

Study on the effect of *Pranakarshan pranayama* and *Yoga nidra* on alpha EEG & GSR

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The study was aimed to find out the effect of *yogic* practices on student's physiology. Forty students of 18-25 yrs age groups were selected from MBPG College Haldwani, Nainital, Uttarakhand. A package of *Yoga nidra* practice and *Pranakarshan pranayama* was given for 40 days. The effects studied on the alpha EEG and GSR level showed a significant change. On the basis of that it is concluded that practice of *yoga* helps to improve the immunity of the students.

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The mechanization of world and the advancement of science and technology have provided us with enormous ranges of creature comforts. These have led to comfort-driven mode of living, generating restlessness, tensions, stress and a horde of new diseases and disorders. The practice of *Yoga* not only help to keep the young body strong and supple but also incorporate mental activities, disciplines that help to develop attention and concentration and stimulate the creative ability that are latent within human body. All the worries and tension are not capable of functioning on their own. They are guided and controlled by the mind. Maharshi Patanjali 5,000 yrs ago has given the secret to controlling the mind in his *Yoga-sutra Yogaschittavrittinirodhah*. That is *yoga* is to control the wayward flow of tendencies of *Chitta* (mind). In other words, to become fully involved in the task at hand is *yoga*.

Practice of *Pranakarshan pranayama* (derived by Sriram Sharma Acharya) is one of the wonderful practices to controlling the mind through conserving *pranic* energy from cosmos. Practice of *yoga nidra* is one of the most powerful and well-known technique of physical mental and emotional relaxation. Both the practice has the impact on our physiology and psychology. The study was carried out to know the effect of above mentioned practices on Alpha EEG and GSR. Alpha is a common state for the brain and

occurs whenever a person is alert (it is a marker for alertness and sleep), but not actively processing information. They are strongest over the occipital (back of the head) cortex and also over frontal cortex. Alpha has been linked to extroversion (introverts show less), creativity (creative subjects show alpha when listening and coming to a solution for creative problems), and mental work. The electroencephalograph measures brain waves of different frequencies within the brain. Electrodes are placed on specific sites on the scalp to detect and record the electrical impulses within the brain. Alpha waves are those between 7.5 and 13(Hz) and peak around 10Hz. Good healthy alpha production promotes mental resourcefulness, aids in the ability to mentally coordinate, and enhances overall sense of relaxation and fatigue. In this state one can move quickly and efficiently to accomplish the task. When alpha predominates, most people feel at ease and calm. Galvanic skin response (GSR), a change in the electrical properties of the skin in response to stress or anxiety can be measured either by recording the electrical resistance of the skin or by recording weak currents generated by the body. It can also be understand as a drop in the electrical resistance of the skin, widely used as an index of autonomic reaction.

The practice of *yoga nidra* brings alpha dominance in the brain, which is characterized by mental relaxation¹. A significant decrease was observed in breath rate after isometric relaxation technique and

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reduction in some physiological signs of anxiety². In other study, initial EEG showed beta activity prominently with intermittent alpha activity³. With the advancement of *Yoga nidra*, beta activity was slowly replaced by alpha activity and still further by smooth well formed alpha activity. After 30 sessions of *Yoga nidra*, gain of alpha activity was better and with further advancement of *yoga nidra* intermittent. After a six months study on the higher class students, practice of *yoga nidra* reduced the stress and anxiety as well as improved the general well being⁴. The study was conducted to assess the effect of *yoga nidra* and *Pranakarshan pranayama* on alpha EEG level of the subjects.

Methodology

The study was conducted to observe the effect of *yogic* practices. Forty students of 18-25 yrs age groups were selected through quota sampling technique from MBPG College Haldwani, Nainital, Uttarakhand. A package of *yoga nidra* practice and *Pranakarshan pranayama* was given to them for 40 days regularly, except Sundays and holidays for 30 and 15 minutes, respectively. The effects on the alpha electroencephalograph (EEG) and galvanic skin resistance (GSR) level were studied. To assess the impact of *yoga nidra* parameters alpha EEG and GSR biofeedback were taken.

Results and discussion

Hypothesis 1— There is a significant relationship between practice of *yoga* and the alpha EEG of the subjects:

Table 1 shows the pre- and post mean values of alpha EEG of the students, the hypothesis 1 has been proved on 0.01 level of confidence and 39 degree of freedom.

Hypothesis 2— There is a significant relationship between practice of *yoga* and the GSR of the subjects:

Table 2 shows the pre- and post mean values of GSR of the students, the hypothesis 2 has been proved on 0.01 level of confidence and 39 degree of freedom. The study shows a significant change in Alpha EEG level as EEG measures minute electrical activity in the brain in the form of waves. The frequency of brain activity waves has been shown to alter according to the state of consciousness and state of mind of the

Table – 1(Alpha EEG)				
	Mean	sd	“t”value	significant level
Pre	21	3.46	4.41	at 0.01
Post	29.5	4.2		

Table – 2 (GSR)				
	Mean	sd	“t” value	significant level
Pre	24.5	7.2	3.42	at 0.01
Post	28.5	8.1		

subject. Beta activity is normally noted in the awake working state. With physical relaxation, beta activity is taken up by alpha activity and as the person goes into different stages of sleep the activity changes to theta and also may exhibit delta activity in deep sleep. The practice of *yoga nidra* has been reported to bring alpha dominance in the brain, which is characterized by mental relaxation¹. A significant change was also observed in the study in the GSR level of the subjects. GSR is a change in the electrical properties of the skin in response to stress or anxiety, can be measured either by recording the electrical resistance of the skin or by recording weak currents generated by the body. It can also be understood as a drop in the electrical resistance of the skin, widely used as an index of autonomic reaction. A direct connection between the nervous and immune system has been reported⁵. It has been reported that stress leads to a build up of a hormone that inhibits the body's ability to fight off bacteria and viruses. Since practice of *Pranakarshan pranayama* has a powerful technique to improve the *pranic* energy level as conserved from cosmos, it improves the GSR of the subjects.

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