

## Mental-Immunity (A Psychological Layer of Protection against Mental Illness) in Male Adolescents Following 8-Weeks of *Pragyayog Sadhana*: A Randomized Controlled Study

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### Abstract

Previous studies have reported the effects of yoga and *yoga sadhana* on different aspects of mental health in adolescents. The present study aimed to assess the effect of *Pragyayog sadhana* (a spiritual practice) on the level of psycho-immunity in healthy male adolescents who had no experience of *Pragyayog sadhana*. There were 62 adolescents randomized as *yoga sadhana* and control groups (n = 31 each). Their ages ranged from 13 to 18 years and the group mean ages were  $14.47 \pm 1.13$  years. All the participants were studying in a high school which was randomly selected among schools in Haridwar and Roorkee, north India. Both groups were assessed using psycho-immunity scale for the adolescents. After assessment, the *yoga sadhana* group practiced *Pragyayog sadhana*, 75 minutes daily for two months continuously. During this period no intervention had provided to the control group. Assessments were made before and after two months of the intervention. Final data (after conversion of raw scores into T-scores) were analyzed using RMANOVA (SPSS 18.0 Version). Signed consent was taken from all the participants as well as the school Principal prior to the study. At the end of two months, *yoga sadhana* group showed a significant increase in the level of psycho-immunity ( $p < .01$ ). Result indicates that the practice of *Pragyayog sadhana* significantly improved the level of psycho-immunity in male adolescents.

**Keywords:** *Pragyayog Sadhana*; Psycho-Immunity; Self-Introspection; Adolescence.

### Introduction

Adolescence, the most important stage for the development of personality is the most difficult, critical and transitional phase of life (Acharya, 1998) which occurs between 13 and 19 years (Telles & Bhardwaj, 2015). Carl Jung has described it as 'afternoon of the life' (Singh, 2006). There are various physical and psychological changes take place at this stage of life. Apart from these changes, they face different challenges at this stage. Emotional stress and aggression, anxiety and depression, different kinds of pressure, academic and carrier anxiety, adjustment related problems are common in this stage. Suicides and suicidal attempts have increased among adolescents in recent decades. Intake of substance such as marijuana, tobacco, and heroine has been

increased in adolescents. Alcohol is the substance most frequently used by adolescents, followed by marijuana and tobacco (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2014). Due to emotional immaturity and low psycho-immunity, sometimes an adolescent feel emotionally alone, impatience and facing problem in making adjustment in day-to-day life. So at this stage, there is a big need to provide them (i) the techniques to enhance their psycho-immunity and (ii) appropriate guidance to overcome the challenges they face. There are evidences which suggest that introducing yoga and different types of *yoga sadhana* at this stage is helpful.

Yoga is an ancient Indian way of life which includes physical postures (*asana*), regulated breathing (*pranayama*), meditation (*dhyana*), as well as certain philosophical principles (Taimini, 1986). Yoga is recognized as a form of mind-body medicine (Kaley-Isley, Peterson, Fischer, & Peterson, 2010) and is being used by a growing number of adolescents and adults as a means of improving their holistic health. Studies with children and adolescents suggest the benefits of using yoga as a therapeutic intervention (Kaley-Isley, Peterson, Fischer, & Peterson, 2010). There are several published studies

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on the effects of yoga on mental health and well-being (Hadi & Hadi, 2007; Berger, Silver, & Stein, 2009), self-esteem (Bhardwaj & Agrawal, 2013; Telles, Singh, Bhardwaj, Kumar, & Balkrishna, 2013), self-confidence (Bhardwaj & Bhardwaj, 2015), self-adjustment (Bhardwaj, Mookherjee, & Bhardwaj, 2015), anxiety (Telles, Bhardwaj, Kumar, Kumar, & Balkrishna, 2012; Kuttner et al., 2006), depression (Telles, Yadav, Bhardwaj, & Singh, 2013) and so on, which suggest the definite role of yoga in improving mental health, and psychological well-being.

Apart from these benefits, yoga affects on the immunological parameters (Manzaneque et al., 2004). Like the body's immune system there is also an immune system in the mind which is known as psycho-immunity or mental immunity (Vasudevan, 2003). General mental and emotional health is the ability of an individual to face life's trials and tribulations, to prevent from daily stresses, and to effectively manage anxious and unfavorable situations. This process of maintaining mental health is known as mental immunity (Vasudevan, 2003). In another word, psycho-immunity is the protection layer of mind which provides strength to an individual to fight against stress, insecurity, inferiority and viruses like negative thoughts and establish the mental balance by providing defense using strength such as self-confidence, adjustment, emotional maturity etc (Bhardwaj, 2012). In this way it is an important marker for holistic health.

