

Meditation [Dhyan] Versus Relaxation A Review With Comprehensive Bibliography

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Abstract: A voluminous amount of research on the multi-faceted complex process of meditation is now available. Meditation [Dhyan], an ancient Indian art and science of healing, has an immense potential to liberate the mankind from the Stress Associated Diseases [SADs] which, today, are addressed as Non-infectious Chronic Diseases [NCDs]. But unfortunately the Conclusion from the currently available research are tentative because of the several errors in the study design. The guidelines suggested in this text may be useful in futuristic research which may bring the dream of trans-personal Psychologists to combine “Eastern Consciousness approach” with the “Western Precisely scientific tackling”. When that happens, it shall bring a better tomorrow in the present Health scenario.

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Introduction:“Of the greatest errors today is that the physicians do not take the soul into account for therapy”, thus lamented Hippocrates, the Father of Modern Medicine. The same error is happening once again. One hundred and ninety six Sutras by the sage Patanjali promise four conquests- of grey hair or baldness, of dim vision[cataract of refractive errors],of ageing[wit, vitality, vigour and vision]till the last breath and that of diseases by Sadhana [regular practice]. Dhyan and Dharana [today’s Mindfulness Meditation] are two out of eight components of Patanjali Kriya Yog or Indian Integral Yog which addresses physical, mental, emotional, social, moral and spiritual dimensions of Total Health. Five thousand years old Bhagavad Gita, today the most powerful book on psychotherapy,³ gives the most precise definition and information about the soul. One thousand years old Charak Sanhita deals effectively with the concepts of “Health promotion” and “Whole Person Medicine”. Great wheel of time has turned a full circle. Time has come to re-visit these ancient scriptures as NCDs are rising in alarming proportions taking the toll of young and productive population.

Ancient Indian spiritual wisdom describes the present Kali-yug as an era of mass-confusion. The following areas represent such area of “Mass confusion” while addressing the topic of Meditation. –1] Spiritual means dealing with Spirit or Atman [Soul].But in India it is always confused with Hindu religion which becomes a

great obstacle in meditation research. Religion is a code of ethical and moral values in life followed by a sect of humanity in accordance with the “Message” received from God by the God’s messengers [Wahi].The Path of Shreyas, Sirat al mustaqim or The Straight Path is when the human beings follow this code. The Path of Preyas is Devil’s Path which leads to a life of pain and suffering after initial rapid gains, gives a “High Achiever’s syndrome. ”The soul on this Path lost in the pursuit of sensual pleasures and transient materialistic gains, commits the crime of Kufra which means neglecting The God or Supreme Consciousness.

2] Meditation involving spiritual evolution and transformation of nature [Vrutti] is confused with a plethora of “Relaxation techniques” because of the lack of precise definition of Meditation. Christian devotional prayer forms like Orison or Philokalia and Mantra –chanting are often confusedly called as meditation.²

3] Several forms of meditation are in existence and many of them carry different nomenclature for the same process, eg. Vipassana is also known as “Insight meditation” or “Art of Living.”Sri Sri Ravishankar’s Sudershan Kriya is today famous as Art Of Living.

4] USA today has 32 Institutes of Mind-Body Medicine investigating the ancient healing science. USA became the first country in 2001 to include teaching and training in spiritual medicine as a compulsory part of UG and PG

curriculum, after WHO added the spiritual as the fourth dimension of Total Health in 1984 due to an Indian initiative. But in India i.e. Bharat Spiritual Medicine, even today remains "OUT OF SYLLABUS" in all of the Indian medical Universities. So the postgraduates shun the topic of Meditation for research. The Task Force of Indian Psychiatry Society, in 2009, set its first task as inclusion of spiritual medicine in UG syllabus, without success even in 2013³.

5] Meditation research demands precise knowledge about the God, Soul, Mind [Mana], Intellect [Chaturai], Wisdom [Saar-asaar Buddhi] consciousness [Chitta], seven Energy – Chakras [Muladhar ,Swadhishtan , Manipura , Anahat , Vishuddhi , Agya and Sahasara], Prana [Life-force] in the form of coiled serpent [Kundalini] and Body-aura. These entities are empirical or metaphysical. That means they are existing but the Science the Infant as termed by Albert Einstein, is unable to demonstrate them. Science [Vigyan or Vighatit gyan] always has a fractionated knowledge. Therefore, the progress in science takes the man from the areas of greater errors to those with lesser errors. But whatever the stage of progress, an area always remains UNKNOWN TO SCIENCE. This is the Domain of God where miracles happen.

Agya-Chakra is the famous Third Eye or Spiritual Eye in the scriptures through which The God's Messengers received the Divine signals. Pineal gland which exists in the same plane today is known as The God's spot and the modern psychiatrists believe that it is the seat of The Soul. The piezochromatic crystals and its structure like the human eye suggests that Pineal gland is involved in processing the photons [Light energy particles]in some way converting them into Divine signals.

6] Value of unpublished research or findings is immense in Meditation research. This has been highlighted by an unique "THE QI GONG DATABASE" which contains more than 1000 abstracts of UNPUBLISHED PAPERS on just one aspect of an ancient Meditative practice in China. This bibliography is one of the richest

sources of information on Chinese Meditation. Best & Taylor's physiology, especially Bijlani's textbook, have exhaustive chapters on yoga and Brahma kumar Dr. Chandrashekhar's innovation highlight the need for creating an "INDIAN DATABASE ON ANCIENT YOGA PRACTICES."

