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Relevance of psycho- yogic Interventions to improve cognitive flexibility among students.

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ABSTRACT: The psychological benefitsofyoga include an increase in somatic and kinetic awareness, positive mood, subjective well-being, self-acceptance, self-actualization, social adjustment and decrease in levels of anxiety, depression and hostility. The present Research Paper focuses on the importance of Psycho yogic techniques in every human being's life. In the present study researchers tried to investigate the role of yogic techniques to improve the cognitive flexibility among the students. The results found that psycho yogic techniques improve the quality of selective attention among students. A pre-post study was conducted and found that students improve their attention. The present researchers found that selective attention was improved after the intervention in post study. In intervention session researchers were planned some yogic exercises which is helpful to improve the cognitive flexibility of individuals.

Keywords: cognitive flexibility, psycho yogic techniques, attention, intervention,

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I. INTRODUCTION

Yoga is referred to in the Rigveda and particularly in the Athervavaeda where there is an elaborate discussion on the individual's psyche and well-being (Kumar, 2013). The most systematic presentation of yoga was made by Patanjali in his Yoga-sutra. Yoga is actually an ancient and well-known Indian technique, which includes physical postures (asanas), voluntary regulated breathing (pranayamas), meditation, as well as certain philosophical principles (Taimini, 1986).

The psychological benefits of yoga include an increase in somatic and kinesthetic awareness, positive mood, subjective well-being, self-acceptance, self-actualization, social adjustment and decrease in levels of anxiety, depression and hostility (Bhardwaj, Sao and Agrawal, 2009). According to Temmi Sears,'the primary benefit of yoga is enhanced self-esteem' (Peters, 2003). Yoga may help teenagers to learn about their body and discover what their strengths and limitations are. Yoga allows teenagers to visualize, relax and enter a noncompetitive environment (Bridges and Madlem, 2007). Yoga practices reduce anxiety through relaxations

Yoga plays a significant role in enhancing one's mental health. In a randomized controlled study on the normal healthy volunteers, the improvement in the yoga group was more when compared to the physical exercises' group for all the Gunas (personality), with accompanying promotion of positive health and self-esteem (Deshpande, Nagendra, and Nagarathna, 2009). Apart from this, yoga and cognitive behavior techniques have shown a significant decrease in academic stress and significant improvement in the mental well-being of the 10th grade school students (Sharma et al., 2010). The practice of yoga increased well-being, reduced the level of stress and helped in treatment (Balkrishna, 2007). In a pilot study, children participated in yoga reported enhanced well-being, as reflected by perceived improvements in behaviors directly targeted by yoga (Berger, Silver, and Stein, 2009). In a study on 77 participants, subjective well-being significantly improved after 10 days of yoga practice (Sharma, Gupta, and Bijlani, 2008).Keeping in mind, the already proven effects of yoga on different psychological parameters, the present study has been designed to develop an intervention plan based on yoga for adolescents for the enhancement of their cognitive flexibility and the level of mental health.

During the recent decades a number of Asian, African, Russian and South American Psychology started challenging and rejecting the dominance of the self-proclaimed universal, hegemonic, Euro-American, or Western academic scientific psychology. Similar views have been expressed against the mainstream Indian academic psychology, which is actually the imported, transplanted, and marginally adapted western psychology. The growing dissatisfaction with the radical behaviorist, purely empirical and exclusive nature science tradition prompted the search for alternative paradigms. Indigenous psychologies drive their content, principles, laws,

theories and methodological assumption from intellectual and cultural heritage of the peoples of their land.The relevance of Indian psychology to cotemporary psychological study and research is twofold –one is specific to India and the other applicable to psychology in general. Indian specific relevance of Indian psychology may be seen the light of the observations made at the very beginning of the chapter. It is difficult to see the relevance of psychology as studied and practiced in India to its national life .Consequently unlike in the US, for example psychology is not a very popular subject in Indian universities. Psychological studies, unlike economics, play little role in national development psychological services are simply nonexistent in much of the country.

Cognition

Mental action or process of acquiring knowledge and understanding through thought experience and senses example- perception ,awareness , apprehension ,learning understanding ,insight , intelligence ,reasoning thinking .A perception sensation idea or intuition resulting from the process of cognition .

\Cognition in Indian Psychology

Knowledge (Cognition) to be of real significance "must be regarded as identical with the soul ,"i.e., the conscious entity , which in knowing only modifies itself in to knowledge , there is no separation possible of any kind between the knower and its knowledge ,the soul which is parinami cannot be regarded as something different from its parinama (evolution, change or modification.) "Knowledge as parinama is the soul knowing "(Bhattacharya, 1999, p.93).

