

Does Growth Hormone and Testosterone Supplementation Improve Physical Performance? A Double-blind Placebo-controlled Study in Recreational Athletes.

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GH and testosterone (T) are widely abused performance-enhancing substances in sport. However whether GH alone or in combination with T enhances performance in young healthy adults is unclear. The aim was to study the effects of GH and testosterone supplementation on physical performance. In a double-blind study of recreational athletes (exercising >2 h/wk for > one year, aged 27.9 ± 5.7 y, mean \pm SD), 64 men were randomised to 8 weeks' treatment with placebo, GH (2 mg/d), T(250 mg IM Sustanon/wk, 5 wks) or combined treatments, and 33 women to placebo or GH (2 mg/d). Physical performance was measured before treatment and at 8 wks by a) a sub-maximal predictive cycle test for VO₂ max, b) dead lift dynamometry for strength, c) vertical jump height for power, and d) sprint cycle ergometry (Wingate test) for anaerobic work capacity. Statistical analysis was performed using repeated measure ANOVA and significance determined after Bonferroni's correction. Results are expressed as % change from baseline (mean \pm SEM)

	Men				Women	
	Placebo	GH	T	GH+T	Placebo	GH
VO 2 max	0.9 \pm 2.5	0.4 \pm 3.5	4.4 \pm 3.1	3.6 \pm 3.5	0.0 \pm 2.8	3.9 \pm 3.3
Dead lift	6.9 \pm 2.9	7.8 \pm 3.2	6.5 \pm 4.7	1.6 \pm 4.4	4.9 \pm 3.8	1.2 \pm 2.5
Jump height	2.7 \pm 1.5	2.9 \pm 1.5	1.8 \pm 1.3	3.0 \pm 2.4	1.3 \pm 2.7	4.6 \pm 2.1
Wingate	0.8 \pm 1.7	5.8 \pm 1.7	4.9 \pm 1.6	9.6 \pm 2.2*	3.0 \pm 2.2	5.5 \pm 2.1

*: p<0.05 compared to placebo.

In men, when compared to placebo, GH alone did not significantly change VO₂ max, dead lift, jump height or an aerobic work capacity. T alone also did not significantly change any of the four measures of performance compared to placebo. Combined treatment significantly increased anaerobic work capacity. In women, GH did not significantly change any of the measures of physical performance compared to placebo. We conclude that in young healthy adults, short term GH or T supplementation in the doses used does not significantly improve physical performance, while combined treatment enhances anaerobic work capacity in men. The effects of higher doses for longer duration on performance merit investigation. *Funding support from the World Anti-Doping Agency and the Australian Government Anti-Doping Research Program.*