

# EFFECT OF YOGA ON COGNITIVE CHANGES IN SCHOOL CHILDREN

Dissertation submitted by

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Under the guidance of

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Towards the partial fulfilment of

Master of Science in Yoga (M.Sc. Yoga Therapy)



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## **CERTIFICATE**

This is to certify that Meena B.M is submitting this Research on “EFFECT OF YOGA ON COGNITIVE CHANGES IN SCHOOL CHILDREN” towards partial fulfilment of the requirement for the Master of Science (Yoga Therapy), conferred by Swami Vivekananda YogaAnusandhānaSamsthāna (S-VYASA), Bangalore. This is a record of the original work carried out by her in this institution and has not previously formed the basis for the award of any degree

Date:  
Place: Bangalore

Guide: Dr.Bharathi dhevi, M.Sc., PhD

## **DECLARATION**

I, hereby declare that the work presented in this dissertation is done by me. This experimental research was carried out under the guidance of Dr. Bharathi dhevi, M.Sc., Ph.D., Swami Vivekananda Yoga AnusandhānaSamsthāna (SVYASA), Bangalore

I also declare that the subject matter of my dissertation entitled “EFFECT OF YOGA ON COGNITIVE CHANGES IN SCHOOL CHILDREN” has not previously formed the basis of the award of any diploma, degree, associate-ship, fellowship or other similar titles.

Date:  
Place: Bangalore

Meena B.M

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**STANDARD INTERNATIONAL TRANSLITERATION CODEUSED TO  
TRANSLITERATE SANĀKRIT WORDS**

|     |   |     |     |   |     |     |   |   |
|-----|---|-----|-----|---|-----|-----|---|---|
| a   | = | A   | ia  | = | '   | pa  | = | p |
| ä   | = | Aa  | ca  | = | c   | pha | = | ) |
| i   | = | #   | cha | = | D   | ba  | = | b |
| é   | = | \$  | ja  | = | j   | bha | = | É |
| u   | = | %   | jha | = | H   | ma  | = | m |
| ü   | = | ^   | ï   | = |     | ya  | = | y |
| â   | = | \   | öa  | = | q   | ra  | = | r |
| è   | = | §   | öha | = | Q   | la  | = | l |
| e   | = | @   | òa  | = | f   | va  | = | v |
| ai  | = | @e  | òha | = | F   | ça  | = | z |
| o   | = | Aae | ëa  | = | [   | ña  | = | ; |
| au  | = | AaE | ta  | = | t   | sa  | = | s |
| à   | = | A   | tha | = | w   | ha  | = | h |
| ù   | = | A>  | da  | = | d   | kña | = | ] |
| ka  | = | k   | dha | = | x   | tr  | = | Ç |
| kha | = | o   | na  | = | n   | jia | = | } |
|     |   | ga  | =   | g | gha | =   | " |   |

## ABSTRACT

**Introduction:** Cognitive changes it means a person's "ability to increase intelligence memory, creativity, emotion regulation, remain calm or even keel when faced with pressure or stress." And it was revealed as a significant predictor of career concerns. Furthermore, a moderating effect of gender and a mediating role of career decision self-efficacy were revealed in this context for school children. It's very crucial because at this age they face a lot of changes in their life. They must be capable of taking the decisions for their career and should be able to improve their social behaviour which leads to a good confidence level.

**Methods and materials:** In the present study, 82 participants with age ranged between (12-16 years) were taken from the school HBP, Shivajinagar (Bangalore). HBP school participants were undergone for 30-day yoga-based lifestyle intervention program and compared their creativity emotional stability and memory before starting their session and after completing their session.

41 participants underwent yoga training i.e., yoga therapy every day, 1 hour for 30 days. The variables like quality of life emotional stability, memory and self-monitoring level were recorded before and after the intervention.

**Result:** significant was found in Self-monitoring scale, Emotional regulation questionnaire and Everyday memory test

**Conclusion:** Complete yoga practice, other curriculum activities influence their creativity, emotional level, good memory in schoolchildren they felt some little change in their life and also stability.

**Keywords:** creativity, memory, intelligence, emotional stability, Self-Monitoring, Personality Development.

| <b>Content No.</b> | <b>Contents</b>                                   | <b>Page No.</b> |
|--------------------|---|-----------------|
| 1.0                | Introduction                                      | 1               |
|                    | 1.1 Kinds of cognitive changes                    | 1               |
|                    | 1.2 Yoga  | 4               |
|                    | 1.3 Kinds Emotions                                | 7               |
|                    | 1.3 How yoga helps to improve emotional stability | 9               |
|                    | 1.4 Stability level in adolescence                | 10              |
|                    | 1.5 Other benefits of yoga in school children     | 11              |
|                    | 1.6 The need for the study                        | 11              |
| 2.0                | Review of Ancient Literature                      | 12              |
| 3.0                | Review of modern literature                       | 22              |
| 4.0                | 4.1 Aim   | 28              |
|                    | 4.2 Objectives                                    | 28              |
|                    | 4.4 Hypothesis                                    | 28              |
|                    | 4.5 Null hypothesis                               | 28              |
| 5.0                | Method and materials                              | 29              |
|                    | 5.1 Sample size                                   | 29              |
|                    | 5.2 source sample                                 | 29              |
|                    | 5.3 Inclusion criteria                            |                 |
|                    | 5.4 Exclusion criteria                            | 29              |
|                    | 5.5 Consent form                                  | 29              |
|                    | 5.6 Design of study                               | 30              |
|                    | 5.7 Intervention                                  | 31              |
|                    | 5.8 Assessment tools                              | 32              |

|      |                                     |    |
|------|-------------------------------------|----|
| 6.0  | Data extraction and analysis        | 33 |
|      | 6.1 Data extraction                 | 33 |
|      | 6.2 Analysis                        | 33 |
| 7.0  | Result                              | 34 |
| 8.0  | Discussion                          | 40 |
|      | 8.1 Summary of the result           | 40 |
|      | 8.2 Compare with the previous study | 40 |
|      | 8.1 Mechanism                       | 40 |
| 9.0  | Appraisal                           | 41 |
|      | 9.1 Strength of the study           | 41 |
|      | 9.2 weakness of the study           | 41 |
|      | 9.3 De-limitations of the study     | 41 |
|      | 9.4 Scope for future study          | 42 |
| 10.0 | Conclusion                          | 42 |
| 11.0 | References                          | 43 |
| 12.0 | Appendix                            | 49 |
| 13.0 | Raw Data                            | 52 |
| 14.0 | questionnaire                       | 53 |



# 1 : INTRODUCTION

## 1.0 Cognition

Cognition is “the mental action it is a process of acquiring knowledge and understanding through thought, experience, and the senses (“cognition | Definition of cognition in English by Oxford Dictionaries,” ). It encompasses processes such as knowledge attention, memory working judgment and evaluation, attention, memory and working memory, judgment and evaluation, reasoning and computation”, problem-solving and decision-making comprehension and production of language, etc. Human cognition is conscious and unconscious, concrete or abstract, as well as intuitive (like knowledge of a language) and conceptual (like a model of a language).

Cognitive process use existing knowledge and generate new knowledge(“cognition | Definition of cognition in English by Oxford Dictionaries,” ).

The processes are analysed from different perspectives within different contexts, notably in the fields of linguistics, anaesthesia, neuroscience, psychiatry, psychology, education, philosophy, anthropology, biology, systemic, logic, and computer science (Eckardt, 1993). These and other different approaches to the analysis of cognition are synthesised in the developing field of cognition science a progressively autonomous academic discipline. Within psychology and philosophy, the concept of cognition is closely related to abstract concepts such as mind and intelligence. It encompasses the mental function, mental process(thoughts) and states of intelligent entities (humans, collaborative groups, human originations, highly autonomous machines, and artificial intelligence)(Blomberg, 2011).

Thus, the usage of the term varies across disciplines; for example, in psychology and cognitive science, “cognition” usually refers to an information processing view of an individual’s psychological functions. It is also used in a branch of social psychology called social cognition to explain attitudes, attribution, and group dynamics.

In cognition psychology and cognitive engineering, cognition is typically assumed to be information processing in a participant’s mind or brain.

## 1.1 Cognitive psychology

Cognitive psychology is a study of the mental process such as “attention, language use, memory, perception, problem solving, creativity, and thinking “.Much of the work derived from cognitive psychology has been integrated into various other modern disciplines of psychology, abnormal psychology, developmental psychology, and economics(“APA Dictionary of Psychology,” ).

## **1.2 Metacognition**

Metacognition in a broad sense is the thoughts that a person has about their own thoughts,

More specifically, metacognition includes things like How effective a person is at monitoring their own performance on a given task (self-regulation). A person’s understanding of their capabilities on particular mental tasks. The ability to apply cognitive strategies (“APA Dictionary of Psychology,”).

### **1.1.3 Cognitive functions:**

A term psychologists refer to the activity of knowing and the mental processes by which human beings acquire and use knowledge to solve problems, the cognitive process that, perceiving, learning, thinking and remembering in short, the unobservable events and undertakings that characterize the human mind (Baldwin & Sinclair, 1996).

Cognition is a term for the mental process involved in gaining knowledge and comprehension. These processes include thinking, knowing, remembering, judging, and problem-solving. These are a higher level function of the brain and encompass language, imagination, perception, planning (Uhlén et al., 2005).

### **1.1.4 Cognition and its development:**

The activity of knowing and the processes through which knowledge is acquired. Changes that occur in mental activities such as attending, perceiving, learning, thinking and remembering (Wertsch & Tulviste, 1992).

**1.1.5 Cognitive equilibrium and metacognition:** Piaget’s term for the state of affairs in which there is a balanced or harmonious, relationship between one’s thought process and environment. One’s knowledge about cognition and about the regulation of cognitive activities (Lewis,).

### **1.1.6 Cognitive function in school children:**

Developing an understanding of the world around you is a lifetime process that at birth. Knowledge, about the regularity and predictability of the universe, is important. This knowledge, called cognitive development, is learned through the mental process and sensory perceptions. Warm, supportive interactions with others, as well as the ability to use all five of the sensory modes—seeing, hearing, touching tasting, and smelling—are required for maximum development of the cognitive processes. High -quality child development centres have always placed a priority on school children’s intellectual learning. Today the emphasis is greater than ever because new research is being reported that helps teachers better understand the mental or cognitive process that is at work in the child (Reddy & Kumari, 2015).

### **1.1.7 Cognition function and stress:**

Most psychological accounts propose that stress impairs cognitive function by reducing the amount of attention one devote to information processing (Reddy & Kumari, 2015)Cognitive reaction of stress result in the inability to concentrate (sailer , Schalater , Edwards ., 1982).

More specifically, the negative effects of cognition will be manifested with task performance requires attention control, or effortful cognitive processing (Hasher & Zacks, 1979).

Studies reveal that even low or moderate levels of stress can interfere with tasks performance .[38(Motowidlo, Packard, & Manning, 1986)][(“Introduction to organizational behavior / Richard M. Steers. - Version details - Trove,” n.d.)] Cognitive reactions and stress result in the inability to concentrate (Sailer, Schlacter, & Edwards, 1982).

### **1.1.8 Cognitive function and Attention**

Anderson, John . (2004) Cognitive psychology and its implication is attention is the behavioural and cognitive process of selectively concentrating on a discrete aspect of information, where deemed subjective and objective while ignoring other perceivable information. It is the taking possession by the mind in the clear and vivid form of one of what seem several simultaneous objects of trains of thought. Focalization of limited processing resources..(“Cognitive psychology and its implications / John . Anderson. - Version details - Trove,” ).one of the studies done by Chaya the journal of alternative and complementary medicine-2012(Dec)-effect

of yoga, compared to physical activity on the cognitive performance in 7-9-year-old school children from a socio-economic disadvantaged background. 200 school children from Bangalore, India, cognitive functions (attention and concentration, vision-spatial abilities, verbal ability, and abstract thinking) 3 months of intervention, 200 subjects, 193 were assessed at 3 months after the study, controlling for grade levels. Improvement in the mean scores of cognitive performance in 7-9-year-old school children (“Chaya , Nagedra , Selvam , Krupad , Srinivas .Effect of yoga on cognitive abilities in schoolchildren from a socioeconomically disadvantaged background : a randomised controlled study .The Journal of Alternative and Complementary Medicine .2012 Dec 1;18(12):1161-7 - Google Search,”).

### **1.2.1 yoga**

The term \_Yoga has been derived from the Sanskrit word Yuj `which means union? It can be explained as the union of the mind and the body to perfect at the most profound level. It helps us to reach a higher level of consciousness, through a transformation of psychic organs. Yoga has not specific religious connotations its universal and is practiced by many. The continuous and comprehensive evaluation process of education has been implemented in Maharashtra before three years. The main of this process is to reduce the anxiety and stress of the school children. We know that academic achievement is an attained ability or degree of competence in school task, usually measured by standardized tests and expressed in grades or units based on norms derived from a wide sampling of students performance. Studies reveal that even low or moderate levels of stress can interfere with task performance. Studies reveal that even low on norms derived from a wide sampling of students performance (Stress RM .1984, Mottowidid, Packed Manning .,1986)(“. Robert . Hockey - Google Scholar Citations,” ).

Yoga, an ancient Indian concept represents the way of life which endows perfect health comprising physical, mental ethical and spiritual development. Yoga physically creates toned, flexible, and strong body and physiologically improves respiration, energy, vitality and helps to maintain a balanced metabolism, promotes cardiac and circulatory health, relieves pain and also improves athletic performance.

Yoga helps psychologically to relax and handle stress full situations more easily. Yoga teaches to have a calm mind and can focus our energy on a particular activity.

Yoga brings for positive thought and self-acceptance. Yoga is a great form of exercise and a mind-body practice that can have physical, mental and emotional benefits to be present at the moment.

Yoga is perhaps the only form of activity which massages all the glands and organs of the body in a thorough manner. Yoga acts in a healthy manner on the various body parts. This stimulation and massage of the organs, in turn, benefit the keeping away diseases.

Yoga ensures the optimum blood supply to various organs. Regular yoga practice brings about mental clarity and calmness, increases body awareness and also relieves stress patterns, relaxes the mind, centres attention and also sharpens concentration.

