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RESEARCH ARTICLE

EFFECTIVENESS OF YOGA AS MIND-BODY EXERCISE OVER MEMORY, PERCEIVED STRESS AND MENTAL HEALTH.

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Abstract

Introduction: Advancement in the world has brought various health concerns in human life. One of the major concerns is psychological stress and therefore mental disorders. Yoga is applied as an alternative approach to overcome the physical & mental issues. Present study was conducted to find the effect of 6 months regular yoga practice (Asanas, Pranayama and Meditation) on Memory, Perceived Stress and Mental Health Index (MHI) score in healthy individuals. **Material & Methods:** 200 healthy study subjects were selected by employing inclusion & exclusion criteria. Out of 200 subjects, 120 were males and 80 were female of age range 30 to 50 years. Written consent from subjects & study approval from ethical committee were obtained. Pre & Post yogic exercise Memory, Perceived Stress (PSS) and Mental Health Index (MHI) Score were estimated by applying PGI Memory scale, Perceived Stress Scale and Mental Health Inventory -38 questionnaire, respectively. **Results:** Pre-yogic Mean Memory Score, Mean Perceived Stress Score (PSS) and Mean Mental Health Index (MHI) were 78.80 ± 8.14 ; 18.63 ± 7.02 and 147.30 ± 35.09 , respectively. Whereas, post-yogic it were to be 86.75 ± 7.86 ; 13.55 ± 4.43 and 176.76 ± 17.34 , respectively. **Conclusion:** There was significant increase in memory score, decrease in perceived stress score and increase in mental health index score after 6 months of regular yoga exercise compared to that of before yoga practice. Significant results encourage us to recommend yoga as a mind-body exercise to achieve mental well-being.

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Introduction:-

Mere absence of mental problem is not the mental well-being or health. It is fundamental & crucial element of overall health. There is no health without mental health. The World Health Organization States: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". While, "mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make contributions to his or her community".¹

As there are multiple determinants for mental health, in this study psychological determinants were aimed to examine. The aim of this study was to see the effectiveness of regular yogic exercise for 6 months continuously over mental health, perceived stress and memory status in normal healthy individuals aged between 30 to 50 years of both genders. Mental stress, depression, anxiety, obesity are some of the major concerns of the modern world population. By 2020, the WHO predicts that depression will be the second largest contributor to global disease burden after ischemic heart disease. It also evidenced the ever growing prevalence of anxiety, psychological distress, etc.^{2,3}

Loss of cognitive function especially memory disorders or dementia is a syndrome of a chronic or progressive nature, caused by variety of brain illness that affect memory, thinking, behavior and ability to perform everyday activities.¹

Stress is any uncomfortable “emotional experience accompanied by predictable biochemical, physiological and behavioral changes”.⁴ In today’s world psychological stress is the most common issue amongst all age group. Stress affects everyone. But interestingly not all stress is bad. At times, it can be beneficial that can either motivate to prepare and perform well as well as produce boost that provide the drive and energy to help people to do well under given circumstances. There are various physiological and psychological responses to stress within the body. Different people can cope up with different level of stress. However, long term stress can be harmful to physical and psychological health which leads to mental disorder eventually.^{5,6}

Although Yoga is an ancient Indian mind-body exercise technique practiced globally in masses as most preferred alternative or complimentary approach to clinical psychological interventions.⁷

Materials and Methods:-

The present study was approved by Ethics Committee for Research on Human Subjects and conducted at Dept of Physiology, MGM Medical College Aurangabad. By simple random sampling method 200 (120 (60%) were male and 80 (40%) were female) healthy subjects aged 30 to 50 years were selected as per inclusion & exclusion criteria.

Inclusion Criteria:-

Male and female healthy subjects never practiced yoga before and willing to practice yoga for 6 month continuously on 1 hour per day X 6 days’ per week basis.

Exclusion Criteria:-

Healthy individual already practicing yoga or any exercise. Pregnant women and individual diagnosed with any systemic disease or psychiatric disease. Post selection, all the 200 study subjects were explained with study design, yoga and experimental procedures and written consent was obtained for participation in study. Yoga was practiced at Yoga Centre under the guidance of qualified Yoga Teacher.

Table 1:-Yoga Practice Schedule

Day	Yogic Exercise with Timing
Monday & Thursday	Prayer (4 min); Joint Movements (6 min); Suryanamskar (12 min); Tadasan, Trikonasan, Virbhadrasan, Vrukshasan, Shavasana (21 min); Pranayama (15 min): Yogshwasan, Anulom-Vilom, Kapalbhathi, Bhastrika; Prayer (2 min).
Tuesday & Friday	Prayer (3 min); Joint Movements (6 min); Suryanamskar (12 min); Naukasan, Dhanurasan, Setubandhasan, Sarpasan, Shalabhasan, Shavasana (21 min), Pranayama (15 min): Yogshwasan, Anulom-Vilom, Kapalbhathi, Bhramari; Prayer (2 min).
Wednesday	Prayer (3 min); Joint Movements (6 min); Suryanamskar (10 min); Pachimottanasan, Sarvangasan, Halasan, Pawanmuktasan, Gomukhasan, Vakrasan, Shavasana (21 min); Pranayama (15 min): Yogshwasan, Anulom-Vilom, Kapalbhathi, Bhramari; Prayer (2 min).
Saturday	Prayer (3 min); Joint Movements (6 min); Suryanamskar (15 min); Meditation (32 min); Prayer (4 min)
Sunday	Holiday

Pre-yogic and post-yogic Mental Health Index (MHI) Score; Memory Score and Perceived Stress Score (PSS), were estimated by using questionnaire based Mental Health Inventory (MHI-38)⁸, PGI-Memory Scale (PGIMS)⁹ and Perceived Stress Scale (PSS)¹⁰, respectively.

