

## **Growth Hormone-releasing effects of whole body vibration alone or combined with squatting plus external load in severely obese female subjects.**

M. Giunta, M. Cardinale, F. Agosti, A. Patrizi, E. Compri, A. E. Rigamonti, A. Sartorio  
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Background: Whole body vibration (WBV) has been reported to exert growth hormone(GH)-releasing effects in healthy subjects. Despite the potential of WBV to positively affect body composition changes via lipolytic effects, few studies have been performed in obese subjects to date.

Methods: This study evaluated the acute effects of WBV alone or in combination with squatting plus external load (WBV+S) on serum GH levels and blood lactate concentrations in 7 severely obese women (age  $22 \pm 5$  years; BMI  $39.9 \pm 2.9$  kg/m<sup>2</sup>).

Results: WBV and WBV+S determined a significant GH increase (mean GH peaks  $5.1 \pm 1.9$  ng/ml,  $p < 0.001$  vs. basal, and  $6.5 \pm 3.7$  ng/ml,  $p < 0.001$  vs. basal, respectively), GH peaks occurring immediately after both exercise sessions. No significant differences were observed between GH peaks and GH net incremental area under the curve (nAUC) after both conditions ( $p = 0.39$  and  $p = 0.53$ , respectively), the whole pattern of GH responsiveness being comparable among all the subjects. Lactate concentrations increased after both conditions (mean lactate peaks  $2.0 \pm 0.5$  mmol/l,  $p < 0.05$  vs. basal, and  $4.5 \pm 2.0$  mmol/l,  $p < 0.001$  vs. basal, respectively). The lactate response was significantly higher after WBV+S than after WBV ( $p < 0.05$ ). Baseline GH and GH peak values positively correlated to baseline lactate and lactate peak concentrations in both conditions ( $R^2 = 0.64$ ,  $p < 0.001$ , and  $R^2 = 0.52$ ,  $p < 0.05$ , respectively).

Conclusions: WBV alone stimulates GH release and lactate production in severely obese female subjects, with no additive effect when combined with squatting plus external load. Further additional studies are required to verify the chronic effects of WBV exercise on the GH/IGF-1 system, which could represent a potentially effective approach for weight management in obese subjects.

Se desidera avere la fotocopia di questo lavoro, per esclusivo uso personale, può fare richiesta per mail a: [info@cresceresani.it](mailto:info@cresceresani.it) indicando il titolo, gli autori, la rivista e il proprio recapito lavorativo (nome, cognome, indirizzo, CAP, città).