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Effect of Different Types of Deep-BreathingExercises on Blood Pressure in Normotensive adults

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ABSTRACT

Background and Objectives: Deep-Breathing is scientifically proven to influence the blood pressure by activating para sympathetic nervous system which decreases heart rate and dilates blood vessels reducing overall blood-pressure.

This study assesses whether a single session of slow Deep-Breathing exercise can influenceblood-pressureandwhich of the two types (Bellow breathing and 'OM'chanting)is more effective.

Methods: This is a cross-sectional study done on 30 normotensive individualsin the age group45-60 years at Balaji Enclave, Hyderabad. Pretest blood-pressure is recorded. 'OM' chanting(After slow deep inspiration the subject is asked to chant 'OM' while exhaling) in sitting position is donethricewith 30 seconds rest in between. Post exercise BP is recorded immediately.After one hour,Bellow breathing (slow deep inspiration followed by forced expiration) is done thricewith 30seconds interval. The values obtained are statistically analyzedusing Paired T-Test.

Results: Bellow-breathing (P value of MAP=0.0047;PP=0.0083;SBP=0.0056) was statistically significant whereas that of 'OM' chanting (P value of MAP=0.998;PP=0.8127; SBP=0.5356) was not.

Discussion&Conclusion: Deep-Breathingrectifies autonomic imbalance which results fromstress induced sympathetic activity and stabilizes the autonomic equilibrium by stimulating parasympathetic activity.

Bellow breathing showed significant lowering of blood pressure as opposed to 'OM' chanting where the influence was not significant.

Keywords: Blood Pressure,Deep-Breathing, OM chanting.

I. INTRODUCTION:

Deep breathing is scientifically proven to affect the heart, brain, digestion and immune system. Slow deep breathing influences blood pressure by activating the para sympathetic nervous system, decreasing heart rate and vasodialation leading to lowering of blood pressure.

II. AIMS AND OBJECTIVES:

1. To assess whether a single session of deep breathing exercise can reduce BP
2. To assess which of the two types - bellow breathing and Om chanting has more effect on BP.

III. MATERIALS AND METHODS:

This is a cross-sectional study done after obtaining informed consent on 30 normotensive individuals in the age group 45-60 years at Balaji Enclave, Hyderabad. Pretest blood-pressure and heart-rate were recorded. 'OM' chanting (After slow deep inspiration the subject is asked to chant 'OM' while exhaling) in sitting position is done thrice with 30 seconds rest in between. Post exercise BP &Heart-Rate are recorded immediately. After one hour, Bellow breathing (slow deep inspiration followed by forced expiration) is done thrice with 30 seconds interval. Pre and Post exercise BP and Heart Rate calculated. The values obtained are statistically analyzed using Paired T-Test.

IV. RESULTS:

All values are expressed as Mean+/-SD. Paired T-Test was performed to compare the values and p-value less than 0.05 was considered statistically significant.

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Bellow-breathing was statistically significant whereas that of 'OM' chanting was not.

Results	Parameter	Pre	Post	P-Value
Bellow Breathing	SBP	125.87+/-6.06	124.5+/-5.72	0.0056
	DBP	79.06+/-4.39	79+/-4.30	0.4229
	Pulse Pressure	46.81+/-7.67	45.5+/-7.58	0.0083
	MAP	94.67+/-3.46	94.17+/-3.23	0.0047
	Heart Rate	85.47+/-12.97	86.22+/-13.46	0.2488
OM Chanting	SBP	125.25+/-5.93	125.12+/-6.06	0.5356
	DBP	78.66+/-4.15	78.72+/-4.12	0.7118
	Pulse Pressure	46.59+/-6.79	46.41+/-7.12	0.8127
	MAP	94.19+/-3.59	94.19+/-3.50	0.998
	Heart Rate	85.79+/-12.29	85.91+/-13.87	0.8757

V. CONCLUSION:

Bellow breathing showed significant lowering of blood pressure as opposed to 'OM' chanting where the influence was not significant.

Deep-Breathing rectifies autonomic imbalance which results from stress induced sympathetic activity and stabilizes the autonomic equilibrium by stimulating parasympathetic activity.

VI. DISCUSSION:

All the studies directly or indirectly have proven the effect of SDB leading to 'parasympathetic predominance' causing decrease in blood-pressure and reduction in stress levels.

With multiple slow deep breaths the increased exposure of central chemo-receptors to higher CO2 levels decreases their sensitivity to CO2 reducing relative sympathetic nerve system activity when exposed to CO2. As para-sympathetic nerve system is more active during expiratory phase of breathing, prolongation of expiratory phase in SDB produces relative increase in PNS drive.

SBD increases tidal volume which cause activation of slowly adapting stretch receptors during inhalation and generate inhibitory signals in neural tissues which in turn synchronize causing decreased action potentials in neural tissues which lead to increased PNS dominance decreasing BP.

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