Recently, Russian technique called Kirlian Body aura photography has been able to establish the existence of metaphysical body-aura, but the cosmic energy-flow experienced by some long-duration Brahma Kumaris meditators remained an enigma. BK Dr. Chandrashekhar , who by Volcanic meditation got himself cured of an end-stage cancer, Diabetes and incurable Hepatitis C, devised an ingenious use of Universal scanner, demonstrates the increase Body-aura as well as the removal of the blocks in different Energy-chakras after intense meditation.[UNPUBLISHED].

7] Mind is an enigma and it is "experiential i.e. all of its knowledge is based on "Experience [Anubhuti] and Mystical experiences [Sakshatkars]. Spiritual knowledge is a conglomerate of "experiences" and "Mystical experiences" of the highly evolved and enlightened souls.[Yoga-siddhas].But the Bhrom [Hallucinations] due to the psychedelic drugs and the Mystical experiences occurring in the same area of the cerebral cortex creates as yet unresolved confusion.

8] A very serious obstacle is SCIENTISM, a pseudophilosophy that firmly believes that whatever has been demonstrated by Science is the UNTIMATE TRUTH. So the super natural powers ascribed to Yoga-siddhas like Yogic flying, levitation, walking on water or fire, astral travel in the form of a white beam of light, Parakaya pravesh [transposing the Prana from own to bring life into the dead],suspended animation[extreme hypometabolic state] and clairvoyance remains a matter of belief and faith for a mind-set [Vrutti] afflicted with Scientism.

8] Meditation is a transformation of mind-set [vrutti] by transforming the quality of thoughts. So Buddha says-"We are what we think. All that

we are arises with our thoughts. With our thoughts, we make the world.[Byron]. Bhagavad Gita tells us-“the thought forms the seed of our karma [action] and destiny. ”Vrutti decides perception, attitude, behaviour and habits³.

Two latest branches of modern medicine, Psycho-neuro-immunology [PNI]⁶ and Psycho-oncology⁷ prove that negative thoughts like stress and toxic emotions like hatred or jealousy are the weapons for Self-destruction by NCDs. The positive thoughts and emotions like purity, love, hope, bliss and peace are wonderful instruments for healing. Dr. Massaru Emoto's⁹ water crystallography and discovery of Ultradean rhythms which are akin to “Pranik healing mechanisms in ancient scriptures, in 2003 provide the scientific evidence.

9] More than 200 types of meditations are now available. Some of them come in commercial-packages. Commerce and spirituality do not go together.], though spirituality could be a part of value-based commerce. The exact steps in these meditations, some of which are called Mindfulness programmes, are never revealed. So any attempt at comparison remains tentative and not conclusive.

Current data shows that only five are evidence-based mindfulness meditations-Vipassana of Buddhism, Preksha Dhyana of Jainism, Japanese Zen, Brahma kumaris Rajayoga and Art Of Living³.A focused research using state of art equipments and neuro-hormone assays may bring out very meaningful research. All the meditations are done with eyes closed except the Zen and BK-Rajayoga. This is unique. Inspite of the sensory inputs through open eyes, the consciousness does not react and get tainted. It remains relatively free from thought-fluctuations. This indicates the ability of the mind to selectively block the undesirable inputs by a hitherto unknown mechanism, that develops in the long-term meditators.

Precise Definition Of Meditation: The US National Centre for Complementary and Alternative Medicine [NCCAM2005] defined meditation as “A conscious mental process that induces asset of physiological changes termed

as Biological Relaxation Response [BRR- Dr. Herbert Benson].”This definition is largely responsible for confusing Meditation as merely a relaxation technique.

The US NCCAM [2006] reviewed the definition. “Meditation is a process in which the person learns to focus his attention on a single positive thought or a point and to suspend the stream of thoughts which are often negative]that normally occupy his mind. This practice results in greater physical relaxation, mental calmness and psychological balance. Sage Patanjali prescribes Vrutti-nirodh for achieving this single point focus of thoughts [Ekagra Chitta] for transformation and spiritual evolution. Dr. Herbert Benson, an American cardiologist and the founder of first Institute of Mind-Body Medicine in USA, in 1987 termed this totally relaxed as well as focused mental state as ‘THE ZONE, ’This new concept of “suspension of thoughts” raises an important question. Whether a shift in consciousness from a state of multiple thoughts to focus to suspension of thought- A NON-THOUGHT CONSCIOUSNESS, implies that a new physiological paradigm should be included in Meditation Research?¹⁴. Sage Patanjali asks to focus on thoughtless interval between two thoughts and to increase it by sadhana [regular practice]¹. BK-Rajayoga concepts tell [believed to be obtained from Shiva through mystical experiences to Brahma Baba, a renowned diamond merchant who became enlightened] that a “Thoughtless situation is impossible”. A vacuum created by deletion of negative thoughts has to be filled in by positive thoughts by a technique called Rajayoga, revealed by Supreme Soul [Param-atma] for the benefit of the mankind at this particular point of time called as an era of Confluence [Sangam Yug] which heralds the beginning of Golden age[Sat-yug].

BK-Rajayoga technique has three very easy steps which incorporate three very powerful psychiatric techniques for mind-empowerment – Neuro-linguisticprogramming[NLP] for developing a “Passion Quotient PQ”, positive autosuggestions and visualization. A sadhana [regular practice] of just half an hour daily for

three months brings about transformation by rewriting the negatively transcribed CD of the mind. Miraculous cures and de-addiction then happen.[Unpublished.].BK-Rajayoga Aim at attaining the highest, purest and most powerful Brahma type of consciousness [Prakruti or personality] described in Charak Sanhita.

