

## Influence of Foot Reflexology Compared to Yogic Practices on Selected Biochemical Variables in Diabetic Men

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### Abstract

The aim of this study was to find out the effect of foot reflexology treatment (FRT) and Yogic practices training (YPT) on selected biochemical variables such as, blood sugar, hemoglobin and blood cholesterol in diabetic men. 45 male adult suffering from diabetes mellitus type II and who volunteered to serve as subjects were randomly selected. Their age ranged from 35 to 50 years for this study. All the subjects were taking anti-diabetic drugs and diet as suggested by their physician. All the subjects attended this study from their respective homes. The subjects were randomly divided into three groups, namely, foot reflexology treatment (FRT) group, yogic practices training group (YPT) and the third group was kept as control group. Only the subjects with reasonable physical ability and willingness to undergo the experimental training programme voluntarily were included in the study. At prior to the experimental treatment blood samples were collected from all the subjects and tested for blood glucose, hemoglobin and blood cholesterol. The FRT group subjects were provided with detailed foot reflexology treatment for 12 weeks and Yogic practices training (YPT) group were provided with selected yogic practices for 12 weeks. After the experimental treatment, post test scores were obtained on selected variables from the blood samples collected from the subjects. The differences between the initial and final scores on selected variables were considered as influence of respective treatments proved that experimental treatments foot reflexology treatment(FRT) and Yogic practices training (YPT) significantly influenced selected biochemical variables, blood sugar, hemoglobin and blood cholesterol. The mean values, adjusted mean values and multiple comparisons of adjusted means proved that foot reflexology treatment was better than Yogic practices training on selected biochemical variables. However, the differences between foot reflexology treatment and Yogic practices training were not significant. It was concluded that FRT group and YPT can be used for managing diabetics to beneficially change selected biomechanical variables, blood sugar, hemoglobin and blood cholesterol.

**KEYWORDS:** Foot Reflexology Treatment, Yogic Practices Training, Blood Sugar, Hemoglobin, Blood Cholesterol.

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### Introduction

Vedantha Maharshi (1983) in his Simplified Kundalini Teaching says Foot Reflexology helps Nature achieve homeostasis. Overactive glands or organs can be helped to return to normal. Conversely, if an organ or a gland is underactive, Reflexology can help return it to its normal functioning level. It is important to note here that the

normalization action of reflexology is never one of opposite extreme. In other words, once homeostasis or a normal condition is achieved, working the area too much cannot unbalance it. Overworking can cause some minor reactions such as diarrhea or perhaps some nasal mucus being secreted (runny nose). These reactions though are cleansing poisons from the body. Succinctly, Reflexology cannot harm a system, it simply brings it back into balance. Reflexology helps Nature achieve homeostasis. Overactive glands or organs can be helped to return to normal. Conversely, if an organ or a gland is underactive, Reflexology can help return it to its normally functioning level. It is important to note here that the normalization action of reflexology is never one of opposite extreme. In other words, once homeostasis or a normal condition is achieved, working the area too much cannot unbalance it. Overworking can cause some minor reactions such as diarrhea or perhaps some nasal mucus being secreted (runny nose).

Mildred Carter (1969) defined “Reflexology is Nature’s push-button” Secret of Vibrant health more dynamic living, abundant personal energy, better living without pain for the perfection in activities”. Reflexology is a science that deals with the principle that there are reflex areas in the feet and hands that correspond to all of the organs and systems in the body. Doing reflexology means more than working on your feet. It is actually working with the person, attempting to mobilize inner energies (physical and mental in conflation) in order to fight any imbalance in the system. The reflexologists, systematically approach, with much empathy, that neglected area between body and soul where modern medical practice normally stops short. And indeed, how often we hear medical experts tell us that ultimately recovery depends on the determination, trust, and optimism of the patient. Unfortunately, medicine has little to say about the means of cultivating such an attitude, and here is where Advanced Foot Reflexology performs so well.

