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Immediate Effect on Breathing Frequency in the Final Position of Selected Asanas

Abstract

Aim of this study was to find out the effect on Breathing Frequencf (BF) in the final position of selected asanas. This study was limited to the 16 selected asanas and also limited to the untrained male of different ages. Total 111 subjects were selected for the study from the different cities. The selected subjects have knowledge of asanas. The pre data was measured in the laying position and post data was measured after performing the final position of asana. T – test was used to analyze the data. The result of this study indicates that Breathing frequency was increased in all asanas except in Shavasana, Makarasana. Maximum increase in breathing frequency was noticed in Halasana.

Keywords: Immediate Effect, Breathing Frequency, Position.

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Introduction

All living things need energy to carry out their activities. This energy is brought by oxidation of food which was occurred in the cell. In oxidation process oxygen is used, carbon dioxide and water are produced as by- products, and energy is released which is use by the cell to carry out their activities. Carbon dioxide is removed from the body and water retained in the body. Person needs continuous oxygen supply to fulfill the requirement of energy, this requirement is also needed at the time of rest or sleeping. During the working condition this supply is increased which is depend on the nature of work.

Intake of oxygen from the atmosphere is known as Inhale and removal of carbon di oxygen from the body is known as Exhale. The combine process of Inhale and Exhale is known as breathing. This process is continuous throughout the life. The number of breathing per minute is known as breathing frequency. Fulfillment of oxygen supply to the body is depending on the breathing frequency and depth of breathing. On the basis of previous researches and available literature breathing is influence by nature of work, movement of lunges, ribs, intercostals muscles & diaphragm, training and exercise. Beside this breathing frequency was also influenced by posture, age, emotion, gender, physical health, and atmosphere. Posture is important factors out of these factors. Asanas are most important part of yoga. In asanas people mold body in different postures and maintain it for some time which is depend on their capacity. According to the available literature there are eighty four lakhs asanas. Asanas are nothing but the pattern of sitting of different species used by them for comfortable sitting. According to the Patanjali “Sthir – Sukham – Asaman” that mean steady and comfort sitting position is known as asanas. All most every asanas might be influenced the breathing frequency in different ways. Every asanas creates pressure or changes on human body and it may be varied for every asanas. This pressure/ changes are temporary or permanent. Permanent changes can be visible after long practice but temporary changes can be visible immediately or during the performance. So effect of any activity on human being could be studied from two angles i.e. the immediate effect/ change (E/C) and long term effect/ change (E/C). The immediate E/C of any activity was more than the long term E/C. In the same way these effects are different in trained and untrained persons. In trained person these changes are very less but in untrained person these changes are high. These points motivates the researcher to conduct a study.

Aim of the study

This study was conducted to check the immediate effect on breathing frequency in the final position of selected asanas on untrained person and its objective was to (1) compare the post data and pre data mean of each asanas, (2) compare the combine post data means of each asana.

Review of Literature

Telles, Rajesh and Srinivas[56] conducted assessments of twenty eight children with impaired vision (VI group), with ages ranging from twelve to seventeen years and in an equal number of age-matched, normal sighted children (NS group). The VI group had significantly higher rates of breathing, heart rates, and diastolic blood pressure values, compared to the NS group (Mann- Whitney U test).

Gunde, Bera and Gore were study to find the effects of some selected yogasanas and similar type of exercises on selected neuro physiological variables (ECG, blood pressure, EEG, SpO2, respiratory rate, pulse rate). Significant increase was found in the heart, blood pressure, pulse rate and respiratory rate when yogaasanas are performed as an exercise.

Chakraborty, study to compare the effect of specific exercise, asanas and clinical findings (Resting heart rate, Respiratory rate, Blood pressure, Hemoglobin) of the adults. After experimental programme it was observed that in case of exercise group revealed that resting heart rate, respiratory rate, hemoglobin contain, systolic blood pressure and diastolic blood pressure improved but found insignificant under t –test. In case of asana group resting heart rate, respiratory rate, and hemoglobin contain, insignificantly, but systolic blood pressure and diastolic blood pressure improved significantly.

Material and Method

This study was delimited to the untrained male subjecgs of different age and also delimited to the sixteen asanas which are divided into four different groups depends on the position of asanas

Standing Position asanas –	Tadasana (AS1),	Trikonasana (AS2),
	Vrikshasana (AS3),	Utkatasana (AS4),
Sitting position asanas –	Padmasana (AS5),	Vajrasana (AS6),
	Parvatasana (AS7),	Paschimothanasana (AS8),
Inverted position asanas –	Viparitha Karni (AS9),	Sarvangasana (AS10),
	Halasana (AS11),	Shirshasana (AS12),
Laying position asanas –	Shalabhasana (AS13),	Bhujangasana (AS14),
	Makarasana (AS15),	Shavasana (AS16)

Total 111 subjects (One Hundred Eleven) were selected from different places on the basis of availability. Selected subjects have knowledge of asanas. Breathing frequency was tested variable and measured manually, it was number of beats per minute. Pre data (normal) of breathing frequency was taken after giving 5 to 10 minute of rest in supine position (shavasana) before starting the asanas. It was taken once in the beginning of data collection and common for all 16 asanas whereas as the post data for all 16 asanas were different and collected in 2 days. During post data collection 2 to5 min of rest in shavasana/ makarasana was given to the subjects in between the two asanas so that he comes in normal condition and prepares himself for the next asana. Post data of breathing frequency was taken in the initial position after holding the final position by manual counting. Timing of 5 breaths was recorded and finally it was converting into total number of breaths per minute by using the formula:–

Total breaths/ minute = (5 breath / time of 5 breathe X 60 second)

For determining significant difference exist between per data and post data of breathing frequency correlated 't' test was used. For determining significant change in gain score of breathing frequency of different asanas, an analysis of variance (ANOVA) and LSD post hoc test was used to check mean pair differences. Gain scores for selected variables were calculated by the following method "Post data – Pre data". The +ve value of gain indicates that post data value was higher than the pre data (normal) value and –ve value of gain indicates that post data value was lower than the pre data (normal) value.

