

To Know the Impact of Yoga Exercises on Releasing Neurological Stress

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Received: 13-03-2021 / Revised: 23-04-2021/ Accepted: 30-05-2021

Abstract

Background & Method: This study was conducted in Department of Physiology, Index Medical College Hospital & Research Centre (Faculty of Medicine & Health Sciences) & Malwanchal University, Indore. Blood pressure variability parameters analyzing, Systolic blood pressure, Diastolic blood pressure, Mean arterial pressure. **Result:** The chi-square statistic is 0.0217. The p-value is 0.0482824. The result is significant at $p < .05$. The chi-square statistic is 0.11. The p-value is 0.035627. The result is significant at $p < .05$. The chi-square statistic is 0.3429. The p-value is 0.043662. The result is significant at $p < .05$. **Conclusion:** Our study demonstrated the effectiveness of individualized yoga for home practice, and that such interventions may be beneficial in mental health care in the broader community. Appropriate training of yoga teachers in the field of mental health is recommended. Reduction of depression and anxiety is also associated with a range of additional health benefits. Like yoga, low-intensity exercise seems to have beneficial effects on the mind and body. The biological mechanisms underlying the effects of each need to be further teased out in research studies.

Keywords: yoga, cardio, metabolic, stress, obesity.

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Introduction

More than 3000 BC Patanjali a Sanskrit researcher and Indian doctor given a depiction for physical yogic stances. Term yoga implies bridling oneself to an order (or) lifestyle which is gotten from the Sanskrit word. Yoga is supposed to be a yoga sutra before in wonderful structure[1]. Reflection, unwinding, control of breathing, different physical stances are the segments of yoga. This yoga has now entered the western way of life through Swami Vivekananda's work in the late nineteenth and mid twentieth hundreds of years.

Being the major non-transferable infection, cardiovascular illness establishes a significant financial weight in all nations around the world. Albeit a few hundred cardiovascular sickness chance components have been recognized, the most significant ones incorporate hypertension, hyperlipidemia, hyperglycemia, and stomach stoutness[2]. About 80% of cardiovascular ailment is for the most part brought about by modifiable hazard factors. Yoga is established in Indian way of thinking and has been a piece of conventional Indian otherworldly practice for centuries. Conventional yoga's definitive objective has been depicted as calming one's brain to accomplish the association of psyche, body and soul. Notwithstanding its otherworldly starting points, yoga has become a mainstream course to physical and mental prosperity and has been adjusted for use in correlative and elective medication in North America and Europe[3]. In the last setting, yoga is frequently connected with physical stances ('Asana'), breath control ('Pranayama'), and contemplation ('Dhyana'); and diverse yoga

schools have risen that put changing spotlight on physical and mental practices. In Western social orders, yoga is increasing expanded notoriety as a helpful technique. Around 14 million grown-up Americans (6.1% of the populace) revealed that yoga had been prescribed to them by a doctor or advisor. Yoga has been appeared to diminish significant mental cardiovascular ailment hazard factors, for example, stress and misery. Being a mix of activity, controlled breathing, and unwinding, it is regularly thought to likewise improve natural cardiovascular sickness chance factors[4]. Yoga treatment is being perceived worldwide as an elective way to deal with numerous well being related issues. An overall component of these practices is their capacity of actuating psycho physiological parity[5]. It is proposed that Yoga practice improves CVD-related result through after two pathways, vagal incitement and parasympathetic enactment. Yoga's restorative potential in the field of cardiovascular wellbeing has been investigated in a developing number of preliminaries to date in spite of the fact that solidification of proof as bibliometric examination is constrained. Henceforth, the motivation behind the current examination is to give a far reaching audit of accessible exploration proof in the field of cardiovascular well being through a bibliometric analysis.

Materials & Methods

This study was conducted in Department of Physiology, Index Medical College Hospital & Research Centre (Faculty of Medicine & Health Sciences) & Malwanchal University, Indore from Dec 2018 to Jan 2021. The ethical clearance was taken for the study from the Ethical Committee of the Institute, subjects of both sex from Index Campus was selected for the study, subject to the criteria described below. Consent was taken from the subjects prior to involving in the study on a consent form.

Inclusion Criteria:

- Family history of obesity
- Age group of 17-50 in both genders

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iii. Patients who can able to perform yoga

iv Body mass index (BMI) >35 kg/m²

Exclusion Criteria:

I Subjects with known hepatic, renal, hematological or any organ disorder.