During the literature search, there was no study found related to the effect of *Pragyayog sadhana* on psycho-immunity but some studies related to the effect of yoga and other *yoga sadhana* on the dimensions of psycho-immunity were available. The possible dimensions are self-confidence, overall adjustment, emotional maturity and psychological well-being (Bhardwaj & Agrawal, 2015). Very few studies are published and few are unpublished doctoral theses; some of the findings are presented below in brief.

Different aspects of yoga improved different psychological parameters. For example, 2 months of comprehensive yoga program which included *pragyayog vyayama*, *nada yoga* and *svadhyaya* had positive impact on adolescents' mental health (Kashyap, 2009). In another study, significant increase in attention and memory was observed after *Vedic* chanting in participants with 2 years of experience in *vedic* chanting in comparison to the control group (Ghaligi, Nagendra, & Bhatt, 2006). Increased emotional stability in students was observed after *anuloma-viloma pranayama* and *savita dhyana* (Kumar, 2006). Another study was designed to investigate the effect of psycho-spiritual counseling

(including *Gayatri japa*, *pranakarshan pranayama* and psychological counseling) on academic anxiety in students. After 45 days of intervention, they had decreased academic anxiety (Tiwari, 2011). In a different study, there was a positive impact on self-confidence and emotional maturity following daily writing *sadhak dainandini* (dairy writing in a systematic way) (Joshi, 2007).

Apart from yoga, different aspects of *yoga sadhana* positively affect our thought pattern, emotional level and behavior (Pandya, 2005). *Yoga sadhana* is like a spiritual exercise by a *sadhaka* to attain a desired goal (example: for mental balance and inner refinement). There are different types of *sadhana* and their effects are also different according to the practice involved in that particular *sadhana*. *Pragyayog sadhana* is one of them and it is a *sadhana* of behavioral life propounded by Pt. Shriram Sharma Acharya. The main ingredients/ components include in this *sadhana* are: *atmabodh* and *tatvabodh*, *Gayatri japa* with meditation on the rising Sun, and *svadhyaya* which have possible effects on different aspects of mental health (Pandya, 2011). Apart from these components, on one day in a week (Sunday or Thursday) as part of this *sadhana*; *dhyana-dharana* (*amrit varsha rasanubhuti* meditation) on the Sun, *brahmacharya* and silence should be practiced for two hours in the early morning.

Other *sadhanas* (apart from *Pragyayog sadhana*) have been shown positive effects on different aspects of mental health. 45 days of *Pran pratyavartan sadhana* (including *khechari mudra*, *Gayatri mantra japa*, combined *sadhana* of *prana yoga*, *bindu yoga* and *nada yoga*) significantly reduced the level of academic anxiety, and increased self-confidence and creativity level in adolescents (Sharma, 2009). In another study, 3 months of *Manomay Kosha sadhana* (including *roopa tanmatra meditation*, *trataka*, *japa*) was significantly improved mental health of adolescents. Apart from this, they had improved leadership skill (Nishad, 2011). In adult population, following 1 month of *Yug shilpi sadhana* session (conducted by Shantikunj, Haridwar), the level of depression significantly decreased (Kotnala & Shukla, 2006).

After observing the amazing effects of different *yoga sadhana*, the present study was designed to see the effects of *Pragyayog sadhana* on the level of psycho-immunity in healthy male adolescents.

## Research Methods

### Participants

In this study 62 male adolescents whose ages ranged between 13 and 18 years (group mean age  $\pm$

S.D.: 14.47 ± 1.13 years) were selected as participants and randomized as two groups; *yoga sadhana* and control. All the participants were studying in a high school which was randomly selected among government schools in Haridwar and Roorkee, north India. Participants who were between 13 and 18 years and those who were willing to follow the study conditions were included in the study. Those participants with diagnosed illness, on medication and any experience of *yoga sadhana* practice were excluded. Personal information including education, general health, daily schedule and experience of *yoga sadhana* of all the participants were collected before the randomization process using personal data sheet. The participants were recruited with prior approval from the Principal of the school. The baseline characteristics of the two groups were as follows (i) age range: *yoga sadhana* (13 to 18 years), control (14 to 18 years); (ii) mean age ± S.D.: *yoga sadhana* (14.35 ± 1.23 years), control (14.58 ± 1.03 years). Signed consent was taken from all the participants as well as the school Principal before starting the actual study. The Research Degree Committee of Dev Sanskriti University, Haridwar, India had approved the study.