### **1.2.2 Yoga and cognitive function**

Yoga places an important role in balancing in Cognitive Functions. The following study shows how Yoga works on Cognitive Functions.

Schools have an important role in the development of children by identifying those with low physical fitness and by promoting healthy behaviours such as encouraging children to be active. The most obvious benefits of physical exercise in children are improvements in physical fitness, which was shown in a study on 57 children. Following seven weeks of exercise, there was an improvement in a fitness test and fat percentage reduction (Telles, Singh, Bhardwaj, Kumar, & Balkrishna, 2013).

A similar benefit has been demonstrated in other studies as well. Apart from physical fitness, there is evidence that exercise influences cognitive performance in school children was reported in the meta-analysis. Also, aerobic fitness in children is associated with higher measures of neuroelectric responsiveness (p3 in brain evoked potentials ), faster cognitive processing speed and better performance in a test of executive control (Telles et al., 2013).

In the preceding paragraphs, the benefits of physical exercise for physical fitness and cognition were described in pre-adolescents. Physical exercise is also associated with a positive effect on depression, anxiety, mood, self-esteem, and higher academic performance. These findings were supported by a study on 540 elementary school children during the academic year. Sub-population analysis showed that physical exercise had a positive effect of on psycho-social

Quality of Life (QoL), especially in urban and over-weight students. There was little effect of the physical exercise program on QoL overall (Telles et al., 2013).

These findings suggest that in addition to improving physical exercise appears to influence the psychosocial quality of life in children (Telles et al., 2013).

Another intervention which has positive effects on physical fitness, cognition, and psycho-social wellbeing is yoga. Yoga is one of the components of 'Be a Fit Kid' which aims at improving physical exercise and nutrition in children. Following the 12-week program, there was a significant improvement in body composition, fitness, nutrition knowledge, dietary habits and a significant reduction in total cholesterol and triglyceride levels. This suggested that yoga-based health promotion programs are well received by children and can favourably being overweight and the development of adult lifestyle-related diseases.

A study was conducted in 31 children between 7 and 12 years, who had bronchial asthma.

Sixteen children were assigned to the yoga program and 15 to a control group. Yoga was practiced three times per week for 7 weeks. Compared to the control group, the yoga group showed favourable outcomes in terms of muscular strength and endurance. After 2 weeks of home practice, yoga continued to improve BMI, flexibility, muscular strength and cardiopulmonary fitness. Hence these two studies suggest the benefits of yoga in improving physical fitness in children (Telles et al., 2013).

One of the studies of physical fitness, yoga practice improves cognition and executive functions. Executive functions are predictors of math and reading competence throughout the school years. It is possible that yoga might help improve executive functions, school children practicing yoga for 10 days improved memory scores, strategic planning and ability to concentrate. Hence, yoga practice physical fitness and cognitive changes. Yoga practice Influences emotional state. The schoolchildren were allowed to two after-school programs Yoga for 12 weeks other programs did not. (i) Perception of physical health and yoga teaching and (ii) focussing/relaxation. Controlling for pre-intervention wellbeing differences. Children in the yoga group reported enhanced wellbeing. The result suggested a possible role of yoga as a preventive technique as well as a means of improving children perceived wellbeing. This was particularly important as the sample was drawn from inner-city children (Telles et al., 2013).

A separate report showed that mindfulness-based approaches may improve adjustment among stressed and disadvantaged youth by improving self-regulatory capacities. A pilot randomized controlled trial assessed the flexibility, acceptability and preliminary outcomes of a school-based mindfulness and yoga intervention on 97 children who were randomized to the intervention condition (n=51) and a control condition (n=46). After 12 weeks findings suggest that the intervention thoughts and emotional arousal (Telles et al., 2013).

### **1.2.3 Yoga and Children**

School-aged children are expected to learn new skills and work productively in many domains of life. Those who fail to keep up, particularly those who have developmental disorders, often experience feelings of inferiority to serve as a haven the performance demands other lives. The capitalizes on children's pleasures in learning and actively promotes self-awareness

Without self-judgment. The class draws inspiration from tantric philosophy, which allows for life to be experienced playfully while recognizing sacred interconnectedness of all things. Three features differentiate this class from a typical adult yoga class: (1) use of an integrating theme, (2) designated times for discussion and movement, and (3) inclusion of a creative portion. These features are designed to engage and motivate school-aged children. Some traditional elements of yoga practice, including breathing exercises (pranayama) and the final relaxation in Corpse Pose (shavasana), are adapted for children. Educating the parents about the vocabulary, structure, and benefits of yoga enhances their ability to focus and that they benefit from the relaxation of body and mind (Feldman, 2005).

Yoga plays an important role in the life of school children, thus maximizing the learning of yoga to support the education of the whole school children, thus maximizing the learning process: provides student's healthy ways to express and balance their emotions promotes a more relaxed, comfortable state of being – the perfect state for teaching and learning. Encourages community and connectedness within the classroom helps to create an atmosphere of confidence, enthusiasm and non-competitiveness where everyone can succeed.

### **1.3.1 Emotion**

Emotion is a strong feeling. It adds colour and spice to our life. Emotions cause both positive & negative effects depending upon the type of emotion. Hence regulating emotion is very important. Indian scriptures have given us enormous knowledge regarding how to regulate emotions. One among them is Patanjali yoga sutras; the purpose of this study is to know the concept of emotion regulation according to Maharishi Patanjali & in brief according to modern psychology.

### **1.3.2 Kinds of emotions**

Researchers on emotions state that there are two types of human emotions: positive and negative emotions. The following are the list of emotions

- **Positive emotions:**

The pleasant emotions like affection, love, amusement, curiosity & happiness which are very helpful & essential for normal development are termed as positive emotions. Eg- Love, appreciation happiness, hope, enthusiasm, vitality, confidence, gratitude, patience, trust, optimistic & appreciation (Mangal, 2002a).

- **Negative emotions:**

Unpleasant emotions like fear, anger & jealousy which are harmful to the individual's development are termed as negative emotions. e.g.- fear, guilt, anger, depression, pride, jealousy, self-pity, anxiety, resentment, envy, frustration, shame, denial, offended, negative, regret, resentful, sad, worried & grief (Mangal, 2002b).

### **1.3.3 Importance of children's social needs**

One of the strongest social needs during childhood appears to be a desire for social approval. This is a social world, and there is ample evidence that other things being equal, man is best satisfied when his behaviour is approved of by his peers. Although the research literature on the effects of praise and blame on children's behaviour is far from clear-cut (Cairns & Cairns, 2007) there is substantial evidence that children seek the social approval of their parents, teachers, and peers. There is also the additional finding that children who typically are not able to secure social approval are likely to underrate their effectiveness (Sears, 1940) and to have lower evaluations of their personal effectiveness and worthwhileness.



A wise parent or teacher who realizes the potency of the child's need for social approval can do much to control his behaviour. Children who have become negativistic or aggressive under excessive disapproval often blossom under appropriate and sincere administrations of social approval.

Children also appear to have different needs for dependence, autonomy, achievements, defence, and so on. The motivation-needs systems of children are complex, are intimately tied up with prior learning, and be used effectively by adults in planning the present and future learning experiences of children.

#### **1.3.4 Relationship between intelligence & memory**

The more intelligent the child, the better he usually does in his school work. A large number of research reports support this generalization.(Fleming, 1934)has conducted an investigation that throws some interesting light on the obtained relationship between memory and intelligence during childhood. Two hundred children between five and six years of age were given 11 tests of memory for various types of material, a vocabulary test, and the Stanford-Benet test of intelligence. The result revealed that the role of memory in children is much more highly related to general intelligence than it is in adults. Memory appears, indeed, to play a significant role in the early adjustments of the child.

#### **1.3.5 Emotional strength impact on human health**

As we all know that emotions play a very crucial role in physical health. It can change it also(Schacter, Guerin, & St. Jacques, 2011) explain that to motivate the adaptive behaviours significantly added to the survival of humans were the primary role of emotions. News in health stated that studies open a link between positive emotional states and improve health. The presence of emotion when turning into strength can affect the recovery of the patient (St, 2017).

#### **1.3.6 How yoga helps to improve emotional stability**

Basically, emotional stability refers to the ability to modulate one or stable and a set of emotions (i.e., the ability to control and influence the emotions we feel, when we are in the circle of emotions and when we feel them, then what we experience and how to express them (Gross, 1998).The practice of yoga asana decreases fatigue and changes the mood status, a great impact on emotional

well-being, (Joseph Oliver, Peter Huxley,) and improving stability of life. It improved emotional function and decreased emotional irritability, decreased tiredness, and increased energy. supervised studies showed that asana, breathing, and meditation practices significantly decreased anxiety, depression, and perceived stress. These practices positively change one's personality. A recent study found that Hatha Yoga practice “brings a positive transformation in personality traits, especially thoroughness (Gobec & Travis, 2018).

In this study lot of yoga asana practices, which included at least some degree of effort, Maharishi Yoga Asana is practiced in a slow and comfortable moving, with no strain required. The aim of Maharishi Yoga Asana is to turn the attention. Maharishi Yoga Asana is considered to be preparation for Transcendental Meditation (TM) practice, which follows (Gobec & Travis, 2018).

In the present article, we clearing the potential of yoga for developing emotional stability and skills. In addition to being an ancient Indian practice that seeks to foster spiritual development (Best, Taylor, Tandon, & Tripathi, n.d.), we all know the benefits of yoga that its very helpful for stability our mind and it was naturally born as a means to cease mental fluctuation and instability(“Taimini, . (2006). A ciência do Yoga. Brasilia, Brasil: Teosofica - Google Search,” ). Hence, yoga considered the only path to balancing emotions and homeostasis.

Few prior studies have examined the change in the emotional health of high school students in a rural context. Considering the multifaceted nature of emotional health, and stability this research aims to identify the patterns and spread the changes and stability of the emotional health of rural Pennsylvania youth. It also investigates the impact of family, peers, school, and the community environment on rural adolescents’ emotional health(Wang, Hagedorn, McLaughlin, & Bray, 2018).

#### **1.4.1 Stability level in adolescents**

Stability shows and explains the level of a person presents to be emotionally stable under various conditions and not risky to anger, panic, depression, and/or other types of high emotional ups and downs (Furnham & Cheng, )Similarly, emotional stability as a personality trait is expected to vary due to different contextual (i.e., classroom) effects (Wood,Denissen,2015). It has been found that an individual’s behaviours and personality traits are calibrated by functionality requirements,

which initiate as conditional adaptations that become more permanent the longer the person is exposed to the effects of a specific context (Wood, Giudice, 2011). Some contextual effects (i.e., schools) on levels of emotional stability could influence its association with OCS during late adolescence and, therefore, need to be controlled/addressed by the conducted analyses (i.e., in the present study random effects due to the classroom of the participants were controlled at level 3)(Stavropoulos, Moore, Lazaratou, Dikeos, & Gomez, 2017).

### **1.5.1 Other benefits of yoga in school children.**

There are at least 2 tools by which the practice of yoga may improve cognitive ability. Both may serve to improve mood and reduce stress which helps the adolescents to stable in life. Hath yoga has been reported to give improvements in mood swings, memory problem as compared to aerobic exercise (Berger & Owner, 1992) so this is one process of mechanism.

It is not a far leap from yoga sutra (1, 2), says that yoga is the control of the moving of the mind (cittaḥ),” to consider attention focus as a major aspect of yoga practice. It is unknown whether the attention practice in yoga would generalize to conventionally assessed attention function (Chapter 6 Attention Attention,).So basically later it improves their emotional stability due to it they can easily cope with all future coming hurdles in their life.

### **1.6 The need for the study**

However, the changes that actually happen at their creativity, emotional stability & memory-related performance of the children undergoing any kind of yoga intervention have not been done. Hence, the present study has been designed to assess the efficacy of

creativity memory and emotional stability in school children. We are designed this study with the interest and focus on this segment so that the student can get the benefits of this cognitive changes technique which will help them how to modulate emotional responses.

## 2 :REVIEW OF ANCIENT LITERATURE

**TITLE-** Concept of according cognitive changes to ancient scripture

### 2.0 Introduction

**Smriti**, literally” that which is remembered, “refers to a specific body of Hindus customary law. The literature which compromises the Smriti was composed after the Vedas around 500 BCE. Smriti also denotes tradition in that it portrays the tradition of the relies on dharma, especially those of lawful virtuous persons. This is understood by looking at tradition texts, such as the Ramayana, in which the traditions of the main character portray a strict adherence to or observation of dharma.

Cognition from the central organizing dynamic of the mind, which seeks to know the phenomenal world. The cognitive function activates mental activity & shape the formation of events in the mind important clusters of events that contribute to a sense of self.

Yoga has to say about controlling the emotions control the mind, the seat of all emotions, says Raja yoga. Think of others before you think of yourself, says karma yoga. Realize that you are not in this mind, says jnana yoga. Sublimate them by surrendering yourselves to the lord, says bhakti yoga.

Emotional stability in yoga is tied to stilling the mind & not identifying with this mental/emotional process. The yogi has developed skills derived from yogic practice & emotions are present without being lost in them. This is essentially what Patanjali states as the goal of yoga in sutra2:” *Yoga’ cittavrittinirodhah*”. Yoga is the stilling of the whirlpools of the mind.

In yoga psychology, emotions correspond most closely to Patanjali concept of *Cittavratti* “whirlpools” of thought, feeling, sensation and action that seek to know & participate in Prakriti the material world.

## 2.1 Aim

To find out the concept of creativity, intelligence, emotional stability, memory power according to ancient scriptures.

## 2.2 Objectives

1. Understand the concept of the emotions, memory, monitoring power according to ancient scriptures.
2. Acknowledge the consequences of cognitive changes according to ancient scriptures.
3. To find out the process of cognitive changes according to ancient scriptures.

**The etymology of the word memory:** In Sanskrit: smriti, smarana, and medha constitute - memory.

Medha is buddhi, smarana is remembering.

## 2.3 smriti according to Ayurveda:

“The process of by which people encode, store and retrieve information”. The ability to remember and forget is one of the most complex and fascinating of the brain.

