

differ between the two groups, and a thyroid-releasing hormone test revealed the absence of hypothyroidism and hyperthyroidism in obese children with high TSH levels. No relationship was found between lipid levels and thyroid hormones; furthermore, lipid levels were similar in children with high TSH levels, and children whose TSH levels were in the normal range.

The authors conclude that hyperthyrotropinemia is a consequence, and not a cause, of obesity. They hypothesize that there is no necessity to treat hyperthyrotropinemia in obese children with thyroxine, because the elevations in their free T₃ and TSH levels are reversible with substantial weight loss, and unrelated to lipid levels.

Original article Reinehr T *et al.* (2006)

Hyperthyrotropinemia in obese children is reversible after weight loss and is not related to lipids. *J Clin Endocrinol Metab* 91: 3088–3091

Estrogen, leptin and exercise in premenopausal women

During the menopause, many women experience accumulation of central abdominal fat; however, this increase in abdominal fat can be prevented (in many instances) by estrogen, in the form of hormonal replacement therapy. Fat accumulation can also be reduced by exercise, but extensive exercise and a large energy deficiency can lead to amenorrhea and hypoestrogenemia. Leptin is involved in energy homeostasis, and might represent a link between energy deficiency and amenorrhea. Puder *et al.*, therefore, investigated the relationships between serum estrogen concentrations, exercise level, body composition and leptin concentrations, in young, premenopausal women.

Overall, 50 women aged between 18 and 36 years (all with similar BMD) were studied. Participants were allocated to one of three groups: women with exercise-associated amenorrhea, normal-weight women who exercised regularly and had regular menstrual cycles, and women with regular menstrual cycles who reported less than 5 h of physical activity per week.

In women with regular menstrual cycles, estradiol concentrations were inversely correlated with central accumulation of body fat. This relationship was not observed in women with exercise-associated amenorrhea. In all women, estradiol concentrations were

positively correlated with leptin concentrations, and exercise was inversely correlated with leptin concentrations, independently of body fat distribution.

The authors conclude that in young, premenopausal women, estradiol concentration and exercise level influence leptin concentrations, which in turn affect energy balance. They note that these processes occur through mechanisms that are, in part, independent of body fat distribution.

Original article Puder JJ *et al.* (2006) Estrogen and exercise may be related to body fat distribution and leptin in young women. *Fertil Steril* 86: 694–699

Men with high estradiol levels have a low risk of cardiovascular disease

Men tend to develop cardiovascular disease 5–10 years earlier than women. It has been suggested that the disparity in age at onset of cardiovascular disease between men and women could be caused by differences in endogenous sex hormones. Ärnlöv and colleagues, therefore, evaluated the associations between baseline levels of sex hormones—total testosterone, total estradiol and dehydroepiandrosterone sulfate—and the incidence of cardiovascular disease, in men.

In total, 2,084 middle-aged men (all white; mean age 56 years at baseline) who had never experienced a cardiovascular event took part in this community-based study. During 10 years of follow-up, 386 men experienced their first cardiovascular event. After adjustment for established risk factors for cardiovascular disease (e.g. blood pressure and cholesterol: HDL ratio), high estradiol levels were found to be associated with a low risk of cardiovascular disease. When data from older men (aged >56 years at baseline) and younger men (aged ≤56 years at baseline) were analyzed separately, the association between high estradiol levels and low risk of cardiovascular disease was only present in older men. Levels of testosterone and dehydroepiandrosterone sulfate were not associated with risk of cardiovascular disease.

The authors hypothesize that estrogen has vasculoprotective influences in men, but they highlight the need for further studies to investigate the pathophysiologic mechanisms