

**EFFECT OF INTEGRATED APPROACH OF YOGA THERAPY (IAYT) ON
PSYCHOLOGICAL WELLBEING IN CHRONIC LOW BACK PAIN PATIENTS**

Dissertation submitted by
PADMANAVA NAYAK

Under the Guidance of
Dr. BALARAM PRADHAN



Towards the partial fulfillment of
Master of Science in Yoga
December 2015



TO
SWAMI VIVEKANANDA YOGA ANUSANDHANA SAMSTHANA
(S-VYASA)

(Declared as Deemed University under Section 3 of the UGC Act, 1956)
Eknath Bhavan, No. 19, Gavipuram Circle, K G Nagar Bangalore – 560019, INDIA.

CERTIFICATE

This is to certify that Mr. Padmanava Nayak is submitting this dissertation on “Effect Of Integrated Approach Of Yoga Therapy (IAYT) On Psychological Wellbeing In Chronic Low Back Pain Patients” in partial fulfillment of the requirement for the Master of Science (Yoga) registered in SWAMI VIVEKANANDA YOGA ANUSANDHANA SAMSTHANA (S-VYASA UNIVERSITY) BENGALURU and this is a record of the work carried out by him in this institution.

Date:

Dr. Balaram Pradhan

Place: Bangalore

Guide:

DECLARATION

I, hereby declare that this study was conducted by me at Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA), Bengaluru, under the guidance of Dr. Balaram Pradhan, S-VYASA University Bengaluru.

I also declare that the subject matter of my dissertation entitled “Effect of Integrated Approach of Yoga Therapy (IAYT) On Psychological Wellbeing In Chronic Low Back Pain Patients” has not previously formed the basis of the award of any degree, diploma, associate-ship, fellowship or similar titles.

Date:
Place: Bangalore

Padmanava Nayak
(Candidate)

ACKNOWLEDGEMENT

I would like to express the deepest gratitude to my guide, Dr. Balaram Pradhan. For his guidance and encouragement. Despite his busy schedule and tour, he made time even on holidays to guide me.

I thank all the faculty and staff of SVYASA especially to Dr. Judu for their help and co-operation at different stages of this work. And I also would like to thank all the students involved in my research as subjects.

I feel grateful to my university Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA) for giving me an opportunity to study yoga and for my work.

I am indebted to my superior, confreres, friends, relatives and colleagues for their inspiration, love and support.

Finally I thank God without whose wish, this work wouldn't have been possible.

Date

Padmanava nayak

Place: Bangalore

(Candidate)

ABSTRACT

Background: Chronic Low back pain is a big problem all over the world especially in City life, IT professions and is a leading cause of pain, disability and Psychological Distress in most countries worldwide.

Design: Single group pre-post.

Method: About 30 patients with LBP registered for a one week IAYT treatment at SVYASA, Holistic Health Centre in Bangalore, age range 20-60 of both gender were taken for the study. Pain and psychology related outcomes were assessed by the Visual analogue pain scale (VAPS), Oxford Happiness Questionnaire Short Form (OHQSF) and psychological well-being scale on chronic low back pain patients. At pre and post Yoga intervention. Data was analyzed using R studio, with Paired t-test and Wilcoxon signed rank test.

Result: After the one week intervention of Integrated Approach of Yoga Therapy (IAYT) in Chronic Low Back Pain (CLBP) patients, the VAPS showed significant reduction ($p < .001$) the OHQSF also showed statistically significant increase ($p > 0.049$) in happiness, but, in case of Psychological well-being, the improvement observed was not statistically significant ($p > .05$)

Key Words: Chronic low back pain, IAYT, psychological well-being.

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CHAPTER 1
INTRODUCTION

INTRODUCTION

Pain is fundamentally a physiological experience, and the degree to which it is felt and how incapacitating it is depends on how it is interpreted. Pain is one of the most mysterious and elusive aspects of illness (Bener et al., 2013). LBP is generally followed with pain that is felt in below the margin of last ribs that is costal margin and above the gluteal line. Further LBP is one of the most reported life style based disability in the modern era (Lizier, Perez, & Sakata, 2012). LBP includes Lumbar Spondylosis, Ankylosing Spondylitis, Sciatica and Non-specific Back pain (Nagarathna & Nagendra, 2014). Pains, mobility impairment, disability in the lumbar or sacroiliac regions are attributes of LBP. Which will be experienced as aching, burning, stabbing, sharp or dull, well-defined, or vague with intensity ranging from mild to severe (Ehrlich, 2003). The most common causes of back pain are lifestyle factors (heavy physical work, wrong working postures, manual handling, lifting and stress), organic factors (trauma, osteoporosis, prolonged corticosteroid, vertebral infections, tumors and bone metastasis), and Idiopathic (Hoy et al., 2012). Further LBP is classified as “specific” (suspected pathological cause) or “non-specific” (about 90% of cases). Furthermore, sub classified (Woolf & Pfleger, 2010) into acute (lasts less than six weeks); sub-acute (six weeks and three months); and chronic (more than three months).

Chronic low back pain is the pain in the lower back area that lasts for longer than 3 months. The causes can be back injury, disease or stress. The quality of pain may be aching, burning, stabbing, or tingling, sharp or dull and well defined or vague (Akuthota, Baker, & Danisa, 2009).

Global –burden of chronic back pain (CLBP)

Chronic Low back pain is a big problem all over the world especially in women and the age group 40 to 80 years (Hoy et al., 2012). Many research showed that the major reason for chronic low back pain is sedentary stressful and modern hurry and worry lifestyle. (Mehra et al) found in their research that a number of patients (39,425) of USA were identified with CLBP (90.4% without neuropathy). Unfortunately this problem is harassing more women than men and the total cost is US\$96 million (Mehra et al, 2012). In 2011 study done by Knox and et al mentioned that chronic low back pain is the most common musculoskeletal problem and has a bad impact on nearly two-thirds of the US population (Knox et al., 2011). One Japanese study shows that the back pain

problem is arising because of higher work load. And because of it the economic burden is getting high year by year. In 2011 only, the total cost was 82.14 billion yen to manage the problem. It is only the red sign because now it should be very high (Itoh et al., 2013). The prevalence of work related LBP is 51% of Musculoskeletal Disorders amongst the IT Professionals in India (Hameed, 2013). Several mindfulness related research papers on modern time shows significantly increase in stress-related complaints (Cramer, Haller, Lauche, & Dobos, 2012). In the world, 37% of LBP are related to occupation (Itoh et al., 2013). Studies shows that positive link between sports and back pain, especially high elite sports including lumbar hyper extension-rotation moments (gymnastics, golf, rugby, badminton, volleyball) bears the highest risk leads to discontinuity in games, absence from jobs (Hasler, 2013). Research which was done in Japan shows about 62% of the whole work-related diseases (period of temporary retirement was equal to 4 days or more) in Japan in 2011 (Itoh et al., 2013).

