

Historical Review of Yoga and Response Pattern of Non-Insulin Dependent Diabetics to Yoga Treatment

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ABSTRACT

Yoga is a physical, mental, and spiritual discipline, originating in ancient India. The goal of yoga, or of the person practicing yoga, is the attainment of a state of perfect spiritual insight and tranquility. The word is associated with meditative practices in Hinduism, Jainism and Buddhism. The Sanskrit word yoga has the literal meaning of "yoke", or "the act of yoking or harnessing", from the root word yuj. In Vedic Sanskrit, the term "yoga" besides its literal meaning, the yoking or harnessing of oxen or horses, already has a figurative sense, where it takes the general meaning of "employment, use, application, performance. All further developments of the sense of this word are post-Vedic. A sense of "exertion, endeavor, zeal, diligence" is found in Epic Sanskrit. The more technical sense of the term "yoga", describing a system of meditation or contemplation with the aim of the cessation of mental activity and the attaining of a "supreme state" arises with early Buddhism and is adopted in Vedanta philosophy by the 4th century BC.

Key words: Yoga, Vedanta philosophy

INTRODUCTION

Many such compounds are also found in the wider field of religion. Thus, bhakti-yoga means "devoted attachment" in the monotheistic Bhakti movement. The term kriya-yoga has a grammatical sense, meaning "connection with a verb". But the same compound is also given a technical meaning in the Yoga Sutras, designating the "practical" aspects of the philosophy, i.e. the "union with the Supreme" due to performance of duties in everyday life. The more technical sense of the term "yoga", describing a system of meditation or contemplation with the aim of the cessation of mental activity and the attaining of a "supreme state" arises with early Buddhism. The Buddhist texts are probably the earliest texts describing meditation techniques altogether. They describe meditative practices and states that existed before the Buddha, as well as those first developed within Buddhism. The most ancient sustained expression of yogic ideas is found in the early sermons of the Buddha. One key innovative teaching of the Buddha was that meditative absorption must be combined with liberating cognition. The difference between the Buddha's teaching and the yoga presented in early Brahminic texts is striking. Meditative states alone are not an end, for according to the Buddha, even the highest meditative state is not liberating. Instead of attaining a complete cessation of thought, some sort of mental activity must take place: a liberating cognition, based on the practice of mind full awareness.

In Hindu philosophy, Yoga is the name of one of the six orthodox philosophical schools. The Yoga philosophical system is closely allied with the Samkhya School. The Yoga school as expounded by the sage Patanjali accepts the Samkhya psychology and metaphysics, but is more theistic than the Samkhya, as evidenced by the addition of a divine entity to the Samkhya's twenty-five elements of reality. The parallels between Yoga and Samkhya were so close that Max Müller says that "the two philosophies were in popular parlance distinguished from each other as Samkhya with and Samkhya without a Lord...". The intimate relationship between Samkhya and Yoga is explained by Heinrich Zimmer:

These two are regarded in India as twins, the two aspects of a single discipline. Sāṅkhya provides a basic theoretical exposition of human nature, enumerating and defining its elements, analyzing their manner of co-operation in a state of bondage ("bandha"), and describing their state of disentanglement or separation in release ("mokṣa"), while Yoga treats specifically of the dynamics of the process for the disentanglement, and outlines practical techniques for gaining of release, or "isolationintegration" ("kaivalya").

Patanjali's writing also became the basis for a system referred to as "Ashtanga Yoga". This eight limbed concept derived from the 29th Sutra of the 2nd book, and is a core characteristic of practically every Raja yoga variation taught today. The Limbs are:

- ❖ Yama : non-violence, non-lying, noncovetousness, non-sensuality, and non-possessiveness.
- ❖ Niyama : purity, contentment, austerity, study, and surrender to god.
- ❖ Asana: Literally means "seat", and in Patanjali's Sutras refers to the seated position used for meditation.
- ❖ Pranayama : Prana, breath, "ayama", to restrain or stop. Also interpreted as control of the life force.
- ❖ Pratyahara : Withdrawal of the sense organs from external objects.
- ❖ Dharana : Fixing the attention on a single object.
- ❖ Dhyana : Intense contemplation of the nature of the object of meditation.
- ❖ Samādhi : merging consciousness with the object of meditation.