II Subjects on any long term medication or drugs.

III Smokers and alcoholics.

IV Subject already practicing Yoga.

Blood pressure variability parameters:

I. Systolic blood pressure

II. Diastolic blood pressure

III. Mean arterial pressure

Results

Table 1: Height in cm

S. No.	Case			Control			P Value
	Age Group	No.	Percentage	Age Group	No.	Percentage	
1	150-160	18	22.78	150-160	16	19.75	.038745
2	161-170	39	49.38	161-170	47	58.02	
3	171-180	22	27.84	171-180	18	22.23	

The chi-square statistic is 1.023. The p-value is .038745. The result is significant at $p < .05$.

Table 2: Weight in kg

S. No.	Case			Control			P Value
	Age Group	No.	Percentage	Age Group	No.	Percentage	
1	70-80	21	26.58	70-80	18	22.24	0.029812
2	81-90	45	56.97	81-90	50	61.72	
3	91-100	13	16.45	91-100	13	16.04	

The chi-square statistic is 0.469. The p-value is 0.029812. The result is significant at $p < .05$.

Table 3: BMI

S. No.	Mean	SD	Max.	Min.
Case	31.016	0.866	33.6	30
Control	31.071	1.059	35.3	30

Table 4: Waist Circumference in cm

Parameter	Base line valueMean±SD	After 30 sittings of yogaMean±SD	After 60 sittings of yogaMean±SD	P Value
Case	105.97±16.21	103.47±16.21	101.05±16.44	0.0482824
Control	102.19±11.68	102.87±12.22		

The chi-square statistic is 0.0217. The p-value is 0.0482824. The result is significant at $p < .05$.

Table 5: Malondialdehyde

Parameter	Base line valueMean±SD	After 30 sittings of yogaMean±SD	After 60 sittings of yogaMean±SD	P Value
Case	3.58±0.88	3.08±0.88	2.58±0.88	0.035627
Control	3.39±.831	3.68±1.086		

The chi-square statistic is 0.11. The p-value is 0.035627. The result is significant at $p < .05$.

Table 6: HOMA-IR

Parameter	Base line valueMean±SD	After 30 sittings of yogaMean±SD	After 60 sittings of yogaMean±SD	P Value
Case	3.09±0.57	2.80±0.57	2.41±0.60	0.043662
Control	3.01±.570	3.33±.747		

The chi-square statistic is 0.3429. The p-value is 0.043662. The result is significant at $p < .05$.

Discussion

With the yoga intervention appealing result was reported in anthropometric parameters, progress was observed in obese female and male participants BMI, WC, HC were significantly reduced. The findings obtained in earlier study in which 14 weeks of yoga intervention improved anthropometric measurement[6]. In the present study skin fold thickness reduction was significant in yoga group but not in control group. The findings of current study are in agreement with the findings of earlier study of PB rishikesan, in relation to skin fold measurement. There was appreciable change in waist hip ratio but it was not significant. The current study observations are supported by earlier study which reported no significant change. Increase in physical activity has double impact of increasing physical fitness as well as mental fitness[7]. In the present study with structured pattern intervention of yoga including asanas and breathing techniques was shown to provide promising improvement in abdominal obesity and psychological stress level, earlier study also

observed that kapalbathi, anulomaviloma pranayama, savasana and meditaion can reduce stress and abdominal obesity. Previous studies have suggested that depression patients could be benefit from Sudarshankriya and related practice. In a former study with 6 weeks of yoga intervention reduction in symptoms of depression and anxiety and associated mental health showed improvement[8]. Role of yoga in reducing symptoms of mental health was found to be achieved with a frequency of five days /week with duration of 25-30 min for 6 weeks. In an earlier study 6 months of regular yoga practice was shown to improve stress as well as recognition memory task, depression and anxiety. The findings in present study also shows improvement in accordance with the previous studies[9]. The current study is a mirror image of earlier studies, which indicates that yoga intervention has a strengthening role in reducing fasting blood glucose. Studies by showed a minimal effect on the intervention of yoga in the lipid profile but in the current study there was a significant change in the lipid profile in the yoga group as compared

to yoga group this may be due to duration and intensity of exercise and monitoring of the intervention group.

My findings are also supported by the findings of who have reported reduction in lipid profile with the intervention of yoga[10]. According to a study, tells various form of asanas like trikonasana, konasana, stithakonasana, paschimottasana, ardhhalasana, bhujangasana, salabhasana and breathing exercise reduces waist circumferences, hip circumferences, abdominal obesity.

