

Young elite athletes of different sport disciplines present with an increase in pulsatile secretion of growth hormone compared with non-elite athletes and sedentary subjects.

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Acute exercise is a well-known stimulus for GH secretion but the effect of chronic training on GH secretion still remains equivocal. The aim of our study was to analyse spontaneous pulsatile GH secretion (during a period of 2 hours in the morning) in a group of young elite athletes (EA) compared with non-elite athletes (NEA), and sedentary subjects (SS). Mean and peak GH levels proved significantly higher in EA than in NEA and SS ($p = 0.0004$ and $p < 0.0001$, respectively). The same differences in mean and peak GH levels were also demonstrated in males and females when considered separately (males: $p = 0.0062$ and $p = 0.0025$; females: $p = 0.0056$ and $p = 0.0032$). In addition, GH levels (mean and peak) were higher in females than in males in SS while no differences were demonstrated between the 2 sexes in the EA and NEA groups. IGF-I levels were within the normal range for age in all the subjects with no difference between the 3 groups. Body mass index (BMI) exhibited no difference between groups, while EA showed higher lean mass ($p = 0.0063$) and lower fat mass ($p = 0.0139$) than NEA and SS measured by dual-energy x-ray absorptiometry. A strong positive correlation between GH levels (mean and peak) and hours of training a week was demonstrated ($p = 0.0101$; $r^2 = 0.1184$; $p = 0.0022$; $r^2 = 0.1640$, respectively). In conclusion, GH levels were higher in EA than NEA and SS without any modification of IGF-I levels; a strong positive correlation was present between GH levels and intensity of training. An increase in the knowledge of the effect of chronic training on GH secretion could improve the training programme to elicit the greatest exercise-induced GH response.

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