Psychological well-being and CLBP

Wellbeing is a growing area of modern research in psychology it is state of equilibrium or balance that can be affected by life events or challenges (Dodge, Daly, Huyton, & Sanders, 2012). More ever over the last decade so many wellbeing related research has begun to accumulate, focusing on subjective well-being, happiness, life satisfaction, positive affect and feelings about social life in which yoga become very significant on positive mental health quality of life and mental disorder (Patil, 2000). The psychological well-being that encompasses 6 distinct dimensions of wellness (Autonomy, self-acceptance, purpose of life, and keeping a positive relation with others has been influenced by two things one is distinguished between positive and negative affect and defined happiness as the balance between the two, another is emphasizes life satisfaction which is considered as the indicator of wellbeing. Cognitive component of life satisfaction is seen to complement happiness the more affective dimension of positive functioning the more affective dimension of positive functioning (Ryff & Keyes, 1995).

A research done in Raj yoga was found to be effective in emotional and mental conflicts as well as brings lasting peace and satisfaction in life by recharging mental energies into positive and blissful directions and intuit solutions to stress-causing events (D, S, D, & Sanjay, 2000). A meta-analysis shows that the promotion of wellbeing, positive function of a person and reducing

depressive symptoms can be brought by yoga practices. (Sjoerd, 2013). Yoga related short lifestyle modification and stress management educational program leads to remarkable improvement in the subjective well-being scores of the subjects and can therefore bring primary prevention and life style problems that result in life style disorders like back pain. (Sharma, Gupta, & Bijlani, 2008). A Systematic review and Meta-Analysis in 2015 concludes the result that Mindfulness meditation programs had moderate evidence to improve anxiety, depression and pain it also says they found less effective than any active treatment (drugs, exercise, other behavioral therapies) (Madhav, Madhav, & F.Gould Neda, 2015).

Yoga and CLBP

Research study found that yoga has been proved very good for most of the patients suffering from chronic low back pain (CLBP). Yoga is an effective treatment, comparative effectiveness of yoga and physical therapy (Saper et al., 2014), Yoga for the treatment of chronic low back pain (LBP) for flexibility and strength the spine in the UK (Cox et al., 2010). Current study showed that yoga gives good result for CLBP, its improved physical function, and enhanced mental, emotional state, enriched sleep quality and health promotion. Meditation and pranayama, along with relaxing asana, can help individuals deal with the emotional aspects of reduced anxiety, chronic pain, and depression effectively and increase the quality of life perceived (Vallath, 2010)

Yoga is one of the spiritual practices derived from the orthodox school of Hindu philosophy. Yoga practices were framed by Sage Patanjali, and named as Ashtanga Yoga. Traditionally, Yoga was seen as a practice meant for achieving self-realization. Recently, there is remarkable notice on influence of yoga in bringing mental and physical wellbeing. (Varambally et al, 2012). Yoga is a science of Holistic living and not merely a set of development of the human body, mind and soul (Bhobe, 2000). The Integrated Approach of Yoga Therapy (IAYT) is an approach which consists in not only dealing with physical layer but also includes using different yoga techniques to operate on different layers of our existence; the physical layer, the layer of prana, the mental layer, the layer of wisdom, and the layer of bliss. It is found to reduce pain, analgesic requirement and disability, and improve spinal mobility (Tekur et al., 2012).

Yoga Therapy – An Integrated Approach

Apart from preparing the system for spiritual transformation, Yoga is a very important science of health. Since ancient times Yoga has been used for the elimination and relief of all kinds of diseases and conditions by yogis and rishis. Asanas and Pranayama i.e. are very powerful ways of controlling the whole body. These two are the first step in gaining control over the total structure of the brain and mind, the controlling system which enables us to direct every aspect of life and the energy within that (Muktibodhananda, 1998).

The Integrated Approach of Yoga Therapy

The disturbances at the level of the mind (Manomaya Kosha) percolate into the physical body (Annamaya Kosha) through Pranamaya Kosha. That is why for the treatment of psychosomatic illnesses there is need to work at various levels of existence. Thus, the Integrated Approach of Yoga Therapy does not only deal with the physical sheath but operates on different layers. The practices included in the Integrated Approach balance and harmonize the disturbances at each of the five levels of existence so that complex psychosomatic ailments can be tackled (Nagarathna & Nagendra, 2013).

I. Practices at the Physical Level (Annamaya Kosha)

Physical Exercise and Movement (Sithilikarana Vyayama)

These set of practices involve very simple physical movements to mobilise and activate the affected parts of the body. They are normally performed with speed and repetition. Most of the practices involve the flexing of the spine. The principles and objectives of these practices are:

- Loosening of the joints
- Flexing the spine
- Stretching and relaxing the muscles
- Improving strength
- Developing stamina
- Removing lethargy in the body
- Disciplining mind-body complex (Nagarathna & Nagendra, 2013)

Yogasanas (Postures)

Yogasanas are physical postures which are often imitating the natural positions of the animals. From a therapeutic point of view, these postures help to attain physical revitalization and deep

relaxation and mental calmness. By practising Asanas, the mind becomes tranquil. The therapeutic benefits of Yogasanas include:

- Improving blood circulation to the internal organs
- Massaging the internal organs
- Improving strength and flexibility of the spine
- Mobilizing the joints
- Inducing a meditative state of the mind
- Developing inner awareness
- Stimulating the nervous system and glandular system
- General physical stamina and strength (Nagarathna & Nagendra, 2013)

Kriyas

Kriyas are Yogic processes described in Hatha Yoga which cleanse the inner organs of the body. These processes bring about the following effects:

- Activating and revitalizing the organs
- Toning up the functions of organs
- Desensitisation
- Development of inner awareness
- Building the stamina and forbearance capacity
- Inducing deep relaxation (Nagarathna & Nagendra, 2013)

II. Practices at the Level of Prana (*Pranamaya Kosha*)

Breathing Practises and Pranayama support the removal of disturbances in Pranic flows operating at the Pranamaya Kosha (the level of vital energy). The respiratory system is the bridge between the conscious and the sub-conscious, voluntary and involuntary or in general the body and the mind. These practises utilize voluntary control to change the involuntary functions.

Therapeutic objectives and principles of Breathing Practises include:

Bringing into action all the lobes of the lungs for full utilisation

Normalizing the breathing rate

Making the breathing uniform, continuous and rhythmic

Increasing and decreasing the breathing rate

Developing awareness of breathing through the movements of different parts of the body

Synchronizing movement and breathing

General therapeutic objectives and principles of Pranayama include:

Enhancing a smooth and slow flow of breath

Balancing Sympathetic and Parasympathetic Nervous System

Increasing vitality

Decreasing of metabolic rates

Clearing of blockages in the flow of vital energy

Reduction of stress and tension (Nagarathna & Nagendra, 2013)

III. Practices at the Level of the Mind (Manomaya Kosha)

Meditation

Meditation is a Yogic process providing deep rest to the mind and body by allowing the mind to calm down to its basal states. Therapeutic features of Meditation include:

Deep relaxation of mind and all parts of the body

Reduced metabolic rate by the slowing down of breath rate

Freshness, lightness and a feeling of expansion at mental level

Inducing calmness and ease of mind (Nagarathna & Nagendra, 2013)

Emotion Culture

Devotion or “Bhakti Yoga” is another major practise at the level of mind. In therapeutic means it provides a technique to soften the violent emotions (ei-ther suppressed or expressed) which constitute any form of stress. Demanding situations may trigger responses such as anger, fear,

jealousy, hatred, etc. which cause the release of large amount of stress hormones in the organism. Regular practicing of soft emotions such as pure love, compassion, pardon, peace, etc. contributes to the change of emotional response patterns. Emotion Culture involves devotional sessions. Songs in devotional sessions aim to bring changes in the experience of emotions (Nagarathna & Nagendra, 2014b).