Result

The data was analyzed and results of the study was presented in the different tables-

Table - 1
't' Test Value of Breathing Frequency

S No	Name of Asana		Normal	Mean	M. Diff	't' – test
1	Tadasana	AS1	18.432	20.306	1.874	11.464*
2	Trikonasana	AS2	18.432	21.351	2.919	15.067*
3	Vrikshasana	AS3	18.432	20.441	2.009	12.508*
4	Utkatasana	AS4	18.432	20.811	2.378	14.209*
			18.432	**20.727**	**2.259**	
5	Padmasana	AS5	18.432	19.676	1.243	8.480*
6	Vajrasana	AS6	18.432	19.523	1.090	8.213*
7	Parvatasana	AS7	18.432	20.261	1.829	9.935*
8	Paschimothanasana	AS8	18.432	21.919	3.486	13.640*
			18.432	**20.344**	**1.912**	
9	Viparitha Karni	AS9	18.432	21.748	3.315	13.504*
10	Sarvangasana	AS10	18.432	21.604	3.171	14.972*

11	Halasana	AS11	18.432	23.477	5.045	16.697*
12	Shirshasana	AS12	18.432	21.793	3.360	15.015*
			18.432	**22.155**	**3.723**	
13	Shalabhasana	AS13	18.432	22.306	3.874	15.819*
14	Bhujangasana	AS14	18.432	20.550	2.117	11.946*
15	Makarasana	AS15	18.432	18.243	-0.189	-2.021*
16	Shavasana	AS16	18.432	17.198	-1.234	-3.379*
			18.432	**19.574**	**1.142**	

* Significant at 0.05 level with df (110) = 1.658

It is clear from the table – 1 that obtained value of 't' for all asanas are higher (irrespective of the ± value) than the tabulated value of 't' (1.658) at 0.05 level, that means there was a significant difference between the pre data and post data of breathing frequency. The negative (-ve) value of 't' for asanas AS16 and AS15 indicates that breathing frequency was lower than the normal and positive (+ve) value of other asanas indicate that breathing frequency was higher than the normal.

Table – 2
Asana Wise Mean Difference on Gain Score Of Breathing Frequency

S. no	Name of Asana		Mean			
1	Halasana	AS11		5.045		
2	Shalabhasana	AS13		3.874		
3	Paschimothanasana	AS8		3.486		
4	Shirshasana	AS12		3.360		
5	Viparitha Karni	AS9	3.315		0.559	
6	Sarvangasana	AS10		3.171		
7	Trikonasana	AS2	0.567	2.919		
8	Utkatasana	AS4		2.378		0.541
9	Bhujangasana	AS14		2.117		
10	Vrikshasana	AS3		2.009		
11	Tadasana	AS1		1.874		
12	Parvatasana	AS7	0.288 1.829			
13	Padmasana	AS5		1.243		
14	Vajrasana	AS6		1.090		0.153
15	Makarasana	AS15		-0.189		
16	Shavasana	AS16		-1.234		

Column wise LSD post hoc test value for critical difference is 0.570

Note :- Bracket indicate that there is no significant difference in the group.

Table – 2 clearly indicates that gain Breathing frequency of AS1 had a significantly higher and superior to all other 15 asanas. No significance difference was found AS13, AS8, AS12 and AS9. During the asanas in which lungs are compressed and subject hold his breathing may increase the breathing after holding the final position. In AS15 and AS16 breathing frequency was lower than the normal and it has –ve value that means during this asana breathing frequency was lower than the normal.

Conclusion

Breathing frequency of all asanas is influence by load, movement of lunges, ribs, intercostals muscles & diaphragm, Flexibility for performing the asanas, perfectness of posture, duration of holding the final posture and environmental temperature.

During the final position of different asanas in which lungs & diaphragm were compressed and there movement was restricted, so the oxygen supply was affected. After holding the final position, body needs more oxygen to recover. So this may increase the breathing frequency as it was noticed in the present study that breathing frequency was increased in AS11 (Halasana), AS13 (Shalabhasana) and AS8 (Paschimothanasana). Maximum breathing frequency was gained in AS11 (5.045).

All these asanas come under the category of inverted asanas. It was also concluded from the study that inverted asanas (AS11, AS12, AS10 and AS9) had higher breathing frequency than the other asanas.

It is also conclude from the study that the asanas in which subject need to maintain balance in the final position of asana (AS12, AS10, AS9, AS2 and AS4), he concentrate on balancing not in breathing which may increase the breathing frequency.

During the relaxing asanas (AS15 and AS16) breathing frequency was lower than the normal. In supine position (AS16) subject feel more relax than the prone position (AS15).

The present study has found that some of the asanas which can give high increase in the breathing frequency. It is suggested to those people who are having breathing problem must aware about those asanas. They should also use expert guidance

and must consult their doctor before performing any difficult asanas.

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