Cognitive Flexibility

Cognitive flexibility has been described as the mental ability to switch between thinking about two different concepts, and to think about multiple concepts simultaneously (Scott, 1962). Cognitive flexibility is a component of executive functioning. Research has primarily been conducted with children at the school age; however, individual differences in cognitive flexibility are apparent across the lifespan (Chelune, and Baer, 1986). Measures for cognitive flexibility include the A-not-B task, Dimensional Change Card Sorting Task, Multiple Classification Card Sorting Task, Trail-making test, Wisconsin Card Sorting Task, and the Stroop Test. Functional Magnetic Resonance Imaging (fMRI) research has shown that specific brain regions are activated when a person engages in cognitive flexibility tasks. These regions include the prefrontal cortex (PFC),basal ganglia, anterior cingulate cortex (ACC), and posterior parietal cortex (PPC) (Leber, Turk-Browne and Chun, 2008). Studies conducted with people of various ages and with particular deficits have further informed how cognitive flexibility develops and changes within the brain. Cognitive flexibility also has implications both inside and outside of the classroom. A person's ability to switch between modes of thought and to simultaneously think about multiple concepts has been shown to be a vital component of learning (Boger-Mehall, 2007).

Cognitive flexibility is the human ability to adapt the cognitive processing strategies to face new and unexpected conditions in the environment (Cañas, Quesada, Antolí and Fajardo, 2003). This definition involves three important concept characteristics. Firstly, Cognitive Flexibility is an ability which could imply a process of learning, that is, it could be acquired with experience. Secondly, Cognitive Flexibility involves the adaptation of cognitive processing strategies. A strategy, in the context of this definition, is a sequence of operations which search through a problem space (Payne, Bettman and Johnson, 1993). Cognitive flexibility, therefore, refers to changes in complex behaviors, and not in discrete responses. Finally, the adaptation will occur to new and unexpected environmental changes after a person has been performing a task for some time. Although flexibility could be an adaptive capacity of individuals (Payne, Betman and Johnson, 1993), this adaptation does not always happen.

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Cognitive flexibility is also known as mental flexibility. The essence of mental flexibility is the ability to handle different situations in different ways, especially to respond effectively to new, complex, and problematic situations. The mentally flexible person is able to: -see things from several different perspectives -tolerate ambiguity and uncertainty -take risks willingly -adapt to change -learn from mistakes -solve problems. By

increasing your mental flexibility, you become a better listener, a keener observer, a more skilled thinker and a more effective problem solver.

Mental flexibility is the ability to shift a course of thought or action according to the changing demands of a situation. It allows an individual to abandon a previous response set or pattern in order to generate an alternate that is better suited to the requirements of the situation at hand. It is one of the hallmark executive functions attributed primarily to the frontal lobes, and is one of the key attributes that underlies the capacity for creative thought. Flexibility can involve perceptual, cognitive, and/or behavioral response

Psycho –Yogic Approach to Improve Cognitive Flexibility

In the 21st century the life of human being has been even more complex this complexity has added a series of disintegration in our outer and inner personality various physical ailment psychological (mental and emotional imbalance and disharmony and spiritual deficiency social male adjustment etc have been very common phenomena in our life we accumulate loads of stress, tension, anxiety, frustration, negative feeling as each day passes by. Yoga has been understood as a set of physical exercise but it does not mean just making physical movement it is an experiential science social etc. It mean the development of the human personality and every aspect when we think of practicing yoga we mean attaining balance harmony and aquarium in all aspect of our personality and expression as well as improving the quality of our life. Therefore the need of the aspirants must be well identified and then practice should be used in need based approach so that every aspirants could get optimum benefit and satisfaction and feel changes as expected for this purpose a system psycho-yogic Approach (working with the body using the mind somatic-psychic and working with the mind using the body ,psycho-somatic for the complete renewed of your entire being has been introduced for your to health and happiness it is because the modern medicine scientist have how damage the 90%of all the problem are psycho-somatic in natural the root cause lies in the deep in our psychic level in this context making use of psychological aspect during yogic practice is very much important therefore in this approach we use both of the techniques through this approach we can develop the ability to strength and relax body part and unburden the three –fold tension (body, mind and emotional) in any situation and under any condition we can also develop the capacity to concentrate to called all our one focus them at one point then the combination of mental force and vital force becomes a very powerful tool in opening up the different dimensional of the human being personality.mensions (Loftis, 2011).

