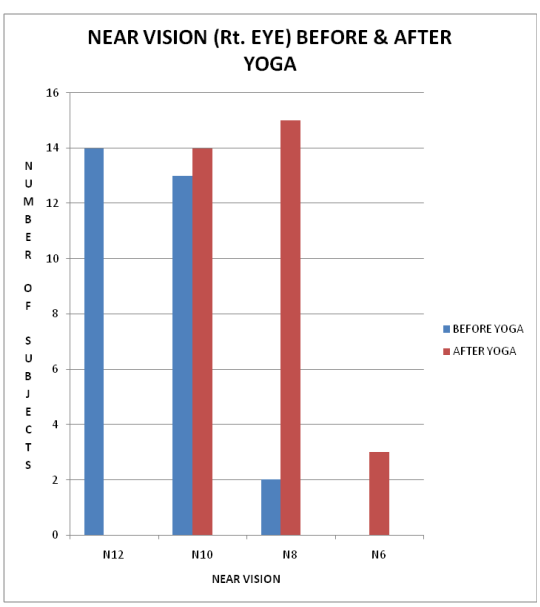
GRAPH 2

OBSERVATION

Source of variation	Sum of square	Degree of freedom	Mean square	F ratio
Between samples	91.2	1	91.2	58.1
Within samples	91.1	58	1.57	

TABLE NO.3 : NEAR VISION : Rt. EYE

In 5% of level of significance (variance) critical value of F is 3.98, but here it is 58.1 for Near vision of Rt. eye. So, there is large variance occur before and after yoga. Graph 3 shows that no. of subjects having N6 Near vision of Rt. eye is zero before yoga , but after doing yoga regularly approximately 3 subjects were having Near vision N6.



GRAPH 3

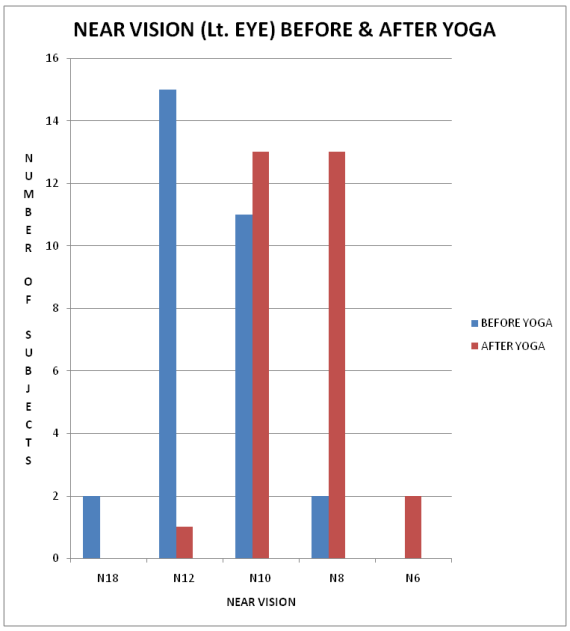
OBSERVATION

Source of variation	Sum of square	Degree of freedom	Mean square	F ratio
Between samples	52.27	1	52.27	33.949
Within samples	89.3	58	1.539	

TABLE NO.4 : NEAR VISION Lt. EYE

Volume : 2 | Issue : 12 | December 2013 • ISSN No 2277 - 8179

In 5% of level of significance (variance) critical value of F is 3.98, but here it is 33.9 for Near vision of Lt. eye. So, there is large variance occur before and after yoga. Graph 4 shows that no. of subjects having N6 Near vision of Lt. eye is zero before yoga , but after doing yoga regularly approximately 2 subjects were having Near vision N6.



GRAPH 4

OBSERVATION

Source of variation	Sum of square	Degree of freedom	Mean square	F ratio
Between samples	170	1	170	61.4
Within samples	160.57	58	2.77	

TABLE NO.5 : BLINKING RATE

In above table , Critical value of F is 61.4 which shows the large variance before yoga and after yoga. Graph 5, shows out of 30 subjects , the Blinking rate results showed an average improvement of ±6 in 16 subjects and an average improvement of ±7 in rest 13 subjects .



GRAPH 5

Discussion :-

In the present study we have investigated the changes of Far vision, Near vision and Blinking rate after doing yoga in regular users of computer.Visual discomfort in professional computer users is contributed to by various factors such as lighting, glare, display quality, ergonomic positioning of the monitor and regularity of work breaks . The symptom which largely contributes to subjectively rated visual discomfort is 'dry eye'. Dry eye is itself contributed to by various factors, including certain diseases (e.g., Sjögren's syndrome, use of certain medication (e.g., anti-histaminics), gender (being more common in females)), and individual factors . Individual factors include blink rate and completeness of blinking which significantly affect tear film dynamics and ocular surface health. Blink rate especially has been shown to vary with the task performed . The mean (± S.D.) rate of blinking was 22 (± 9) per minute under relaxed conditions, 10 (± 6) per minute while the subjects were reading a book at table level, and 7 (± 7) per minute while working at a video display terminal. Hence the frequency of blinking reduces while mentally alert and with gaze focused.

