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SHORT COMMUNICATION

QUANTITATIVE EVALUATION OF MUSCLE RELAXATION INDUCED BY KUNDALINI YOGA WITH THE HELP OF EMG INTEGRATOR.

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Abstract : The present work is aimed to quantify the degree of relaxation of muscle under the effects of Kundalini Yoga with the help of EMG integrator. The data collected from 8 individuals (4 males and 4 females) on the degree of muscle relaxation at the end of meditation revealed a significantly decreased muscle activity amounting to 58% of the basal level in both the sexes.

Key words : integrated EMG Kundalini Yoga muscle relaxation

It is an established fact that with the help of Yogic practice one can achieve relaxation of body and mind during the state of meditation (1,2,3,4,5,6). The present work is aimed to study integrated EMG and to establish the degree of muscle relaxation during the process of Kundalini Yoga.

METHODS

A total 8 volunteers (4 males and 4 females) were selected from students belonging to the age group 17 to 19 who had preliminary training on Kundalini Yoga. They were trained to meditate in the sitting posture (Sukhasana) for 30 minutes. The instructions were given through a tape recorder and the subjects were taught to concentrate at each chakra in the "ascending" manner, till their concentration reached the level of "Sahasrara". Further, they were allowed to concentrate on a background instrumental melody. The surface EMG was recorded by placing the electrodes on the chin and the ground electrode on the wrist, and the integrated record was taken for 4 min before meditation, and 4 min after meditation. The integrated EMG expressed as mV was recorded through Integrator Model 211 (INCO) Polyrite set to integrate the amplitude and the signal was displayed as 'RAMP' output at maximum deflection (sensitivity 50 uV DC input). Simultaneously, direct EMG was also recorded an another channel to monitor surface EMG (interference pattern) (Fig. 1). Each individual was tested for daily sessions on 4 consecutive days.

RESULTS

The effect of meditation by Kundalini Yoga on muscle activity is represented in Table I.

The data of the table indicate that the muscle activity in males as well as in females decreased as a function of meditation carried out by them in 4 consecutive daily sessions. The same table reveals further that the percentile decrease in both the groups was almost identical. The p value in the female group showed to be more significant ($P < 0.001$) as compared to males ($0.01 > p < 0.02$).

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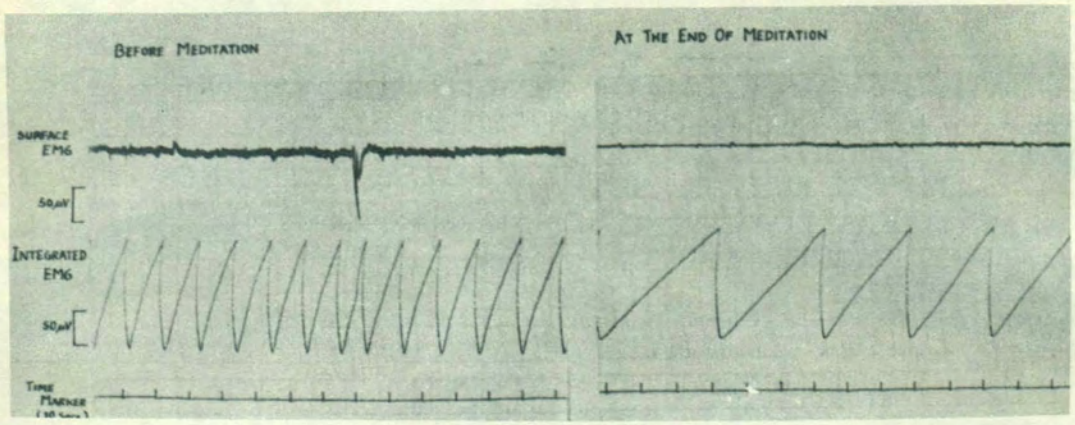

Fig. 1 : Surface E.M.G. (interference pattern) and integreted E.M.G. before meditation and at the end of meditation

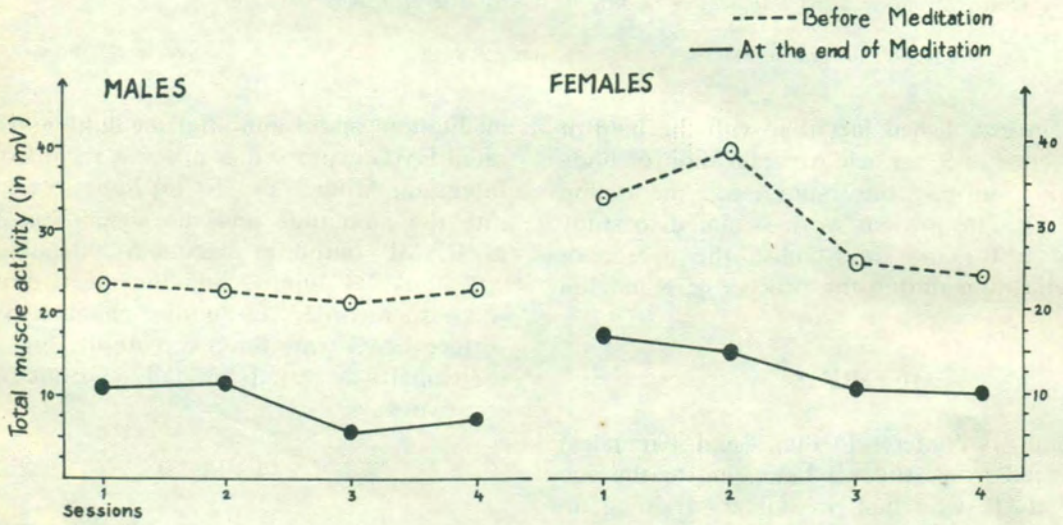

Fig. 2

TABLE I

Subjects	*Xa (in mV)*	*Xb (in mV)*	*e (Xa-Xb) (in mV)*	*'P' Value*	*Mean percentile decrease*
MALES (N=4)	5.632	2.243	0.745	$0.01 < P < 0.02$	58.98
FEMALES (N=4)	7.678	3.334	0.078	$P<0.001$	58.12

Statistical Data of the effect of Kundalni Yoga on Electromyographic Activity (in mV) Xa = Mean Activity before meditation; Xb Mean activity at the end of meditation, e(Xa-Xb) = Std. error difference between means.

DISCUSSION

The present results indicate that the activity of the chin muscles was shown to be considerably decreased (58%) in both the groups during the practice of kundalini yoga.

On comparing the results of muscle relaxation in males and females, the mean percentile values of their EMG revealed no significant difference as far as their ability to concentrate and achieve muscle relaxation. Further work in this direction is clearly needed.

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