In a previous study done on diabetic patients it was observed that hatha yoga which included various forms of yogic postures, asanas, and breathing techniques was proved to be beneficial in reducing fasting blood glucose level and oxidative stress as well as serum cholesterol and VLDL[11]. In various studies it was spotted that malonaldehyde concentration was raised in patients suffering with stress disorder.

According to earlier studies it was seen high glucose levels may be associated with oxidative stress which may cause damage to membrane polyunsaturated fatty acids and causes generation of MDA. It was observed that oxidative stress also causes insulin resistance.

Malonaldehyde concentration which is considered a marker of oxidative stress, was significantly decreased in subjects performing yoga[12]. The findings of present study also propose significant decrease in malonaldehyde concentration after yoga intervention. Earlier studies on stress have shown that MDA concentration have significantly lowered by Sudarshankriya yoga.

Work done have established that with yoga there is significant improvement in fasting blood glucose as well as postprandial blood glucose levels. Many studies have documented advantages role of yoga as a tool for glycemic regulation. Yoga postures causes stimulation of organs and glands by easy bending and extension which do not over stimulate muscles or glandular secretion[13].

Various researchers have shown that yoga asana have potential in reducing MAD concentration. The observation of the current study also shows significant decrease in MAD concentration. In the current study it was noted that obese subjects have higher systolic pressure, diastolic pressure and mean arterial pressure was also higher.

Adipose tissues produce pro inflammatory cytokines that may cause insulin resistance and lipolysis, high level of circulating free fatty acids and improper insulin activity lead to hyper glycemia. Insulin resistance is the finest forecaster for the onset of diabetes mellitus, prior the onset of disease[14]. Former studies have shown insulin resistance as a consonant finding in the patients of type 2 diabetes mellitus. Insulin resistance and developing beta cell ailment have been positively correlated with type 2 diabetes mellitus. HOMA – IR (homeostasis model assessment of insulin resistance) is the frequently used authentic calculation for insulin resistance. HOMA is derived from a mathematical calculation, to check the balance between hepatic glucose output and insulin secretion from fasting level of glucose and insulin[15]. The homa index of insulin sensitivity is calculated as $HOMA\ IR = \frac{\text{fasting insulin} \times \text{fasting glucose}}{22.5}$ where 22.5 is constant. $HOMA-IR = \frac{G \times B}{I \times k}$, GB AND IB is the basal glucose and insulin concentration and k is constant. It was observed by, that HOMA IR value was higher in diabetes type 2 patients. In various prior studies significant association was seen between BMI and insulin resistance. Gender difference was also observed in reference to total body fat distribution and insulin resistance. Metabolic syndrome and hyperinsulinemia have been positively correlated with oxidative stress and inflammation this can cause high serum level of LDL causing development of atherosclerosis and negative cardiovascular conditions[16].

Insulin resistance induces hyperinsulinemia which enhances renal sodium reabsorption which may cause hypertension. Hyperinsulinemia increases urate reabsorption in the proximal tubule and causes hyper uricemia this indicates association of uric acid with

metabolic syndrome. Many hypotheies suggest that increase fat accumulation in liver could be induced by uric acid[17].

These metabolic alteration causes reduced ATP level impaired fat oxidation which may result in obesity and diabetes. Many cross-sectional studies have reported positive association between hyperuricemia and increased in waist circumference), dyslipidemia, low HDL. Hyperuricemia was found to be associated with obesity and insulin resistance.

In earlier studies it was observed that waist circumference, BMI and triglycerides were higher in males with hyperuricemia, In previous studies it was observed that hyperuricemia may lead to endothelial dysfunction and nitric oxide inhibition which causes insulin resistance and development of diabetes type II. In the present study also high uric acid level was reported in the subjects. Many studies have reported yoga intervention significantly reduces uric acid level[18]. The findings of the present study also show positive correlation between yoga intervention and reduction in the uric acid level.

Conclusion

Our study demonstrated the effectiveness of individualized yoga for home practice, and that such interventions may be beneficial in mental health care in the broader community. Appropriate training of yoga teachers in the field of mental health is recommended. Reduction of depression and anxiety is also associated with a range of additional health benefits.

Like yoga, low-intensity exercise seems to have beneficial effects on the mind and body. The biological mechanisms underlying the effects of each need to be further teased out in research studies.

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Conflict of Interest: Nil

Source of support: Nil