The authors propose that the following may be considered as a candidate for a flawless definition of Meditation – Meditation [Dhyan] is one of the component of eight-fold kriya yog of Patanjali that transforms the consciousness from the basal and satanic Rajasik-Tamasik state of the man to an elevated divine, peaceful, loveful, blissful, powerful and pure Satvik consciousness or soul-consciousness that empowers the mind so much that it can remain calm under any adverse circumstances and retain its spiritual equipoise in grief and bliss. A state of mind that is permanently stabilized in soul-consciousness is described as Sthit-pragnya state in Bhagavad Gita. Turia consciousness is when the knowledge of the past and future becomes known to the person.

Living example of Sthit-pragnya state is 97 years old Janaki Dadi of Brahma kumaris, who has been certified as the most stable mind in the whole world by two independent teams of Neurologists from USA and Australia¹⁵.

A PRELIMINARY KNOWLEDGE OF ANCIENT INDIAN SPIRITUAL WISDOM

Such knowledge shall facilitate to understand certain often repeated terms while dealing with the topic of Meditation.

Patanjali Sutra: Sage Patanjali says” Restraint of turbulent mind [turbulent due to negative thoughts and toxic emotions characterizing RAJASIK-Tamasik consciousness] is a step towards Self-realization and subsequently God-realization. ”He further describes Chitta [consciousness], Mana [mind], Vrutti [Prakruti, Nature] and Purusha [Self ,Purusha] in minutest details. A human being is BMSO, Body-Mind-Soul-Organism or a trinity of mind, body and soul. Consciousness in BMSO, a part and parcel of cosmic consciousness, is fluid and untainted. It does not have an existence of its own unless

it comes in contact with Purusha [soul].It depends on Purusha for its manifestation. It branches into different types of “Thought-waves” on coming in contact with the objects which attract the mind¹.

Buddhi [wisdom],a part of Divine consciousness, analyses this input and decides about action[Karma]. This “inner voice” shouts its loudest if the analysis tells that the action shall be wrong. The reflections [Manan-chintan] that begin in Mind before and after the action, give “Experience” and knowledge [Gyan]. Thus the Mind is experiential because all its knowledge is based on the “Experiences” of the Purusha. Whole of spiritual knowledge is the conglomerate of “Experiences’ and “Mystical experiences” of the highly evolved and enlightened souls. In Purusha, two different facets of Consciousness [microcosm] come into existence-

1] Divine consciousness [Divya chitta]or the Spiritualist Mind. It is pure, powerful and very wise, the storehouse of the knowledge gained through past several births .Thus it has immense potential for problem-solving and infinite tasks. Normally it serves subservient role. The scriptures describe it as Kaak Bhrushandi, the eternal, timeless, ageless and very wise crow.

2] Tainted consciousness or the Scientist mind- It is transient, turbulent and restless as it is busy in the pursuit of fulfilment of desires [Thought-waves] created by the objects that attract the Chitta. So the spiritual wisdom tells us that a thought or emotion can be good or bad. But the desire is always bad because it does not allow the Purusha to rest until it is satisfied and the next desire forms no sooner the first one is satiated.

Edward De Bono’s¹⁷ Twin Hemisphere theory provides the scientific evidence about two minds. Scientist Mind in the dominant left hemisphere [in right-handed person] does analytical and logical linear thinking and demands “Scientific proof” for having Belief and Faith. The Spiritualist Mind, in the other

hemisphere functions on belief and faith and is responsible for intuition, innovation and creativity by Lateral thinking, an “Out Of Box” thinking.. It is associated with Emotional Intelligence E.Q.⁸. The women have right hemispheric predominance and hence they are better than men in the skills for Man-management, an important criterion in Human Resource Development.

Meditation quietens the Scientist Mind full of Vikalpa, Vikar, Vasana [Negative thoughts] and Vikshepa [waste thoughts]. So the lust, anger, greed, jealousy, hatred, stress, tension, anxiety, worry, fear and frustrations disappear. Scriptures call this state as Antar-mauna [Inner silence]. At this point of time Spiritualist Mind [Soul consciousness] becomes active.

Yogic Practices Involved In Physical And Mental Empowerment : The yogic practices involved in this process could be divided into two categories-

1] Hath yoga and 2] Gyan Yoga or Rajayoga¹⁶. Overall eight interlinked components are involved in the integral yoga.

Hath-yoga consists of Asanas [Yogic postures for strengthening and relaxing], Pranayam [Yogic breath control technique which activates Prana, Life-force] and Kriyas [yogic practices involving external and internal cleaning known as Shaucha], Kriyas are six in number [Shat-karma]

- 1) Neti [nose-cleansing]
- 2) Dhauti [stomach cleansing]
- 3) Basti [colon cleansing]
- 4) Nauli [abdominal churning and cleansing]
- 5) kapalbhati [Head cleansing]
- 6) Trataka [Eye cleansing and strengthening].

Rajayoga consists of Yama, Niyama, Dhyana, Dharana, Pratyahar and Samadhi [Kaivalya] . Patanjali tells that diligent practice of five Yama and five Niyama can give Vacha-siddhi [Spoken words becoming a reality] and Sankalpa-siddhi [Mere thoughts becoming a reality]¹. The mind-set afflicted by Scientism shall say “Impossible.” But accepting the concept with an open mind, judging it on the anvil of Wisdom [Not intellect] whether any harm shall come, and then putting it to practice and self-experiments to gain the

“Experience” [Anubhuti] shall very easily result in the belief [Bhav] and faith [Shruddha] in the Supreme consciousness and supernatural powers [Siddhis] that one may acquire with constant connection with the Supreme [Nirantar Dhyana]. That is why Ishwer-pranidhan or the total and trusting surrender to the Divinity is most important amongst five Niyamas.

Bhagavad Gita: Bhagavad Gita divides the sojourn of the soul in a life-span into four parts- 1] Karma yoga 2] Japa yoga 3] Bhakti yoga and 4] Gyan yoga or Rajayoga.