Yoga is a scientific exploration of the inner self that eventually brings about a metamorphosis in the seeker and leads to self realization. The true essence of Yoga revolves around elevating the life force or 'Kundalini' at the base of the spine. Yoga is a leading light for a practitioner into gaining mastery over the self, and comprehending the purpose of birth. To quote from Bhagavad-Gita, "A person is said to have achieved yoga, the union with the Self, when the perfectly disciplined mind gets freedom from all desires, and becomes absorbed in the Self alone". As man is a physical, mental and spiritual being, yoga helps to promote a balanced development of all the three stated above. Physical exercises, aerobics and other forms of exercises assure welfare only to the physical body. It has little to do with the development of the spiritual body or the astral body.

DIABETES

Diabetes mellitus represents a cluster of metabolic diseases characterized by high levels of blood glucose (hyperglycemia). This may be as a result of defects in insulin secretion, insulin action or both. Insulin is a hormone secreted by beta cells of islets of langerhans, situated in pancreas. The glucagons produced by alfa cells have anti-insulin action. Both in unison keep a constant glucose level in the blood. Insulin also acts as gate keeper, where, only in its presence can the blood glucose enter the body cells and provide fuel and energy to work. In diabetes, the cellular fuel is thus compromised, while excess of glucose remains in the circulation.

TYPES OF DIABETES

Type 1 diabetes is a disease resulting from absolute insulin deficiency, usually caused by autoimmune destruction of pancreatic islet cells. The initial clinical presentation may be ketoacidosis with an acute illness, or a more gradual presentation with symptoms of hyperglycemia. Other autoimmune disorders may also be present such as Addison's disease, thyroiditis, and pernicious anemia. A small subset of patients with type 1 diabetes has a non-immune mediated disease process with a waxing and waning clinical course. This form of type 1 diabetes is strongly inherited and most commonly affects persons of African and Asian descent.

Type 2 diabetes is a disease resulting from a relative, rather than an absolute, insulin deficiency with an underlying insulin resistance. Type 2 diabetes is associated with obesity, age, and physical inactivity. Patients with type 2 diabetes are not prone to ketoacidosis, frequently do not require insulin, and may be asymptomatic, despite being hyperglycemic for many years. Gestational diabetes (GDM) is diabetes or any degree of glucose intolerance that is diagnosed during pregnancy.

OTHER CAUSES OF DIABETES

There are not classified as either type 1 or type 2 include: genetic defects of islet cell function; genetic defects in insulin action; endocrinopathies such as Cushing's disease or syndrome; drug- or chemical-induced hyperglycemia; infections; and insults to the pancreas from a variety of causes such as pancreatic cancer, cystic fibrosis, trauma, and pancreatitis. Diabetes Mellitus is a disease related to the impaired glucose tolerance of the body, insulin functioning is affected. Symptoms of diabetes can be excessive thirst, excessive hunger or excessive / frequent urination. Diabetes Mellitus can be of Type 1 or Type 2 or pancreatic diabetes or gestational diabetes.

YOGAASANM AND DIABETICS**Sun Salutation**

Sun Salutation is very good exercise for people suffering from diabetes, it increases the blood supply to various parts of body, improving insulin administration in the body, it gives all the benefits of exercise if practiced at 4 rounds per minute. If practiced at slow speed, it offers the benefits of asanas.

Asanas

Asanas are beneficial in treatment of diabetes. Important aspect of Asanas is stability and comfort experienced in the position. After attaining the position, one needs to relax all the muscles and try to maintain the positions for long. Due to various twists, stretches and strains in the body, the internal organs are stretched and subjected to strain. This increases the blood supply, oxygen supply to the organs increasing the efficiency and functioning of the organ. Stretching various glands result in increased efficiency of the endocrine system. Asanas like Dhanurasana, Ardhamatsyendrasana, Vajrasana Yoga Mudra, Pavan Muktasana, Sarvangasana, Halasana, Matsyasana have been found useful in diabetes. These asanas have positive effect on pancreas and also insulin functioning. But to get this result, one needs to maintain the asana for longer duration while relaxing the muscles.

Pranayama

There are 8 types of Pranayama mentioned in Hatha Yoga. One of the basic preparations for Pranayama is Nadi Shodhan Pranayama or alternate nostril breathing, this type is found useful in diabetes as Alternate nostril breathing has calming effect on nervous system, which reduces stress levels, helping in diabetes treatment. Also research has shown that Bhramari and Bhasrika Pranayama help in diabetes. Bharamari has calming effect on mind, brain and nervous system. Bhasrika Pranayama is revitalizing Pranayama, which increases oxygen levels and reduces carbon dioxide levels in the blood. In bhasrika Pranayama, the abdominal muscles and diaphragm are used which puts pressure on the internal organs. But before practicing these Pranayama, one must learn and practice deep breathing, fast breathing, alternate nostril breathing, Bandhas from expert Guru.

