



## Effect of Life Style Changes on Cardiovascular Autonomic Function

### KEYWORDS

SYMPATHETIC, PARASYMPATHETIC, LIFESTYLE, ACTIVE SEDENTARY

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**ABSTRACT** Autonomic function is influenced by obesity and life style factors. Emotional stress, anxiety, smoking, alcohol tend to increase sympathetic activity and on the other hand meditation, yoga and other relaxation techniques increase vagal tone and reduces blood pressure and heart rate.[1]The autonomic nervous system, though previously thought as part of the nervous system that cannot be controlled, now a days it is seen that with help of yoga meditation and other relaxation technique it can be controlled.[2]Because of its participation in the pathologic process like sudden death, ischemic heart disease, coronary artery disease, the importance of studying autonomic function has grown over years

#### Objective

To establish the relation of life style modification on cardiovascular autonomic function.

#### Material and Methods

The study was carried out among 200 staff of Gauhati Medical College in the age group 20 to 58 years.

Life style of all the 200 cases was determined..Life style is defined as the way people live, reflecting whole range of social values, attitudes and activities is composed of cultural and behavioral patterns and life long personal habits that have developed through process of civilization.

Mainly two types of life style were assessed.

**ACTIVE LIFESTYLE**-Regular exercise program with sufficient period of rest at night and diet rich in fresh fruit and vegetables, but low in saturated fats and simple carbohydrates.

**SEDENTARY LIFE STYLE**-Lack of exercise, obesity, smoking alcoholism and diet rich in saturated fat

For parasympathetic function ]

1. Deep breath test

2. Valsalva test

For sympathetic function

1. Hand grip test

;2. Orthostatic hypotension test

#### Results

In comparison to sedentary life style the parasympathetic activity was significantly increased in active life style valsalva ratio p value<.05.

Though sympathetic functions were raised in sedentary life style it was not found to be statistically significant.

#### Conclusion

In today's world of anxiety and stress it is seen that meditation and yoga and other stress relaxation techniques help reduces heart rate and blood pressure. Sedentary life style and unhealthy food habits increases sympathetic tone and greatly increase risk of cardiovascular diseases. So modification of life style is essential for prevention of cardiovascular accidents

**INTRODUCTION-** Chronic imbalance of the autonomic nervous system is a prevalent and potent risk factor for adverse cardiovascular events, including mortality. Although not widely recognized by clinicians, the risk factor is easily accessed by measure such as resting and peak exercise and heart rate recovery, after exercise and heart rate variability.[5]

Activation of the sympathetic nervous system can be expected to have an adverse effect on these measures. Any factor that leads to inappropriate activation.[6] The autonomic nervous system though previously thought as the part of the nervous system that cannot be controlled now a days it is seen that with help of yoga, meditation and other relaxation technique it can be controlled.[7]

Life style modification has achieved beneficial cardiovascular effect in patients with coronary artery disease. In studies done earlier patients who were adhered to a program

of comprehensive lifestyle changes for 1 to 4 years improved symptomatically and angiography revealed modest regression of coronary artery stenosis. Recent studies on less intense cardiac catheterisation.[7]

Indicate that after completion of such program beneficial changes were seen in autonomic function. It was seen that life style modification results in beneficial change of the combined systolic and diastolic blood pressure -

Change of the combined systolic and diastolic blood pressure -

**AIMS AND OBJECTIVE-**The present study was done to establish the effect of life style changes on cardiovascular autonomic function

**MATERIALS AND METHOD-**Life style of all the 200 cases was determined.

Life style is defined as the way people live, reflecting whole range of social values, attitudes and social activities.

It is composed of cultural and behavioral pattern and life-long personal habits that has developed through process of socialization

Mainly two types of life style were assessed-

[1]ACTIVE LIFESTYLE

[2]SEDENTARY

ACTIVE LIFESTYLE-Regular exercise program with sufficient period of rest at night and taking diet rich in fresh fruits and vegetables, but low in saturated fats and simple carbohydrates.

SEDENTARY LIFESTYLE - Lack of exercise, obesity, smok-

ing, alcoholism and diet rich in saturated fats.

The BP was measured using a sphygmomanometer.

The subjects were requested to come to the department at 9 am after having light breakfast and to abstain from tobacco or caffeine beverage that day. The subject was made to lie supine in an examination bed large enough to support the subject's entire body. So that he or she was completely relaxed.

For parasympathetic function deep breath test and valsalva test were performed, .For sympathetic function hand grip test and orthostatic test were done.