A common phobia that prevails today due to faulty interpretation of the scriptures [BK-concepts call it as Mana-mat], is that Gyan-yoga is dangerous as one may attain great heights or may suddenly fall to the lowest nadir. But the spiritual reality is that each soul has to pass through all the four stages.

Karma Yoga- Karma theory of two alternatives in Gita tells that a man is provided with two choices at every step of the life- Right and Wrong. Here the Right or Wrong is in accordance with the eternal moral and ethical values which are common for the whole mankind regardless of the religion. Right choice gives good karma [action] and accumulates Good Karmik Account [GKA]. Bad karma [Vikarma] adds to the already existing huge Bad Karmik Load [BKL]. A soul conscious state results in Sankalpa [positive thoughts] and good karma adding to GKA. The Body-conscious state of mind results in Vikalpa [Negative thoughts and toxic emotions] Vikarma [Bad acts] adding to BKL. Health, Happiness, harmony, peace, success and prosperity in life are due to GKA, The pain, suffering, diseases, defects, disharmony, turmoil and even premature deaths are the shedding of BKL. Both the accounts are independent. One does not neutralize the other. The Bhog [the consequence of GKA or BKA] continues till the exhaustion of accounts. Intense meditation burns out the BKL as per BK-concepts. The cure of end-stage cancer, Hepatitis C and Diabetes in BK Dr. Chandrashekhar could be

easily explained according to spiritual concepts, but not by science. The present life-scenario in which grossly bad people seem to be having a rich life is due to the GKA of past birth carried to this birth in the form of Traits[Sanskars, Spiritual genome].But then suddenly ,during last phase of life, BKL comes into force. Then the most powerful and the extremely rich, inspite of the best medical treatment, dies a very painful and pitiable death. Purusharth [Spiritual effort] in the form of meditation is required to ensure at least painless and instant death after a full life, with no suffering to Self and others.

2] Japa Yoga- When in trouble a man starts chanting the name of God, All merciful God, seeing that His beloved and lost child, has once again started chanting His Holy name, removes the trouble. Now the person develops belief and faith and his mechanical chanting turns into a song full of love and enjoyment.

3] This is the beginning of Bhakti yoga.

4] Gyan Yoga- Means the person acquires the real knowledge about The Self [Self-realization] and about God.[God-realization].This is the Ultimate Truth of life.

BK-Rajayoga is also known as Sahaj [easy] Rajayoga because of the precision and the simplicity of the Knowledge, Soul is a conscient, metaphysical point of light situated in the centre of the forehead. About God there are so many misconceptions that only God Himself can remove the confusion. BK-concepts tell that the God has descended on this planet and teaching us an easy technique [Vidhi] while giving knowledge about Himself and about our true Self. No wonder He is called as Vidhata for He is asking us, "Do you know the Vidhi without which Siddhi [super human powers] is not possible. He is formless and so beyond life and death. [Ajanma].So any body-form can never be Param-atma. Yoga [yuj, connection] is when soul the conscient point of light connects with Him, also a conscient point of light.

Sir Aurobindo, the last of the Yoga-siddha divides consciousness into three components- Supreme consciousness, Supra-mental consciousness and basal limited human consciousness.

Charak Sanhita : One thousand years old Charak Sanhita is the first treatise on latest concepts in Medicine about "Health Promotion" and "Whole Person Medicine." It describes fifteen types of Prakruti [personalities] according to the level of consciousness. Each of these 15 types receives a different therapeutic approach involving Herbs, Metals and Meditation. Three main types of consciousness are- 1] Satvik 2] Rajasik and 3] Tamasik. Satvik has five subtypes, the highest being Brahma type. Rajasik has five subtypes with different grades of tainted consciousness. Tamasik has three subtypes with different grades sloth, laziness and violent desires. The highest, purest and most powerful in Satvik is Brahma type Prakruti. This is Eastern consciousness oriented approach.³

Western approach focuses on body. So Sheldon describes only 3 types of Prakruti called Morphotypes- Ecto, Meso and endomorph and their relationship with diseases.

Five Body-sheaths and their relevance- Charak describes five body-sheaths around the central Purusha-1] Most superficial Annamaya kosh 2] Pranamay kosh 3] Manamaya kosh 4] Gyan-vigyanmaya kosh and the innermost, Anandmaya kosh. All the drugs including those used in mentaldiseases, act only unto Annamaya kosh. This may explain why the incurable diseases [NCDs] are on rise. Pranayam generates Prana to remove impurities from Pranamaya kosh thus curing asthma, allergies and auto-immune disorders¹²¹.The action probably is by destroying the Free radicals formed due to stress and causing oxidative damage. Meditation removes the impurities from manamaya kosh and thus contributes to mental health. Gyan-vigyanmaya kosh is the famous inner voice or Saar-asaar Buddhi [wisdom] which rings warning bells when Purusha is about to commit wrong. Mirror

neurons may be responsible for the gut feeling. If all the Koshas are pure then the Purusha dwells in Anandamaya kosha, the ever lasting bliss [Sat-Chit-Anand]. These sheaths are unknown to the modern medical science.

Types Of Meditation : Various types of meditations [Transcendental meditation of Maharshi Mahesh Yogi, Vipassana, Prekha, A.O.L, Zen, Indian, Chinese Tai chi, Tibetan, Korean, Christian devotional type, Biofeedback respiratory type and Sufi meditation] could be classified into two broad categories –

- 1] Concentrative and
- 2] Mindfulness types.