स्मिन्तिर्भुताद्य विज्ञानं ।

द्रष्ट -श्रुत अनुभुतनं स्वमरणतु स्मिन् रुच्यते ॥

*smritirbhutādha vijñānam* |

*draṣṭa -śruta anubhutanam svmaraṇatu smrit rucyate* ||

By definition, according to caraka” capacity to remember the past or to recollect the past is called memory”. he registration that occurs on the mind of the past experience, ideas and thoughts are called as memory”. When we are under intense consciousness we can clearly comprehend(understand I’m detail)the past experience or this comprehension may also happen during stupor. The retention of memory digger in different people. The samskara which arises because of the connection between Atman (soul)and the Manes mind I’d turned Smriti.

Types of Smriti according to Ayurveda (Caraka vimana Astana)

It is divided into 2 types, true memory, and false memory

यथर्थ स्मृति= Memory came from true knowledge

अयथर्थ स्मृति= Memory came from false knowledge

At the back ground of all these states of mind is Aham. The 'I' often called ego. wherever activities we do there is the 'I' thought 'I' am seeing, 'I' am doing and so on. This is the subtlest accepts to mind Smriti is the one of the satvikaahankaralankana.

स्मृतिमंतो भक्तीमंतो क्रुतज्ञः श्रुतयो महोत्साहाः

दक्षाः धीराः समरविक्रंतयोधिनः त्यक्तीविशदः

सुव्यवस्थितगतिगम्भिरबुद्धिचेष्टाः कल्याणाभिनिवेशिनश्च सत्व सर ॥

*smrutimanto bhaktīmanto krutajñāḥ śrutayo mahotsāhāḥ*

*dakṣāḥ dhīrāḥ samaravikrantayodhinaḥ tyaktīviśadaḥ*

*suvyavasthitagatigambhirabuddhiceṣṭāḥ kalyaṇābhiniveśinaśca satva sara ॥*

The satwasaara people are blessed with the best memory and maintain mental.

Tranquillity like bakthi, gratitude, philosophical knowledge, enthusiasm, and efficiency

Knowledge, enthusiasm, efficiency. Boldness and bravery hence, they will be free from worries and agitation. Their actions and movements are well organized, well disciplined, and well thought and they always think good of over the world.

**Smriti according to Bhagavad Gita:**

यायतो विषयान्पुंसः सङ्गस्तेषूपजायते ।

सङ्गात्सञ्जायते कामः कामात्क्रोधोऽभिजायते ॥ २-६२ ॥

dhyāyato viṣayānpumsaḥ saṅgasteṣūpajāyate |  
saṅgātsañjāyate kāmaḥ kāmātkrodho'bhijāyate || 2-62||

Memory is the base of imagination and thoughts. man is thought to be intellectual due to the power of remembrance as the old experiences remain with him as an impression. lack of memory leads to loss of knowledge (*Buddhi*) which may destroy the individual.

क्रोधाद्भवति सम्मोहः सम्मोहात्स्मृतिविभ्रमः ।

स्मृतिभ्रंशाद् बुद्धिनाशो बुद्धिनाशात्प्रणश्यति ॥ २-६३ ॥

krodhādbhavati sammohaḥ sammohātsmṛtivyibhramaḥ |  
smṛtibhramśād buddhināśo buddhināśātpṛaṇaśyati || 2-63||

The man dwelling on sense objects develops attachment for them; from attachment springs up desire which in turn gives birth to anger. From anger arises infatuation; infatuation leads to confusion of memory; from the confusion of memory, loss of reason finally leading mental illness and complete ruin.

मय्यावेश्य मनो ये मां नित्ययुक्ता उपासते ।

श्रद्धया परयोपेताः ते मे युक्ततमा मताः ॥ १२-२ ॥

mayyāveśya mano ye mām nityayuktā upāsate |  
śraddhayā parayopetāḥ te me yuktatamā matāḥ || 12-2||

Sri Bhagavan said: I consider them to be the best yogis, who endowed with supreme faith, and ever united through meditation with me, worship Me with the mind centered on me.

Like the celebrated cowherd damsels of Vraja, a devotee has his mind absorbed in God Almighty, who is the supreme object of love and is ever engaged in loving meditation on his virtues, glory, and essence even while attending to his daily round of activities.

Accepting with reverence as more than evident, the existence of God, his various descents, his utterances, power, virtues, glory, sports, and greatness, etc is what is supreme faith and him who cultivates absolute dependence on God like the great prahlanada is said to be endowed with supreme faith. The term yuktatamah is a synonym of the wordyogavittamah(knower's of yoga) is present in the verse of which Arjuna uses in verse one.

मय्येव मन आधत्स्व मयि बुद्धिं निवेशय ।

निवसिष्यसि मय्येव अत ऊर्ध्वं न संशयः ॥ १२-८ ॥

mayyeva mana ādhatsva mayi buddhiṁ niveśaya ।  
nivasiṣyasi mayyeva ata ūrdhvaṁ na saṁśayaḥ ॥ 12-8॥ (B.G)

Therefore, fix your mind on me, and establish your intellect in me alone; thereafter you will abide solely in me; there is no doubt about it. Pervading the whole universe consisting of animate and inanimate beings, God is enshrined in the heart of all. He is an ocean of countless virtues like compassion, omniscience, amiability, and cordiality, etc And he who , having wholly withdrawn his attachment from everything else than his most beloved Purushottam or God , merges his mind in him alone and remains constantly engaged in his thought in the aforesaid manner is said to have fixed his mind on God thus one can fix his/her mind or intellect on the divine and their emotions can be changed and it relates to *bhakti* and to worship God.

### **Related to tapas**

The third division of Patanjali's niyamas is tapas which often translate traditionally as austerity or discipline. The word tapas is derived from the root Sanskrit verb “tap” which means to burn and evokes a sense of passion. Tapas can be cultivating a sense of self-discipline, passion, courage. In order to burn away’ Impurities’ physically, mentally, and emotionally And way of true greatness (by Emma Newlyn 5 May 2014)

संतोषादनुत्तमसुखलाभः ॥ २-४२ ॥

santoṣādanuttamasukhalābhaḥ ॥ 2-42॥

Meaning: Penance is Tapas, to the stayon single subject have chosen whatever task you take up, Put all your energy and do not stop till the task Is finished.



(Patanjali Yoga Sutra, Chapter no 2, sloka no 42 years:2001 by swami venkatananda)

प्रजहाति यदा कामान्सर्वान्पार्थ मनोगतान् ।

आत्मन्येवात्मना तुष्टः स्थितप्रज्ञस्तदोच्यते ॥ २-५५ ॥

prajahāti yadā kāmānsarvānpārtha manogatān ।  
ātmanyevātmanā tuṣṭaḥ sthitaprajñastadocyate ॥ 2-55॥

**Meaning:** when a man abandons, o Parth all the desire of the herself alone by the self then he is said to be one study wisdom.

(Bhagavad Gita chapter no 2, slokha 55 ,year 2002, by Dr. Saraswathi Mohan)

नस्तिबुद्धरयुध्वक्तस्य भवन ।

न च भवयतशानन्तिः अशन्तस्य कुतः सुखमु ॥

nastibuddharayuthvaktasya bhavana ।  
na ca bhavayataśānantīḥ aśantasya kutaḥ sukhamu ॥

**Meaning:** He who gives up all desire and move free from the sense of mine, egoism and thirst for necessities of life, attains peace.

(Patanjali Yoga Sutra, sloka 89, year, swmi venkaananda)

योगस्थः कुरु कर्माणि सङ्गं त्यक्त्वा धनञ्जय ।

सिद्धयसिद्धयोः समो भूत्वा समत्वं योग उच्यते ॥ २-४८ ॥

yogasthaḥ kuru karmāṇi saṅgaṁ tyaktvā dhanañjaya ।  
siddhyasiddhyoḥ samo bhūtvā samatvaṁ yoga ucyate ॥ 2-48॥

**Meaning:** Endowed with equanimity, one free oneself from good and evil alike, their fore, devote to this yoga of equanimity. Skills in action lie in yoga.

(Bhagavad Gita chapter 2,sloka no 48, year 2002,by Saraswathi Mohan)

बुद्धियुक्तो जहातीह उभे सुकृतदुष्कृते ।

तस्माद्योगाय युज्यस्व योगः कर्मसु कौशलम् ॥ २-५० ॥

buddhiyukto jahātīha ubhe sukṛtaduṣkṛte ।  
tasmādyogāya yujyasva yogaḥ karmasu kauśalam ॥ 2-50॥

Meaning:He who controls the senses by the mind, Engages himself in the path of action with all the organs of action and sense, without attachment is superior.

Bhagavad gita chapter no2, sloka50.year 2002 ,by Swami Abhedananda)

तपःस्वाध्यायेश्वरप्रणिधानानि क्रियायोगः ॥ २-१ ॥

tapasvādhyāyeśvarapraṇidhānāni kriyāyogaḥ ॥ 2-1॥

**Meaning:** The three aspects mentions, namely austerity,(tapas)study of the psyche(svadhyaya) and profound religious meditation upon the Supreme Lord (Isvarapranidhanani)are absolutely essential for the liberation of living energy.Whether one cultivates this by long practices, as Sri Patanjali described or one does so effortlessly as Sri Caitanya Maha Prabhu did, it will stillbe a necessary in one way or the other either. Natural ability. There is no avoiding this.Ultimately it must be done.

(Patanjali Yoga Sutra. Chapter 2, sloka 1, the year 2001, by swami venkatananda)

देवद्विजगुरुप्राज्ञपूजनं शौचमार्जवम् ।

ब्रह्मचर्यमहिंसा च शारीरं तप उच्यते ॥ १७-१४ ॥

devadvijaguruprājñapūjanaṁ śaucamārjavam ।  
brahmacaryamahimsā ca śārīraṁ tapa ucyate ॥ 17-14॥

service of the dadas, holy men, teachers, parents, and wise persons, as also observance of cleanliness uprightness, continence, and noninjury these constitute Austerities pertaining to the body.

(BG CH 17, SL 14, by swami Abhedananda 2002)

अनुद्वेगकरं वाक्यं सत्यं प्रियहितं च यत् ।

स्वाध्यायाभ्यसनं चैव वाङ्मयं तप उच्यते ॥ १७-१५ ॥

anudvegakaram vākyaṁ satyaṁ priyahitaṁ ca yat ।  
svādhyāyābhyasanaṁ caiva vāṅmayam tapa ucyate ॥ 17-15॥

**Meaning:** Speacking only words that are inoffensive, true ,pleasant and beautiful as also the regular reaction of scriptures constitute austerity pertaining to speech.

(BH G, CH 17, SLO 15, By Swami Abhedananda year 2002)

मनः प्रसादः सौम्यत्वं मौनमात्मविनिग्रहः ।

भावसंशुद्धिरित्येतत्तपो मानसमुच्यते ॥ १७-१६ ॥

manaḥ prasādaḥ saumyatvaṁ maunamātmavinigrahaḥ ।  
bhāvasaṁśuddhirityetattapo mānasamucyate ॥ 17-16॥

**Meaning :**Serinity of mind gentleness, moderation into each self-control, and purity of heart these are called austerity of the mind

(BG ,CP 17, SLO 16 Sarswathi mohan , year 2002)

तपंसि सर्वानि च यत् वदन्ति ।

*tapamsi sarvani ca yat vadanti*

Meaning: The tapas ,meaning heat , indicates sffort and endeavour.

(year 1987, by Swami Ghabiraanada)|(Katha upanishad)

कायेन्द्रियसिद्धिरशुद्धिक्षयात् तपसः ॥ २-४३ ॥

kāyendriyasiddhiraśuddhikṣayāt tapasaḥ || 2-43||

यस्य ज्ञानमयं ज्ञानविकरमेव सर्वं ज्ञानलक्षणम् ।

तपो अनयस लक्षणम् ॥

*yasya jñānamayaṁ jñānavikarameva sarvaṁ jñānalakṣaṇam |  
tapo anayasa lakṣaṇam ||*

Meaning: Whose tapas consists of thought, it is just a form of his knowledge, which is of the nature of omniscience, it is tapas characterized by effortlessness or spontaneity.

(Swami Ghabhirananda)

(P.Y.S. 3/1)

**Meaning:** Once mastery of the five stages of yoga from Yama to pratyahara is achieved, the art of focusing the mind and consciousness is undertaken. *Dharna* is established when the mind learns to remain steady on its own, or hold on to an unmoving object.

*Dharna* is the art of reducing the interruptions of the mind and ultimately eliminating them completely so that the knower and the known becomes one. *Dharana* may be focused on external or internal objects. External objects should be auspicious and associated with purity. Internally, the mind penetrates to the soul, the core of once being the object is, in reality, pure existence.

तत्र प्रत्ययैकतानता ध्यानम् ॥ ३-२ ॥

tatra pratyayaikatānatā dhyānam || 3-2||

[P.Y.S., Vibhuti pada ]

A steady, continuous flow of attention directed towards the same point or region is meditation (*dhyana*). The characteristic feature of meditation (*dhyana*) is the maintenance of an uninterrupted flow of attention on the fixed point or region, without intervention or interruption. In *dhyana*, psychological and chronological time come to a standstill as the mind observes its own behavior. The intensity of attention in the field of consciousness neither alters nor wavers, remaining as stable, smooth and constant as oil pouring from a jug, maintaining the same intensity of awareness.

(P.Y.S. 3/2)

### **Summary**

Cognition is the changes in memory, emotional awareness, stability including the ability to identify your own emotion and thought of others, the ability of harness emotion and apply them to tasks like thinking, problem solving our strong likes and dislikes, our hatred and obsession our fears and moods all vanish when we surrender totally Bhagwad Gita teaches us how to control our emotion. The goal of bhakti yoga is beautifully enunciated below as ' Ap prayer for the good of all, health and absence of misery and illness of all to reach divinity itself.

### **3 :: SCIENTIFIC LITERATURE REVIEW**

#### **Yoga for cognitive functions in children memory**

A remarkable effect of relaxation techniques on memory level, stability, removes anger, anxiety and all are measured by the Digit –Letter Substitution Task (DLST), because of practice cyclic meditation (CM), a yoga relaxation technique, as equal to Supine Rest (SR). Samples 253 school students, 156 boys, 97 girls, in age range is 13–16 years. They have attended the 10-day yoga camp where they experience criticality of yoga. After the intervention, they were assessed by the DLST worksheet consists of 8 rows × 12 columns array of random digits 1–9. Subjects are seated with the worksheet upside down until the start of the test. The result shows the good changes in their stability, attention, memory (Nagendra & Pradhan, 2009).

