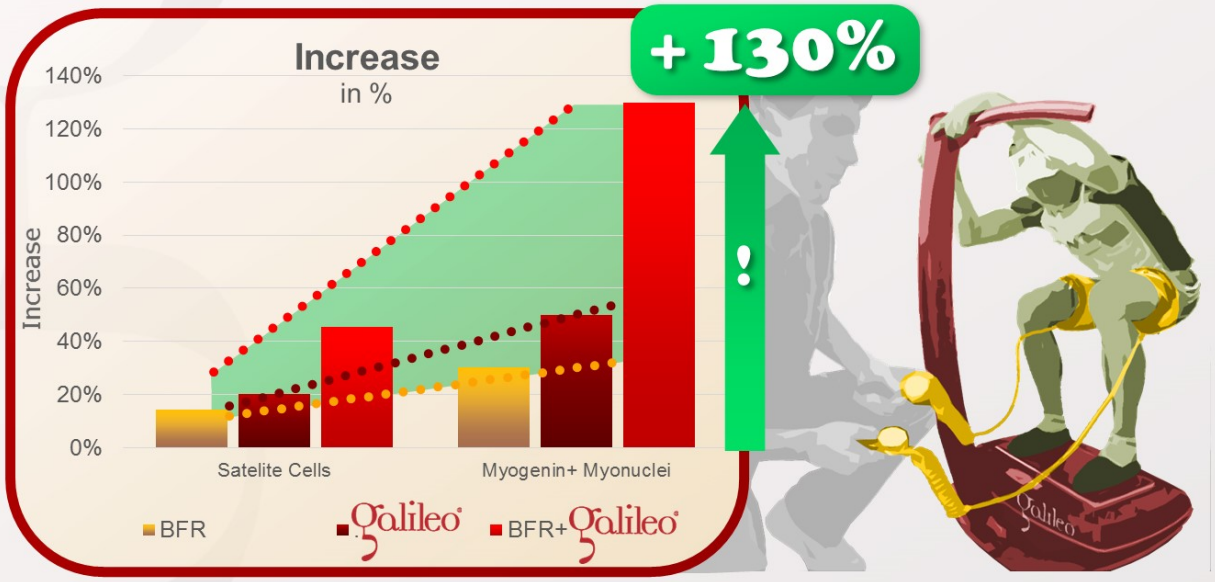
Can one set Galileo Training + Blood Flow Restriction activate muscle Satellite cells ?

The answer is: YES

This study tested the influence of one set of Galileo Training with and without Blood Flow Restriction (BFR) on the activation of Satellite cells of the muscle fibers in trained men (30Hz, pos. 2.5, 3x4 min., squatting 135°, only 1 set). The study used three groups: BFR, Galileo, Galileo + BFR. The Galileo group showed a tendency to higher effects than BFR while the combination of Galileo + BFR showed massive increases in results.



Aguayo D, Mueller SM, Boutellier U, Auer M, Jung HH, Fluck M, Toigo M: One bout of vibration exercise with vascular occlusion activates satellite cells.; Exp Physiol, 101(2):295-307, 2016; PMID: 26663352; GID: 4083

Galileo Research Fact Sheet #33 Sports & Fitness: Occlusion www.galileo-training.com

Satellite cells are the cell nuclei of muscle fibers. An increase of the number of Satellite cells indicates a growth of the muscle fiber (either cross sectional area which is equivalent to an increase in force or length which is equivalent to an increase in contraction speed).

Occlusion (Blood Flow Restriction, BFR – the blocking of vessels by a cuff which blocks blood transport into the muscle during the training session) is known to be a very potential training especially for endurance.

This study used 3 groups: BFR, Galileo and the combination of both. It showed that BDR and Galileo Training had the same tendency of increasing the number of Satellite cells 24 hours after only one set of Training of 3x4 minutes.

However, the combination of the two showed a tremendous increase of Satellite cell activity by up to 130% indicating a massive training effect on the muscle fiber level. Interestingly this effect was identical for Type I and Type II fibers indicating that the training effect was addressing fast and slow twitch fibers at the same time.

Therefore, if you use BFR training you should combine it with Galileo.

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One bout of vibration exercise with vascular occlusion activates satellite cells.

Aguayo D[1], Mueller SM[1], Boutellier U[1], Auer M[2], Jung HH[2], Flück M[3], Toigo M[3].

Abstract

What is the central question of this study? Acute skeletal muscle satellite cell (SC) activation is associated with skeletal muscle hypertrophy. Although the quantity of SCs has been reported to increase following a single bout of resistance exercise, data on muscle fibre type-specific SC quantity and/or activation status after a single bout of vibration is presently lacking. What is the main finding and its importance?

By determining SCs from muscle biopsies of the vastus lateralis using immunohistochemistry, we conclude that modification of vibration exercise by superimposition of occlusion induced activation and differentiation of SCs in young men, which had not been observed with whole-body vibration or blood flow restriction alone. We tested the hypothesis that whole-body vibration (WBV) is insufficient to expand satellite cell numbers 24 h postexercise, whereas WBV in combination with blood flow restriction (BFR) is sufficient.

Twenty-five young men were randomly assigned to one of the following three groups: WBV, BFR exercise or WBVBFR. Satellite cell numbers were determined from muscle biopsies of the vastus lateralis muscle using immunohistochemistry. Satellite cell quantity and frequency (+99.4%, $P = 0.012$ and +77.1%, $P = 0.010$, respectively) increased only in the WBVBFR group. Similar results were obtained for the quantity and frequency of myogenin-positive myonuclei (+139.0%, $P < 0.001$ and +148.4%, $P < 0.001$, respectively).

We conclude that modification of WBV by superimposition of BFR induced activation and differentiation of satellite cells in young men, which had not been observed with WBV or BFR alone. These data suggest that WBVBFR might represent a novel viable anabolic stimulus.

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