1] Concentrative – is a “Relaxation response oriented Meditation” in which there is a decrease in respiratory and heart rates, Blood pressure; increase in Galvanic Skin Resistance [GSR] and alpha wave activity in the brain. Focus on a flame, flower or object, repetition of a Mantra or a prayer, chanting, autosuggestions or visualization are used in this form of meditation. This type is based on the definition given by US National Centre for Complementary Alternative Medicine [NCCAM] in 2005.¹¹

2] Mindfulness or Experience-oriented Meditation- Dr. Richard Davidson, Professor of Psychiatry, Wisconsin University in 2003, coined the term Mindfulness while working on Buddhist Vipassana meditation for health benefits.¹⁹ This is also known as Mental silence – oriented Meditation.¹⁴ This type is based on the revised definition by NCCAM in 2006¹³. Katha Upanishad describes **Mental Silence** as a state when the five senses and the Mind are still and the reason rests itself in silence¹⁴.

Patanjali describes Mental Silence as “The development of the awareness about “The silent void” pervading the emptiness between two thoughts. Then one can develop the skill of expanding this “Void” by thought-subjugation which leads to the transformation [of Vritti from the basal and tainted to the elevated Satvik or soul-consciousness].

This “Non-thought Consciousness” [Nirvichar Samadhi] results in mental calmness, relaxation, psychological balance and Well Being.” Non-thought consciousness is the major theme in the most effective Zen meditation²⁰.

BK-RAJAYOGA CONCEPTS : BK-concepts [founded on divine directions by mystical experiences to a human conduit] believe that a “Non-thought consciousness” is impossible. Law of Nature tells that any emptiness gets quickly filled up. So Rajayoga brings about transformation by using the inherent qualities of Purusha [soul] as the positive thoughts [peaceful, loveful, blissful, pure, and powerful] which are used as CD-writer to rewrite the negatively corrupted CD of the Mind. A relatively permanent Soul-consciousness ensues within a maximum of three months. This is a boon for Meditation research. The mind develops the power to block undesirable inputs through open eyes within three months allowing the consciousness to remain untainted. The unique “Thought-graph machine” in S.P.A.R.C. wing of Brahma kumaris clearly shows this transformation. Unfortunately the presently available scientific instruments in the Medical colleges, are unable to precisely grade “experiential variables.” for a meaningful research in Transpersonal psychology.^{21,22,23} The “Thought-graph” machine functions on a computer programme which could be made available in various medical colleges and research institutes until more refined instruments become available.

Two instruments available with Brahma Kumaris S.P.A.R.C. wing may herald the beginning of a new era of highly refined instruments. A novel “Thought-graph machine” with a basic and advanced programme, shows a fish in ocean moving forwards in the ocean with deepening meditation, progressing to a mermaid and man stage and finally showing an angel with wings. Second instrument involves the innovative use of Universal scanner to demonstrate the Energy-chakras and Body aura. Dadi Janaki of Brahma kumaris, when tested by Kirlian body aura photography with gas diffusion

visualization showed expanding Body-aura with deepening meditation¹⁵.

BK-Rajayoga is an evidenced based meditation similar in results [unpublished] to Mindfulness Based Stress Reduction [MBSR] of Kabat-Zinn,^{91,104} and Spiritually Augmented Cognitive Behavioural Therapy [SACBT]³. Both have become established as powerful psychotherapies. Hundred percent regressions of hundred percent blocks, even the calcified blocks in coronary vessels, with BK-Rajayoga 3-D programme in 2011, is a miracle⁸⁷. The 3-D programme or Rajayoga capsule consists of 1) meditation 4am to 5am [Amrit-vela, Brahma-muhurth] 2) Satvik vegetarian diet and walk and 3) purity of thoughts by constant guidance from the Supreme Soul in the form of Muralis [Celestial messages from Shiva, the Supreme soul through a human conduit, Brahma Baba]. This ensures a perpetual God-conscious state.

Responses To Meditation: The responses could be classified into six categories- 1] Psychological 2] Phenomenological [Experiential], 3] Physiological 4] Metabolic [Biochemical] 5] Autonomic Nervous System and 6] Brain physiological responses.

1] PSYCHOLOGICAL RESPONSES

Meditation enhances psychological Well-being^{25,26,27}. Many studies reported reduction in both specific as well as non-specific anxiety^{28,29}, specific phobias of enclosed spaces, of examinations, of being alone³⁰, and of heart attack-cardio neurosis³¹. Drug and alcohol use may be reduced^{13,29,32}. Hospitalized psychiatry patients with a variety of mental disorders may benefit from daily meditation³³. Several studies report about psychological benefits for successful rehabilitation after myocardial infarction³⁴, treatment of bronchial asthma^{35,37,121,125} and insomnia³⁶ and to reduce blood pressure.^{37,38,39,40} Positive changes have been observed in healthy non-clinical population. Regular meditators change remarkably in the direction of enhanced confidence, Self-esteem,⁴³ Self-control and spiritual experience³⁹, Self-actualization and

empathy^{41,42}. Thus mediation has considerable therapeutic potential.³⁰ in cancer⁷.