#### **Other mental health**

A study provided the evidence that a relatively brief yoga intervention to the 150 students assessed by the questionnaire and computer tests so the outcome was associated with a number of psychological benefits for boys and girls, such as improved frustration tolerance, focus, self-acceptance, and awareness, as well as increased patience & stability (Diyankova, 2010) .

Another study on 450 participants, were taught integrated yoga module up to 60 days assessment were taken after the 60-day intervention. The result showed a reduction of negative emotions and enhancement in positive emotions (Nagendra, Telles 1999).

#### **Modern methods to develop memory**

Yoga plays a very crucial role in increasing and improving the memory also helps to give monitoring power .there is research on it. for this study they took 198 samples from the high school in age range of (11 to 17)they attended a short term yoga camp for 4 weeks only where they practice all the dynamic exercise of hatha yoga which stimulates their brain cells and after that they assessed by the automated Operational Span Task) and self-report measures of perceived stress (Perceived Stress Scale) and anxiety Screen for Childhood Anxiety Related Emotional Disorders which shows the great result which influences their emotional level, memory improvement, reduction of anxiety (Telles,1999).

Another study on 82 students, age ranged from 11-15 years, were randomly divided into experimental(n=41)and control(n=41)groups, significant improvements were observed in measures of mental ability and memory in the experimental group. However, no statistically significant changes were observed in measures of mental ability and memory tests in the control group. Selected cognitive development variables were improved after 12 weeks of yoga training in adolescent school children(Anita verma: Kulkarni, 2015).

### **Yoga and emotional stability**

Yoga improves emotional stability and reduces negative thoughts in the mind (Daly, Haden, Hagins, Papouchis, & Ramirez, 2015). Yoga is the only formal practice of mental health significantly related to increases in non-judgmental thoughts (Carmody& Baer, 2008). Research has found yoga-based programs may have potential to increase subjective well-being and foster resiliency toward mental health in this study they took 200 students from the schools for the 60 days yoga camp and assess them through self-monitoring test, computer test. Which shows the big change in their life after the practice they acknowledge their stability, improving memory, decision making(Carmody & Baer, 2008)

Yoga has been shown to increase the quality of life, mindfulness, and self-compassion and decreases stress. Compassion is also a key component that can be learned from yoga. Self-compassion predicts stress and relates positively to mental and physical health (Gard et al., 2012).

### **Importance of emotional stability in children**

Ability to monitor & control our own emotions or self-regulation does not come easily to everyone and students with certain disabilities, emotional unstable that impact their social understanding it can be incredibly difficult and sometimes painful. The control of emotions and behaviours is crucial to success in all facets of life for the bright future of adolescents. Self-regulation also means altering them in accordance with the demands of the situation. Whether academic, athletic, social, etc. and knowing how and acting to improve in these areas. For social situations, self-regulation is vital, especially during adolescence where friendships are of the utmost importance. If self-regulatory behaviours are not ingrained by the time of the transition to college, the adolescent could be alienated and withdraw, impacting his or her academic success as well provide a more concise definition with self-regulation being the ability for self-control over thought, feeling, and

behaviour. They randomly selected 145 adolescents aged 13 to 18 for their 2 months yoga intervention afterward they assessed them through computer test and logical questionnaire so this research shows the vitality of yoga that it induces or active our memory also helps to balance our life and emotions

Mounting evidence suggests that emotional stability works on other physiological functions of the body that tend to deteriorate, is often well-conserved even with aging (Charles,Scheibes,2016). This general agreement regarding the conservation of emotional stability despite aging suggests a paradox to our understanding of aging. 286 healthy subjects aged (11 to 19) were selected for measuring their memory strength, assessment was taken after the 6 months intervention through, using the emotion recognition task (ERT) and resting-state functional brain magnetic resonance imaging (fMRI) afterward founded that a great result it increases their monitoring power, self-control, other effects (Ruffman, Goh, 2011).



**3::1 TABLE: LITERATURE REVIEW**

| S.NO. | AUTHOR AND YEAR                                  | SAMPL E -SIZE   | INTERVENTION PERIOD  | ASSESSMEN T TOOL  | RESULT   |
|-------|--|---|--|---|--|
| 1.    | (Das, Deepeshwar, Subramanya, & Manjunath, 2016) | 210 children  | 10 day of the yoga group                                     | Through 2 questionnaires (TMT), (SET)   | Yogä practices improve emotional stability, self-monitoring and with a fine mind and mental coordination, planning ability, and cognitive performance.   |
| 2.    | (Daly et al., 2015)                              | 34 participants from high schools (randomly selected)                 | 16 week of yoga practices                                    | Questionnaire of measuring their stability  | yoga enhances the memory power strong the emotional level, enlargement of the capacities of adolescents to stable in their life.                         |
| 3.    | Naomi et al.,2012                                | 160 children in 4 <sup>th</sup> & 5 <sup>th</sup> grade (age 8 to 11) | 2 yoga sessions per week during the school day for 3 months. | Behaviour assessment scale teacher rating scale-child, the Swanson, kotkin, agler, m-flynnpelhan rating scale (SKAMP) | Teachers reported improved stability and attention in class & adaptive skills reduced depressive symptoms & internalizing symptoms also in the students. |

|    |  |  |  |  |   |
|----|--|--|--|--|---|
| 4. | (Nagendra & Pradhan, 2010)                                       | 208 school students, age 13 to 16yrs                       | Yoga-based relaxation techniques.  | six letter cancellation task (SLCT)  | The net score change in the CM session was significantly larger than the change in the SR   |
| 5  | (Kortering, Ockeloen, Hilbink, Benninga, & Deckers-Kocken, 2016) | 69 patients, ages 8 to 18 yrs.                             | 10 weeks of yoga therapy (YT) and standard medical care. once a week in group sessions | YT is a mixture of yoga poses, meditation, and relaxation exercises.   | Significant result for the standard medical care(SMC) but in yoga therapy give more reduction of instability of mind it shows much more effective than the SMC.                       |
| 6  | (Quach, Jastrowski Mano, & Alexander, 2016)                      | 198 adolescents from a large public middle school          | 4 weeks (short term mindfulness, memory improving practices)                           | Automated Operational Span Task, Perceived Stress Scale and anxiety Screen for Childhood.  | Participants in the mindfulness meditation condition showed significant improvements in working memory capacity, whereas those in the hatha yoga and waitlist control groups did not. |
| 7  | (Butzer et al., 2017)  | 16 students were Randomly selected from the yoga condition | 4 months of yoga intervention  | using mini-laptop computers equipped with RED Cap survey software Each participant was provided with a separate mini-laptop computer for the duration of | Both positive and negative opinions of yoga, direct comparisons between yoga and physical education. Students had positive opinions regarding the                                     |

|           |                                   |  |  |  |  |
|-----------|-----------------------------------|--|--|--|--|
|           |                                   |  |  | the testing session in order to privately complete the outcome measures.   | beneficial effects of yoga on stress, sleep, stability, relaxation.  |
| <b>8</b>  | (Hailat et al., n.d.)             | 16 students between the age of (11 to 18)              | yoga for approximately 8 hours a day, for 10 days. | The verbal and spatial memory tests were assessed test material was projected on a screen, allowing 10 seconds for each slide. After the 10 slides were shown. | data of yoga groups found to normally increase in spatial memory scores. It shows that they are more stable and their cognitive power increases.                                 |
| <b>9</b>  | (Rangan, Nagendra, & Bhat, 2009). | 49 boys of ages(11-13yrs) selected from middle school. | 10day yoga camp (asanas, pranayama, tratka)        | Assessed by (spatial and verbal memory tests) applicable to Indian conditions before and after an academic year.   | The test comparing the pre-post values within group showed that improvements in both groups. The GES boys showed highly significant greater improvements in memory than MES boys |
| <b>10</b> | (Chaya, Nagendra,                 | 200 school   | after 3 months of yoga intervention,               | using an Indian adaptation of  | There were no significant  |

|           |                                     |  |                                   |   |  |
|-----------|-------------------------------------|--|-----------------------------------|---|--|
|           | Selvam, Kurpad, & Srinivasan, 2012) | children from Bangalore                        | and later at a 3-month follow-up. | the Wechsler Intelligence Scale for Children                                  | differences in cognitive performance between the two study groups (yoga versus physical activity) .but memory power was little improved. |
| <b>11</b> | S.Telles,N.Singh, 2013              | 98 school children (11 to16) randomly selected | Only 3 months                     | (i)Flamingo balance test (ii) Plate tapping test and some questionnaire test. | An impressive improvement in both groups in emotional stability, behavior with friends and behavior with teachers.                       |

## **4::AIM AND OBJECTIVES**

### **4.1 Aim**

The present study was aimed at assessing student's cognitive changes in school children with yoga.

### **4.2 Objective**

The current study was planned with the objectives

- To study the memory level in school children.
- To study the self-monitoring quality in school children.
- To study the emotional level in school children.

Following the practice of Yoga therapy

### **4.3 Research question:**

- Will short duration of yoga intervention improve memory, self-monitoring and Emotional stability in school children?

### **4.4 Hypothesis**

The yoga practices may bring positive outcome is increased in memory, self-monitoring and Emotional stability.

### **4.5 Null hypothesis:**

- The yoga intervention may not affect in yielding good outcome in memory, self-monitoring and emotional stability in school children.

## **5::MATERIALS AND METHODS**

### **5.1 Sample size**

G-power was used to estimate sample size with effect size = 0.66;  $\alpha$  -value = 0.05 and power = 0.95; estimated sample size was 32 on the basis of emotional stability (Madhusudan et al., 2016).

### **5.2 Source of Sample**

In the present study, 82 participants with age ranged between (12 -16years) were taken from Shivaji Nagar HBP (Hindustan Balakiyara Prowda) school. Yoga participants were undergone for 30-day yoga-based lifestyle intervention program and compared their emotional stability and memory before starting their session and after completing their session.

### **5.3 Inclusion criteria**

Following criteria were advocated to include the subjects for the study

- a. School children between the age of 12 to 16.
- b. Students those who are keen on taking part in the trial.
- c. Those who are able to perform yoga practices.
- d. Not under any medication.

### **5.4 Exclusion criteria**

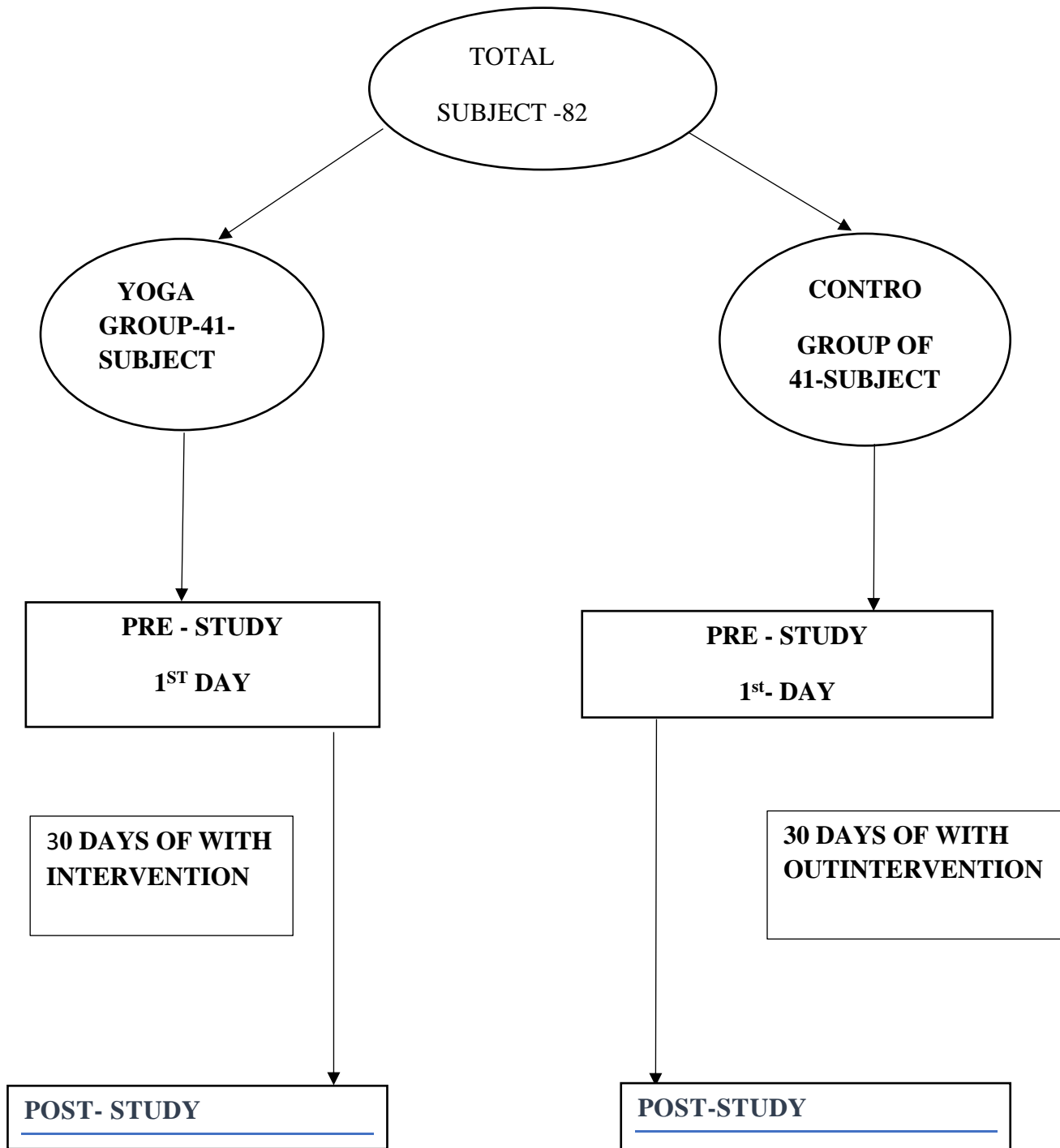
Following criteria were taken into consideration to exclude subjects

- a. Those who were under medication
- b. Those who don't know proficient English
- c. Those who are unable to perform the practice.