Meditation

Practice of meditation is especially useful in management of stress. Relaxed and Concentrated state of mind is the aim of any form of meditation which creates calming effect on nervous system, brings balance between Sympathetic and Parasympathetic nervous systems. Initially meditation may be difficult, and one can practice Omkar Chanting, concentration on breathing. Especially for diabetes, concentration on pancreas during the meditation practice has shown positive effects on sugar levels. One can even visualize the proper functioning of pancreas, proper insulin administration in the body can help in treatment of diabetes.

RESULT & DISCUSSIONS

The analysis of data and the detailed results of the study are presented in this paper. They were divided randomly into three groups of fifteen each i.e., Group I (yoga practices three days per week), Group II (yoga practices five days per week) and Group III acted as (Control). The training period was limited to fifteen weeks. The dependent variables selected for this research were breath holding time on the selected dependent variables.

Table – 1

Values of dependent t-tests for Experimental groups and Control group on Breath holding time

	Yoga practices three days per week Group – (I)	Yoga practices five days per week Group – (II)	Control Group – (III)
Pre- test mean	29.87	29.87	29.60
Post-test mean	33.45	35.60	29.47
't'-test	3.89*	6.14*	0.17

* Significant at .05 level.

From Table 1 the dependent 't' test values between the pre and post test means of Yoga practices three days per week, Yoga practices five days per week and Control groups are, 3.89, 6.14 and 0.17 respectively. Since the obtained 't'-test value of the Experimental groups are greater than the table value 2.17 with df 14 at .05 level of confidence and insignificant for control group, hence it is concluded that Yoga practices three days per week and Yoga practices five days per week had registered significant improvement in the performance of Breath holding time.

The Analysis of covariance on Breath holding time of Yoga practices three days per week, Yoga practices five days per week and Control groups, have been analyzed and presented in Table -2.

Table – 2

Values of analysis of covariance for Experimental group and Control groups on Breath holding time

Adjusted Post-test Means			Source of Variance	Sum of Squares	df	Mean squares	'F' ratio
Yoga practices three days per week Group – (I)	Yoga practices five days per week Group – (II)	Control Group – (III)					
33.37	35.45	29.51	Between	274.32	2	136.71	59.30
			Within	94.52	41	2.31	

* Significant at .05 level of confidence

Table 2 shows that the adjusted post test mean values of Breath holding time for Yoga practices three days per week, Yoga practices five days per week and Control groups are 33.37, 35.45 and 29.51 respectively. The obtained F-ratio of 59.30 for the adjusted post test mean is more than the table value of 3.26 for df 2 and 41 required for significance at .05 level of confidence.

The results of the study indicate that there are significant differences among the adjusted post test means of Yoga practices three days per week, Yoga practices five days per week group and Control Group on the change of Breath holding time. To determine which of the paired means had a significant difference, Scheffe's test is applied as Post hoc test and the results are presented.

Table – 3

The Scheffe's test for the differences between the adjusted post test paired means on Breath Holding Time

Adjusted Post-test Means			Mean differences	Confidence interval
Yoga practices three days per week Group – (I)	Yoga practices five days per week Group – (II)	Control Group – (III)		
33.35	35.43		2.12*	1.41
33.35		29.48	3.91*	1.41
	35.43	29.48	5.98*	1.41

* Significant at .05 level of confidence

Table 3 shows that the adjusted post test mean difference on Yoga practices three days per week and Yoga practices five days per week groups, Yoga practices three days per week and Control groups, Yoga practices five days per week group and Control groups are 2.12, 3.91 and 5.98 respectively. The values are greater than the confidence interval value 1.41, which shows significant differences at .05 level of confidence. It may be concluded from the results that there is a significant difference in Breath holding time between the adjusted post test means of Yoga practices three days per week and Yoga practices five days per week groups, Yoga practices three days per week and Control groups, Yoga practices five days per week group and Control groups. However, the change in Breath holding time is significantly higher for Yoga practices five days per week group than Yoga practices three days per week group and the Control group.