II. REVIEW OF RELATED LITERATURE

Mental health specialists all around the world understand that, the root cause of about 75 percent of all diseases is disturbed mental state. According to a survey in America, 20 percent adults are affected by different mental problems (Pandya, 2004, July). After reviewing available literatures, it is clear that, people don't have control over their mind especially on their thoughts. Today man doesn't have a clear view-point towards the life and he/she is feeling emotionally alone, impatience and facing problem in making adjustment in the life. So there is an imbalance among his/her emotions, thoughts and behavior and this all is caused by the weakening of his/her cognitive system (Sao, Bhardwaj and Agrawal, 2013).

The cognitive system of the person is made up of several mental activities such as his perception, memory, attention, thinking, learning, problem solving, reasoning and decision making (Singh, 2005). The most important thing among these is thought process. As long as a person does not have clear and strong thought process, till than his cognitive system also not be fully developed and well adjusted. Truth is that, our thoughts alone make us rise and fall. Yoga experts and psychologist both believe that, only negative thoughts are responsible for all the mental disorders. Negative thoughts spoil the mind (Saraswati, 2005). Every day nature keeps on bombarding millions of negative thoughts and information on our mind and person is affected by all these and also enjoys it. Adolescence is a transitional stage of physical and psychological human development that occurs between the period of puberty and adulthood that is between 13 and 19 years (Telles and Bhardwaj, 2015). Carl Jung has described it as 'afternoon of the life' while Raymond Cattell called it 'stressful and problematic stage' (Singh, 2006). It can be a time of both disorientation as well as discovery. The transitional period can bring up issues of independence and self-identity; many adolescents and their peers face tough choices regarding schoolwork, drugs, alcohol, and their social life. Peer groups and external appearance tend to naturally increase in importance for some time during a teen's journey toward adulthood. At this stage, adolescents learn new things, make new friends, take new responsibilities and actively participate in different social activities. Apart from the psycho-physiological and glandular changes, they face different challenges at this stage (Bhardwaj, 2012). Level of emotional stress and aggression is also high at the early stage in adolescents but gradually the intensity decreases (Singh, 2006). At this stage, there is a big need to provide them proper guidance to overcome the challenges they face. Techniques mentioned in yoga and other psychological tools can be helpful here.

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III. RESEARCH METHODOLOGY

Statement of the Problem

- To study the effect of psycho-yogic intervention on students cognitive flexibility.

Objectives of the Study

The present study comprises following objectives:

- To measure the Cognitive flexibility students
- To study the effects of Psycho-Yogic Intervention on Cognitive flexibility.

Research Hypothesis: It is expected that one month psycho-yogic intervention may inculcate their Cognitive flexibility and improve the state of mental health.

Participants

Fifty healthy adolescents (aged between 13 and 19 years) studying in an Inter college were the sample of the study. Demographic data (about personal information, general health, socio-economic status etc.) was taken from all the participants before starting the randomization. Inter College was randomly selected and the participants were randomly assigned to two groups, i.e. yoga and control group.

Table 1: Baseline characteristics of participants of yoga and control groups

Groups	Yoga group	Control group
Total number of participants	50	50
Age (mean ± S.D.)	17.03 ± 0.87 years	16.80± 0.83 years
Age range	13 to 19 years	13 to 19 years
Gender (M: F)	25: 25	25: 25
Class	Standard 8 to 10	Standard 8 to 10

Inclusion Criteria

a. Participants of both sexes, ages between 13 and 19 years.

b. Those who were willing to follow the study conditions.

Exclusion Criteria

a. Participants with a diagnosed illness.

b. Those who were taking any medication.

The signed consent was obtained from all the participants as well as from the Principal of the school.

Design of the study

The study was a randomized controlled trial with assessment at the beginning and end of a one month period. Participants were randomly assigned into two groups using a standard computer-generated random number table. One group was assigned to yoga and another group was assigned for no intervention i.e. control group. The study was conducted on the students of standard 9 to 12. Experimental Procedure -Tests have been conducted in a college after familiarizing the participants as well as school authorities with the testing procedure and the study protocol.

The following assessments have been done in the study as described below:

1. Cognitive Flexibility using Trail Making Test: The test used for measuring cognitive flexibility. The test developed by Spreen and Strauss (1998). In essence, participants were instructed to complete each part of the TMT as quickly and accurately as possible. When an error was made, the participant has been instructed to return to the "circle" where the error originated and continue. Total time in seconds for parts A and B was recorded, representing the TMT-A and TMT-B direct scores.

