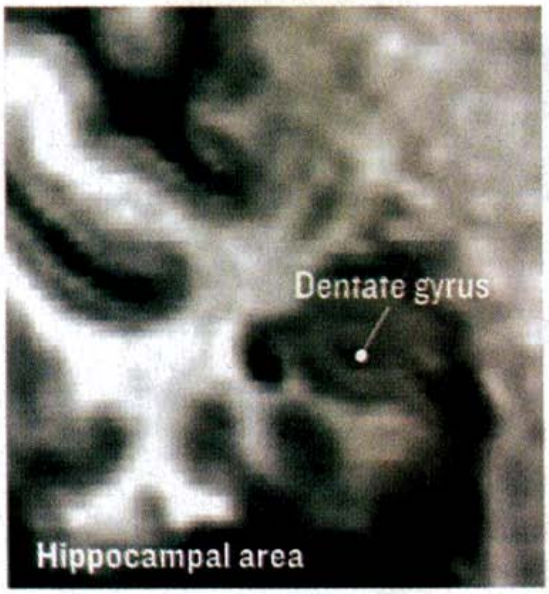
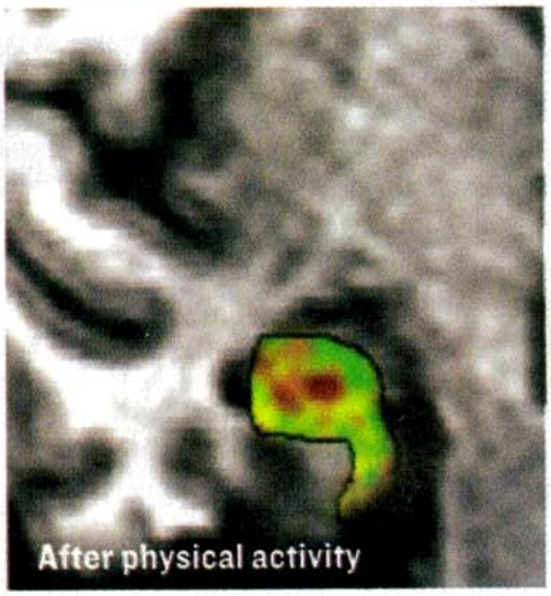
Recent evidence has suggested that over 9000 new cells are produced in the hippocampal DG (dentate gyrus) of adult laboratory animals every day (Cameron and McKay, 2001).

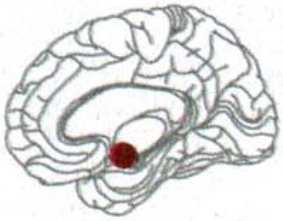
How the Brain Changes

Research suggests exercise spurs growth in a brain structure associated with memory, possibly leading to improved function. An overview:

BLOOD VOLUME IN THE BRAIN: NEUTRAL INCREASED

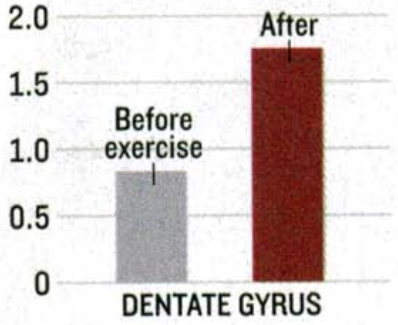






THE EVIDENCE: When new nerve cells form in the brain, their growth is accompanied by the creation of blood vessels. Researchers found that exercise increased blood volume in the dentate gyrus (a region of the hippocampus, which is used in memory), implying new cells were forming in the area.

Relative blood volume in the brain with exercise



SOURCES: NATIONAL ACADEMY OF SCIENCES OF THE U.S.A., COLUMBIA UNIVERSITY

–MARC BAIN

This process can also be dramatically enhanced by exposing animals to environmental enrichment (Kempermann et al., 1997) or allowing them access to voluntary exercise (Eadie et al., 2005; Farmer et al., 2004; van Praag et al., 1999).