IV. Intervention at the Level of the Intellect (Vijnanamaya Kosha)

Enhancing understanding is the key to operate from Vijnanamaya Kosha. It is a lack of an inner wisdom or knowledge (Jnana) which is responsible for many wrong habits, agitations, etc. Yogic Counselling involves the conciliation of ancient wisdom from scriptures which helps to change an attitude of greed and deep attachment to material possessions and enjoyments towards the realization that happiness within us and each individual in its causal state is “Ananda” (bliss) embodied (Nagarathna & Nagendra, 2013).

CHAPTER 2

REVIEW OF LITERATURE

ANCIENT LETTERATURE

CONCEPT OF CHITTA ACCORDING TO DIFFERENT SPIRITUAL LORES

Descriptions of Mind:

Mind is not a gross object it is neither visible nor tangible. Its existence cannot be seen, its magnitude cannot be measured, and it does not require a space in which to exist. The mind is nothing but a collection of habits and desires (*saàskāras*), and feelings and ideas that arise from contact with different objects. These desires, ideas and feelings are constantly changing; old impressions are leaving the storehouse and new ones are replacing them. Therefore, the mind is constantly changing and evolving through experience, in search of variety and new sensations to avoid monotony. It is said to have three states, active (*rajas*), passive (*tamas*) and neutral (*sattva*), in addition to three levels of awareness, conscious (*jāgrat*), subconscious (*swapna*), and unconscious (*suñupté*).

According to Sri Adi Sankaracarya, the ten organs (five organs of action, and five organs of perception: ear, organ of touch, eye, tongue, nose) are called the outer instruments as they receive knowledge about outside objects and respond to the world. The mind (called the inner instrument) receives sense perceptions, cognizes them based on previous experience and commands the senses to respond. The mind cannot contact the world directly, it has to go through the senses, and likewise the senses cannot function without the prompting of the mind. Hence, there is a close relationship between them and they function in co-ordination. Each sense organ perceives only its particular sense object, but the mind receives information from all of them. It understands sound, touch, form, taste and smell. It also feels emotions and thinks thoughts. The inner instrument is a continuous flow of thought modifications, and is classified into four according to the different functions it performs.

The mind (*manas*) thoughts in a state of volition constitute the mind, and this state of vacillation continues until a decision is made. Emotions also constitute the mind. The intellect (*buddhi*) thoughts in a state of decision constitute the intellect, which is the discerning and discriminating aspect of the mind. Reasoning, observation, and conclusion are functions of the *buddhi*. The ego (*ahaikāra*) is the sense of individuality or the notion of doer ship. The memory (*citta*): The function

of reflection and recollection is the *citta*. All experiences are stored as impressions and can be recollected. It is based on this information alone that we can think

मनः एवं मनुष्याणां कारणं बन्धमोक्षयोः । अमृतविन्दुपनिषद्-२ ।

manaḥ evaṁ manuṣyāṇāṁ kāraṇaṁ vandhamokṣayoḥ | amṛtavindupaniṣad-2 |

mind alone is the cause of both bondage and freedom. You can be miserable or happy, suffer from diseases or retain good health and promote positive health. You have power within you to heal yourself. The power of resolve depends on your faith.

योगस्चित्तवृत्तिनिरोधः ॥ प-यो-सु-१-२ ॥

yogascitavṛttinirodhaḥ || pa-yo-su-1-2 ||.

प्रमाण विपर्यय विकल्प निद्रा स्मृतयः । प-यो-सु-१-६ ॥

pramāṇa viparyaya vikalpa nidrā smṛtayaḥ | pa-yo-su-1-6 ||

The mind has five modifications; direct sense preception, wrong knowledge, mere verbal idea, deep sleep with or without dreams and memory; the store house of all the past experiences at un concious, subconcious and super concious states. Thoughts are conceived as waves in the ocean of pure conciousness. As waves come up and diffuse, in mind waves of thoughts come up and diffuse, these waves could be violent or calm.

यदेतद्धृदयं मनश्चैतत् । संज्ञानमाज्ञानं विज्ञानं प्रज्ञानं मेधा ।

दृष्टिर्धृतिर्मतिर्मनीषा जुतिः स्मृतिः संकल्पः क्रतुरसुः कामो वश इति ।

सर्वाण्येवैतानि प्रज्ञानस्य नामधेयानि भवन्ति ॥ ऐतर्यैपनिषत् -३-२ ॥

yadetaddhṛdayaṁ manaścaitat | | sañjñānamājñānaṁ vijñānaṁ prajñānaṁ medhā |
dṛṣṭirdhṛtimatirmanīṣā jutiḥ smṛtiḥ saṅkalpaḥ kraturasuḥ kāmo vaśa itī |
sarvāṅyevaitāni prajñānsya nāmadheyāni bhavanti | ||'itarayaipaniṣat3-2||.

It is this heart(intellect) and this mind that were stated earlier. It is sentience, ruler-ship, secular knowledge, presence of mind, retentiveness, sense-preception, fortitude, thinking, genius, mental suffering, memory, ascertainment resolution, life-activities, hankering, passion and such others. All the variety are the names of Conciousness.

क्रोधाद्भवति सम्मोहः सम्मोहात्स्मृतिविभ्रमः ।
स्मृतिभ्रशात बुद्धिनाशो बुद्धिनाशातप्रणश्यति ॥भ-गी-२-६३ ॥
krodhādbhavati sammohaḥ sammohātsmṛtivyibhramah |
smṛtibhraśāta buddhināśo buddhināśātapraṇaśyati ||bha-gī-2-63||.

From anger comes delusion; from delusion loss memory; from loss of memory the destruction of discrimination; from the destruction of discrimination he perishes.

तत्प्रतिषोधाथर्मकतत्त्वाभ्यासः ॥प-यो-१-३२ ॥
tatpratiṣodhātharmekatattvābhyāsaḥ ||pa-yo-1-32||

to prevent or deal with these modifications of the mind and their consequences, the recommendation is to make the mind one-pointed, training it how to focus on a single principle or object.

अभ्यासवैराग्याभ्यां तन्निरोधः ॥प-यो-१-१२ ॥
abhyāsavairāgyābhyāṁ tannirodhaḥ ||pa-yo-1-12||.

One-pointedness is to be achieved through practice, and non-attachment:- The two principle of अभ्यास (abhyāsa) practice , and वैराग्य(vairāgya) non-attachment; make the foundation for योगः (Yogaḥ) meditation.