### **5.5 Consent form**

The informed signed consent was obtained from the school principal of Shivajinagar HBP school, Bangalore.

## 5.6 Design of the study



## 5.7 Intervention

Thirty days of yoga lifestyle intervention will be given to all school children. It is consisting of yoga postures, breathing practices, spiritual lectures.(Kashinath metri)

| Sr.No                  | Practices name  | Duration<br>Min |
|------------------------|---|-----------------|
| 1                      | Opening prayer (OM Sanhanavavatu.....)  | 1               |
| 2                      | Breathing practices: Hands in-out breathing, Sasankasana breathing, Ankle stretch breathing                                       | 5               |
| 3                      | Loosening exercises of Wrist, fingers, elbow, shoulder; neck movements; forward and backward bending; mild jogging twisting, etc. | 5               |
| 4                      | Relaxation for 10-12 rounds (deep inhalation and completely exhalation) followed by shvasana.                                     | 5               |
| 5                      | 12 steps of suryanamskara   | 10              |
| 6                      | Quick relaxation techniques   | 5               |
| 7                      | Ardhachakrasana, Padhahastasana, Trikonasana, Paschimotanasana, Ardhastrasana, Vrikshasana.                                       | 18              |
| 8                      | Deep relaxation technique   |                 |
| 9                      | Nadishuddi pranayama, ujjayi, Bharmari, Sectional breathing.  | 10              |
| 10                     | Closing prayer (Om sarvebhavantusukinah.....)   | 1               |
| Total Duration: 1 hour |   |                 |



## **5.7ASSESSMENT TOOL**

For 30 –day yoga-based lifestyle intervention effect will be assessed using state cognitive changes questionnaires. The cognitive changes will be measured before and after practice.

- **Self- Monitoring Scale-{SMS}**

This Scale measure the extent to which you consciously employ impression management strategies in social interaction. Basically, the scale assesses the degree to which you manipulate the nonverbal signals that you send to others and the degree to which you adjust your behaviour to situated demands. In this scale total of 25 questions, it was concerned about their personal reactions how they are monitoring itself basically how they observe their regular activity day to day lifestyle. It is a true-false type of test. In this test, they have to answer very frankly and honestly and they can also able to observe their activity with awareness what they are doing wrong or Wright (Mark Snyder, 19). (Self-Monitoring Scale,).

- **Emotion regulation questionnaire {ERQ}**

Emotional regulation is narrowly related the concept of cognitive coping. One important difference between the two perspectives is that both the widely accepted problem -focused and emotion -focused dimensions of coping include a mixture of cognitive and behavioural strategies, while cognition emotion regulation theory is based on assumption that thinking and acting refer to different processes and, therefore considers cognitive strategies in a conceptually pure way, separate from behavioural strategies. The emotion regulation questionnaire is designed to assess the individual difference in the habitual use of two emotion regulation strategies: cognitive reappraisal and expressive suppression. Basically, how to control regulate, manage their emotions. In this test, there are a total of 10 questions. In the test, there are options like 1strongly disagree 4neutral 7strongly agree with help of this test they can judge thyself properly (Garnefski & Kraaij, 2007).

- **Everyday Memory Questionnaire {EMT}**

Everyday memory questionnaire was developed as a subjective measure of memory of memory

Failure in everyday life. The aim of the study of the study was internal consistency and criteria validity of the scale and developed a shortened version. The general memory attention with some differentiation of visual and verbal or language system. In this test there are 28 statements based on their memory what kind of memory they have like they forget their belongings most of the times & they find difficulty to found their things, they cannot remember the things which happened in yesterday. In this test we are using following scale like 0=, not at all, 1= about once, 2= more than once, but less than once a month, etc (Royle & Lincoln, 2008).

## **6: DATA EXTRACTION AND ANALYSIS**

### **6.1 Data extraction**

The data was collected from all participants using questionnaires and scoring was done using standard operating procedures suggested by the respective assessment questionnaire.

### **6.2 Data Analysis**

The scores obtained from questionnaires Self-Monitoring Scale, Everyday Memory test, Emotional Regulation questionnaire were tabulated and inspected for extreme values and found two values in data. Mean and the standard deviation was calculated using r studio.

Data were tested for normal distribution using the Shapiro Wilcoxon test and found it was not normally distributed, then for within-group analysis was done using paired sample t-test rank test.

## 7: RESULTS

Shapiro Wilcoxon test was conducted and found data was not normally distributed and hence non-parametric test Wilcoxon test was done. The result showed changes in pre and post collections.

**The within-group analysis** is done using the paired sample t-test test.

This was a single group study with pre-post design. 82 school children were selected based on inclusion criteria. Yoga Therapy for 30 days and 1 hour in a day was given to participants. Assessments were collected at the first and last day of the intervention. Emotional stability and memory were measured using questionnaire of the emotional regulation test (ERT), to measure their emotional stability and everyday memory test (EMT), self - monitoring scale (SMS), to measure their working memory.

**7.1Table-:** Table showing the Mean, SD, P-value of yoga group and control of the practice.

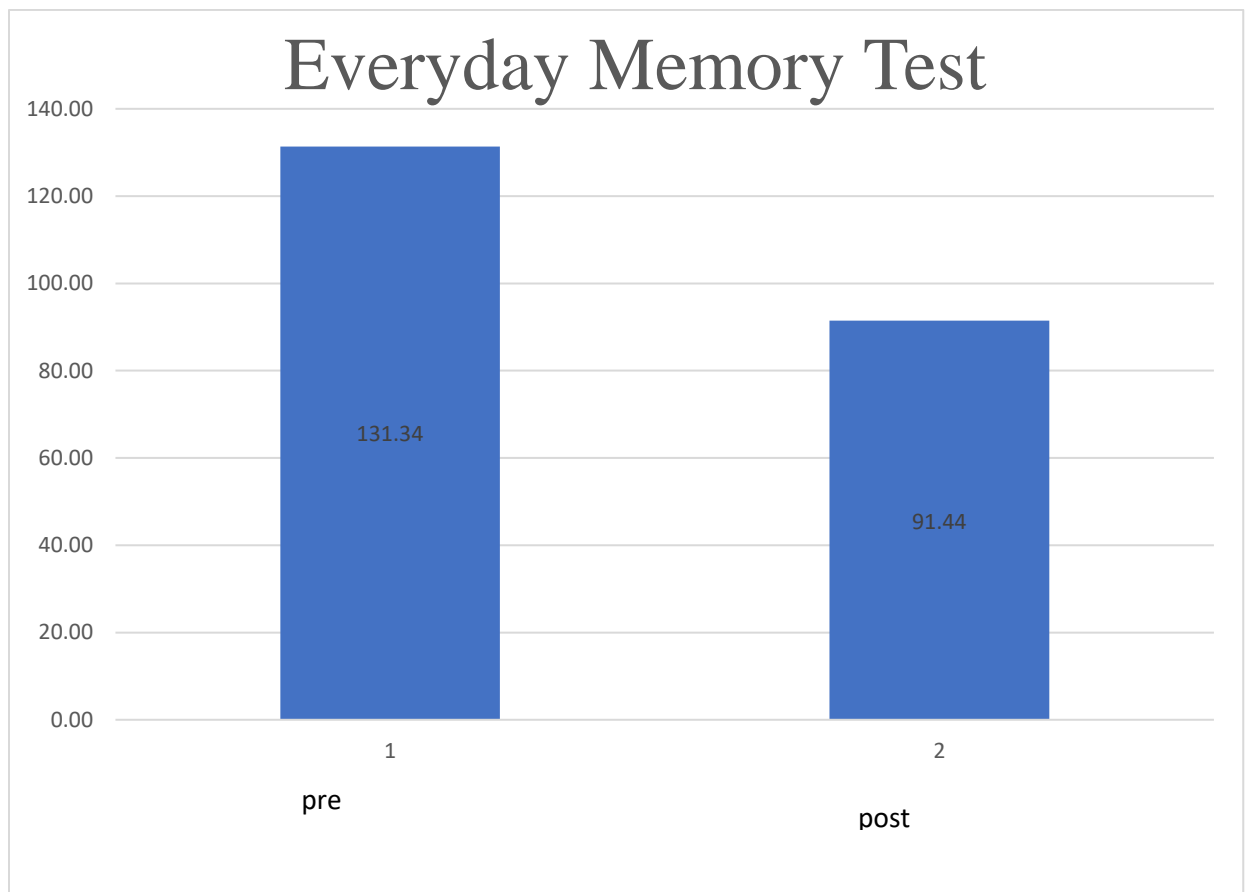
# Every day memory table and graph

## YOGA GROUP

| Sr.no | Variable             | Pre Mean $\pm$ SD  | Post Mean $\pm$ SD | P-Value       |
|-------|----------------------|--------------------|--------------------|---------------|
| 1     | Everyday Memory Test | 131.34 $\pm$ 12.35 | 91.44 $\pm$ 10.29  | $<2.2e^{-16}$ |

## CONTROL GROUP

| Sr.no | Variable             | Pre Mean $\pm$ SD  | Post Mean $\pm$ SD  | P-Value |
|-------|----------------------|--------------------|---------------------|---------|
| 1     | Everyday Memory Test | 131.71 $\pm$ 11.71 | 131.05 $\pm$ 11.221 | 0.1285  |



It is reverse calculation =It has significant changes

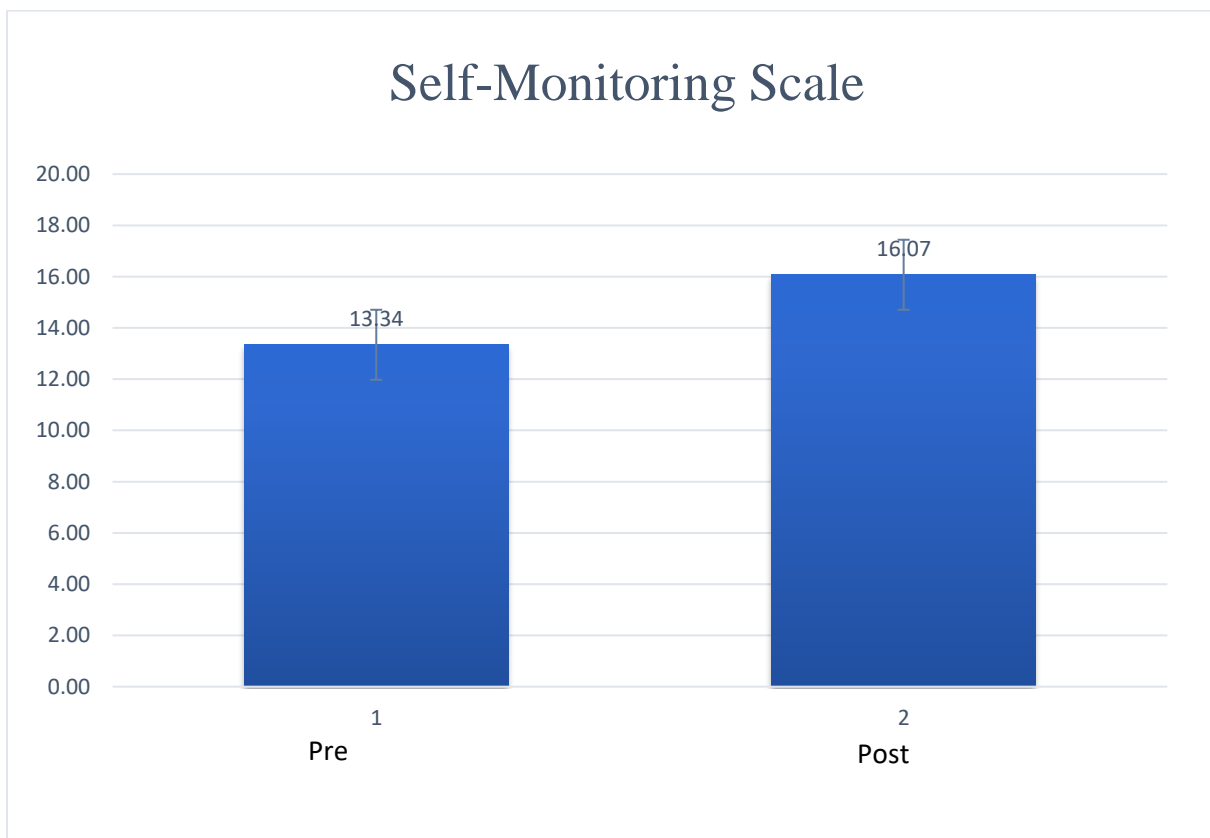
## Self-monitoring scale table and graph

### YOGA GROUP

| Sr.no | Variable             | Pre Mean $\pm$ SD | Post Mean $\pm$ SD | P-Value  |
|-------|----------------------|-------------------|--------------------|----------|
| 1     | Self-Monitoring Test | 13.34+3.13        | 16.07.25+3.25      | <2.3e-13 |

### CONTROL GROUP

| Sr.no | Variable             | Pre-Mean $\pm$ SD | Post-Mean $\pm$ SD | P-Value |
|-------|----------------------|-------------------|--------------------|---------|
| 1     | Self-Monitoring Test | 13.22+2.56        | 13.32+2.56         | 0.8323  |