BENEFITS OF YOGA

The benefits of yoga on circulation are tremendous. This is one of the reasons yoga is so healthy for people suffering from a variety of ailments. Circulatory problems, in diabetics, are the primary cause of many devastating side effects. Yoga's focus on breathing, stretching and rotational movements, by nature, improves circulation. Yoga also helps maintain the elasticity of blood vessels. This further assists in good circulation. In turn, increased oxygen is supplied to internal organs and the important glands of the endocrine system. When the blood vessels remain elastic, this means better heart health and decreased risk of stroke.

Back bends are especially good for the cardiovascular system. Yoga teachers should encourage diabetic students to incorporate back bends into their postures. If a student has mobility problems, because of age or obesity, consider assisted back bends with props to support his, or her, body, neck, and head. Digestion is improved through movements and breathes control of yoga. Pancreas and liver operation is also enhanced. The rotations of certain postures also massage the glands of the endocrine system, encouraging hormone production. Diabetics, who commit to the regular practice of yoga, will likely experience less dependence on insulin. Studies have found that significant drops in the average blood glucose levels occur in type II diabetics, when they practice yoga on a regular basis. Additional findings demonstrate an increase in nerve function.

The following sequences and poses are beneficial to diabetic students:

- ❖ Sun Salutations - This sequence of poses is great for diabetics. The flowing series of movements increases blood flow to all parts of the body, improving insulin administration.
- ❖ Peacock Pose - The peacock pose is said to tone up the pancreas, kidneys, and liver. Improved digestion is another benefit.
- ❖ Locust Pose - The locust benefits the nerves by reducing tension. The constriction and release, in the muscles of the back, relaxes muscles. The movement also stimulates the pancreas.
- ❖ Chest-Knee Pose - Also called the Knees to Chest pose, this posture provides a great deal of support for digestion. The lower digestive tract is soothed and stimulated by this posture. Lower back pain is also relieved by the stretching of those muscles. It reduces tension.

Regular practice of yoga does reduce blood sugar levels, the blood pressure, weight, the rate of progression to the complications, and the severity of the complications as well. The symptoms are also reduced to a great extent, so are number of diabetes related hospital admissions. The quality of life questionnaires do reveal a remarkable improvement in the scores.

Possible Mechanisms of Yoga

- ❖ Glucagon's secretion is enhanced by stress. Yoga effectively reduces stress, thus reducing glucagon's and possibly improving insulin action.
- ❖ Weight loss induced by yoga is a well accepted mechanism.

- ❖ Muscular relaxation, development and improved blood supply to muscles might enhance insulin receptor expression on muscles causing increased glucose uptake by muscles and thus reducing blood sugar.
- ❖ Blood pressure plays a great role in development of diabetic and related complications, which is proven to be benefited by yoga.
- ❖ Yoga reduces adrenaline, noradrenalin and cortisol in blood, which are termed as ‘stress hormones’.
- ❖ Many yogic postures do produce stretch on the pancreas, which is likely to stimulate the pancreatic function. In India, we are having many patients controlled only on so called ‘lifestyle modification’ i.e. yoga essentially.

CONCLUSION:

Healthy life can be considered as a by-product of practicing yogic techniques since it has been observed that yoga practitioners are physically and mentally healthier and have better coping skills to stressors than the normal population. Yoga is widely practiced and globally accepted. Hence, it can be very well integrated as a health promoting tool in our society. Healthy people as well as patients may inquisitively approach medical professionals to take consultation about yoga. Yoga is an experiential science. If this knowledge about yoga invokes interest in the medical professionals and they practice it themselves, it might open up new avenue in bringing together our traditional heritage of yoga and today’s’ objective knowledge of modern medicine. Documented scientific evidence strongly indicates that yoga has promotive, preventive as well as curative potential. As a non-pharmaco therapeutic and safe modality, it can be used as an effective lifestyle adjunct to medical treatment to reduce drug dosage and improve quality of life of the patients. It is to be emphasized that yoga is very effective for prevention as well as management of all-pervading stress and stress-related disorders. Modern medicine is very effective in controlling infections, performing surgeries and managing diseases. However, it has limited role in stress-based, chronic degenerative, old age and lifestyle related disorders which are the bane of modern society. Yoga has been found to be very effective in these conditions. Our public health delivery system is under-staffed, fund-starved and reeling under severe economic burden. Knowledge of inexpensive, effective and easily administrable yogic techniques by health professionals will go a long way in helping us achieve the WHO goal of providing “physical, mental, spiritual and social health” to the society. In this context, the investigator made an attempt to investigate the effect of yoga practices among the diabetic patients.

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