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Lactate production during training of running musculature on an oscillating platform

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Vibration training was developed (space) and has shown to increase muscle mass even after short training sessions. The effects on lactate and heart rate as well as the influence on the anaerobic threshold should be examined in the setting of a program of 8 weeks, twice weekly for 15 minutes. 20 men between 35 and 45 years with no previous experience with vibration training volunteered for the training. The running musculature was tested in 4 different positions on the training platform at a low frequency of 35 Hz

1. Light squat with a knee angle of 100°
2. Lateral abdominal (sideways with one arm on the platform)
3. One legged squat (see item 1)
- and 4. Pelvic bridge, lying in front of the plate with both feet on the platform and head, shoulders and arms on the floor.

After an adaptation period of 2 weeks, hold time, heart rate and lactate was measured and repeated every 2 weeks.

Subjects were able to maintain position 1 for 2:26 ($\pm 0:55$ min) at the first test, at the final test for 2:48 ($\pm 0:49$), where the average heart rate was reduced from 115 (± 16) to 110 (± 13) per minute and lactate remained on practically the same level, from 3,05 ($\pm 1,09$) to 3,02 ($\pm 0,89$) mmol/l.

Position 2 was increased from 3:14 ($\pm 0:47$) to 3:34 ($\pm 0:59$) min, where average heart rate was lowered from 123 (± 20) to 117 (± 20)/min and the lactate went from 5,33 ($\pm 1,17$) to 4,39 ($\pm 1,18$) mmol/l. In the 3rd exercise the subjects were able to increase their time from 2:10 ($\pm 0:37$) to 2:44 ($\pm 0:43$) min at a similar heart rate of 128 (± 19) and 126 (± 20)/min and a diminished lactate from 7,47 ($\pm 1,71$) to 6,78 ($\pm 1,57$) mmol/l. In position 4 the increase in time was from 2:07 ($\pm 0:59$) to 2:28 ($\pm 1:02$) min at a level heart rate of 112 (± 15) to 110 (± 13)/min and a reduction of lactate from 6,99 ($\pm 1,68$) to 6,29 ($\pm 1,72$) mmol/l.

Training of the running musculature on an oscillating platform occurs in the anaerobic range in 3 of the exercises, and subjects were able to keep the increase in lactate production to a minimum, even when extending the total training time.