Increased physical activity is known to be associated with long-term successful weight loss maintenance due to mechanisms more complex than simply increased energy expenditure. A new study using MRI imaging has shown that intense exercise not only affects energy output, but it also may influence how people respond to food cues.

The effects of high-intensity exercise on neural responses to images of food

Short bouts of intense exercise are known to suppress hunger through appetite regulating hormones. In a new study published online in the *American Journal of Clinical Nutrition*, researchers aimed to determine the effects of high-intensity exercise on central (brain) response to visual food stimuli.

The study included 15 healthy men of normal weight that completed two 60 minute experiments: exercise (running at 70% maximum aerobic capacity) and a resting control. After each trial, images of high- and low- calorie foods were viewed and the brain response to the foods was measured using an MRI.

After the bout of exercise, thirst and core body temperature were increased while appetite response was significantly suppressed. Exercise significantly suppressed ghrelin (an appetite stimulating hormone) and enhanced the release of peptide YY (an appetite reducing hormone). When compared to the resting control, neural (brain) response in the brain's reward related regions were stimulated in response to viewing the images of low-calorie foods but suppressed upon viewing images of high-calorie foods.

This study has shown that high intensity exercise increases neural responses in reward-related regions of the brain in response to images of low-calorie foods and suppresses activation during the viewing of high-calorie foods. These central responses are associated with exercise-induced changes in peripheral signals related to appetite-regulation and hydration status.

Daniel R Crabtree et al. The effects of high-intensity exercise on neural responses to images of food. December 4, 2013, doi: 10.3945/ajcn.113.071381.