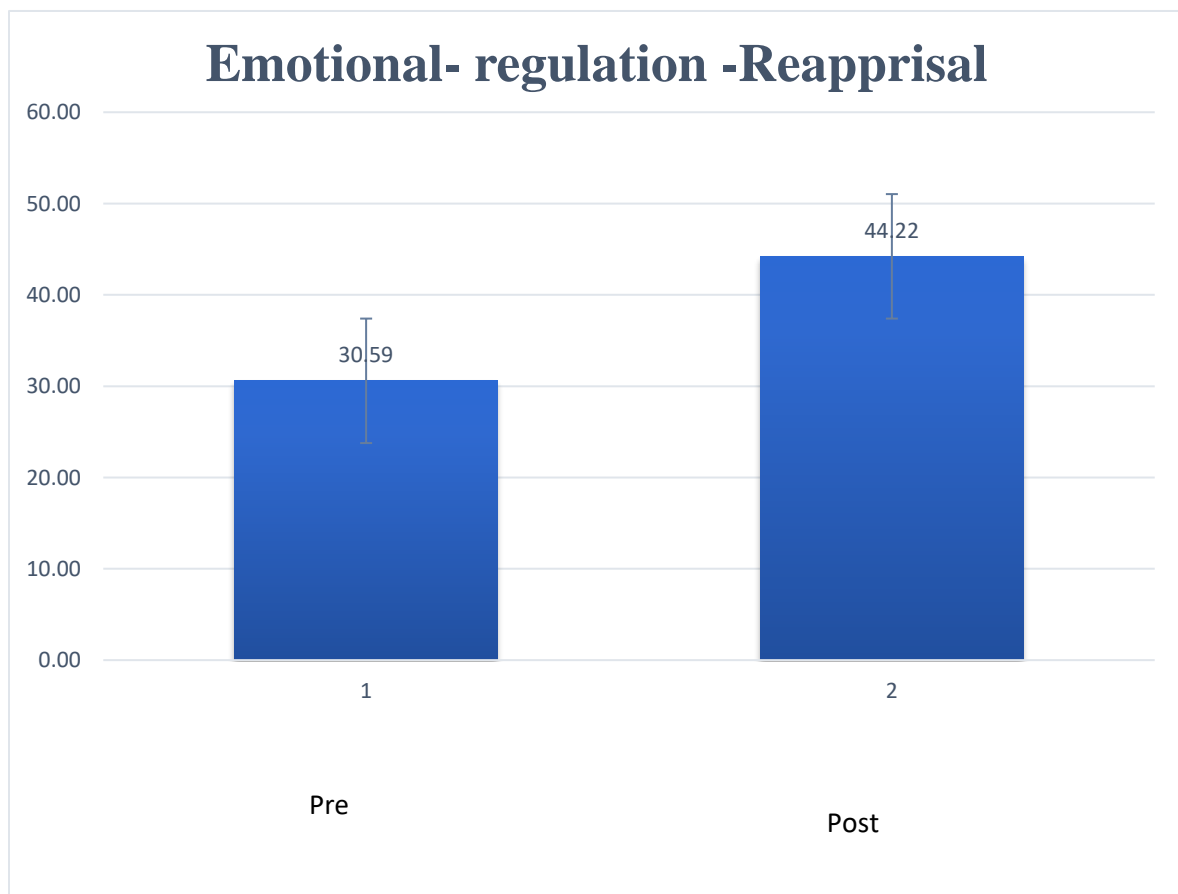
# Emotion regulation Reappraisal table and graph

## YOGA GROUP

| Sr.no | Variable                 | Pre-Mean $\pm$ SD | Post-Mean $\pm$ SD | P-Value    |
|-------|--------------------------|-------------------|--------------------|------------|
| 1     | Emotion-Reappraisal Test | 30.59 $\pm$ 2.16  | 44.22 $\pm$ 2.14   | 0.<2.2e-16 |

## CONTROL GROUP

| Sr.no | Variable                 | Pre-Mean $\pm$ SD | Post-Mean $\pm$ SD | P-Value |
|-------|--------------------------|-------------------|--------------------|---------|
| 1     | Emotion-Reappraisal Test | 31.00 $\pm$ 2.16  | 30.93 $\pm$ 2.62   | 0.8735  |



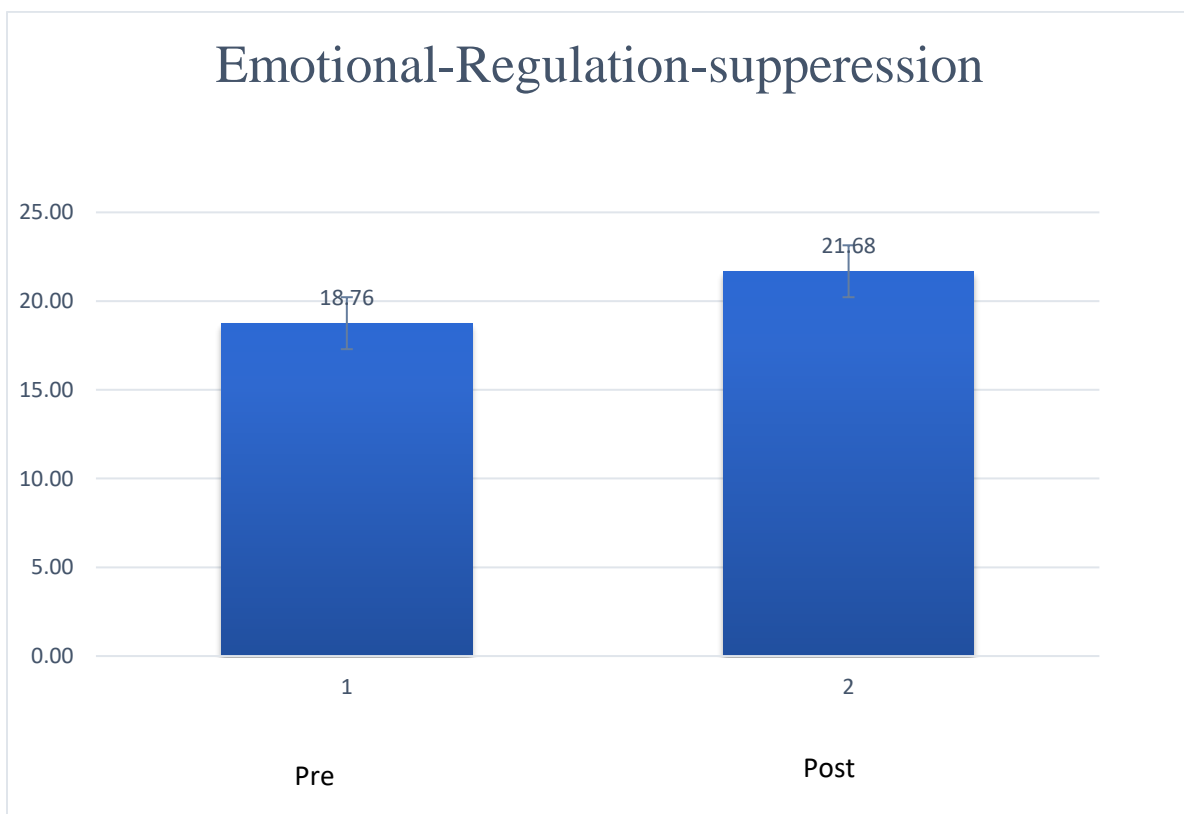
## Emotion regulation suppression table and graph

### YOGA GROUP

| Sr.no | Variable                 | Pre- Mean $\pm$ SD | Post-Mean $\pm$ SD | P-Value  |
|-------|--------------------------|--------------------|--------------------|----------|
| 1     | Emotion-Suppression Test | 18.76 $\pm$ 2.02   | 21.68 $\pm$ 1.56   | <2.2e-16 |

### CONTROL GROUP

| Sr.no | Variable                 | Pre Mean $\pm$ SD | Post Mean $\pm$ SD | P-Value |
|-------|--------------------------|-------------------|--------------------|---------|
| 1     | Emotion-Suppression Test | 20.46 $\pm$ 1.95  | 20.27 $\pm$ 2.10   | 0.8323  |



The mean and SD of emotional regulation reappraisal was 30.59 & 2.16 respectively which is changed to 44.22 & 2.14 with range of 44.65% and with p-value 0.000(2.2e-16) (<0.05);



emotional regulation suppression was 18.76 & 2.02 respectively which is changed to 21.68 & 1.56 with range of 13% and with p-value 0.000(2.2e-16) (<0.05); mean & SD of everyday memory test was 131.34 & 12.35 which is changed to 91.44 & 10.29 with range 30% and p-value 0.000(2.2e-e) (<0.05), and mean and SD of the last one is self-monitoring scale was 13.34 & 12.35 which is changed to 16.07 & 3.25 with range of 13% and p-value 0.000(2.2e-13)(p=0.05)

## **8: DISCUSSION**

### **8.1 Summary of the result**

This study hypothesized that after 30 days yoga-based personality cognitive changes on the emotion regulation, memory and self-monitoring will improve in the School children. The result of this study showed that memory ( $P=2.2e^{-16}$ ) and emotion regulation reappraisal ( $p=<2.2e^{-16}$ ) and emotion regulation suppression ( $p=<2.2e^{-16}$ ) memory ( $P=2.2e^{-16}$ ) and self-monitoring ( $P=<2.3e^{-16}$ ) increased significantly improvement.(if the ( $P=<2.2e^{-16}$  =) p value is equal to 0)

### **8.2 Compare with the previous study:**

These findings support those of the previous studies who observed improvement at an emotional level, memory problems after the yoga-based intervention (Smitha&Hancock,2007, Dehghan&Adib, 2011).In this direction, another study found Integrated approach of yoga therapy (IAYT), to be a better intervention for mild instability and depressive symptoms but did not produce any effect to the patients with severe instability and poor attention patients (Telles, Singh, 2013). IAYT balances our mind and physical body enhances the stability and the motor functions (Leslie, Sara, 2015) and maintain the physical and psychological fitness in Adolescence (Madhusudhan, 2016). Ten days of an integrated approach of yoga therapy reduced the memory weakness, suppression of emotions, instability better than physical exercise ( Kaley-Isley, Lisa ,2010).

### **8.3 Mechanism:**

Yoga reduces the sympathetic activity and helps in downmodulation of the HPA axis, which reduces the hyperactivity of the mind. The practice of yoga in a group improves the social interaction of the subjects. Further, study shows yoga-based intervention improved trait mindfulness (Shelov, Suchday, & Friedberg, 2009) which may be a preventive method for the later development of negative emotional mood states which in turn enhanced mental wellbeing.

## **9: APPRAISAL**

### **9.1 Strength of the study**

- Yoga practice was provided in a school set up.
- All the students are regular and supportive.

### **9.2 Limitation of the study**

- Less intervention times.
- Questionnaire-based study and no apparatus is used.

### **9.3 Scope for future study**

- Study with more clinical parameters can be planned.
- Intervention time can be increased.
- Sample size can be increased.

Future research could include additional forms of assessment that extend and strengthen the self-report measures used in the current study.

## **10: CONCLUSION**

The ability to modulate and stable the cognitive changes shapes the memory, emotion stability, self-monitoring & directs it towards a healthy way of living. School children deeply observe their stability and check their memory power through different types of the questionnaire they can easily get to know about themselves. 30 day of yoga practices gives them improve on them

Emotional level, Everyday memory and Self-monitoring power.

The present study shows that there are significant changes in reducing the parameters instability, memory weakness, monitoring quality, etc., and providing an evidence that rhythmic and daily practice of Yoga for particular period time can bring about remarkable changes in leading stable life and hence can be concluded saying that yogic practices may have ability to tranquil mind and increases cognitive changes .

## 11::REFERENCES

- APA Dictionary of Psychology. (n.d.). Retrieved April 27, 2019, from <https://dictionary.apa.org/>
- Baldwin, M. W., & Sinclair, L. (1996). Self-esteem and “if . . . then” contingencies of interpersonal acceptance. *Journal of Personality and Social Psychology, 71*(6), 1130–1141. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8979382>
- Best, C. H., Taylor, N. B., Tandon, O. P. (Om P., & Tripathi, Y. B. (n.d.). *Best and Taylor’s physiological basis of medical practice*.
- Blomberg, O. (2011). Conceptions of Cognition for Cognitive Engineering. *The International Journal of Aviation Psychology, 21*(1), 85–104. <https://doi.org/10.1080/10508414.2011.537561>
- Butzer, B., LoRusso, A. M., Windsor, R., Riley, F., Frame, K., Khalsa, S. B. S., & Conboy, L. (2017). A Qualitative Examination of Yoga for Middle School Adolescents. *Advances in School Mental Health Promotion, 10*(3), 195–219. <https://doi.org/10.1080/1754730X.2017.1325328>
- Cairns, R. B., & Cairns, B. D. (2007). The Making of Developmental Psychology. In *Handbook of Child Psychology*. <https://doi.org/10.1002/9780470147658.chpsy0103>
- Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine, 31*(1), 23–33. <https://doi.org/10.1007/s10865-007-9130-7>
- Chapter 6 Attention Attention*. (n.d.). Retrieved from [https://nptel.ac.in/courses/109101015/downloads/Lecture Notes/Lec6-Attention.pdf](https://nptel.ac.in/courses/109101015/downloads/Lecture%20Notes/Lec6-Attention.pdf)
- Chattha, R., Raghuram, N., Venkatram, P., & Nr, H. (2016). Treating the climacteric symptoms in Indian women with an integrated approach to yoga therapy : a randomized control study . PubMed Commons. *Menopause International, 1*–2. <https://doi.org/10.1097/gme.0b013e318167b902>. Treating
- Chaya, M. S., Nagendra, H., Selvam, S., Kurpad, A., & Srinivasan, K. (2012). Effect of Yoga on Cognitive Abilities In Schoolchildren from a Socioeconomically Disadvantaged Background: A Randomized Controlled Study. *The Journal of Alternative and Complementary Medicine, 18*(12),

1161–1167. <https://doi.org/10.1089/acm.2011.0579>

Chaya MS, Nagedra H, Selvam S, Krupad A, Srinivas K .Effect of yoga on cognitive abilities in schoolchildren from a socioeconomically disadvantaged background : a randomised controlled study .*The Journal of Alternative and Complementary Medicine* .2012 Dec 1;18(12):1161-7 - Google Search. (n.d.). Retrieved April 27, 2019, from [https://www.google.com/search?rlz=1C1CHZL\\_enIN752IN752&q=Chaya+M+S,+Nagedra+H,+Selvam+S,+Krupad+A,+Srinivas+K+.Effect+of+yoga+on+cognitive+abilities+in+schoolchildren+from+a+socioeconomically+disadvantaged+background+:+a+randomised+controlled+study+.The+Jour](https://www.google.com/search?rlz=1C1CHZL_enIN752IN752&q=Chaya+M+S,+Nagedra+H,+Selvam+S,+Krupad+A,+Srinivas+K+.Effect+of+yoga+on+cognitive+abilities+in+schoolchildren+from+a+socioeconomically+disadvantaged+background+:+a+randomised+controlled+study+.The+Jour)

cognition | Definition of cognition in English by Oxford Dictionaries. (n.d.). Retrieved April 26, 2019, from <https://en.oxforddictionaries.com/definition/cognition>