मैत्रीकरुणामुदितोपेक्षाणां सुखदुःख-पुण्यापुण्यविषयाणां भावनातः चित्तप्रसादनम् ॥प-यो-१-३३ ॥
maitrīkaruṇāmuditopekṣāṇāṃ sukhaduḥkha-puṇyāpuṇyaviṣayāṇāṃ bhāvanātaḥ
cittaprasādanam|pa-yo-1-33||

Furthermore, the mind becomes purified by cultivating feelings of friendliness towards those whose are happy, compassion for those who are suffering, goodwill towards those who are victorious, and indifference or neutrally towards those we perceive as wicked or evil. By these methods, you will have peace of mind.

नाविरतो दुश्चरितात्राशान्तो नासमहितः ।
नाशान्तमानासो वाऽपि प्रज्ञानेनैनमान्पुयात् ॥कठोपनिषद् द्वितियोधायः -वलि-२४ ॥
nāvīrato duṣcaritātrāśānto nāsamahitaḥ|
nāśāntamānāso vā'pi prajñānenainamānpuyāt|kaṭhōpaniṣad dvitīyodhāyaḥ -valli-24||
but he who has not turned away from bad conduct, whose senses are not subdued, whose, Mind is not concentrated, whose mind is not pacified, can never obtain this Atman by knowledge.

According to Tattvabodha of Shri shankara acharya

एतेषां पञ्चतत्त्वानां समष्टिसात्त्विकांशात्
मनोबुद्धेरुद्वेद्यहंकार चित्तान्तः करणानि संभूतानि ।२१ ॥१
संकल्पविकल्पात्मकं मनः निश्चयात्मिका बुद्धिः ।२१ ॥२ ॥३
अहंकर्ता अहंकारः । चिन्तनकर्तृ चित्तम् ।२१ ॥४ ॥५

eteṣām pañcatattvānām samaṣṭisāttvikāṁśāt
manobuddhyahaṅkāra cittāntaḥ karaṇāni sambhūtāni|21.1
saṅkalpavikalpātmakam manaḥ niścayātmikā buddhiḥ|21.2.3
ahaṅkartā ahaṅkāraḥ| cintanakarṭṛ cittam|21.4.5

From the total sāttvic aspect of these five elements the inner instrument of the mind, intellect, ego and memory are formed. The mind is of the nature of indecision. The intellect is the nature of decision. The ego is of the nature of the notion of doership. Memory is of thinking or recollection.

According to Pātañjali Yoga Sūtras 1-2

योगस्त्विच्छित्तवृत्तिनिरोधः ॥१ ॥२ ॥

yogascittavṛttinirodhaḥ//1.2//

To block the patterns of consciousness is Yoga (13).

Mind, or *citta*, is derived from the basic idea of *chit*, which means to see, to be conscious of, to be aware. Hence *citta* means individual consciousness, which includes the conscious state of mind, the subconscious state of mind and also the unconscious state of manas. The totality of these three conditions of individual mind is characterized by the expression *citta*. These three states of pure consciousness should be understood as the *citta* referred to in this *sūtra* (reference).

According to Haṭha Yoga Pradīpikā

ज्ञेयं सर्वं प्रतीतं च ज्ञानं च मन उच्यते ।
ज्ञानं ज्ञेयं समं नष्टं नान्यः पन्था द्वितीयकः ॥४ ॥६० ॥
मनोदृश्यमिदं सर्वं यत्किञ्चित्सचराचरम् ।
मनसो ह्युन्मनीभावादखे द्वैतं नैवोपलभ्यते ॥४ ॥६१ ॥

ज्ञेयवस्तुपरित्यागाद्विलयं याति मानसम् ।
मनसो विलये जाते कैवल्यमवशिष्यत ॥४ ॥६२ ॥

jñeyam sarvam pratitam ca jñānam ca mana ucyate |
jñānam jñeyam samam naṣṭam nānyaḥ panthā dvitīyakaḥ //4.60//
manodṛśyamidaṁ sarvaṁ yatkiñcitsacarācaram |
manaso hyunmanībhāvād dvaitam naivopalabhyate //4.61//
jñeyavastuparityāgādvilayaṁ yāti mānasam |
manaso vilaye jāte kaivalyamavaśiṣyata //4.62//

All that known, all that is known and the knowledge is called mind. When the knower and that which is known are lost together, there is no dual or second way. All that is in the world animate and inanimate, is the appearance of mind. When the three states of knower, knowing and known are merging as one experience that is one-pointedness of mind, which becomes the state of cosmic or universal consciousness.

MODERN LITERATURE SURVEY

Literature review on Yoga and CLBP

Author/year	S.S	Intervention/ duration	Results/ conclusion
(Sherman et al., 2010)	210	Yoga/ 12 weeks	An effective treatment, comparative effectiveness of yoga and physical therapy
Curtis et .al/2011	22	Yogic exercise/8week	pain (intensity, unpleasantness, quality, sum of local areas of pain, acceptance, disability), anxiety, depression, and mindfulness
(Groessl, Weingart, Johnson, & Baxi, 2012)	53	Yogic practice /10 weeks	Improve pain at motion, functional disability, and quality of life.
(Padmini Tekur, Singphow, Nagendra, & Raghuram, 2008)	80	IAYT/1 week	Reduced pain-related disability and improved spinal flexibility in patients with CLBP better than a physical exercise.

<u>Helen Cox</u> ; et all.2010	286	Yoga therapy /2 weeks	The yoga group reported significantly less pain.
N. Hartfiel; et all.2012	37	Yoga therapy/8 weeks	Yoga intervention can reduce perceived stress and back pain and improve psychological well-being.
<u>Kimberly Anne Williams</u> ; et all. 2015	60	Iyengar yoga therapy/16 weeks	Improvement on medical and functional pain-related outcomes in the case of low back pain
Mary lou galantine; et all. 2004	22	Hatha yoga/6 weeks	Its improve balance and flexibility and decrease disability and depression.
Helen E. Tilbrook; et all 2011	313	Yoga therapy/ 12 weeks	Chronic or recurrent low back pain led to greater improvements in back function than did usual care.
<u>Karen Sherman</u> ; et all.2011	228	Yoga therapy/ 12 weeks	Help to reducing symptoms of chronic low back pain.
<u>Robert B Saper</u> ; et all. 2009	30	Yoga therapy/ 12 weeks	It is more effective than usual care for reducing pain and pain medication use.

Present treatment modalities

Present treatment modalities include a wide variety of treatment options to the patient with CLBP, categorized as

- a) Non-pharmacological: Commonly utilized non-pharmacological treatments include heat or cold therapy, Ultra sound, shock wave therapies and physical therapy.
- b) Pharmacological: Pharmacological treatments include analgesics, non-steroidal anti-inflammatory drugs, corticosteroids, hyaluronic acid and various disease-modifying chronic back pain drugs.
- c) Surgical: The long-term effect surgery has no clear history of recovery, and less invasive surgeries have shown a record of improvement at times, but evidence regarding effectiveness is insufficient.(Manusov, EG 2012)

Drawbacks of the present treatment modalities

Pharmacological treatment is associated with a lot of risks and complications. NSAIDs, including opioids such as morphine should be used to treat CLBP in the elderly with great caution (Chaparro et al., 2014). Oral NSAIDs are associated with elevated risk of dizziness, nausea, and constipation. Pads are suitable for short-term management of severe, acute pain that is causing significant problems. Specialist groups advise against the general long-term use of opioids for chronic low back pain. For older people with chronic pain, opioids may be used by those for whom NSAIDs present a risk, such as those with diabetes, stomach or heart problems(Miller2012).

