

Meditation May Bolster Brain Activity

Buddhist Meditation May Produce Lasting Changes in the Brain

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Nov. 10, 2004 -- Meditation may not only reduce a calming effect, but new research suggests that the practice of Buddhist meditation may produce lasting changes in the brain.

Researchers found that monks who spent many years in Buddhist meditation training show significantly greater brain activity in areas associated with learning and happiness than those who have never practiced meditation.

The results suggest that long-term mental training, such as Buddhist meditation, may prompt both short and long-term changes in brain activity and function.

Buddhist Meditation May Change the Brain

In the study, which appears in this week's online edition of the *Proceedings of the National Academy of Science*, researchers compared the brain activity of eight long-time Buddhist monks and 10 healthy students.

The average age of the monks was 49, and each had undergone mental training in meditation for 10,000 to 50,000 hours over the course of 15 to 40 years.

The students' average age was 21. They had no prior experience in meditation and received one week of meditative training before the start of the study.

Both groups were asked to practice compassionate meditation, which does not require concentration on specific things. Instead, the participants are instructed to generate a feeling of love and compassion without drawing attention to a particular object.

Researchers measured brain activity before, during, and after meditation using electroencephalograms.

They found striking differences between the two groups in a type of brain activity called gamma wave activity, which is involved in mental processes including attention, working memory, learning, and conscious perception.

The Buddhist monks had a higher level of this sort of gamma wave activity before they began meditation, and this difference increased dramatically during meditation. In fact, researchers say the extremely high levels of gamma wave activity are the highest ever reported.

The monks also had more activity in areas associated with positive emotions, such as happiness.

Researchers say the fact that the monks had higher levels of this type of brain activity before meditation began suggests that long-term practice of Buddhist or other forms of meditation may alter the brain.

Although age differences may also account for some of the differences found by this study, researchers say that the hours of meditation practice, rather than age, significantly predicted gamma wave activity.

Researchers say more studies are needed to look at whether differences in brain activity are caused by long-term meditation training itself or by individual differences before training.