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Meditation and bodily changes

Most of us would admit to a secret fascination with the idea of strange powers exercised by practitioners of Oriental mysteries (strictly male preserves, it would seem). The Indian yogi is popularly credited with unusual powers in the control of body function—powers gained by lengthy practice. Anand *et al*[1] reported a dramatic fall in oxygen consumption and heart rate in one highly regarded yogi. Yet such changes might be not an inevitable concomitant of meditation itself but a result of deliberate, selective training, and comparable to those that may be achieved through laboratory biofeedback techniques[2] or by non-meditators.[3]

The United States is a tolerant land in which esoteric sects can flourish. As the search for drug-expanded minds has waned, "transcendental meditation" has found favour on college campuses. Devotees meditate in any comfortable posture, repeating to themselves again and again a specific set of words, and returning to these once more if their attention wanders. Woolfolk[4] has recently reviewed published scientific reports to discover whether there are any regular bodily correlates of this or of yogic or Zen practices.

Alas, much of the published research is contained in abstracts, in journals of less than first rank, or in preliminary communications that lack lineal successors. An exception was the work of Wallace *et al*,[5] who reported a 17% fall in oxygen consumption while 36 practitioners engaged in transcendental meditation. They gave an impression of naive enthusiasm: "There is no belief, faith or any type of autosuggestion involved in the practice." While proposing that transcendental meditation is a "hypometabolic" state, they pointed out that emotional stress can raise oxygen consumption, so it would have been helpful had they employed controls trained in simple, quiet relaxation without the inward word-repetition characteristic of transcendental meditation. They did find a large increase in palmar skin resistance; but apparently this was equally true both of meditators and of controls who simply rested in an unpublished study by Schwartz and recounted by Woolfolk.

After a sudden stimulus such as a clap, or an emotionally charged word, there is normally a brief decrease of palmar skin resistance which is caused by momentary sweating. In addition to these induced galvanic skin responses, spontaneous, similar events occur every now and then during wakeful rest, and do so especially often in anxious people. If the evoking stimulus is repeated again and again the induced responses become gradually smaller, though the trend is less appreciable if the individual is very anxious.[6] In transcendental meditation the lessening in magnitude is more rapid,[7] and in this state and in Zen meditation the spontaneous galvanic skin events are unusually few,[7 8] indicating a state of special tranquillity.

Other features of these meditative states indicative of such tranquillity, of relative absence of spontaneous arousals, and of unresponsiveness to outside events are to be found in the electroencephalogram. Various authors have reported not only diminished EEG arousal responses during meditation but a persistent strengthening of the alpha rhythm and more uniform electrical potentials across the entire head. Banquet[9] used spectral analysis to study these rhythms in transcendental meditation. Like some others, he found that in deep meditation subjects could signal their awareness of the state without disrupting either it or their EEG rhythms, and that groups of EEG waves at about 20 Hz seemed prominent. His report was a descriptive one with illustrative examples, and did not use measurement and statistics to establish the reliability of the reported features. Without controls engaged on other relaxing or repetitious activities it is difficult to be sure how peculiar to transcendental meditation his findings might be.

The general trend of the research that Woolfolk reviews does, however, suggest that meditation may be regularly accompanied by a lessened outward responsiveness, by autonomic quietude, and by low metabolic activity. The practices seem harmless and much to be preferred to drug-taking. Whether they have achieved a great deal for individuals, or, over the centuries, for their countries of origin, has not, however, been established. It is unlikely that meditative practices will find wide acceptance among European cultures, where the Christian tradition holds that salvation should be sought by forgetting the self in the interests of others rather than by turning attention inwards.

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