Cognitive psychology and its implications / John R. Anderson. - Version details - Trove. (n.d.). Retrieved April 27, 2019, from [https://trove.nla.gov.au/work/6492473?q&sort=holdings+desc&\\_=1556376297257&versionId=19377228](https://trove.nla.gov.au/work/6492473?q&sort=holdings+desc&_=1556376297257&versionId=19377228)

Daly, L. A., Haden, S. C., Hagins, M., Papouchis, N., & Ramirez, P. M. (2015). Yoga and Emotion Regulation in High School Students: A Randomized Controlled Trial. *Evidence-Based Complementary and Alternative Medicine*, 2015, 1–8. <https://doi.org/10.1155/2015/794928>

Das, M., Deepeshwar, S., Subramanya, P., & Manjunath, N. K. (2016). Influence of Yoga-Based Personality Development Program on Psychomotor Performance and Self-efficacy in School Children. *Frontiers in Pediatrics*, 4, 62. <https://doi.org/10.3389/fped.2016.00062>

Diyankova, I. (2010). *Irina Diyankova Yoga for Emotional Well-Being Yoga for Emotional Well-Being Irina Diyankova Yoga for Emotional Well-Being 2*. Retrieved from [https://www.dr-irina.com/userfiles/1631024/file/yoga for emotional wellbeing paper.pdf](https://www.dr-irina.com/userfiles/1631024/file/yoga%20for%20emotional%20wellbeing%20paper.pdf)

Eckardt, B. Von. (1993). *What is Cognitive Science?* Retrieved from <https://philpapers.org/rec/VONWIC>

Feldman, H. (2005). Teaching Yoga to School-Aged Children: Principles and Personal Experiences. *International Journal of Yoga Therapy*, 15(1), 87–95. <https://doi.org/10.17761/ijyt.15.1.y1r2071380136260>

- Fleming, G. W. T. H. (1934). Organization of Memory in Young Children. (Arch. of Psychol., No. 162, March, 1934.) Bryan, A. I. *Journal of Mental Science*, 80(331), 728–729. <https://doi.org/10.1192/bjp.80.331.728-d>
- Furnham, A., & Cheng, H. (n.d.). *Childhood Intelligence Predicts Adult Trait Openness Psychological and Demographic Indicators*. <https://doi.org/10.1027/1614-0001/a000194>
- G. Robert J. Hockey - Google Scholar Citations. (n.d.). Retrieved April 27, 2019, from [https://scholar.google.com/citations?user=RrNUCKMAAAAJ&hl=en#d=gs\\_md\\_cita-d&u=%2Fcitations%3Fview\\_op%3Dview\\_citation%26hl%3Den%26user%3DRrNUCKMAAAAJ%26citation\\_for\\_view%3DRrNUCKMAAAAJ%3AHoB7MX3m0LUC%26tzm%3D-330](https://scholar.google.com/citations?user=RrNUCKMAAAAJ&hl=en#d=gs_md_cita-d&u=%2Fcitations%3Fview_op%3Dview_citation%26hl%3Den%26user%3DRrNUCKMAAAAJ%26citation_for_view%3DRrNUCKMAAAAJ%3AHoB7MX3m0LUC%26tzm%3D-330)
- Gard, T., Brach, N., Hölzel, B. K., Noggle C D, J. J., Conboy, L. A., Lazar, S. W., & Noggle, J. J. (2012). *The Journal of Positive Psychology: Dedicated to furthering research and promoting good practice Effects of a yoga-based intervention for young adults on quality of life and perceived stress: The potential mediating roles of mindfulness and self-compassion*. <https://doi.org/10.1080/17439760.2012.667144>
- Garnefski, N., & Kraaij, V. (2007). The Cognitive Emotion Regulation Questionnaire. *European Journal of Psychological Assessment*, 23(3), 141–149. <https://doi.org/10.1027/1015-5759.23.3.141>
- Gobec, S., & Travis, F. (2018). Effects of Maharishi Yoga Asanas on Mood States, Happiness, and Experiences during Meditation. *International Journal of Yoga*, 11(1), 66–71. [https://doi.org/10.4103/ijoy.IJOY\\_66\\_16](https://doi.org/10.4103/ijoy.IJOY_66_16)
- Gross, J. J. (1998). The Emerging Field of Emotion Regulation: An Integrative Review. *Review of General Psychology*, 2(3), 271–299. <https://doi.org/10.1037/1089-2680.2.3.271>
- Hailat, M., Sabbagh Engineering Studies, A., Ecaterina Patrascu, S., -Calin SERITAN, G., Baktir English Language, H., Department, L., ... Kumar Kalhotra, S. (n.d.). *EFFECT OF SIX WEEKS MEDITATION PRACTICES ON SELF CONFIDENCE AMONG VOLLEYBALL PLAYERS*. Retrieved from [www.isrj.org](http://www.isrj.org)
- Hasher, L., & Zacks, R. T. (1979). Automatic and effortful processes in memory. *Journal of Experimental Psychology: General*, 108(3), 356–388.

<https://doi.org/10.1037/0096-3445.108.3.356>

Introduction to organizational behavior / Richard M. Steers. - Version details - Trove. (n.d.). Retrieved April 27, 2019, from [https://trove.nla.gov.au/work/6730616?q&sort=holdings+desc&\\_=1556375603146&versionId=26140520](https://trove.nla.gov.au/work/6730616?q&sort=holdings+desc&_=1556375603146&versionId=26140520)

Joseph Oliver, Peter Huxley, K. B. and H. M. (n.d.). Quality of Life and Mental Health Services - Keith Bridges, Peter Huxley, Hadi Mohamad, Joseph Oliver - Google Books. Retrieved April 28, 2019, from [https://books.google.co.in/books?id=d3OGAgAAQBAJ&pg=PA20&dq=\(Nagpal%26Sell,1985\)&hl=en&sa=X&ved=0ahUKEwihrMCE\\_nLhAhVSWisKHVuMCjQQ6AEIKjAA#v=onepage&q=\(Nagpal%26Sell%2C1985\)&f=false](https://books.google.co.in/books?id=d3OGAgAAQBAJ&pg=PA20&dq=(Nagpal%26Sell,1985)&hl=en&sa=X&ved=0ahUKEwihrMCE_nLhAhVSWisKHVuMCjQQ6AEIKjAA#v=onepage&q=(Nagpal%26Sell%2C1985)&f=false)

Korterink, J. J., Ockeloen, L. E., Hilbink, M., Benninga, M. A., & Deckers-Kocken, J. M. (2016). Yoga Therapy for Abdominal Pain-Related Functional Gastrointestinal Disorders in Children. *Journal of Pediatric Gastroenterology and Nutrition*, 63(5), 481–487. <https://doi.org/10.1097/MPG.0000000000001230>

Lewis, M. D. (n.d.). The promise of dynamic systems approaches for an integrated account of human development. *Child Development*, 71(1), 36–43. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10836556>

Mangal, S. K. (2002a). *Advanced educational psychology*. Prentice-Hall of India.

Mangal, S. K. (2002b). *Advanced educational psychology*. Prentice-Hall of India.

Motowidlo, S. J., Packard, J. S., & Manning, M. R. (1986). Occupational stress: its causes and consequences for job performance. *The Journal of Applied Psychology*, 71(4), 618–629. Retrieved from [Http://Www.Ncbi.Nlm.Nih.Gov/Pubme, 71\(4\), 618–629](http://www.ncbi.nlm.nih.gov/pubmed/3804934). Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/3804934>

Nagendra, H., & Pradhan, B. (2009). Effect of yoga relaxation techniques on performance of digit-letter substitution task by teenagers. *International Journal of Yoga*, 2(1), 30. <https://doi.org/10.4103/0973-6131.43293>

Nagendra, H., & Pradhan, B. (2010). Immediate effect of two yoga-based relaxation techniques on attention in children. *International Journal of Yoga*, 3(2), 67. <https://doi.org/10.4103/0973-6131.72632>



- Quach, D., Jastrowski Mano, K. E., & Alexander, K. (2016). A Randomized Controlled Trial Examining the Effect of Mindfulness Meditation on Working Memory Capacity in Adolescents. *Journal of Adolescent Health, 58*(5), 489–496. <https://doi.org/10.1016/j.jadohealth.2015.09.024>
- Rangan, R., Nagendra, H., & Bhat, G. R. (2009). Effect of yogic education system and modern education system on memory. *International Journal of Yoga, 2*(2), 55–61. <https://doi.org/10.4103/0973-6131.60045>
- Reddy, G. K., & Kumari, S. (2015). Effect Of Short Term Yoga Practices On Cognitive Function And Attitude Towards Violence In School Children- A Randomized Control Study. *Working Papers*. Retrieved from <https://ideas.repec.org/p/vor/issues/2015-03-05.html>
- Royle, J., & Lincoln, N. B. (2008). The Everyday Memory Questionnaire – revised: Development of a 13-item scale. *Disability and Rehabilitation, 30*(2), 114–121. <https://doi.org/10.1080/09638280701223876>
- Sailer, H. R., Schlacter, J., & Edwards, M. R. (1982). Stress: causes, consequences, and coping strategies. *Personnel, 59*(4), 35–48. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10258851>
- Schacter, D. L., Guerin, S. A., & St. Jacques, P. L. (2011). Memory distortion: an adaptive perspective. *Trends in Cognitive Sciences, 15*(10), 467–474. <https://doi.org/10.1016/j.tics.2011.08.004>
- Sears, P. S. (1940). Levels of aspiration in academically successful and unsuccessful children. *The Journal of Abnormal and Social Psychology, 35*(4), 498–536. <https://doi.org/10.1037/h0054073>
- Self-Monitoring Scale*. (n.d.). Retrieved from [http://www.cabrillo.edu/~jtice/Psychology 33/Assignments/Journal Assignment Spring 2010/Self Monitoring Scale.PDF](http://www.cabrillo.edu/~jtice/Psychology%2033/Assignments/Journal%20Assignment%20Spring%202010/Self%20Monitoring%20Scale.PDF)
- Shelov, D. V., Suchday, S., & Friedberg, J. P. (2009). A Pilot Study Measuring the Impact of Yoga on the Trait of Mindfulness. *Behavioural and Cognitive Psychotherapy, 37*(05), 595. <https://doi.org/10.1017/S1352465809990361>
- St. (2017). Theory of Emotional Strength Medel Oabel Cabalsa. *Imperial Journal of Interdisciplinary Research (IJIR), 3*. Retrieved from <https://www.onlinejournal.in/IJIRV3I5/226.pdf>
- Stavropoulos, V., Moore, K. A., Lazaratou, H., Dikeos, D., & Gomez, R. (2017). A multilevel longitudinal study of obsessive compulsive symptoms in

adolescence: male gender and emotional stability as protective factors. *Annals of General Psychiatry*, 16(1), 42. <https://doi.org/10.1186/s12991-017-0165-z>

- Taimini, I. K. (2006). A ciência do Yoga. Brasília, Brasil: Teosofica - Google Search. (n.d.). Retrieved April 28, 2019, from <https://www.google.co.in/search?hl=en&biw=1707&bih=784&tbm=isch&sa=1&ei=iHTFXMicE6LYz7sP9uyXuAY&q=Taimini%2C+I.+K.+%282006%29.+A+ciência+do+Yoga.+Brasilia%2C+Brasil%3A+Teosofica&oq=Taimini%2C+I.+K.+%282006%29.+A+ciência+do+Yoga.+Brasilia%2C+Bras>
- Telles, S., Singh, N., Bhardwaj, A., Kumar, A., & Balkrishna, A. (2013). Effect of yoga or physical exercise on physical, cognitive and emotional measures in children: a randomized controlled trial. *Child and Adolescent Psychiatry and Mental Health*, 7(1), 37. <https://doi.org/10.1186/1753-2000-7-37>
- Uhlén, M., Björling, E., Agaton, C., Szgyarto, C. A.-K., Amini, B., Andersen, E., ... Pontén, F. (2005). A human protein atlas for normal and cancer tissues based on antibody proteomics. *Molecular & Cellular Proteomics : MCP*, 4(12), 1920–1932. <https://doi.org/10.1074/mcp.M500279-MCP200>
- Wang, D., Hagedorn, A. D., McLaughlin, D. K., & Bray, B. C. (2018). Change and Stability of Emotional Health of Rural Pennsylvania Youth During High School. *The Journal of Rural Health*, 34(3), 322–332. <https://doi.org/10.1111/jrh.12296>
- Wertsch, J. V., & Tulviste, P. (1992). L. S. Vygotsky and contemporary developmental psychology. *Developmental Psychology*, 28(4), 548–557. <https://doi.org/10.1037/0012-1649.28.4.548>

## 12: APPENDIX

### 12.1 Consent form:



### **INFORMED CONSENT TO PARTICIPATE IN RESEARCH** **SWAMI VIVEKANANDA YOGA ANUSANDHANA SAMSTHANA**

Vivekananda Road, Kallubalu Post, Anekkal Taluk, Jigani, Bengaluru

[research@svyasa.org](mailto:research@svyasa.org); Phone: 080-22639983

**Title of the Project:** EFFECT OF YOGA THERAPY ON COGNITIVE CHANGES IN SCHOOL CHILDREN.

**Principal investigator:** Meena. B M

**Organization:** Swami Vivekananda Yoga Anusandhana Samsthana

**This informed consent has two parts:**

- ✚ Information sheet (to share information about the research)
- ✚ Certificate of Consent (for signature if you allow to conduct the study)

### 12.2 You will be given a copy of fully informed consent form.

Your institution is being invited to participate in a research study. This form is designed to provide you with information about this study. The principal investigator or representative will describe this study to you and answer any of the questions. If you have any questions or complaints about the informed consent process or the research study.

There may be some words that you do not understand. Please ask the Principal investigator or the representative to stop as you go through the information in case of any doubts. If you have questions later you can ask during the study

### 12.3 Purpose of the Research:

- Aim of this study is to assess the changes in cognitive in school children.

#### **12.4 Participant selection:**

- Children between the age group of 12 to 16, and those who are willing to participate in the study. From the study children who are having any serious illness or under medication will be excluded.

#### **12.5 What will be the children asked to do if I agree to do the study?**

- Children will be in to yoga practices. Children will be asked to fill 3 sets of questionnaires before and 3 sets the of questionnaire of the intervention. Yoga will be taught to the experimental group for 30 days 60 minutes per day, and Data will be collected from experimental group.