**RESULTS -**

Life style	No of cases	Valsalva test			Deep breath test/(beats/min)			Hand grip test(mm Hg)			Orthostatic test (mm Hg)		
		Mean	SD	SE	Mean	SD	SE	Mean	SD	SE	Mean	SD	SE
Active	150	1.53	0.022	(7.919)-04	19.76	4.25	0.309	9.03	2.37	0.17	18.28	4.06	0.292
Sedentary	50	1.47	0.0821	0.031	18.5	4.72	1.815	9.2	3.36	1.407	21.14	3.02	1.61

Test	Total no of cases 150	Active	Total no of cases 50	Sedentary	Significance	P'Value
		<b>Mean±SD</b>		<b>Mean±SD</b>		
Valsalva ratio	1.53±0.022		1.47±0.0821		Significant	<0.05
Deep breath test	19.76±4.25		18.50±4.72		Not significant	>0.05
Orthostatic test	9.03±2.37		9.20±3.36		Not significant	>.05
Hand Grip test	18.28±4.06		21.14±3.02		Not significant	>.05

From table 2 and it was seen that mean values of valsalva ratio of sedentary life style was 1.53

And 1.47 respectively and standard and standard deviation are .022 and .0821 and standard error were [7.919]-04 and .031

So it was seen from mean value of valsalva ratio in sedentary life style was less than that of active life style. Parasympathetic activity of sedentary lifestyle was less than that of active life style.

It was seen that there was no statistically significant difference of valsalva ratio between active sedentary life style. P value>.05

From table 1 it was seen that mean value of deep breath test was less compared to that of active life style. The parasympathetic activity in sedentary life style was decreased

From table2 it was seen that there was no significant difference of deep breath between active and sedentary life style P value >.05 and sedentary life style P value>.05

From table2 it was seen that mean value of orthostatic test of active and sedentary life style were .03mmHg, 9.03mmHg respectively and standard deviation 2.37 and 3.66

So it was seen from mean value of orthostatic test in ac-

tive and sedentary life style was more or less same.

The mean value of orthostatic test of both active and sedentary life style were within normal range .

But there was no statistically significant orthostatic test between active and sedentary style.

It was seen from table2 that mean value of hand grip test of people of active and sedentary life style was 18.28mmHg, 21.14mmHg,

So it was seen from mean value that hand grip test that rise of diastolic BP and hand grip test was more in sedentary people though they were not statistically significant P value>.05

Sympathetic activity was more in sedentary life style compared to that of active life style.

DISCUSSION-The present study was carried out on 200 staff members of Gauhati Medical College.

In the results and observation mean value, standard deviation test of all the parameter were calculated.

In a study done by Jyotsna R -Bhaskaran et ell in 2001, valsalva ratio is more in yoga practitioner than normal people <sup>[9]</sup>

There is increased parasympathetic tone in yoga practitioner.

In another study done by Nandini Kapur found significant change in parasympathetic<sup>[10]</sup>

Parameter like valsalva ratio showed an increase in ratio after doing relaxation technique .

In 2003, Asha Srivastava found in people doing physical exercise that parasympathetic activity as evaluated by valsalva ratio showed an increase in respond though not significant<sup>6</sup>

In 2002, Brian M Curtis found that lifestyle modification like exercise ,meditation ,leads to increase in parasympathetic activity and reduction in sympathetic activity.<sup>8</sup>

The same idea was supported by in 2004 by Rajesh K . Sharma who found that regular physical training causes a decrease in sympathetic tone and increase in parasympathetic tones<sup>9</sup>

It was seen that mean value of valsalva ratio was increased in active life style compared to that of sedentary life style .

So the parasympathetic activity was more in people of active life style compared to that of sedentary lifestyle .

when compared with "t" test the valsalva ratio between active and sedentary life style though it was found to be statistically significant,P value<.05

So the present study go in favor of findings done by other authors

according to Nandini Kapur,2003 significant improvement was found with deep breadth test after relaxation training program me in the students who did meditation practice<sup>[11]</sup>. But according to another study done by Rajesh K Sharma in 2004 deep breadth test showed no significant difference between trained and untrained person<sup>8</sup>

It was seen that mean value that orthostatic test of active and sedentary life style are more less same

Comparative analysis done with the help student t test showed no significant difference in orthostatic test between active and sedentary life style .

According to study done by M Curtis in 2002,regular exercise reduces blood

pressure and sympathetic activity with mild hypertension.

In a study done by Vijaylakshmi P,it is seen sympathetic activity it is reduced after yoga training<sup>9</sup>

And presser response to emotional and physical stimuli become less exaggerated

In another study done by Rajesh K. Sharma 2004, he found that diastolic blood pressure after hand grip showed a decrease after physical training<sup>10</sup>

In the present study the mean value of difference diastolic blood pressure in hand grip test showed a decrease after physical training

CONCLUSION-In presence of modern treatment comprehensive life style modification provides no additional ben-

efit on progression of atherosclerosis but improves autonomic function.

So from present study the parasympathetic function which was assessed by valsalva ratio and deep breath test was decreased in sedentary life style compared to that of active life style.

Which is often ignored by the clinicians is very essential for cardiovascular health and prognosis.

Importance should be given to regular exercise,meditation,weight loss and reduction of mental stress. These factors augments vagal tone and improve outcome

CONFLICT OF INTEREST-There is no conflict of interest

ETHICAL CLEARANCE-Ethical clearance taken.

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