

Role of scientific Pranayama in cardiovascular disease

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Abstract - Recent scientific research has begun to explore pranayama as a measurable, evidence-based intervention for regulating physiological functions. Today fast paced world hypertension increasing and affecting millions of people worldwide High blood pressure (hypertension) is very common and increases the risk of heart disease and stroke. Doctors recommend lifestyle changes (diet, exercise, stress control) along with medicines when needed. But scientific pranayama techniques that introduce by psychologists and researcher *Dr Devaki Madhav*

This paper discusses the science behind pranayama and how slow breathing practices can be proven to help lower blood pressure by calming the nervous system and improving how the heart and blood vessels respond to stress. Although pranayama is capable of controlling and helping with hypertension, asthma, thyroid disorders, metabolic dysregulation, and gastric disorders, we will focus on the impact of pranayama on hypertension. Past studies show some benefit, but many used different breathing methods, different durations, and different study quality, so results are not always consistent. This paper shows how pranayama can scientifically help a group of people reduce their blood pressure levels through regular practice of the techniques discussed. With the data provided and the experiments performed, we also conclude how something as simple as regulated breathing can help keep blood pressure under control and enhance overall body function and efficiency.

Key Words: Scientific , Pranayama , oxygenation, breathing, cell, deep, hypertension, inhalation,

1.INTRODUCTION

Prana O₂ is a life force energy ,We get oxygen from food air and water. We get only 4% oxygen from normal breathing but when we do deep, conscious, controlled, regulated breathing we get 5-6 % oxygen from environment and output of CO₂ can be increased from 2.6 mg to 4.6 mg in scientific pranayama by implementing scientific principles . The goal of scientific pranayama is to promote overall well being on all levels- physical, mental, emotional, spiritual. The pranayama has its roots in India back around 4000 years. Pranayama has been mentioned in our ancient scriptures . Pranayama has been known to have positive effects on CVD risk factors . Awareness of principals of anatomy and physiology is essential for practicing pranayama to reduce hypertension.

For example slow deep breathing reduces the metabolic rate and frequency of brain waves . Ujjai breathing exerts a slight pressure on carotid sinus which lowers the blood pressure it balances the autonomic nervous system and activate parasympathetic activity it can be used as a complimentary therapy along with drug therapy . Regular practice of pranayama helps increase alpha waves which improved cognitive activity and reduce high BP

Methodologies:

Anuloma Viloma

There is a relationship between breathing and emotions here psychology works slow deep inhalation with one nostril will get more time for diffusion of oxygen and relax nerves symptoms and reduce hypertension

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Ujjayi pranayama

Constriction of glottis during slow inhalation and slow exhalation produces sound vibrations and slight pressure on carotid sinus which leads to reduce tension and slows the thought process and balance the autonomic nerves system and lower the blood pressure

Udgeetha

Sounds vibration induced forced oscillation from head to feet here Newton's first law works when we produce vibrations while OUM chanting during exhalation it's keep on vibrating at constant speeds unless it acted upon by force So proper generation of OUM sound vibration one can reduce hypertension with daily 15 minutes practice

PRANAVA Pranayama

Deep slow effortless inhalation and exhalation increase the time for diffusion of O₂ and increased the flow of Velocity

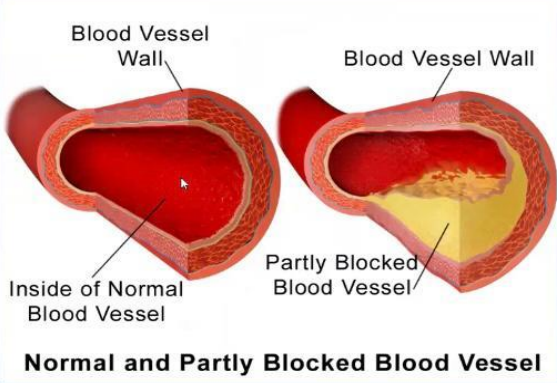
Sheetali pranayama

Cooling breathing slowly cool down the deep tissues of the body, it arouses the digestive fire of our system Practice sheetali can be considered to balance heat

Table -1: Data of Bp recordings

Preparation of Manuscript		
Subject	Before Pranayama	After Pranayama
1	160/100	145/80
2	140/99	121/81
3	150/90	130/80
4	123/85	121/82
5	164/95	140/85
6	167/90	150/85

- picture shows blockage artery which causes various complications based on the area of their presence. It can be in any part of body including brain. Deposits(blockages) in arteries results in diminished blood flow and oxygen supply to the tissues.
- Disease that can affect CS includes: hypertension, high cholesterol, depression, stress, cancer, respiratory illness, Coronary Artery Diseases, thyroid.
- Scientific Pranayama helps in detoxification, rejuvenation of heart muscles by continuous expansion and contraction of heart muscles during practice.



Normal and Partly Blocked Blood Vessel

Fig -1: Blood Flow in Blood Vessels

Causes of cardiovascular diseases

Causes >>>>

- Obesity
- Lack of exercise
- Unhealthy eating habits
- Pollution
- Virus, bacteria
- Weak immune system
- Bad habit(smoking, alcohol, high salt content, fatty food)
- Low oxygen level in the body
- Diabetes
- Aging causes narrowing arteries
- Stress
- Lack of sleep
- Long working hours
- Genetic factors
- Hypertension(high bp)

- name of few cardiovascular diseases
- Atherosclerosis: hardening of arteries
 - Heart attack
 - Arrhythmias
 - Valve diseases
 - High cholesterol
 - Cardiac ischemia
 - Stroke
 - Heart failure
 - Coronary artery diseases
 - Angina and many more
 - And many more

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3. CONCLUSIONS

This study demonstrates that regular practice of the pranayama techniques mentioned in this paper can significantly reduce blood pressure levels in individuals with hypertension. The comparison of pre- and post-intervention readings shows a clear shift of systolic and diastolic values toward the normal range. These findings suggest that controlled, slow breathing helps regulate autonomic function, reduce stress response, and improve cardiovascular efficiency. Now it's time for the Doctors, scientists and yogis to come together with proper understanding for the well-being of human.

ACKNOWLEDGEMENT

Thank you Dr. Devaki Madhav Madam For your guidance and support. Her extensive career and knowledge about scientific pranayama has made a great impact on all of us, her student and admirers

Need for the study:

Scientific pranayama is very much needed for study because it enhances oxygenation increase detoxification and rejuvenate cells, activate inactive cells enhances cognitive function improve concentration and focus by more oxygen supply to brain we need more scientific research on pranayama Dr *Dr Devaki Madhav* has researched by applying scientific laws and principles for getting more effects on our internal organs like how diaphragm moves while inhalation and exhalation how gas exchange happen etc.

REFERNCES

1. Compendium on "The Science of Pranayama" - Dr.Devaki Madhav

BIOGRAPHIES



My journey and relation with yoga and pranayama has been long and blissful. It all started with my first Patanjali Yogpeeth teacher training course many years ago. Since then, I've been teaching yoga and have taken a lot of workshops. My curiosity for learning has still not perished and recently I did the Scientific pranayama course by Dr Devaki Madhav with helped me further understand the nuances. Yoga has kept me motivated and healthy and I want to keep sharing the knowledge I have with as many as possible.