#### Study Design

The participants were randomized to *yoga sadhana* and control groups using a standard computer-generated random number table (www.random.org). In this randomized controlled study, 31 students were each allocated to the *yoga sadhana* and the control group. Assessments were made before and after two months of the intervention. Randomized controlled group design was used for testing of the hypothesis.

#### Assessment

The level of psycho-immunity of the participants was measured using Psycho-immunity scale for

adolescents (Bhardwaj, Verma, Misra, & Kotnala, 2016). The reliability ( $r = 0.85$  using test-retest method) of the scale has been established for the Indian adolescents ( $n = 365$ ). The validity (face validity) and norms (T-score norm and percentile norm as well) has been also established on Indian adolescents ( $n = 600$ ). The scale has 60 items with 4 subscales. The subscales are (i) self-confidence (SC), (ii) total adjustment (TA), (iii) emotional maturity (EM), and (iv) psychological well-being (PW). There are 15 items on each sub scales. The scale is a 5-point scale that is there are five possible options for each item. The five options are (i) strongly agree, (ii) agree, (iii) undecided, (iv) disagree, and (v) strongly disagree. Out of 60 items, 25 items are positive and 35 items are negative in nature. The scale was administered in a group. The participants were given proper instructions to attempt all the questions, and to complete filling in the scale as soon as possible.

#### Intervention

Intervention was given for two months and on each day the participants of the *yoga sadhana* group practiced *Pragyayog sadhana* (Acharya, 2009) for 75 minutes daily. Apart from this they practiced weekly *sadhana* {special *dhyana-dharana* (15-20 minutes) and silence (2 hours in the morning); one day in a week} for two months. *Pragyayog sadhana* involved *aatmbodh*, *tatvabodh* (self-introspection and self-analysis techniques) including dairy writing, *Gayatri mantra* recitation with meditation and *svadhyaya* (study of books related to mental health). *Yoga sadhana* were taught by a trained *sadhaka* who had 10 years of experience in *Pragyayog sadhana*. Details about *Pragyayog sadhana* have been mentioned in Table 1.

No intervention had been provided to the control group during that time. They were attended their class

**Table 1:** Chief components of *Pragyayog sadhana* and their duration of practice

Components of <i>Pragyayog sadhana</i>	Duration
1. <i>Gyan yoga</i>	30 minutes
• <i>Atmabodh</i> (Self-introspection) { <i>Chintan</i> (planning) for the day in the morning after awakening}	
• <i>Tatvabodh</i> (Self-analysis) { <i>Manan</i> (contemplation) in the night before going to sleep) and <i>Sadhaka dainandini</i> writing (maintaining dairy before <i>Tatvabodh</i> }	
2. <i>Karmyoga</i>	30 minutes
• <i>Atmashodhan</i> (rituals of purification)	
• <i>Dev poojan</i> (worshiping a deity)	
• <i>Japa</i> ( <i>Gayatri mantra</i> 108 times) with meditation on rising Sun	
• <i>Surya arghyadaan</i> (Offering <i>arghya</i> to the Sun-god)	
(After daily routine and taking bath, with a calm and quiet mind, at a fixed place and fixed time)	
3. <i>Svadhyaya</i>	15 minutes
(Literature by <i>Acharya Shriram Sharma</i> on mental health)	
<b>Total duration of the intervention</b>	<b>75 minutes</b>

\*Meaning of Sanskrit terms used in *Pragyayog sadhana* are mentioned in Appendix 1.

according to their daily schedule. Class attendance was monitored by one of the class teachers.

#### Data Extraction

Scoring was carried out by an individual who was blinded to which group the participants belonged. Psycho-immunity scale is a five point scale and the scoring was done according to the manual. For positive items 5, 4, 3, 2, 1 and for negative items 1, 2, 3, 4, 5 have been given for the five options that are (i) strongly agree, (ii) agree, (iii) undecided, (iv) disagree, and (v) strongly disagree respectively. In the manual it is mentioned that which items are positive and negative. The minimum raw scores can be 60 and the maximum raw score can be 300 for this scale. Maximum score indicates high level of psycho-immunity while the minimum score indicates low level of psycho-immunity. Before the statistical analysis raw (test) scores of psycho-immunity were converted into T-scores (with the help of T score norm) as mentioned in the manual (Bhardwaj, Verma, Misra, & Kotnala, 2016).