CHAPTER 3

AIM AND OBJECTIVES

3.1 Aim

The aim of this study is to observe the changes on Psychological well-being on chronic low back pain with IAYT intervention.

3.2 Objectives

The objective of the study is:

- To find out the effect of IAYT on Psychological wellbeing using Ryff's (1995) Scales of Psychological Well-Being (SPWB).

3.3 Research Hypothesis

The Integrated Approach of Yoga Therapy (IAYT) may increase psychological well-being of patients suffering from chronic low back pain.

3.4 Null Hypothesis

The Integrated Approach of Yoga Therapy (IAYT) may not increase psychological well-being of patients suffering from Chronic back pain.

3.5 Definition of key terms

Chronic Low Back Pain

Chronic low back pain is the pain in the lower back area that lasts for longer than 3 months. The causes can be back injury, disease or stress. The quality of pain may be aching, burning, stabbing, or tingling, sharp or dull and well defined or vague(Akuthota et al., 2009)

Integrated approach of yoga therapy (IAYT)

The IAYT is that yoga concept taken from the traditional yoga scriptures (Patanjali yoga sutras, yoga vasishtha, and Upanishads) which highlights a holistic lifestyle for positive health at physical, mental, emotional, and intellectual levels (Ebnezar, Bali, Nagarathna, & Nagendra, 2011).

Psychological well-being

The psychological well-being that encompasses six distinct dimensions of wellness (Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, Self-Acceptance) has been influenced by two things one is distinguished between positive and negative affect and defined happiness as the balance between the two, another is emphasizes life satisfaction as the key indicator of well-being (Ryff & Keyes, 1995).

CHAPTER 4

METHODS

4.1 Source of subject

Thirty chronic low back with age range of (20 to 60) years were recruited for the study. They were all the participants of Arogyadhama hospital at prashanti kutiram, Bangalore.

4.2 Inclusion criteria

- a) The participants who are CLBP patient more than 3 months.
- b) Pain in lumbar spine with or without radiation to legs(Spitzer et al 2007)
- c) Age : 20 to 60 years

4.3 Exclusion criteria

Organic spinal pathology such as malignancy (primary or secondary) or chronic infection like Tuberculosis of the spine with Pott's abscess, morbid obesity and critically ill.

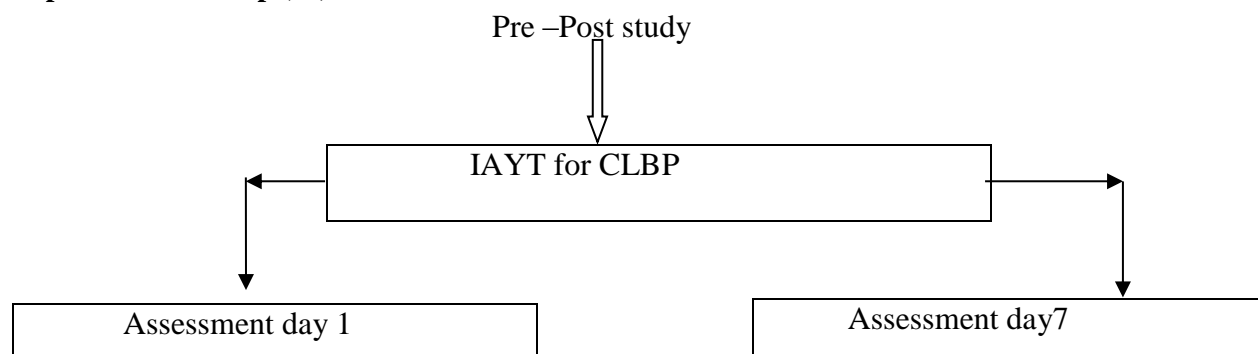
4.4 Ethical consideration

All subjects will be informed about the current research and an informed consent will be obtained from each subject.

4.5 Design

Single group Pre – Post design

Experimental Group (30):



4.6 INTERVENTION

Integrated approach of yoga (back pain model) which is designed by SVYASA will be given to them in Arogyadhama inside the same university.

Integrated Approach of Yoga Therapy (IAYT)

A team of yoga experts developed the specific integrated yoga therapy which was very useful for LBP. The modules of these concepts were borrowed from the traditional yoga scriptures (*Patañjaliyoga sutra* and *Yoga vaçinõha*) that highlight a holistic approach to health management at physical, mental, emotional and intellectual levels (Nagarathna & Nagendra, 2013). It consists set of practices: *āsanas*, relaxation technique (Physical body: Annamaya Kosha), *prāyāma* (Vital Body: Pranamaya Kosha), meditation (Mental Body: Manomaya Kosha), lectures on yogic lifestyle, devotional sessions, stress management through yogic counselling (Wisdom Body: Vijnanamaya Kosha) and Tuning to Nature (Bliss body: Anandmaya kosha) for back pain. The physical practices (back pain special techniques included simple yogic movements and maintenance in the final posture of *āsana* that provided stretch ability, flexibility and relaxation. During the designing module the practice was ensured by avoiding acute forward or backward movements and jerky movements for the convenience of the patients (Nagarathna & Nagendra, 2013).

Prāyāma included yogic breathing practices to achieve a slow rhythmic pattern. The directions for this integrated (a) slow down the breathing pattern (b) exhalation to be made longer than inhalation and (c) develop an internal awareness. A lengthened easy, slow exhalation is the safest way to get mastery over the mind (Nagendra, 2013).

Cyclic meditation, Om meditation, Mind Sound Resonance Technique (MSRT), Chanting and devotional sessions (*Bhajans*) very helpful for applicable to calm down the mind, reduce the Speed of mind, develop divine mood and increase the receptivity which work in Manas level for better improvements of pain in physical level.

Yogic counselling and lectures for stress management help for notional correction in very useful way as well as knowing the meaning of life increases the deeper level of understanding and develop trust towards significance of Yogic life style. It worked help to change the deep rooted negative thought patterns (Padmini Tekur, Chametcha, Hongasandra, & Raghuram, 2010).

In the other hand yogic cleansing techniques were also powerful tools for LBP. It included frontal brain cleansing breath (*Kapālabhāti*), intense candle focusing (*trāōakaà*), nasal cleaning with water and catheter (*jala and sutra neti*), internal cleaning by vomiting with luke worm saline water (*vamana dhauti*), partial colon cleaning by (*Laghuçaiikha prakñāalana*). These all practices clean the inner tract namely optical path, respiratory tract and gastrointestinal tract and there by refresh the inner passage. It develop and inner awareness, it desentitizes the likely hypersensitive reaction in the pathway. It make the stamina and for tolerance capacity (Nagarathna & Nagendra, 2008). Thus the IAYT for Chronic low back pain had a multidimensional approach to promote positive mood and well-being. Results can be achieved through techniques for physical relaxation, breath handling to calm down the mind, cleans the physical body and counselling sessions for cognitive change(Padmini Tekur et al., 2010).