In the present prospective trial 30 persons working at a computer for 6 hrs in a day were evaluated for self-rated symptoms of visual discomfort. YOGA group showed comparable discomfort at baseline. At the end of sixty days the YG group showed decreased scores in visual discomfort.

Changes in vision:-In the present study the significance of variance for Far vision is F=30.49 and F=62.5 of Rt. eye and Lt. eye respectively, similarly for Near vision is F=58.1 and F=33.9 of Rt. eye and Lt. eye respectively.It is shown in the Graphs 4-7 , there is a large improvement in Far vision and Near vision after doing yoga regularly.**Shirley Telles, KV.Naveen, Manoj Dash,Rajendra Deginal and NK Manjunath[8]** have been made similar observation on 291 persons working in a software company Banglore . The repeated measures analyses of variance (ANOVA) showed a significant difference between BYG and AYG groups (F = 40.369 for Far vision and F= 52.9 for Near vision). Multiple comparisons of mean values showed a significant decrease in scores of self-rated visual discomfort for the YG group on day 90 compared to baseline .

Changes in Blinking rate:-Out of 30 subjects, blinking rate results showed an average improvement of ±6 in 16 participants and an average improvement of ± 7 in rest of 13 participants after doing yoga regularly. **DEPARTMENT OF YOGA RESEARCH , Ghantali Mitra Mandali Thane (Maharashtra)[9]** have been done similar research on Computer vision syndrome and effects of yoga on them. They were carried out their project on 15 subjects by doing TBUT test (tear break out time test) on them and notice the Blinking rate. TBUT test is one of the test used to test the dryness of eyes. They found that, out of 13 participants, the TBUT test results showed an average improvement of 4 seconds (± 2) in the right eye of 10 participants, and an average improvement of 5 seconds (± 2) in the left eye of 10 participants and also the average improvement of Blinking rate of ±7in them.

Specific yoga practices have been found to bring about physiological changes suggestive of 'alertful rest'[10] . This description was based on a simultaneous decrease in heart rate and oxygen consumption along with a reduction in peripheral cutaneous blood flow. Also the visual cleansing practices used in the present trial have been shown to facilitate visual perceptual sensitivity in terms of a decrease in optical illusion[11] . A reduction in anxiety has been found to be associated with better visual perceptual sensitivity . A relaxed state is associated with a higher frequency of blinking. Yoga practice has been associated with better self rated relaxation as well as with physiological relaxation[12] . Hence the reduction in visual discomfort in the yoga group in the present study may be attributed to an improvement in the ability to focus while remaining relaxed which may have increased the blink rate[13].

In the present study the frequent meetings which the yoga group had with the instructor could serve as additional care and may have contributed to the benefits seen in the yoga group. The ab-

sence of this psychological support and the yoga practice may have contributed to increased visual discomfort at follow-up.

Results suggest that 90 days of yoga practice may have reduced visual fatigue based on the self-rated symptoms , also shows that yogic eye practices definitely help in improving the tear film of the eyes, thereby reducing the symptoms arising out of computer use and the effects of yoga in the present study is similar to previous studies.

Conclusion:-

Human eyes are a wonderful creation of nature, and these need care and attention. As years go by, the muscles around the eyes lose their tone. Eyesight becomes weak after the muscles around the eyes lose their elasticity and become rigid – thereby reducing the power to focus different distances[14]. In addition, tension around the eyes affects the brain – causing stress and anxiety. There is a deep correlation between the eyes and the mind. It is said that vision occupies 40 percent of the brain's capacity[15]. Long periods of sitting and intensely focusing work causes physical and mental strain to those who uses computers at their work places or at home.In the present study Far vision , Near vision and Blinking rate utilized as parameter for detectinc the effects of yoga on vision and all assessment were done by using Snellen's chart, Jaeger's chart and Blinking rate. After doing statical comparision between before and after yoga group it was found that there is significant improvement in Far vision , Near vision and Blinking rate after doing yoga regularly. So, the results of the present study suggest that a combination of yoga techniques practiced for 90 days improves self-rated visual discomfort in computer professionals.It would seem then that regular yoga practice is a very good option as a preventative and therapeutic means to overcome **Computer vision syndrome**[16]. It can be easily learnt, is cost effective, has no negative side effects, will be beneficial for a lifetime and will bring about positive effects on the physical, mental, emotional and spiritual levels. Indeed, "For eye trouble, the remedy is eye drops. For 'I' trouble, the remedy is 'drop I'. And if you want to drop both eye drops and I, adopt yoga!"Hence the practice of yoga can be a potential non-pharmacological intervention for visual discomfort related to working at visual display terminals (VDTs).

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