2. Selective Attention using a cancellation task: Attention level of the participants was measured using six letter cancellation task (SLCT). It consists of a test worksheet which specifies the six target letters to be cancelled and has a 'working section' which consists of letters of the alphabet arranged randomly in 22 columns and 14 rows. The participants were asked to cancel as many of the six target letters as possible in the specified time, i.e. ., and 90 sec.

Interventions

Psycho-Yogic Intervention: Duration: 40 minutes

The 30 minutes yoga programme was given to the experimental (yoga) group which includes voluntary regulated breathing (pranayamas, 8 minutes), surya namaskara (5 minutes) and yoga postures (asanas, 10 minutes), chanting and yoga relaxation techniques (7 minutes)for one month.
Group Counseling – 10 minutes for each and every
Data analysis Data analysis was done using statistical software (SPSS, Statistical Package for the Social Sciences, Version 18.0). Repeated measures analysis of variance (ANOVA) was used to compare post data with pre. There will be one within subjects factor i.e., States with two levels (pre and post) and one between subjects factor i.e., Groups with two levels (yoga and control).

Data Analysis
Hypothesis 1: Yogic techniques may improve the cognitive flexibility.

Table 1: SLCT-Total scores of the two groups. Values are group mean (S.D.)

Variable (scores)	Yoga group (n = 50)			Control group (n = 50)		
	Pre	Post	Cohen's d	Pre	Post	Cohen's d
SLCT-TOTAL	30.22(6.91)	49.69(6.27)***		30.56(6.70)	31.99(6.40)***	

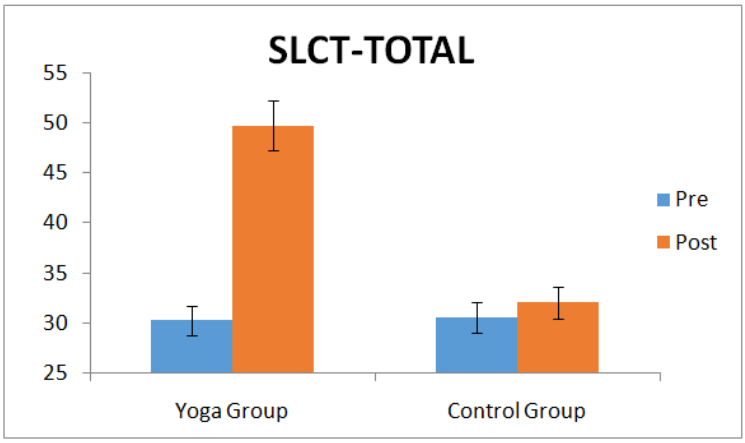
***p < .001, post-hoc analysis with Bonferroni adjustment compared with pre
Table 1 shows scores on all the psychological measures of all the 50 participants. The general findings of the study are that Psycho yogic techniques are effectively and actively improve the cognitive flexibility. Table 1 show that there were significant mean differences on SLCT in pre and post test conditions.

Table 2: ANOVA values for SLCT-Total scores

Variable	Factors	F	df	Huynh-Feldt ε	P	Mean square	Partial Eta squared
SLCT-TOTAL	Sessions (Between Subject Factors)	635.741	1, 99	1	.000	7534.240	.865
	States (Within Subject Factors)	1194.261	1,99	-	-	10920.250	.923
	Sessions X States	1208.577	1,99 (Sessions) X 99 (States)	-	-	8136.040	.924

Again Table 2 shows that there is significant difference on SLCT.

Graph 1: Graph showing SLCT-Total scores before and after one month of yoga in students



IV. DISCUSSION

Yoga not only considers physical health but also more important y mental health, yoga which emphasizes the universal, is a perfect foil to those human activities which glorify the personal and provides endless foundation of inspiration and joy.

The seed of yoga finds fertile soil good will concepts grow naturally slowly but surely taking root in all aspects of life . which help of yoga we learn how to unwind through the many relaxations technique available in the yoga science to balance the immense amount of stress and strain that are part and parcel of day to day life. Meditation technique us to be sensitive to one's bio- rhythms , ones owns physical , mental and emotional

cycles "oneness with the universe is the perfect state of harmonious health , it offers us many practical day to day methods of action to become aware one's body body since psycho-somatic disorder cannot be tackled without awareness most important is life satisfaction the sense the one's own life is good which correlated the characteristics such as self esteem , resiliency , optimism , Self -reliance , healthy habits and pro-social behavior , which hectic life schedule.

Yoga aasana not only director redirect physical actions and behaviors but stimulate various glands , muscles and part of the body related to emotional re activity or states of mind the nervous system can be activated or soothed through aasana , breath and metaphors of the poses.

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