#### **12.6 Are there any benefits for taking part in this research study?**

- This research study does not have any financial binding. All benefits out of the practice of yoga will be there.

#### **12.7 What are the dangers?**

- There are no potential dangers by participating in the study. You are free to withdraw from the study at any point of time.

#### **12.8 How will you keep he information confidential?**

- The assessment sheets will be coded with a number. Code number will be kept confidentially with the principal investigator. All information obtained in this study will be kept confidential unless disclosure is required by law.

#### **12.9What if anyone want to leave the study?**

- Participants have the right to withdraw from the study at any point of time, without penalty.

#### **12.10 Whom to contact:**

- If you have any questions, you may ask them now or later, even after the study has started. If you wish to ask the questions later, you may contact

Researcher – Meena. B.M

Mobile: 9606152912

Email- [meena1951975@gmail.com](mailto:meena1951975@gmail.com)

Guide –Dr. Bharathi dhevi

Mobile:

### **12.11 Voluntary consent by the head of the organization**

By signing this consent form, I am agreeing that I have read, or it has been read to me and I fully understand the contents of this document and I am openly willing to consent to conduct this study in our organization. In case of any problem or clarification, I may contact the above-mentioned persons.

I agree            I do not agree

Name of the head of the institution:

Signature of the head of the institution:

Date:

### **12.12 Statement by the researcher/person taking consent:**

I have accurately read out the information sheet to the head of the organization, and to the best of my ability made sure that he understands that the following will be done:

1. Fill in 3 questionnaires before the intervention
2. Fill in 3 questionnaires after the intervention

I confirm that the head of the institution was given an opportunity to ask questions about the study, and all the questions have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the head of the institution.

Name of Researcher/person taking the consent:

Signature of Researcher /person taking the consent:

Date:

**13::Raw data**

| SR NO | ERQ-PRE-R | ERQ-PRE-S | ERQ-POST-R | ERQ-POST-S | SMC-PRE | SMS-POST | EMQ-PRE | EMQ-POST |
|-------|-----------|-----------|------------|------------|---------|----------|---------|----------|
| 1     | 32        | 19        | 44         | 22         | 14      | 20       | 144     | 101      |
| 2     | 31        | 18        | 43         | 21         | 10      | 14       | 142     | 93       |
| 3     | 32        | 20        | 44         | 22         | 16      | 16       | 144     | 100      |
| 4     | 33        | 20        | 45         | 22         | 18      | 22       | 134     | 96       |
| 5     | 26        | 22        | 44         | 23         | 14      | 20       | 145     | 98       |
| 6     | 29        | 19        | 40         | 21         | 17      | 20       | 145     | 99       |
| 7     | 31        | 16        | 46         | 22         | 13      | 15       | 135     | 105      |
| 8     | 31        | 18        | 46         | 21         | 10      | 15       | 139     | 91       |
| 9     | 35        | 16        | 45         | 20         | 8       | 12       | 144     | 98       |
| 10    | 34        | 19        | 46         | 21         | 12      | 17       | 145     | 98       |
| 11    | 32        | 19        | 45         | 22         | 16      | 20       | 143     | 98       |
| 12    | 31        | 21        | 44         | 22         | 11      | 16       | 141     | 97       |
| 13    | 29        | 20        | 43         | 22         | 13      | 16       | 144     | 94       |
| 14    | 27        | 20        | 42         | 24         | 13      | 16       | 134     | 96       |
| 15    | 27        | 20        | 40         | 23         | 13      | 17       | 133     | 92       |
| 16    | 28        | 21        | 42         | 24         | 14      | 16       | 132     | 110      |
| 17    | 30        | 23        | 44         | 25         | 12      | 16       | 136     | 104      |
| 18    | 31        | 19        | 44         | 24         | 15      | 18       | 130     | 84       |
| 19    | 31        | 20        | 47         | 23         | 12      | 16       | 127     | 88       |
| 20    | 34        | 18        | 47         | 22         | 19      | 19       | 131     | 107      |
| 21    | 34        | 20        | 48         | 23         | 14      | 16       | 134     | 97       |

|    |    |    |    |    |    |    |     |     |
|----|----|----|----|----|----|----|-----|-----|
| 22 | 30 | 20 | 48 | 22 | 13 | 17 | 134 | 95  |
| 23 | 31 | 18 | 48 | 20 | 9  | 9  | 139 | 98  |
| 24 | 32 | 17 | 46 | 20 | 5  | 5  | 141 | 97  |
| 25 | 35 | 16 | 46 | 19 | 14 | 16 | 146 | 98  |
| 26 | 31 | 16 | 45 | 20 | 16 | 18 | 145 | 96  |
| 27 | 29 | 15 | 44 | 22 | 15 | 17 | 139 | 92  |
| 28 | 27 | 15 | 42 | 17 | 18 | 20 | 138 | 87  |
| 29 | 28 | 17 | 43 | 20 | 11 | 14 | 130 | 91  |
| 30 | 30 | 19 | 45 | 21 | 12 | 14 | 127 | 83  |
| 31 | 30 | 17 | 43 | 22 | 9  | 11 | 113 | 102 |
| 32 | 30 | 16 | 42 | 20 | 13 | 13 | 117 | 81  |
| 33 | 32 | 18 | 48 | 20 | 16 | 18 | 114 | 80  |
| 34 | 31 | 18 | 44 | 21 | 14 | 16 | 115 | 72  |
| 35 | 29 | 20 | 42 | 23 | 14 | 16 | 115 | 72  |
| 36 | 29 | 17 | 41 | 21 | 8  | 13 | 109 | 73  |
| 37 | 31 | 19 | 43 | 22 | 13 | 16 | 113 | 76  |
| 38 | 29 | 18 | 42 | 22 | 14 | 15 | 112 | 75  |
| 39 | 29 | 21 | 42 | 23 | 17 | 19 | 116 | 76  |
| 40 | 32 | 23 | 44 | 24 | 12 | 14 | 111 | 77  |
| 41 | 31 | 21 | 46 | 21 | 20 | 21 | 109 | 82  |



## 14::Questionnaire copy

### EVERYDAY MEMORY QUESTIONNAIRE

Instructions. The 28 statements set out below are about forgetting things, something everyone does to an extent. Please indicate how frequently the examples given have happened to you, (or to the patient) over the last 3 months, using the following scale:

0 = Not at all

1 = About once

2 = More than once, but less than once a month

3 = About once a month

4 = More than once a month, but less than once a week

5 = About once a week

6 = More than once a week, but less than once a day

7 = About once a day

8 = More than once a day

- 1\_\_\_ Forgetting where you have put something. Losing things around the house.
- 2\_\_\_ Failing to recognize places that you are told you have been to before.
- 3\_\_\_ Finding a television story difficult to follow.
- 4\_\_\_ Not remembering changes in you daily routine, such as a change in the place where something is kept or a change in the time something happens. Following your old routine by mistake.
- 5\_\_\_ Having to go back to check whether you have done something you meant to do.
- 6\_\_\_ Forgetting when it was that something happened; for example, whether it was yesterday or last week.
- 7\_\_\_ Completely forgetting to take things with you, or leaving things behind and having to go back and fetch them.
- 8\_\_\_ Forgetting you were told something yesterday or a few days ago, and maybe having to be reminded about it.
- 9\_\_\_ Starting to read something (a book or an article in a newspaper or magazine) without realizing you have already read it before.
- 10\_\_\_ Letting yourself ramble on, to speak about unimportant or irrelevant things.
- 11\_\_\_ Failing to recognize, by sight, close friends or relatives whom you meet frequently.
- 12\_\_\_ Having difficulty in picking up a new skill; for example, finding it hard to learn a new game, or to work some new gadget after you have practised it once or twice.
- 13\_\_\_ Finding that a word is 'on the tip of your tongue'. You know what it is but cannot quite find it.
- 14\_\_\_ Completely forgetting to do things you said you would do and you planned to do.
- 15\_\_\_ Forgetting important details of what you did or what happened to you the day before.
- 16\_\_\_ When talking to someone, forgetting what you have just said. Maybe saying, "What was I just talking about?"
- 17\_\_\_ When reading a newspaper or magazine being unable to follow the thread of a story; losing track of what it is about.
- 18\_\_\_ Forgetting to tell someone something important. Perhaps forgetting to pass on a message or remind someone of something.

*Please turn over*

- 19\_\_\_ Forgetting important details about yourself; for example, your birthdate, or where you live.
- 20\_\_\_ Getting the details of what someone has told you mixed up and confused.
- 21\_\_\_ Telling someone a story or joke that you have told them once already.
- 22\_\_\_ Forgetting details of things you do regularly, whether at home or at work. For example, forgetting details of what to do, or forgetting at what time to do it.
- 23\_\_\_ Finding that the faces of famous people seen on television or in photographs look unfamiliar.
- 24\_\_\_ Forgetting where things are normally kept or looking for them in the wrong place.
- 25\_\_\_ Getting lost or turning in the wrong direction on a journey, on a walk or in a building where you have often been before.
- 26\_\_\_ Getting lost or turning in the wrong direction on a journey, on a walk or in a building where you have only been once or twice before.
- 27\_\_\_ Doing some routine things twice by mistake. For example, putting 2 lots of tea in the teapot or going to brush/comb your hair when you have just done so.
- 28\_\_\_ Repeating to someone what you have just told them or asking the same question twice.

## CHAPTER 5 QUESTIONNAIRE 5.1

### Self-Monitoring Scale

#### INSTRUCTIONS

The statements below concern your personal reactions to a number of situations. No two statements are exactly alike, so consider each statement carefully before answering. If a statement is true or mostly true as applied to you, mark T as your answer. If a statement is false or not usually true as applied to you, mark F as your answer. It is important that you answer as frankly and as honestly as you can. Record your responses in the spaces provided on the left.

#### THE SCALE

- \_\_\_\_\_ 1. I find it hard to imitate the behavior of other people.
- \_\_\_\_\_ 2. My behavior is usually an expression of my true inner feelings, attitudes, and beliefs.
- \_\_\_\_\_ 3. At parties and social gatherings, I do not attempt to do or say things that others will like.
- \_\_\_\_\_ 4. I can only argue for ideas I already believe.
- \_\_\_\_\_ 5. I can make impromptu speeches even on topics about which I have almost no information.
- \_\_\_\_\_ 6. I guess I put on a show to impress or entertain people.
- \_\_\_\_\_ 7. When I am uncertain how to act in a social situation, I look to the behavior of others for cues.
- \_\_\_\_\_ 8. I would probably make a good actor.
- \_\_\_\_\_ 9. I rarely need the advice of my friends to choose movies, books, or music.
- \_\_\_\_\_ 10. I sometimes appear to others to be experiencing deeper emotions than I actually am.
- \_\_\_\_\_ 11. I laugh more when I watch a comedy with others than when alone.
- \_\_\_\_\_ 12. In a group of people I am rarely the center of attention.
- \_\_\_\_\_ 13. In different situations and with different people, I often act like very different persons.
- \_\_\_\_\_ 14. I am not particularly good at making other people like me.
- \_\_\_\_\_ 15. Even if I am not enjoying myself, I often pretend to be having a good time.
- \_\_\_\_\_ 16. I'm not always the person I appear to be.
- \_\_\_\_\_ 17. I would not change my opinions (or the way I do things) in order to please someone else or win their favor.
- \_\_\_\_\_ 18. I have considered being an entertainer.
- \_\_\_\_\_ 19. In order to get along and be liked, I tend to be what people expect me to be rather than anything else.
- \_\_\_\_\_ 20. I have never been good at games like charades or improvisational acting.
- \_\_\_\_\_ 21. I have trouble changing my behavior to suit different people and different situations.
- \_\_\_\_\_ 22. At a party, I let others keep the jokes and stories going.
- \_\_\_\_\_ 23. I feel a bit awkward in company and do not show up quite so well as I should.
- \_\_\_\_\_ 24. I can look anyone in the eye and tell a lie with a straight face (if for a right end).
- \_\_\_\_\_ 25. I may deceive people by being friendly when I really dislike them.

#### SCORING THE SCALE

The scoring key is reproduced below. You should circle your response of true or false each time it corresponds to the keyed response below. Add up the number of responses you circle. This total is your score on the Self-Monitoring Scale. Record your score below.

- |           |           |           |           |          |          |           |          |          |           |
|-----------|-----------|-----------|-----------|----------|----------|-----------|----------|----------|-----------|
| 1. False  | 2. False  | 3. False  | 4. False  | 5. True  | 6. True  | 7. True   | 8. True  | 9. False | 10. True  |
| 11. True  | 12. False | 13. True  | 14. False | 15. True | 16. True | 17. False | 18. True | 19. True | 20. False |
| 21. False | 22. False | 23. False | 24. True  | 25. True |          |           |          |          |           |

MY SCORE \_\_\_\_\_

Source: Snyder, 1974

# Emotion regulation Questionnaire (ERQ)

Gross and John

9/03

The Emotion Regulation Questionnaire is designed to assess individual differences in the habitual use of two emotion regulation strategies: cognitive reappraisal and expressive suppression.

## Citation

Gross J J and John O P (2003) Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348-362.

## Instructions and Items

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

|                   |   |   |         |   |   |                |
|-------------------|---|---|---------|---|---|----------------|
| 1                 | 2 | 3 | 4       | 5 | 6 | 7              |
| Strongly disagree |   |   | Neutral |   |   | Strongly agree |

1.  When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about*.
2.  I keep my emotions to myself.
3.  When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.
4.  When I am feeling *positive* emotions, I am careful not to express them.
5.  When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.
6.  I control my emotions by *not expressing them*.
7.  When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.
8.  I control my emotions by changing the way I think about the situation I'm in.
9.  When I am feeling *negative* emotions, I make sure not to express them.
10.  When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.

## Note

Do not change item order, as items 1 and 3 at the beginning of the questionnaire define the terms "positive emotion" and "negative emotion".

## Scoring (no reversals)

Reappraisal Items: 1, 3, 5, 7, 8, 10; Suppression Items: 2, 4, 6, 9.

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Reference: Gross J J and John O P (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348-362.

Research in Practice Scoring standardised measures - Emotion Regulation Questionnaire