Reduced growth hormone response to anaerobic exercise among children with overweight and obesity

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INTRODUCTION

The aim of the present study was to examine the effect of an anaerobic exercise test on growth hormone (GH) secretion in children with overweight and obesity compared to children with normal weight.

METHOD

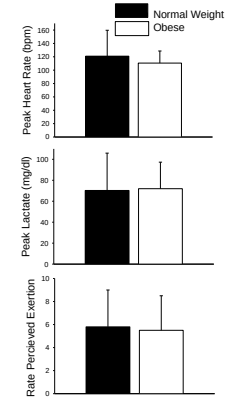
Fifteen children with overweight (BMI%ile ≥85<95) and obesity (BMI%ile ≥95) and 10 children with normal weight (BMI%ile >5<85) participated in the study. Participants performed a modification of the Wingate anaerobic test (WAnT), with 10 bouts of 15 sec cycling separated by one minute of rest. Blood samples for GH and lactate were collected before and 15, 30, 45 and 60 min after the beginning of the exercise test.

STUDY PARTICIPANTS (*p<0.005)

	Normal weight (n=10)	Overweight (n=15)
Age (years)	11.8±2.7	11.6±3.0
Male/female	7/3	9/6
Pubertal stage(Tanner)	2.3±0.9	2.2±1.3
Height (cm)	143.5±4.8	151.7±13.8
Weight (kg)	33.4±8.5	59.4±19.4*
BMI (Kg/M^2)	17.3±1.8	25.2±4.1*
BMI percentile (%)	27.7±21.8	93.9±4.3*

RESULTS

There was a significant increase in GH levels following the modified repeated WAnT in both groups, but the increase in GH levels was significantly greater among the normal weight compared to participants with overweight and obesity (p<0.003, d=1.45). Seven of the ten participants with normal weight had GH increase above the threshold for GH sufficiency compared to only two participants with overweight and obesity.



Heart rate, lactate level and rating of perceived exertion of the study participants following the modified repeated WAnT.
No difference was found between the groups

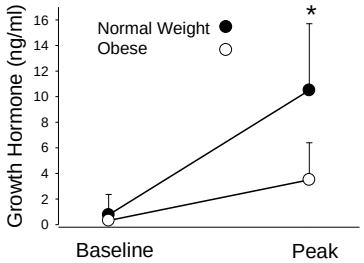


Figure 2: GH response to the modified repeated WAnT.
GH increase was significantly greater (*p<0.003) among normal weight participants.

CONCLUSIONS

GH response to the modified repeated WAnT was significantly reduced among children with overweight and obesity compared to children with normal weight. Anaerobic interval-type training may not be a sufficient exercise alternative to stimulate appropriate GH levels among children with obesity.