

Does Exercise Increase or Decrease Sex Hormone Levels?

Every practitioner understands the importance of exercise in health and wellness. There are some interesting hormone related considerations to bear in mind with working with patients of different ages. Some literature suggests that exercise increases estrogen and testosterone, other research suggests the opposite. This newsletter will take a brief look at why there might be this difference.

There is widespread support for the role of increased levels of physical activity in reducing cancer risk through lowering of estrogen levels in both pre-and postmenopausal women.¹ A small exercise intervention study of premenopausal women at high risk for breast cancer identified a reduction of total monthly estrogen exposure by 18.9%, primarily during the luteal phase.² That same study also identified an average decline in progesterone by 23.7%. While this study had a small sample size, a meta-analysis of the effect of physical activity on sex hormones identified a statistically significant decrease of both total estradiol and free estradiol.³ There is consistent evidence that, over time, consistent exercise will contribute to a lowering of baseline levels of steroid hormones. For your patients experiencing estrogen dominance, maintaining an exercise routine that elevates heart rate on a consistent basis can, over time, result in a reduction of estradiol levels and easing of the associated symptoms. In post-menopausal women with declining or low estrogen who exercise regularly – there are the usual risks associated with low estrogen. Even though weight bearing exercise is important for maintaining bone health, it is advisable to consider estrogen supplementation if a patient has a regular and frequent high intensity exercise regime.

A 2002 study that identified that short term endurance exercise can result in an increase in anabolic steroids.⁴ This study focused on just one exercise session rather than an exercise program that extended over time. Samples were taken before and after exercise, then at 30 minutes of recovery, and analyzed for plasma lactate and serum growth hormone, IGF 1, testosterone, estradiol, DHEA, and cortisol. Elevated levels were reported, perhaps due to the stress response to sudden exertion. The findings were supported by a 2016 study evaluating responses of sex steroid hormones to different intensities of exercise in endurance athletes.⁵ In this study, both athletes and non-athletes exercised at a range of intensity levels. Dihydroepiandrosterone (DHEA), free testosterone, dihydrotestosterone (DHT), cortisol and estradiol levels were measured before and after exercise. Non athletes experienced increases in DHEA, testosterone, DHT, cortisol and estradiol at all exercise intensities. The athletes experienced an increase in DHEA, testosterone, DHT, and Cortisol only at high intensity exercise. The general conclusion is that base line sex hormone levels in athletes are likely to be lower and do not peak as much with exercise.

One of the challenges with research into the impact of exercise on hormones is there are so many variables to control and, with longitudinal studies, there are additional variations in participant compliance. Accepting that each patient is an individual, it would seem that exercise provides short term boosts in steroid hormone levels but with

consistent training over time, baseline levels appear to go down. While maintaining an exercise routine is important at any age, changing hormone levels do have implications for supplementation with age and menopausal status.

References

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