Theoretical aspects

Annamayakoña (The Physical layer)

This refers to the material aspect, the physical personality. Our body is made of *paīcamahābhuta* namely-earth (*pāthvé*), water (*jala*), fire (*agni*), wind (*vāyu*) and space (*akāça*). The functional type of back pain (non-specific back pain) is related to the mind. And mind, considered as one of the *ādhiya vyādhis*. Direct handling of the mind through *dhāraēā*, *dhyāna*, *çravaēā*, *manana*, *nidhidhyāsana* along with the body and *Prāēā* corrects the problem. For the physical problem which is the after effect of the stress at the mind level manifesting as persistent pain, chiefly due to muscle spasm primary or secondary, you need to bring your awareness to the part of the pain at the physical level, work with body movements without injuring the underlying vital structures such as the nerves or the spinal cord or blood vessels. You are correcting the problem slowly in the process of *pratiprasava* (retracing the steps). The three factors that we need to correct on the back are

- Relax the spinal muscles.
- Strengthen the spinal muscles.
- Mobilize the stiff back.

A healthy yogic diet, *kriyās*, loosening exercises and *Yogāsānas* are used to operate the *annamayakoñā* level. All these practices are aimed to reach the state of mind mastery using the physical aspect of the personality.

Prāemayakoñā (The Layer of Prāna)

Prāe is the vital life energy or a subtle energy. *Prāe* is the basic fabric of the universe, both inside and outside the body. Its flow through subtle channels in the body called *nāḍe* and has a directional flow to maintain all physiological activities. Mainly there are five types of *prāe* (*apāna*, *samāna*, *udāna*, *prana*, *vyāna*). The *prāe* balance is the bridge between mind and the healthy body. This shows up as uneven breathing. When you slow down the breathing rate, the mind slows down. As we know there is a direct connection between our mind and breath. Whenever you are anxious or stress or angry, your breath rate speeds up vice versa, i.e. whenever you are calm, sleep relaxed, comfortably or meditating, your breathing slows down.

Through the practice of proper breathing, *Kriyās* and *Prāeyāma*, we start operation on the *prāemayakoñā*. Directions and functions of five *prāes* are

- *Apāna* is that which promotes downward activities and is responsible for functions like defecation, menstruation, urination, ejaculation, parturition etc.
- *Samāna* is responsible for proper digestion and balancing the *prāe* and *apāna*.
- *Udāna* is responsible for upward activities like vomiting.
- *Prāe* (also called *mochaprae*) is responsible for breathing movement.
- *Vyāna* is that which is responsible for every activity in the periphery like nerve impulse, blood circulation and cellular activities in all cells.

Manomayakoñā (The Mental Layer)

A direct operation on this level is complete possible by the last three limbs of *antaraḡga yoga* of *Patañjali–Dhārae*, *Dhyāna* and *Samādhi*. The culturing of mind is accomplished by focusing of the mind (*dhāranā*) initially and followed by the relaxed dwelling of the mind in a single thought (*dhyāna*) for longer and longer duration leading ultimate to super consciousness (*Samādhi*) (Swami, Satyananda, 2008). A progressive habituation allows the mind to remain relaxed during the period of meditation (*dhyāna*) when the emotions become powerful they start

governing our action. These results in an imbalance called *ādhi* or stressful heightened reaction to situations that involve autonomic arousal. Long standing *ādhis* get pushed in to *prāḥamaya* and *annamayakoṇa* causing *vyādhis*. Thus, *manomayakoṇa* is the mental and emotional library, a subtle layer of existence (Nagarathna & Nagendra, 2013).

Emotion Culture

To handle and gain control over the basic cause for mental agitations, we use the Yoga techniques that control our emotions. A devotional session containing prayers, Chants, *Bhajans*, *Nāmāvalis*, *Dhuns*, *Stotras* etc., help to build a congenial atmosphere to evoke, recognize, attenuate and disperse the emotions. Thus, control over emotions is obtained through the devotional session. The emotional imbalances and upsurges are eliminated by such control.

Vijānamaya koṇa (layer of wisdom)

A basic understanding is the key to operate from *vijānamayakoṇa*. *Upaniṇads* are the treasure house of knowledge which is the redeemer of all miseries and obsessions. It is the lack of that inner *jāna* which is responsible for many wrong habits, agitations, etc. The happiness analysis—*Ānandamimāçā* of *Taitrēyaupaniṇada* handles the most fundamental problem relevant to all living creatures. The analysis systematically leads to the reader to that substratum from which *prāḥa* and mind emerge the *AnandamayaKosha*.

Ānandamayakoṇa (The Layer of Bliss)

To bring the bliss of our causal body called *ānandamaya koṇa* in all our actions is the key for a very happy and healthy life. This brings our innate healing power to affect, a complete cure of our ailments. The techniques used to reduce the mental and physical differences is karma Yoga, the secret of action: do your best leave your rest otherwise leaving the fruit of each and every action.

Table: Integrated Approach of Yoga Therapy (IAYT) Daily Schedule

Time	Schedule
05:30 am	Om meditation
06:00 am	Special Yoga Techniques for Back Pain
07:30 am	Breakfast
08:00 am	Maitri Milan
09:00 am	Parameters
10:00 am	Pranayama
12:00 pm	Yogic counselling
01:00 pm	Lunch
02:00 pm	Video, Yogic Games
03:00 pm	Cyclic Meditation
04:00 pm	Special Yoga Technique for Back Pain
05:00 pm	Malt & Tuning to Nature
06:00 pm	Bhajan
06:30 pm	Trataka, MSRT
07:30 pm	Dinner
08:15 pm	Happy Assembly
10:00 pm	Good Night

4.7 ASSESSMENT

Visual Analogue Scale (VAS)

This is a scale which have 0 to 10 points, on 0 no pain and 10 for worst possible pain. This we will use for Low Back Pain. We tell to the patient is pleased rate your Low Back Pains on this scale according to you that how much pain you are feeling. The Visual Analogue Scale (VAS) was designed as a rating scale to discriminate pain level (Cortés, et. al., 2014).

Scale of Psychological Well-Being (SPWB)

The SPWB is an 18-item scale of psychological wellbeing. Items are related to Autonomy, personal growth, self-acceptance, environmental mastery and being in positive relation with others. The SPWB has high internal consistency, which has been found to be stable across samples. Test-retest and self-peer correlation, suggests great reliability, and construct studies validity convergent and discriminate validity have confirmed the use of this scale to measure the construct of psychological wellbeing (Ryff & Keyes, 1995).

CHAPTER 5

DATA EXTRACTION AND

ANALYSIS

5.1 DATA EXTRACTION

Data was extracted by the researcher from the Spinal Disorders department. Data was obtained from participants according to manual of questionnaires and tests. Collected data was entered in excel.

5.2 DATA ANALYSIS

Data was tabulated in Microsoft excel. Further statistical analysis was performed using R software (version 3.2.2). Data were checked for out layers and found no outliers. Further it was tested for normality before subjecting it to appropriate statistical test.