#### Data Analysis

A repeated measures analysis of variance (RMANOVA) with Bonferroni correction for *post-hoc*

analyses was used using PASW Version 18.0. The Bonferroni value was adjusted to 0.025. The ANOVA compared data of the two groups as a Between subjects factor and data recorded at baseline with that recorded at 2 months as a Within subjects factor. Statistical significance ( $\alpha$ ) was set at 0.05.

#### Result

At the end of 2 months, *yoga sadhana* group showed a significant increase in the level of psycho-immunity ( $p < 0.01$ ). Group mean values  $\pm$  S.D. for psycho-immunity have been mentioned in Table 2.

#### Repeated Measures Analysis of Variance (RMANOVA)

Values for the factors such as Within-Subjects (States), Between-Subjects (Groups) and interaction between the two for the psycho-immunity are given in Table 3. The significant Groups  $\times$  States interaction indicated interdependence of the two.

#### Post-HOC Analyses

Comparisons were made with respective 'pre' States within a group and between groups.

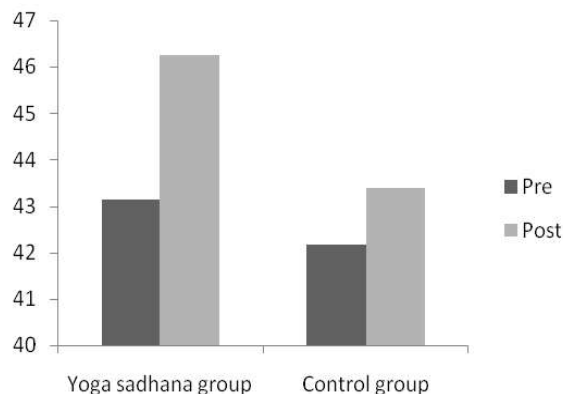
**Table 2:** Overall psycho-immunity of the two groups, values are group mean (S.D.)

Variable (scores)	Yoga sadhana group (n = 31)			Control group (n = 31)		
	Pre	Post	Cohen's d	Pre	Post	Cohen's d
Psycho-immunity	43.13 (7.09)	46.26 (7.15)**	-0.440	42.16 (5.06)	43.39 (5.43)	-0.234

\*\*p < .001, post-hoc analysis with Bonferroni adjustment compared with pre

**Table 3:** ANOVA values for overall psycho-immunity

Factors	F	df	Huynh-Feldt $\epsilon$	P	Mean square	Partial Eta squared
Within subjects (States)	9.622	1, 60	1	0.003	146.976	0.138
Between subjects (Groups)	1.815	1, 60	-	0.183	114.202	0.029
States X Groups	1.838	1, 60 (States) X 60 (Groups)	-	0.180	28.073	0.030



**Fig. 1:** Graph showing psycho-immunity scores before and after 8-weeks of *Pragyayog sadhana* in male adolescents

## Discussion and Conclusion

Adolescents who practiced *Pragyayog sadhana* for 8 weeks showed a significant increase in the level of psycho-immunity in a post-pre comparison. Control group had no significant changes. In previous studies, different yoga *sadhana* improved confidence (Sharma, 2009), emotional maturity (Kumar, 2006), adjustment and well-being (Pandya, 2011) which are the possible components of psycho-immunity. The previous results support the present finding.

This is the first study which investigates the effect of *Pragyayog sadhana* on psycho-immunity. Other *sadhana* has been shown effective on different psychological variables. Based on these findings, there have been different speculations on the mechanisms by which practice of *yoga sadhana* might improve psycho-immunity and its possible dimensions. *Pragyayog sadhana* involved self-introspection and self-analysis techniques including diary writing, *mantra* recitation with meditation and *svadhyaya*. With continuous self-introspection and analysis, the practitioner gets aware of his inner self. After knowing the self, after assessing strength and limitations, gradually the level of self-confidence increases. If a person knows the art of self-evaluation, he/she can get success easily than others; they can cope up from any stressful situation earlier than others. In a study on drug dependence in-patients, 5 weeks of regular diary writing significantly increased self-evaluation (Newman, 1985). According to *Swami Virajeshwara* (n.d.), spiritual *sadhana* gives peace, prosperity, contentment and happiness in life and apart from these; it eliminates impurities of the mind, doubts, suspicion, fear, sloth, lust, anger, greed, and misery.

*Japa* with meditation helps in concentration of mind. Regular *japa* increases self-confidence and gives inner strength. Mental powers get concentrated if meditation is linked with *japa* (Chaitanya, 1999). In this *sadhana*, *sadhaka* feel each day as an entire life span thus they programme for its best utilization, with a determination to implement it in a well-planned manner. In this way they get more than others. Just before going to sleep in the night, while lying on the bed, the *Sadhak* remember the end of life and do self-analysis which helps in the development of personality.

