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Spontaneous physical activity and sleep promotion for obesity prevention

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Abstract

The prevalence of obesity continues to increase despite modifying behavior can reduce the risk for obesity. Behavioral modification to adopt a lifestyle with lower caloric intake, higher exercise levels and adequate sleep is difficult in an obesigenic environment that promotes highly palatable foods, use of labor-saving devices and extended work hours. Alternative behavioral modalities are needed in the arsenal of obesity treatment options. Spontaneous physical activity (SPA) or all physical activity aside from formal exercise is highly variable across individuals and is higher among individuals with lower body weight. Sub-optimal sleep time is prevalent among individuals. Likewise, reduced sleep time or sleep quality increases risk for obesity. Promoting higher levels of SPA and improving sleep may curb weight gain. However, identifying the relative contribution of SPA and sleep on total energy expenditure to overall energy balance and understanding neural factors modulating SPA and sleep is required first. Work in a rodent model of obesity resistance demonstrates that high SPA levels confer lower adiposity and this parallels sleep quality. Thus high SPA levels may confer protection against the deleterious effects of sleep deprivation. The neuromodulatory lateral hypothalamic neuropeptide orexin may underlie this heightened SPA and sleep quality and therefore may provide an avenue for pharmacologic obesity therapeutics.

Biography

Jennifer A. Teske completed her Ph.D. in 2007 in Nutritional Biochemistry at the University of Minnesota in Saint Paul, Minnesota, USA and postdoctoral studies in 2011 at the Minneapolis VA Health Care System in Minneapolis, Minnesota, USA. Currently, she is an Assistant Professor in the Department of Nutritional Sciences at the University of Arizona and a Research Scientist at the Southern Arizona VA Health Care System in Tucson, Arizona, USA.