

Serum Testosterone in Physically Active Adolescent Males

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Dear Editor,

Some studies show an increase in the testosterone output after an intense workout, but other studies report a reduction in the testosterone levels. The testosterone response to exercise is still controversial. Previous research on male athletes has demonstrated that their testosterone levels increased after they won a competition and that they decreased after they lost. These changes may last for a few days and they can affect the athletes' performance in the subsequent competitions [1]. This study has projected the hypothesis that exercise decreases the sensitivity of the testosterone receptors by negative feedback inhibition.

This prospective case control study which was done between February 2010 and April 2010 comprised of 13 males of ages of 20+/- 5 years, who regularly exercised at a fitness centre for six days a week, for more than 5 years (cases) and 19 male students of ages of 20+/- 5 years of a medical college in Chennai, (controls) who had not done any physical exercise. Ethical approval was obtained from the institution. The participants were asked to fill in a questionnaire to assess their physical activity, exercise design, personal behaviour and habits, training regimes, amount of hours of workout, time spent in warming up, aerobics, weight lifting, diet pattern and anthropometry. A written informed consent form was signed by the participants. A fasting blood sample was obtained from the participants to measure the testosterone levels in their blood by the quantitative electrochemiluminescence method (ECLIA) method. All the data were analyzed statistically by a non-parametric test by using the SPSS software version. The test of significance was done by the Mann-Whitney's method.

Subjects	Age in yrs Mean (SD)	Weight in Kgs Mean (SD)	Height in Cms Mean (SD)
Cases	22 (3.1)	70 (0.56)	170 (2.5)
Controls	18.3 (0.58)	76 (2.1)	160 (1.2)

[Table/Fig-1]: Age, weight and height in cases & controls

In this present study, the subjects who underwent physical training regularly at a fitness centre showed significantly decreased testosterone levels (4.28 ± 1.61 ng/ml) in their blood as compared to

those who were never involved in any specific physical training or exercise (6.55 ± 0.94 ng/ml). Our results were in par with those of a study which was done by Kim L Bennal et al. who concluded that, endurance training may be associated with a reduction in the circulating testosterone levels [1]. The supraphysiological doses of testosterone, especially when they were combined with strength training, increased the fat-free mass and the muscle size and strength in normal men [2], but in our study, there was a strong negative correlation between the muscle building exercise and the testosterone levels. A programme with periods of consistent, high quality training, periods of rest and recovery and periods of overreaching, should be a key goal for the future to identify the training programme which can create the best testosterone response [3]. There was no association between the levels of free testosterone and the exercise performance or the muscle strength [4]. The exercise induced hormonal elevations do not enhance the intra-cellular markers of anabolic signaling or the acute post exercise elevation of the myofibrillar protein synthesis [5]. It is important to quantify the levels of the physical activity which correspond to the levels of benefit in general, as well as to define the specific outcomes which are related to particular activities in both men and women [6].

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