Meditation is also a part of this *sadhana*. According to Udupa (1985), parasympathetic activity increases through the practice of meditation which brings the body-mind in a relaxed state and keep mental balance and gradually this state gives us psychological well-

being. Meditation also helps to remove negative emotions (Gaur & Sharma, 2003), anxiety, complexes (inferiority or superiority) as it makes the mind silent. The meditation practices, while also downregulating the stress systems, are believed to improve the control of attention, stress perception, and emotion regulation (Ospina et al., 2008).

Study of good literature (called *Svadhyaya*) is known to enhances the psycho-immunity and develop mental health by cognitive restructuring (Sao, Bhardwaj & Agrawal, 2013). Our mind is like a super computer on which negative thoughts are always attacking like different types of viruses. The *svadhyaya* works like an anti virus in cognitive field and removes unwanted negative and disabling thoughts and hence creates immunity against mental health issues. By *swaadhyaya* our mental energy starts getting concentrated and person feels himself energized. The role of positive thinking is very important in developing psycho-immunity.

Yoga and *yoga sadhana* acts as a centripetal force (concept used in physics). Centripetal force is a force that prevents the object from “flying out,” keeping it moving instead with a uniform speed along a circular path and that counteracts the centrifugal force. Yoga develops *pratyahara* (withdrawal of the sense) in a person. *Pratyahara* develops most of the psychological changes in an individual (Bhardwaj, Telles, & Balkrishna, 2015). Meditation, prayer, and other spiritual practices have the power to release the ‘life force’, the positive ‘latent energy’ lying dormant in the deepest levels of human psyche. They are devoted seriously to facilitate a healthy mental state. Man’s involvement in sorrow and sufferings can be ameliorated through this state (Vasudevan, 2003).

The main limitations of the present study are: (i) There were no follow-up after completion of the actual study. (ii) Participants in this study were from north India, the generalizability of the findings needs to be further investigated from diverse geographical and cultural backgrounds. Despite these limitations the present study demonstrated the positive effect of *Pragyayog sadhana* on the level of psycho-immunity in male adolescents.

### *Applications in Daily Life*

Strong psycho-immunity develops positive mental health in an individual and the positive mental health is associated with improved sleep, exercise, diet (Pressman & Cohen, 2005; Mental Health Foundation, 2006). Improving positive mental health reduces alcohol intake, smoking, delinquent activity (Friedli, 2009). Other study showed that improved wellbeing

(dimension of psycho-immunity) predicts good job performance (Harter, Schmidt, & Keyes, 2003). Those having optimum level of psycho-immunity will:

- ♦ Be mentally healthy.
- ♦ Perceive and explain the things in a positive manner.
- ♦ Manage day-to-day stress easily.
- ♦ Adjust quicker in new situation.
- ♦ Prepare them for a challenging situation.
- ♦ Always try to perform better in their work place.
- ♦ Control over their emotions.
- ♦ Feel energetic and mentally fit.
- ♦ Being self-motivated and motivate others.
- ♦ Get success easily rather than others
- ♦ Face less difficulty in a painful situation.

**Appendix 1: Meaning of Sanskrit terms used in *Pragyayog sadhana* (Acharya, 2009)**

*Atmabodh-tatvabodh* - Introspection and self-analysis

*Arghya* - Surrender our self to the Sun god in terms of offering *arghya* (pure water)

*Brahmcarya* - the discipline of physical and mental chastity

*Chintan* - Sincere thinking. It is art of pin pointed thinking.

*Dharna* - Attention

*Dhyan* - Meditation

*Gyan yoga* - The path where reality is discovered through insight, practice and knowledge.

*Japa* - Silent or mental chanting of a *mantra* in a rhythmic (consistent) manner with emotional engrossment.

*Karma yoga* - The path of selfless action and selfless service

*Manan* - Sincere contemplation with a calm and clean mind

*Sadhaka* - A spiritual aspirant; one who endeavors to follow a method of spiritual practice.

*Sadhana* - Spiritual exercise by a *Sadhaka* to attain a desired goal

*Samyam* - Continence with inner determination

*Savita* - It refers to the subtle body of the Sun

*Svadhyaya* - Self-study of sagacious thoughts/ good books

*Tapa (tapasya)* - Devout austerity and ascetic endeavors of spiritual refinement

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