



**BREATHING EXERCISES  
IN THE LIGHT OF  
CONTEMPORARY SCIENCE –  
*REVIEW OF THE MEDICAL  
LITERATURE***

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# ***CORRECT BREATHING IS THE BASIS OF ALL PRANAYAMA TECHNIQUES***

- **COMPLETE BREATHING BY USING DIAPHRAGM**
- **BREATHING THROUGH THE NOSE (NASOPULMONARY REFLEX)**
- **NATURAL RATIO: INHALATION : EXHALATION = 1 : 2**
- **PERFORMING BREATHING TECHNIQUES IN RECUMBENT POSITION IMMEDIATELY AFTER ASANAS: EFFECT ON PULMONARY BLOOD FLOW AND OXYGEN UPTAKE**
- **ONLY AFTER MASTERING COMPLETE BREATHING WITHOUT ANY TENSION CAN WE PROCEED WITH ADVANCED PRANAYAMA TECHNIQUES**

# ***BRAIN ACTIVITY AND BREATHING PATTERN***

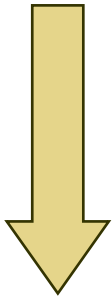
- **NASAL CYCLE AND CEREBRAL HEMISPHERIC DOMINANCE (EEG RECORDINGS); 20-200 min**
- **HIGHER ACTIVITY OF THE RIGHT CEREBRAL HEMISPHERE: EASIER BREATHING THROUGH THE LEFT NOSTRIL AND VICE VERSA**
- **EQUALLY OPENED NOSTRILS: A BALANCE BETWEEN CEREBRAL HEMISPHERIC ACTIVITIES**
- **INTERESTINGLY THE LATER HAPPENS MAINLY IN THE TIME OF DAWN, MIDDAY AND SUNSET WHEN VITAL ENERGIES OF THE NATURE ARE HIGHEST**

# ***CAN WE INFLUENCE THE BRAIN ACTIVITY THROUGH BREATHING ?***

- **ALTERNATING BREATHING BALANCES THE FUNCTIONAL ACTIVITIES OF THE BRAIN**
- **SELECTIVE STIMULATION OF BRAIN HEMISPHERES**
- **BREATHING THROUGH THE LEFT NOSTRIL STIMULATES THE RIGHT BRAIN HEMISPHERE AND INTENSIFIES THE FUNCTIONS OF THE PARASYMPATETIC NERVOUS SYSTEM !!!**
- **BREATHING THROUGH THE RIGHT NOSTRIL STIMULATES THE LEFT BRAIN HEMISPHERE AND INTENSIFIES THE FUNCTIONS OF THE SYMPATETIC NERVOUS SYSTEM !!!**

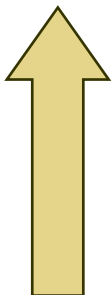
# ***CONT.***

- **LEFT NOSTRIL (PARASYMP. NS):**



**HEART RATE**

- **RIGHT NOSTRIL (SYMP. NS):**



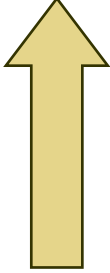
**HEART RATE**

**BLOOD PRESSURE**






**CONSUMPTION OF OXYGEN**

**CONSTRICTION OF THE SKIN BLOOD VESSELS**

# ***EFFECTS OF ALTERNATING BREATHING***

- **IMPROVEMENT OF SPATIAL ORIENTATION AND SPATIAL MEMORY (LEFT NOSTRIL)**
- **IMPROVEMENT OF VERBAL EXPRESING (RIGHT NOSTRIL)**
-  **COGNITIVE CAPACITIES**
- **ONE RESEARCH REPORTED OF IMPROVED SOCIAL ADAPTATION AND COGNITIVE FUNCTION IN HANDICAPED CHILDREN**

# ***OTHER EFFECTS OF PRANAYAMA***

-  ANTIOXIDANTS IN THE BODY ( PREVENTION AGAINST CANCER, ATHEROSCLEROSIS, ARTHRITIS...)
- **ASTHMA:**  **IMPROVEMENT OF VITAL CAPACITY**  
 **REDUCTION OF DAILY DOSE OF ANTI-ASTHMATIC DRUGS**  
 **REDUCTION OF ASTHMATIC ATTACKS**  
 **DECREASED REACTIVITY OF THE BRONCHIAL TREE**
- **CANCER PREVENTION THROUGH INFLUENCE ON BOWEL MOVEMENTS (FOOD AND CARCINOGENES)**
- **EFFECTS ON IMMUNE SYSTEM, BLOOD PRESSURE, EPILEPSY (REDUCED No. AND DURATION OF THE ATTACKS)**

# ***PRANAYAMA AND BREATH HOLDING***

- **DURING NORMAL PRANAYAMA WITHOUT BREATH HOLDING**



**ACCUMULATION OF ENERGY IN THE BODY (SWEATING)**

- **DURING BREATH HOLDING (KUMBHAKA)**



**DECREASED METABOLIC ACTIVITY, DECREASED OXYGEN CONSUMPTION (THUS CONSERVING THE BODIES ENERGY), DECREASED HEART RATE AND BP**



## ***IN THE END...***

- **WITH BREATHING EXERCISES WE CAN INFLUENCE THE BRAIN ACTIVITY, CONSERVE BODIES ENERGY, ADAPT TO EXTERNAL HEAT/COLD DIFFICULTIES AND REGULATE THE METABOLIC PROCESSES**
- **IT HELPS US TO EXPLORE AND UNVEIL THE POSSIBILITIES OF THE HUMAN NATURE**

THANK YOU FOR YOUR  
PATIENCE !