The only drawback is that Meditation practice [sadhana] has to be regular and for a long time.- ranging from for 3 months to 5 years. The benefits from meditation for less than 2 years are almost similar to non-meditative Self-strategies like Relaxation training or self-hypnosis, visualization and Neuro-Linguistic Programming [NLP] without God-consciousness.^{44,45, 46, 47, 48}

There are some instances in which inspite of shorter duration of practice, the Meditators reported that their "Subjective Experiences" were deeper and more meaningful than in those using "Self-regulation strategies, even though the "Objectivetest" did not reveal significant differences.^{49,50,51} Indian astrological Horoscopes of an individual classify persons into three categories- 1] Deva-gana [Deity-like full of virtues] 2] Manushya-gana [Human qualities] and Rakshasa-gana [Devilish traits]. It may be worthwhile to investigate if the "Short-term Meditators" showing "Deeper Experiences" [Early Responders] belong to Deva-gana. The extensive discussion about Integral Psychology and Consciousness research appears in Ken Wilber's "Spirit and consciousness."⁵²

TWO UNUSUAL INEXPLICABLE INSTANCES

1] Individual consciousness having effect on atmospheric consciousness- A group of meditators met regularly and meditated upon a single thought about peace in the world. Within a few months the crimes, violence, rapes and riots in Washington DC reduced by a magical 72%. When the meditation-sessions were stopped, the crime rate once again rose to the original level.⁵³

2] Dr. Hew Len's modification of Hawaiian Ho'oponopono [wishing well]:- Dr. Len was posted in one notorious psychiatric ward housing the most difficult cases with violent tendencies. No doctor could stay for more than 3 months. Staff turn over was rapid. Dr. Len did an innovation. In addition to the standard therapy, he administered something unusual. After the rounds he would sit in his chamber, take each patient's bed-record and addressed

with it with the words 'I am sorry. I love you' for some time. Within few months shackled patients were allowed to move freely. Heavy sedation for others was discontinued. Soon the staff outnumbered the patients. Today, the ward has been closed.⁵⁴

Russian thought-experiments have shown [Faraday cage experiment] that the thought-vibrations are very powerful and they can travel in the atmosphere for an infinite distance. It is possible that healing thoughts with laser beam single point focus [as told by sage Patanjali] may have brought these miracles.

2] PHENOMENOLOGICAL [EXPERIENTIAL]

RESPONSES: Such studies are relatively few but quite important^{55,56,41,57,58,59,60-64}. The experiential responses included 1] intense and labile emotions 2] awareness about how difficult it is to control the mind 3] losing concentration or becoming lost in fantasy 4] Experience of Self-transcendence and unity with others 5] a wide range of psychological insights or intuitive phenomena 6] reduced defensiveness and increased openness of the mind to the experience of peace, love, hope, happiness or power and 7] an altered state of consciousness from the restless to the peaceful and even mystical experiences [Sakshatkars]. Almost any "Experience" may occur during meditation when done with "Openness" and "Sensitivity." Patanjali describes sensitivity as ishwer-pranidhan, the total and unconditional surrender to the Supreme.¹

Some studies have reported some disturbing experiences eg. Tension, anger, perpetual changes in the sense about self and reality. But these are usually short-lived and remit spontaneously.⁶⁵⁻⁶⁹. In some cases, the "experiences" acted as psychological purging of repressed memories, past trauma and conflicts giving a beneficial effect.

Holtzman ink blot test and Rorschach effects provide objective evidence for the subjective phenomena eg. Capacity for empathy.^{41,46,70}, increase in field independence^{71,72}, increased and significant shifts in Rorschach effects⁷³ and synesthesia⁷⁴. The state of Synesthesia is a cross-

modality perception in which one sense-modality eg. Sound is experienced in other sense-modalities eg. sight, touch, smell and taste. It is very rare.

3] PHYSIOLOGICAL RESPONSES : Three kind of responses happen-

1] Biological Relaxation Response [BRR]- is notable finding described by Dr. Herbert Benson, an American cardiologist¹². This is a totally relaxed physical state which is associated with a totally relaxed as well totally focused mental state, "The zone." [Ekagra-chitta]. [Beyond Relaxation response]. Another book "With your maximum mind" in 1987,⁷⁵, reveals that the Relaxation Response when combined with hopefulness and mental strength derived from patient's Religio-spiritual beliefs and values gave much greater relief from stress and alcohol consumption. First Institute of Mind-Body Medicine [Behavioral Medicine] was founded in the same year. The Institute offers a one-week training programme for stress management for Healthcare Professionals. A similar one week's foundation course is available free of cost through more than 8500 BK-centres in 135 countries. The conference by the institute in 1995 "Spirituality and healing in Medicine" was unique. The book "The power and Biology of Belief" 1996⁷⁶ renames the "placebo effect" as "Remembered Wellness." This changes the negative perception with which Medical science perceives the Placebo effect. It now envisages its possible use as a powerful "Psychological tool" for therapy.

2] Improvement in immune functioning, potentiation of Natural Killer Cells and reversion of immune-suppression happens.¹⁹ Greater increase in anti-influenza antibodies found after vaccination⁸⁵.

3] Heart rate variability test [Breathing sinus arrhythmia] amplitudes increased significantly.^{54,77}

4] METABOLIC [BIOCHEMICAL] RESPONSES

Several Biochemical markers have been identified

1] Earliest ones include reduction in Basal Metabolic Rate [BMR] and Oxygen- consumption^{78, 79}

2] Unique patterns of blood levels of neuro-hormones-

Reduction in plasma lactate levels⁸⁰⁻⁸³, salivary and plasma cortisol levels^{84,85}, increase in plasma arginine-vasopressin,⁸⁶ “Feel Good Hormones” –GABA, Serotonin, Dihydro-epi-androsteron [DHEA] and enzyme choline esterase, enkephalin, endorphins, melatonin, Brain Derived Neurotrophic Factor [BDNF] in 2003⁸⁸ and possibly Stem Cell Activation Factor [SCAF].The SCAF is in conceptual stage. But miraculous instances of rejuvenation may be a pointer to its existence.