Subjects	Numbers of Subjects	Age-range	Age in Mean \pm SD
Holistic health care centre, Arogyadhama Bangalore.	30 participants. (Male 18 &female 12).	20 -60 Years	40.5 \pm 8.5

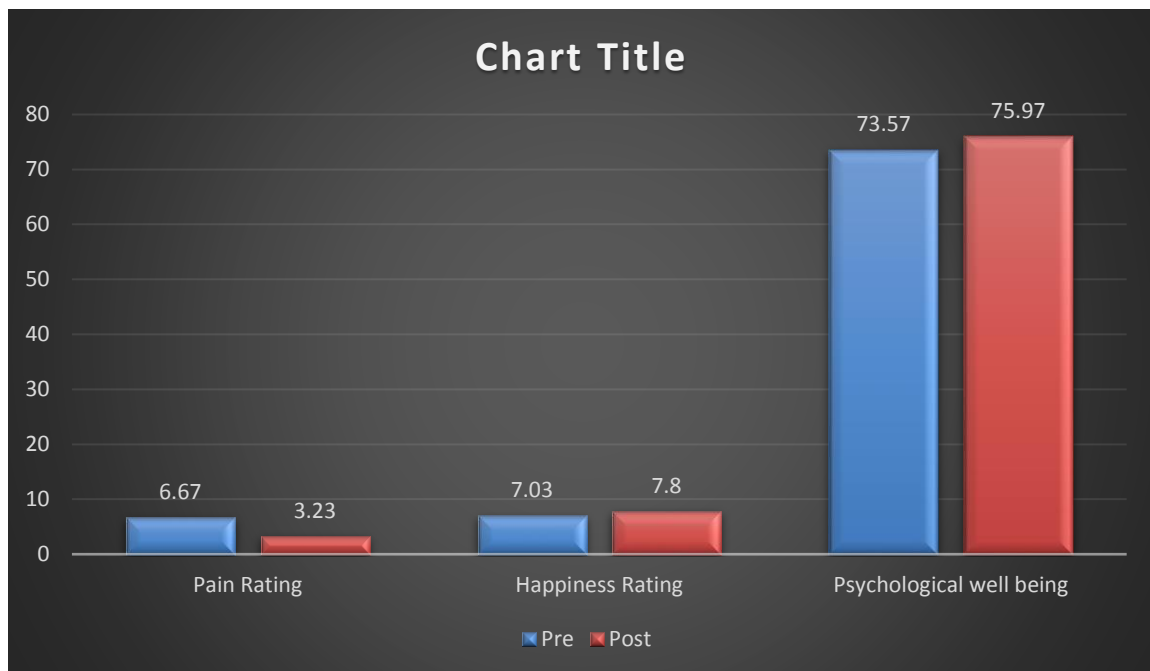
CHAPTER 6
RESULTS

RESULTS:

The test for normality was done by Shapiro Wilks test and the data was not found to be normally distributed as $p > 0.05$. Pain score: Statistical test (Wilcoxon signed rank test, as one of the data is not normally distributed) within the group (pre and post) shows statistically significant ($p < .05$) improvement in the pain profile. Happiness score: Statistical test (Wilcoxon signed rank test. As one of the data is not normally distributed) within the group (pre and post) shows statistically significant ($p < .05$) improvement in the happiness profile. Psychological well-being score: Statistical test (Paired t-test, as both the data are normally distributed) within the group (pre and post) shows the improvement observed in the psychological well-being is not statistically significant ($p > .05$) (*) $P < 0.05$, (***) $P < 0.001$

Then results observed are given below in tabular format.

Variables	Pre	Post	D (E.S.)	P value
Pain Rating	6.67±1.77	3.23±1.68	1.9	0.001***
Happiness Rating	7.03±1.85	7.80±1.47	0.35	0.049*
Psychological well being	73.57±6.07	75.97±7.31	0.28	0.131



CHAPTER 7
DISCUSSION

DISCUSSION

The study was conducted with the aim of seeing the effect of Integrated Approach of Yoga Therapy. Change in Pain score, Happiness score, Psychological well-being score were assessed before and after one week IAYT in 30 participants. Current study showed significant increase in Happiness score and pain score following one week IAYT practices. Improvement was observed in psychological well-being though it was not statistically significant.

Summary of results

After the one week intervention of Integrated Approach of Yoga Therapy (IAYT) in Low Back Pain (CLBP) patients, the Pain score showed a statistically significant improvement on the pain profile. Happiness score showed a statistically significant improvement on the happiness profile. Psychological well-being score did not show any improvement, been observed on the psychological well-being which was not statistically significant.

Comparing this study with previous studies

A previous study which was done to compare the effect of yoga with physical exercises on chronic low back pain patients. The result showed the significance of yoga on back pain, as yoga practice for seven days had improved the flexibility of spine and reduced the pain related disability in patients with chronic low back pain, compared to physical exercises (Padmini Tekur et al., 2008).

The current study concludes that the Integrated Approach of Yoga Therapy (IAYT) is very effective in reducing chronic low back pain, depression, and improves the Somatic Perception, and visual descriptive score in Chronic Low Back Pain (CLBP) patients.

Mechanism

Yoga influences all effects of the person: in vital, mental, emotional, intellectual and spiritual. It deal with the chronic back pain, reduces and muscle tense effectively. (Vallath, 2013). The Integrated Approach of Yoga Therapy (IAYT) includes holistic lifestyle for positive health at physical, mental, emotional, and intellectual levels which therefore helps individuals to reduce

stress and helps deal with the aspects of chronic back pain and depression effectively and improve mindfulness and the quality of life perceived.(Currie & Wang, 2004).

There are very less research has been conducted on yoga for positive psychology like happiness, satisfaction and emotional regulation, subjective and psychological wellbeing as well as negative emotional states like anxiety, depression and psychological distress in patients with low back pain. Yoga which is the state of balance in physical and mental level, reduces the psychological stress and distress, is found not to improve the psychological wellbeing in patients with chronic low back pain. (Nagendra, 2013). This shows the more research with bigger sample size for better conclusion.

CHAPTER 8
CONCLUSION

8.1 CONCLUSION

The study showed that the application of Integrated Approach of Yoga Therapy (IYAT) has the potential to reduce chronic low back pain and to increase the happiness in patients with CLBP. Improvement was observed, though not significant, in psychological well-being of patients with CLBP on one week yoga intervention.

CHAPTER 9
APPRAISAL

9.1 Strength of this study

- This is the first study that used particular Parameter with combination related to pain score, Happiness score and psychological well-being in patients with CLBP.
- It had a comprehensive intervention that composed of satvic diet, physical postures, breathing practices, Meditation and counselling session etc.

