GROWTH HORMONE RESPONSE TO ACUTE EXERCISE: EFFECTS OF CHRONIC TRAINING AND ACID-BASE STATUS
PURPOSE

The study investigated whether [H⁺]-dependent growth hormone (GH) response to exercise is affected by chronic alteration of acid-base status during training. The study also investigated GH secretion during acute exercise in relation to adaptation to endurance training.

METHODS

21 healthy subjects (age, 24.4 ± 2.5 yr; height, 180.9 ± 5.8 cm; weight, 78.8 ± 11.6 kg; \( \text{VO}_{2\text{peak}} \) 48.5± 1.7 ml·kg\(^{-1}\)·min\(^{-1}\)) underwent a six week leg-cycle training. During training subjects were supplemented with either NaHCO\(_3\) (0.4 mg·kg\(^{-1}\)) or placebo. GH response to high-intensity exercise (8 x 2-min, 1-min rest at 90% of PPO) was evaluated before and after the training during leg-cycling (under influence of NaHCO\(_3\)) and arm-cycling.

RESULTS

Exercise increased GH levels in both groups (P < 0.05) with no effects from NaHCO\(_3\). Pre-training GH response to leg-cycle exercise was inversely related to the improvement in LT (\( r = -0.580, \) P < 0.05). GH response to exercise was positively correlated to relative exercise intensity and increase in [H⁺] pre-training (\( r = 0.477 \) and 0.560, respectively, P < 0.05) but not post-training.

CONCLUSION

Thus, this novel finding suggests a potential role of the GH-IGF axis in the adaptive response to endurance training.

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