Enkephalin – an immune-potentiator restores homeostasis and gives a “Reverse Transport of cholesterol, which may be the reason for miraculous disappearance of 100% blocks in coronaries.⁸⁷

Endorphin – a powerful natural pain killer and mood elevator. This may explain the beneficial effects of meditation in chronic pain,^{24, 94, 114, 120}in reduction of psychological distress in cancer patients⁸⁹, doubling of life-span and even cancer-free state⁷ Anxiety-panic disorders^{17, 90} in dermatological disorder with psychosomatic element like Psoriasis⁹¹, and in depression^{92, 93}.

BDNF [2003] is a recent discovery. It gives the miracle of hitherto unknown neurogenesis-regeneration of neurons providing a new strategy in Dementia including Alzheimer’s. Newer anti-depressants act by raising BDNF levels.^{53,88}

Melatonin – secreted by Pineal gland controls sleep – wake cycle and is a powerful anti-cancer agent as it blocks certain intermediate stages of cell-proliferation. Its production is highest at night and it is “Psycho-sensitive i.e. its production is enhanced by psychological intervention. A significant increase is observed in meditators. Intense and volcanic meditation gives highly enhanced levels of melatonin.⁹⁴This may explain the miraculous cures of Hepatitis C, Diabetes and end-stage cancer in the case of BK Dr. Chandrashekar. Melatonin has become an important marker in for different psychosomatic interventions including

Meditation for assessing the relevance of a particular therapy, especially in prostate and breast cancers. Meditation practice effectively cures insomnia⁹⁵.

The pineal gland is known as God’s spot as psychiatrists now believe that it is the seat of the soul.³Recent discovery of finding similarity in the structures of eye and the pineal gland and that of piezoelectric and piezochromatic crystals in the pineal is strange.¹²⁵ It envisages that a gland embedded in total darkness has the capacity to process photons or light-energy particles. It may explain how God’s messengers receive Divine signals, “Messages” for the benefit of the humanity. This is a common belief in almost all the philosophies.¹²⁶

5] RESPONSES OF AUTONOMIC NERVOUS SYSTEM [ANS]

Galvanic Skin Resistance [GSR] provides a measure of ANS-reactivity and stress-reactivity. GSR becomes reduced after a meditative practice.^{49, 96, 101} and more stable skin resistance observed⁹⁷.

6] RESPONSES OF THE BRAIN

These responses could be divided into three categories –

1] Electroencephalograph [EEG] patterns 2] Brain-function involving “Experiences” and 3] Assessment of focused concentration [Ekagra-chitta state].

EEG PATTERNS IN MEDITATORS

Three EEG patterns have been observed –

1] Slower alpha waves [8-13 cycles per second] preponderance
2] Greater alpha synchronization or coherence between Right and Left cerebral hemispheres
3] Advanced meditators show Theta wave pattern [4-7 cycles/second]^{78, 98, 99, 123}

These patterns are consistent with deep relaxation. Some meditators may show episodes of drowsiness or sleep. But these are less common than those in controls. Some slowing may persist even during non-meditative phase.⁷⁸

More discreet analysis shows –

- 1) The existence of “Specific patterns of synchronization not only between the two hemispheres but also within the individual hemisphere.”⁸²
- 2) Faster H-reflex recovery
- 3) Shorter latencies of auditory Evoked Potential [EP]^{86, 98, 101}
- 4) EEG response to repeated sounds [alpha-blocking or habituation] is absent in meditators.
- 5) High resolution EEG investigation shows anterior and frontal theta and lower alpha waves reflect emotionally positive state and an “Internalized attention”.¹²²

EEG Coherence Or Synchronization: The greater coherence suggests enhanced functional integration of operation and greater equalization of the work load in the two hemispheres.^{58,97,123} There is enhancement of Lateral thinking involved in intuition, innovation and creativity by the Right hemisphere and lessening of Linear thinking by Left hemisphere [in the right-handed persons] involved in raising questions and doubts and analysis leading to a profusion or diarrhoea of thoughts [waste and negative] and constipation of action¹⁰³. This is the famous “Mental silence” [Antar-mauna].

The slower alpha waves indicating “Resting brain activity” in the left Frontal/Central regions is greater in the meditators than in controls. This accounts for more positive and adaptive emotional styles [denoting Satvik/soul-consciousness]. Meditators may exhibit enhanced ability in the skills localized in Right hemisphere eg.- ability to remember and discriminate musical tones¹⁰⁴. In addition, EEG patterns may show greater capacity of the person to shift the consciousness from left to right or vice versa in response to the demands of a specific tasks [indicating fast adaptation and quick and correct instant decisions].¹⁰⁵

EEG –RESPONSE TO REPEATED SOUND [Alpha blocking and Habituation]-

Meditative practice of long duration [five years or more] confers an ability of continuous open receptivity to all stimuli eg repeated sound or others without showing Habituation indicated

by “Alpha blocking.” [This is famous “Yoga-nidra” in ancient scriptures indicating that only very few neurons are active and remaining are in rejuvenating rest]. During meditation session or a Relaxation strategy in use, a bell is rung at at fixed intervals. Non-meditators showed alpha-blocking and habituation within three to five rings. The alpha blocking did not happen in the meditators who practiced for five or more years.¹⁰⁰

2] BRAIN-FUNCTION STUDIES INVOLVING EXPERIENCE [ANUBHUTI]: Various experiences that happen in a meditative process are four in number-

1] Wellness¹⁰⁶ 2] Relaxation⁸⁵ 3] Heightened alertness and attention along with physiological rest^{102,4} a “Transcending Experience”, This is defined as taking the mind away from the prevailing thought [which are often negative or a waste or painful] to an elevated [Shreshtha] state of consciousness with finer, refined, powerful, pure and positive thoughts [described as Satvik or Soul-consciousness in Bhagavad Gita].

