Brain science of exercise-eating linkage for improvements in modern human health / Takahiro Yoshikawa, Shin-ya Ueda, Akira Ishii, Yoko Yamano, Katsuko Takada, Takashi Matsuo, Chika Nakamura, Masato Uji

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Abstrak

The health values of exercise and eating are separately established as two independent pillars for human life. However, a substantial amount of evidence shows the physiological crosstalk by which exercise might be associated with hunger and satiety, as regulated by gut hormones. A single bout of exercise tends to suppress the blood levels of orexigenic acylated ghrelin (AG) and to increase the levels of anorectic hormones like peptide YY (PYY) and gluca-gon-like peptide-1 (GLP-1). It was reported that, while sustained physical activity increases the drive to eat in the fasting state, this seems to be compensated by an improved satiety response to a meal through changes in the gut hormone systems. A few studies reported exercise-induced reductions in the neural responses to food-related cues in higher brain center networks involved in the attentional, emotional and cognitive functions. The present review introduces the latest research on the effects of various types of exercise on the neuroendocrine networks related to hunger, satiety, appetite, and responses to food-related cues, suggesting the physiological ratio¬nale for the linkage between exercise and eating in humans. Next, the possibilities of the brain science of exercise and eating for improvements in modem human health in various generational groups are discussed.