Reflexology deals with the principle that there are reflex points on the hands and feet which correspond to all of the body’s glands, organs and structures. By manipulating or applying specific pressure techniques to the different reflex points, it is possible to initiate healing in the corresponding area of the body. When illness or imbalances occur, the energy channels that flow through our bodies become blocked. A Reflexology treatment aims to destroy these blockages, allowing energy to flow freely again and restoring the body’s natural balance and good health. (Judith Berger and Judith Sachs, 1997)

The concept of disease, according to yoga, is found in the treatise called Yoga Vaasishtha. According to yoga studies, the modern diseases such as asthma, diabetes, hypertension, and anxiety is called “Aadhija Vyaadhi” (stress born diseases) originating in Manomaya kosha-the astral layer of our existence. They arise from our actions rather than what is right or what is wrong. Often in this phase, we respond to our emotions – the pull of senses knowing fully well that we are going against what is right. This is called Pranjnaparaadha in Ayurveda-a mistake at the level of inner consciousness. It is this ‘going against what is right’ – the cosmic law- that causes an imbalance, a disease at the Manomaya Kosha called Aadhi. (Srikanth, et.al. 2010)

Yoga means the experience of oneness or unity with inner being. This unity comes after dissolving the duality of mind and matter into supreme reality. It is a science

by which the individual approaches truth. The aim of all yoga practice is to achieve truth where the individual soul identifies itself with the supreme soul or God. Yoga has the surest remedies for man's physical as well as psychological ailments. It makes the organs of the body active in their functioning and has good effect on internal functioning of the human body. Yoga is a re-education of one's mental process, along with the physical.

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 alpha 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. 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.

Swami Gitananda (1989) stated that when we are under stress and our muscles are tense, the free flow of blood is interrupted. When the flow of the blood is interfered with, the arteries, the blood pressure and the rate of breathing are affected, this has a negative effect on the individual's activities. Our adrenal glands, which release hormones in our body, saves our life by coping with stress. As long as we experience stress, the adrenal glands will continue to produce the vital hormones, cortisones and adrenalin. But if the stress continues for too long, these excessive hormones can have a harmful effect on the body, which may affects the individual activities. This is where the Yoga reflex pressure massage (reflexology) comes into act to protect the individual from the illness. This controls the function of various hormones. It is the interest of this study how far the foot reflexology treatment influences selected biochemical variables, such as, blood sugar, hemoglobin and total cholesterol of diabetic persons compared to selected yogic practices

## METHODOLOGY

To achieve the purpose of the study 45 male adult suffering from diabetes mellitus type II and who volunteered to serve as subjects were randomly selected. Their age ranged between 35 to 50 years for this study. All the subjects were under anti-diabetic drugs and diet as suggested by their physician. All the subjects attended this study from their respective homes. The subjects were randomly divided into three groups, namely, foot reflexology treatment (FRT) group -I, yogic practices training (YPT) group-II and the third group-III was kept as control group. Only the subjects with reasonable physical ability and willingness to undergo the experimental training programme volunteered were included in the study. At prior to the experimental treatment blood samples were collected from all the subjects and tested for blood glucose, hemoglobin and blood cholesterol of the subjects. The FRT group-I subjects were provided with detailed foot reflexology treatment for 12 weeks and YPT group-II were provided with selected yogic practices for 12 weeks. After the experimental treatment, post test scores

were obtained on selected variables from the blood samples collected from the subjects. The differences between the initial and final scores on selected variables were considered as influence of respective treatments. The collected data were subjected to statistical treatment using ANCOVA.

## RESULTS

**TABLE-I**

**Descriptive Statistics on Selected Bio Chemical Variables on Diabetic Patients**

TESTS	FRT Group-I	YPT Group-II	CONTROL GROUP-III
<b>BLOOD SUGAR</b>			
Pre Test Mean	134.67	133.20	134.67
Std Deviation	4.75	4.63	4.27
Post Test Mean	130.07	129.13	134.07
Std Deviation	3.47	3.74	4.46
Adjusted Post Test Mean	129.67	129.93	133.67
<b>HEMOGLOBIN</b>			
Pre Test Mean	14.91	14.44	14.36
Std Deviation	0.11	1.07	0.74
Post Test Mean	15.87	15.40	14.47
Std Deviation	0.00	0.00	0.00
Adjusted Post Test Mean	15.58	15.51	14.65
<b>BLOOD CHOLESTEROL</b>			
Pre Test Mean	175.19	172.70	174.03
Std Deviation	12.75	10.68	11.20
Post Test Mean	162.31	161.60	172.33
Std Deviation	11.47	10.65	10.57
Adjusted Post Test Mean	161.22	162.74	172.29

