THE EFFECTS OF THE TRANSCENDENTAL MEDITATION PROGRAM ON STRENGTH OF THE NERVOUS SYSTEM, PERCEPTUAL REACTANCE, REACTION TIME, AND AUDITORY THRESHOLD

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Research completed September 1979.

The Transcendental Meditation programme was found to improve reaction time at both high and low levels of stimulation, to increase auditory acuity, and to enhance sensitivity, indicating the growth of flexibility in the functioning of the nervous system.—EDITORS

The following is an abstract of the author's original master's thesis presented to the Graduate School of the University of Massachusetts in partial fulfilment of the requirements for the degree of Master of Science in Exercise Science.

The present study was designed to assess the effects of the Transcendental Meditation (TM) program on strength of the nervous system, perceptual reactance, reaction time, and auditory threshold. Three reaction time indices of strength of the nervous system were utilized: 1) Nebylitsyn's index, 2) the slope index, and 3) the low level stimulation index. Absolute auditory threshold was the fourth strength of the nervous system index used in the study. Vando's Perceptual Reactance Scale and time estimation tests of 90 seconds and 120 seconds were used as tests of perceptual reactance.

Thirty volunteer subjects ranging in age from 18 to 33 were utilized. Fifteen subjects who had practiced the Transcendental Meditation technique for a minimum of five years were tested three separate times in a six-week period. Fifteen nonmeditating controls were tested twice and were then instructed in the TM technique. Three weeks and six weeks following instruction in TM the subjects were retested.

Simple finger reaction time to 40 dB, 55 dB, 70 dB, 85 dB, and 100 dB continuous, pure tone was assessed. Three blocks of reaction time trials were given to each subject during each test session. Each block of reaction time trials consisted of five trials at each of the five stimulation levels. The Nebylitsyn, slope, and low level stimulation indices of strength of the nervous system were calculated from reaction time data.

Auditory thresholds were assessed using a variation of the Hughson Westlake method. Two blocks of seven ascending trials of auditory threshold measurement were administered each test session to each subject. Time estimation was examined four times in each test session. Two trials at 90 seconds and two trials at 120 seconds were administered each session. The 54-item Vando Perceptual Reactance Scale was administered after the first and fourth test sessions.

Intraclass reliability coefficients for all measures with the exception of the Vando scale were assessed for sessions one and two. The Pearson product-moment correlation procedure was used to examine test-retest reliability between the two administrations of the Vando scale. Reliabilities for all measures with the exception of Nebylitsyn's index of strength of the nervous system agreed with those reported in the literature. Reliability for Nebylitsyn's
index in the present study was unusually low.

Duncan’s multiple-range test was used to examine the block means for sessions one and two for all variables which showed significant changes from session one to two. Results of these analyses showed that a substantial degree of stability had occurred in all variables by the end of session two.

Analysis of reaction time data for sessions one and two indicated that of the two groups, the long-term practitioners of the TM program had significantly faster reaction times at every level of stimulation. During session two the long-term TM group had a mean reaction time of 186.0 ms, 24.7 ms faster than the new TM group. The long-term group also showed significantly lower scores for auditory threshold and the Vando scale than did the new TM group during sessions one and two. The long-term group showed a mean session two auditory threshold of 1.07 dB SPL, 3.70 dB below that of the new TM group. No significant differences were found between groups for any other variables during the first two sessions.

After session two the new TM group learned the Transcendental Meditation program, which they practiced twice a day for the remainder of the study.

Analysis of variance showed that the new TM group improved significantly from session two to session four on reaction time (a 16.8 ms decrease) and auditory threshold (a 1.94 dB decrease), and changed significantly towards increased sensitivity on the Vando Perceptual Reactance Scale (a 3.00 decrease). The long-term TM group did not change significantly on any variable between sessions two and four.

The overall performance of the two groups suggested that the practice of the TM technique caused 1) an increase in the sensitivity component of strength of the nervous system, 2) an increase in the strength or stability component of strength of the nervous system, and 3) an increase in flexibility of the nervous system.

The results of the study suggest that the TM program significantly improves strength of the nervous system, perceptual reactance, reaction time, and auditory threshold. Results suggest that strength and sensitivity of the nervous system are not necessarily mutually exclusive.

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