Transcending Experience- differs from other “Experiences” in that it shows some unique features eg. 1] significantly lower respiratory rates, 2] Higher amplitudes in respiratory sinus arrhythmia 3] higher EEG alpha amplitude and 4] greater alpha coherence.

These patterns show that a “Transcending Pattern may involve “Smearing” of recognized physiological patterns. Thus it becomes imperative for a meaningful and precise “Meditation research” to simultaneously study “The EEG patterns” along with an ANS pattern and “Subjective experience” throughout a meditation session.

3] ASSESSMENT OF BRAIN-FUNCTION INVOLVING FOCUSED CONCENTRATION [EKAGRA CHITTA STATE]: This response to meditation was studied using Single-Photon-Emission-Computed-Tomography [SPECT] for measuring regional Cerebral Blood Flow [rCBF].

Significantly increased rCBF was found in inferior and orbital frontal cortex which indicated focused concentration. Thalamic increases indicate an overall increase in cortical activity during meditation. Significantly higher rCBF was also found in Dorso-Lateral Pre-frontal Cortex [DLPFC]. Its correlation with reduced rCBF in left superior parietal lobe indicates the "Altered sense of space" during meditation.⁶⁸ This may be one of the components of "Transcendental Consciousness" experienced during sleep by the meditators.^{68,123}

Patanjali Sutras describe a concept of "Yoganidra or "Wakeful Consciousness" in a state of deep sleep or/more precisely, rejuvenating/rest.⁵ The "Unique EEG Signature" during meditation supports the claim that it is possible to develop an "Alert Mental State of Transcendental Consciousness] during deep sleep, which Western Psychologists have long dismissed as impossible. The "Alert Experience" has also been observed in "Lucid-Dreaming" and "Lucid Non-dream" states. The development of lucidity offer a valuable support to the concept of phenomenon called "Spiritual Enlightenment" in the form of mystical experiences [Sakshatkars} and Clairvoyance [Trikaal-darshi] in ancient Indian scriptures.

In conclusion, all of such findings open up an entirely new field of NEURO-THEOSOPHY OR PSYCHO-PHYSIOLOGY on the lines of Psycho-neuro-immunology or Psycho- oncology.

SUGGESTED GUIDELINES FOR THE FUTURISTIC STUDY-DESIGNS FOR MEDITATION

1] Formulation of a precise definition of Meditation to differentiate this complex process with multi-faceted benefits from the "Self-regulated Relaxation strategies."

2] The studies need to include phenomenological or "Experiential evidences" in the study along with "ANS" and "physio-psychological responses."

3] Facet of "Self-liberation" [from pain, suffering and transcendence] which remains the original purpose of "Indian Integral Yoga"

[Patanjali] may also be taken into account. This means that there is a need to clearly understand the phenomenon called as Consciousness[Chitta] and its various forms.eg.God-consciousness, Soul-consciousness,Body-consciousness, Non-thought consciousness, supra-mental consciousness, Transcendental consciousness The process of Self-liberation includes development of virtues [Divya-guna].

Some of the studies include these Divya-guna- eg 1] Compassion, co-operation, mutual understanding and empathy [great need of these virtues in doctors today],^{41,108}, 2] Taking responsibility for the acts [Karma], improvement in Self-actualization⁹⁷, 3] Sense of coherence and Stress-hardiness^{24, 114, 118}, Happiness in life¹¹⁷, increased autonomy and independence⁴³, a positive sense of control³⁹, increased "Moral Maturity"⁴², and increased spirituality.^{109, 124} Positive behavioural effects include 1] Heightened perception [visual sensitivity and auditory activity, improvement in "Reaction Time" and responsive motor skills ,increased field independence, increased concentration and attention, 2],improvement in all aspects of intelligence eg. School grades, learning ability, and short-tem and long-term recall and memory,^{110,111,112} and some forms of creativity¹¹⁹.

4] Precise definition of Self – The term "Self" is being used very loosely eg.Self-actualization, Self-determination, Self-empowerment, Self-regulated etc. without the clarity in understanding the real meaning of Self. So a reference to Bhagavad Gita, Patanjali Sutra and BK-Rajayoga concepts, which are a precise and easy to understand re-mix of knowledge from Gita and Patanjali, appears to be necessary in Meditation research.

5] Lack of exact details about a meditation practice often quoted as a "Mindfulness Programme" in different studies remains a unresolved enigma making the comparisons of different studies very difficult. The step-wise details need to be specified.

6] The studies need to specify about whether the Meditation process under study is a “Relaxation oriented practice” or “Experience oriented and mental-silence oriented Meditation” to make the Conclusion more meaningful.

7] Four categories of participants may be included – 1] Non-meditators 2] Non-meditators practicing “Self-regulated Relaxation technique 3] Meditators of short duration [less than 2 years] and 4] Meditators of long duration [five years or more].Time-frame of the meditative practice is very important.

8] Shifts of consciousness – eg Non-thought-consciousness, Body-consciousness which include Rajasik and Tamasik consciousness, Satvik or Soul-consciousness, Transcendental consciousness, God-consciousness” need to be included to match the Western scientific approach with the Eastern Consciousness oriented strategies.

A common error that needs rectification- is “Pathologizing Meditative Experiences”. The psychiatrists or the clinicians who are not aware about the “Trans-personal possibilities” easily misdiagnose a transpersonal experience as psychosis or neurosis. “Trans-personal progression” and “Elevation of consciousness” are often quickly dismissed as “Pre-personal Regression”. Alternatively a psychosis may be mistaken for “Spiritual Opening and spiritual evolution”. All of these could be devastating for the participants,^{114,115,116} and tragic for Meditation research.

9] Other often repeated errors include lack of randomization, lack of follow-up, improper measurements of the constructs and very small sample-size.

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