GH responses to two consecutive bouts of whole body vibration, maximal voluntary contractions or vibration alternated with maximal voluntary contractions administered at 2-h intervals in healthy adults.

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Background: Pharmacological or exercise stimuli repeated at a short interval (but not electrical muscle stimulation) are associated with a blunting of GH responsiveness.

Aim: To compare GH responses to repeated bout of three different GH-releasing stimuli.

Methods: The effects of two consecutive bouts (with a 2-h interval) of whole body vibrations (WBV), maximal voluntary contractions alone (MVC), or alternated with WBV (MVC–WBV) on blood GH and lactate (LA) were assessed in nine young males.

Results: Baseline levels of both GH and LA increased significantly after the first bout of all the tested stimuli, and were significantly lower after WBV than after MVC or MVC alternated with WBV, no difference being detected between these last. The administration of a second bout resulted in significantly lower GH increases than those elicited in the first bout in the three different tests; significantly lower LA responses were recorded after the second bout of MVC and MVC–WBV when compared with those obtained after the first bout, while no significant differences were observed after the two WBV bouts for LA. All responses after the second bout of MVC and MVC–WBV were significantly higher than those observed after WBV alone. GH concentrations were significantly correlated with LA after all stimuli, although LA concentrations after the second bout were associated with markedly lower GH levels.

Conclusions: A significant blunting of GH responsiveness ensues after a second bout of different GH-releasing stimuli, independent from the amount of GH released after the first bout. This is a pattern also observed for other pharmacological stimuli and exercise modalities, and suggests a common mechanism underlying different GH-releasing stimuli.