**TABLE-II**

**Influence of Foot Reflexology Treatment (FRT) and Yogic practices training (YPT) on Selected Bio Chemical Variables on Diabetic Patients**

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
<b>BLOOD SUGAR</b>					
<b>Initial</b>	Between	21.51	2	10.76	0.52
	Within	871.07	42	20.74	
<b>Final</b>	Between	206.04	2	103.02	6.72*

	<b>Within</b>	643.60	42	15.32	
<b>Adjusted</b>	<b>Between</b>	149.46	2	74.73	47.54*
	<b>Within</b>	64.45	41	1.57	
	<b>HEMOGLOBIN</b>				
<b>Initial</b>	<b>Between</b>	2.62	2	1.31	2.32
	<b>Within</b>	23.72	42	0.56	
<b>Final</b>	<b>Between</b>	15.37	2	7.68	13.24*
	<b>Within</b>	24.38	42	0.58	
<b>Adjusted</b>	<b>Between</b>	7.67	2	3.84	26.45*
	<b>Within</b>	5.95	41	0.15	
<b>BLOOD CHOLESTEROL</b>					
<b>Initial</b>	<b>Between</b>	46.69	2	23.34	0.17
	<b>Within</b>	5628.64	42	134.02	
<b>Final</b>	<b>Between</b>	1080.57	2	540.28	4.54*
	<b>Within</b>	4993.43	42	118.89	
<b>Adjusted</b>	<b>Between</b>	1079.22	2	539.61	47.18*
	<b>Within</b>	468.97	41	11.44	

\* Significant at 0.05 level.

**TABLE-III**  
**Multiple Comparisons of Paired Adjusted Means and Scheffe's Post Hoc Analysis Results**

FRT Group-I	YPT Group-II	Control Group-III	MEAN DIFF	Reqd. C.I
<b>Blood Sugar</b>				
129.67	129.93		0.26	1.19
129.67		133.67	4.00*	1.19
	129.93	133.67	3.74*	1.19
<b>HEMOGLOBIN</b>				
15.58	15.51		0.06	0.36
15.58		14.65	0.92*	0.36
	15.51	14.65	0.86*	0.36
<b>BLOOD CHOLESTEROL</b>				
161.22	162.74		1.52	3.20
161.22		172.29	11.07*	3.20
	162.74	172.29	9.54*	3.20

\*Significant at 0.05 level.

## DISCUSSIONS

The results presented in Tables I to III proved that experimental treatments that FRT group-I and Yogic practices training, group-II (YPT) were significantly influenced on selected biochemical variables, blood sugar, hemoglobin and blood cholesterol. The mean values, adjusted mean values and multiple comparisons of adjusted means proved

that FRT group-I was better than Yogic practices training group-II (YPT) on selected biochemical variables. However, the differences between FRT group and Yogic practices training group (YPT) were not significant. The results are in agreement with the findings of Sahay (2007), Manjunatha (2005) and Singh (March 2004) who carried out a research on diabetes to assess the role of yogic practices and found beneficial effect on the co-morbid conditions like blood sugar, hemoglobin, hypertension and dyslipidemia. Kao Fredrick (1975) found blood sugar had dramatically gone down and the doctor found that blood sugar had dropped down to a normal level. The findings of the study were in agreement to the previous researches.

## CONCLUSIONS

It was concluded that foot reflexology treatment (FRT) and yogic practices training (YPT) can be used for managing diabetics to beneficially change the selected biomechanical variables such as blood sugar, hemoglobin and blood cholesterol.

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