9.2 Limitations

Limitations of the study are:

- Lack of control group.
- Short-term Interventions (only one week)

9.3 Implications

The recent study has shown a significant improvement in chronic low back pain with IAYT module, but did not show the relevant efficacy of yoga on psychological wellbeing. It has encouraged and made a curiosity to find out the relation with back pain and its relation with psychological phenomena. Yoga intervention is the best way to reduce the stress, Anxiety and Depression. Every back pain patients can do the yogic technique in their personal life in today's speed era. The treatment is cost effective compared to more expenditure on conventional medical management, thus dropping the economic burden linked to CLBP. Yogic intervention does not just heal back pain, but also takes concern of the psychological phenomena, bringing deeper level of understanding of life and harmony.

9.4 Suggestions for future work

Upcoming, study should be done with control group and larger pre and post sample size. Study should be conducted to confirm the efficacy of IAYT on Happiness, Satisfaction and Emotional Regulation in LBP. Future studies should also do longer follow up to see whether the effects are maintained for a longer time with IAYT practices or not.

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APPENDICES

APPENDIX-I

Signed Informed Consent Form

Informed Consent Form

TITLE: EFFECT OF INTEGRATED APPROACH OF YOGA THERAPY (IAYT) ON PSYCHOLOGICAL WELLBEING IN CHRONIC LOW BACK PAIN PATIENTS

Information to the participants:

We understand that you are in Arogyadhama for treating your Back Pain related problem through Yoga Science. In this study we are evaluating the impact of yoga in happiness, satisfaction and emotion regulation level on back pain participants, residing in the Arogyadhama.

It is a 7 days study of pre and post changes through yoga intervention. Participant has to do yoga practice as well as add-on therapy like Naturopathy, Physiotherapy, Ayurveda and Diet plan according to recommendation of treatment plan needs to do yoga and meditation every day.

Your consent is required to take part in the study. If you consent to take part in this study, questionnaires will be given to you to answer, along with other participants. You will be asked questions related to demography. The information collected from you would be helpful in understanding the effect of the study. The questionnaire may take an hour.

I will be using 4 questionnaires; Short-Form of oxford happiness Questionnaire (OHQ), Satisfaction with life scale (SWLC), Emotional regulation Questionnaire (ERQ) Visual analogue scale (VAS), you need to be present for assessment twice in 7 days – day 1 & day 7.

The questionnaires are expected not to cause any serious undesirable effect on your physical or mental health. During the entire period of the study you can continue with your routine daily work activities. You are required to stick on to this specific yoga session & not move away for 7 days.

Please note that you have a right to refuse to take part in the study at any time. Your refusal will not negatively affect you. Please also note that the information you are going to make known to us will be kept in extreme confidentiality.

Undertaking by the investigator:

I undertake to maintain complete confidentiality regarding the information obtained from you during the course of the study. If you have any doubts about the study, please feel free to clarify the same. Even during the study you are free to contact the investigator for clarifications if you so desire. The phone number of the investigator is given below.

Investigator Name	Phone Number
Padmanava Nayak	9481062448

Consent:

I have been informed about the procedure of the study. I have understood that I have the right to refuse my consent or withdraw it any time during the study without adversely affecting me. I am aware that by subjecting to this investigation, I will have to give more time to assessments by the investigating team and that these assessments do not interfere with the benefits. I, _____, the undersigned, give my consent to be a participant of this investigation/study program.

Signature of the participant's parent/guardian

Signature of the investigator

Date:

place:

APPENDIX-II

Demographic Form: back pain study

Date:

E Mail ID:

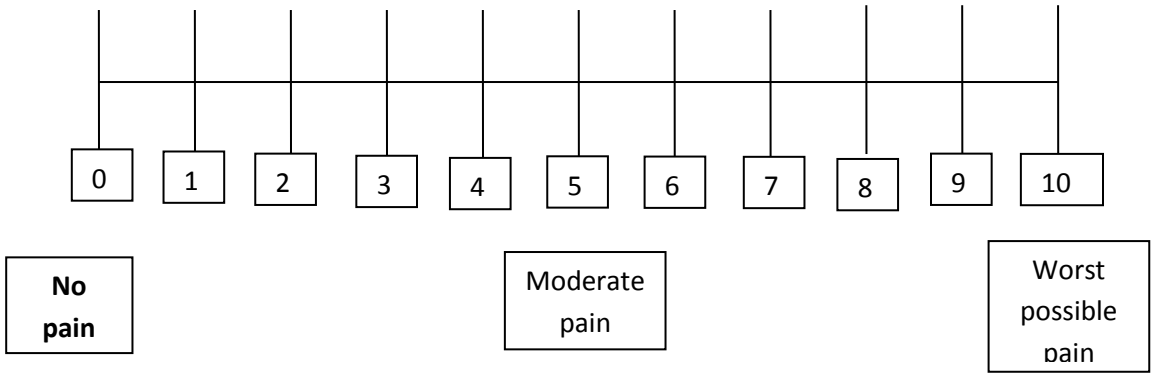
Mobile NO:

1. Full Name:
2. Age:
3. Weight:
4. Height:
5. Religion:
6. Gender Education (your highest degree/current course):
7. Current marital status:
8. How long have you been getting Lower Back pain?
9. Primary language:
10. Native place:
11. State you belong to:
12. Total number of people in the family (specify total number of adults & children separately): Total household annual income of the family
13. Do you have any known food allergies?
14. Food preference: Vegetarian(includes milk & its products/veg but consume egg)
15. Medical history (any disease or disorder you suffer, other than fever, cold, cough):
16. Family medical history (Do your parents or siblings suffer from obesity, diabetes mellitus Type 2, Cardio vascular problems or thyroid hormone imbalances):
17. Have you followed any specific diet regime in the last 6 months
18. Any stress history:
19. How happy are you on a scale of 0 to 10(10 being happiest)?

Thank you for your time and effort

Signature of the participant

0 to 10 pain rating Scale



Ryff's (1995) Scales of Psychological Well-Being (SPWB)

1	2	3	4	5	6
Strongly	moderately	slightly	slightly	moderately	strongly
Disagree	disagree	disagree	agree	agree	agree

- 1.* I tend to be influenced by people with strong opinions.
2. In general, I feel I am in charge of the situation in which I live.
3. I think it is important to have new experiences that challenge how you think about yourself and the world.
- 4.* Maintaining close relationships has been difficult and frustrating for me.
- 5.* I live life one day at a time and don't really think about the future.
6. When I look at the story of my life, I am pleased with how things have turned out.
7. I have confidence in my opinions, even if they are contrary to the general consensus.
- 8.* The demands of everyday life often get me down.
- 9.† For me, life has been a continuous process of learning, changing and growth.
10. People would describe me as a giving person, willing to share my time with others.
- 11.† Some people wander aimlessly through life, but I am not one of them.
12. I like most aspects of my personality.
- 13.† I judge myself by what I think is important, not by the values of what others think is important.
- 14.† I am quite good at managing the many responsibilities of my daily life.
- 15.* I gave up trying to make a big improvements or changes in my life a long time ago.
- 16.*† I have not experienced many warm and trusting relationships with others.
- 17.* I sometimes feel as if I've done all there is to do in life.
- 18.*† In many ways, I feel disappointed about my achievements in life.

*These items are reverse-scored so that higher scores correspond to greater psychological well-being. † These questions were selected for the Psychological Well-Being Index (PWBI).