Statistical Analysis:-

The collected data was compiled in MS-Excel sheet for analysis of this data SPSS (Version 24th) used. For the comparison of between Pre & Post-yogic exercise of different parameters pair t-test was applied. P-value was checked at 5% level of significance.

Results:-**Table no. 2:- Pre & Post-yogic exercise Mental Health Index (MHI), Memory and Perceived Stress Scores**

S – Significant; SD – Standard Deviation

Particular		Mean±SD	Mean Difference	t-value	P-value
Mental Health Index (MHI)	Pre-Yogic	147.30±35.09	29.45 (20%)	12.70	P<0.0001 S
	Post-Yogic	176.76±17.34			
Memory Score	Pre Yogic	78.80±8.14	7.94 (10%)	16.82	P<0.0001 S
	Post Yogic	86.75±7.86			
Perceived Stress Score (PSS)	Pre-Yogic	18.63±7.02	5.08 (27.27%)	9.83	P<0.0001 S
	Post-Yogic	13.55±4.43			

The Pre and Post-yogic Mean Mental Health Index (MHI) Score of all study subjects (200) was 147.30±35.09 and 176.76±17.34, respectively. Mean Difference between Pre & Post-yogic exercises for MHI was 29.45. The Pre-yogic & Post-yogic Mean Memory Score was 78.80±8.14 and 86.75±7.86, respectively. The Mean Memory Score Difference was 7.94. The Pre-yogic & post-yogic Mean Perceived Stress Score (PSS Score) was 18.63±7.02 and 13.55±4.43. The Mean Perceived Stress Score (PSS Score) Difference was 5.08. Pre and post-yogic Mean Difference for Mental Health Index (MHI), Memory and Perceived Stress were statistically highly significant (P < 0.0001).

Discussion:-

As the aim of the present study, effectiveness of daily yoga practice (Yogic Postures, Yogic Breathing & Meditation) for 1 hour daily for continuously 6 months was examined on Mental Health, Memory Status and Perceived Stress level in healthy 200 individuals. Pre & Post-yogic scores were measured at the beginning of the study and at the end of the study period (6 months), respectively. Pre & post-yogic exercise Mental Health Index (MHI), Memory Score and Perceived Stress Score (PSS) are shown in Table no.2.

Mental Health Index (MHI) indicates the overall mental health of an individual. It is observed that, Post-yogic MHI score was significantly greater than Pre-yogic MHI score with 29.45 Mean Difference or 20% higher (Table 2). It only suggests the usefulness of the Yoga as a mind-body exercise for the betterment of mental well-being. Further, there is highly significant increase in Post-yogic exercise Memory Score when compared it with Pre-yogic exercise Memory Score. The Mean Difference 7.94 or 10% increase was noted (Table 2). Perceived Stress Score (PSS Score) was decreased after practicing Yoga for 6 months. Post-yogic PSS Score (13.55±4.43) was highly significantly lesser than the Pre-yogic PSS Score (18.63±7.02) by 5.08 or 27.27% (Table 2). Pre and post-yogic results noticeably shows the positive effectiveness of yoga practice on mental health, memory and perceived stress. Therefore, results have encouraged us to see the strong relationship between Yoga practice and mental well-being. Moreover in support, we found that our results are quite consistent with the results of some of the previous studies of this kind.

Javnbakht (2009) and Narasimhan (2011) in their studies reported regular yoga practice (at least once weekly) helps to decrease levels of depression and anxiety significantly. Twice weekly yoga practice for two months showed a significant decrease in levels of depression as well as levels of both state and trait anxiety. For individuals who practiced yoga twice weekly for a period of two months, levels of state anxiety and trait anxiety decreased.^{11,12}

Heriza in his one of the study he found that the physical and mental health through yoga and getting control over the cognitive functions especially attention, memory and arousal is achievable¹³. Specific inverted Yogasanas increases the blood flow to the brain as a result memory related parameters such as attention, recall concentration are improved in yoga practitioners.¹⁴ Our results are in line with the findings of Diya Nagina and Rekha Malhotra. They found that, the Yoga group was observed to perform significantly better on the test of attention, concentration, remote memory, mental balance, delayed recall, immediate recall, verbal retention of dissimilar pairs and visual retention and recognition.¹⁵

Training body to respond to the request for relaxation on a muscular level and breathing deeply create a habit of relaxing that can be very helpful in turning off the stress response.¹⁶ Issue of Consumer Reports suggests Yoga for stress relief.¹⁴ Practicing Yoga will “provide effective relief of anxiety and stress”.¹⁵ Cowen & colleagues studied the effects of Yoga intervention among firefighters that had significantly decreased Perceived Stress Score after 4 yoga classes over 6 weeks.¹⁷ Further, similar results obtained by Hamid Dehghanfar et.al. and Eric Lindahl et.al. that there was significant decrease in stress score by Yoga intervention.^{18,19}

The strong point of this study was substantially larger sample size. However, the limitation of the study was, the effect of Yoga had not compared among the male and female subjects on these parameters.

Conclusion:-

In and through this study we have concluded that, Yoga can be the best available complimentary approach to pharmacological intervention for mental well-being, within its own limits. Yoga can certainly bring utmost harmony within physical and mental health, if practiced regularly.

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