Complete Metabolic Health and Fitness Via (REHIT) Reduced Exertion High Intensity Training on the Ultimate Exercise Biohack

By Tony K Molina

This is a summary of a preliminary study carried out at the Arête Lifelab, The Center for Longevity Programming, Santa Monica, California, USA

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Recent research shows reduced exertion high-intensity interval training (REHIT) is more effective at improving cardiorespiratory fitness and cardiometabolic health than traditional moderate-intensity continuous training.

Introduction:

Power Plate has developed the revolutionary "Ultimate Exercise Biohack"; REV. The REV is a stationary road cycling experience with vibration mechanism beneath the rider reflexively inducing heightened metabolic demand. This represents the first mechanical training exercise modality specifically designed to apply vibration training (VT) to enhance human performance.

Method:

13 participants; six women and seven men to participate in the pilot study all of whom were low metabolic risk and physically active. Participants wore Polar Heart Rate Monitors throughout the three sessions (REHIT, MICT with Vibration and MICT without Vibration), which took place during the 4 weeks of testing.

A reduced form of HIIT was utilized throughout the study, REHIT. Reduced exertion high intensity training. This methodology invokes rapid skeletal muscle glycogen depletion which induces hormetic activation (hormesis), a survival pathway.

Results:

At baseline, treatment (REHIT and MICT) groups did not differ significantly in physical or physiological characteristics. The physical and physiological characteristics for participants in both groups at baseline and 4wks are shown below.

The exercise prescriptions in all treatment groups were well-tolerated for 12 of the 13 participants who completed the study. Overall, there was excellent adherence to the total number of prescribed training sessions: REHIT group— mean, 95% and MICT groups—mean, 97%.

	MICT No Vibration		MICT Vibration		REHIT	
	Pre	Post	Pre	Post	Pre	Post
Age	52.3 ± 16.6		37.6 ± 8.8		51.5 ± 3.6	
BMI	26.8 ± 3	26.3 ± 2.7	26.5 ± 3.6	26.4 ± 3.3	24.8 ± 0.9	24.8 ± 0.9
Weight (kg)	78.9 ± 14.3	78.1 ± 14.8	79.8 ± 14.8	78.9 ± 14.5	79.8 ± 7.8	79.7 ± 6.6
Waist Circ (cm)	89.9 ± 15	85.9 ± 13.1	86.1 ± 12.1	84.1 ± 11.8	89.9 ± 5.3	87.6 ± 3.9
Body Fat %	26.2 ± 8.8	25.6 ± 7.6	25.6 ± 6.1	24.8 ± 5.7	27.7 ± 5.8	27.4 ± 6.5
FEV1 (L)	2.4 ± 0.7	2.8 ± 0.8	3.2 ± 0.2	3.5 ± 0.8	2.7 ± 0.5	3.2 ± 0.3
VO_2 Max (mL/kg/min)	28.7 ± 1.2	29.0 ± 2.2	38.2 ± 6.4	39.0 ± 3.5	33.8 ± 4.9	40.5 ± 5.1
Systolic BP (mmHG)	133.5 ±15.5	127.3 ±10.6	143 ± 25.5	120.4 ± 3.4	117.5 ± 6.1	115.3 ± 7.1
Diastolic BP (mmHG)	79.8 ± 3.1	79.5 ± 7	76.0 ± 9.7	77.6 ± 2.7	78.3 ± 5.7	69.8 ± 0.8
Blood Glucose (mg/dL)	87.3 ± 11.2	90.5 ± 6.3	85.2 ± 7.4	93.2 ± 3.3	91.3 ± 2.4	90.0 ± 2.8
MetS z-score	-1.8 ± 1.3	2.1 ± 1.4	-1.1 ± 1.0	-2.1 ± 1.5	-1.4 ± 1.0	-2.7 ± 0.4

Table 1. Physical and physiologic characteristics at baseline and 4 weeks for REHIT and MICT groups. Note: REHIT = Reduced-exertion high-intensity training; MICT = Moderate-intensity continuous training.

Summary:

4 weeks of REHIT elicited time-efficient improvements in V02 Peak and cardiometabolic health when compared to traditional MICT. There was statistical change in V02; one standard deviation improvement as compared to the other groups. Additionally, reductions in fasting blood sugar in the REHIT group show initial influence of metabolic response.

Consistent with previous REHIT studies with a similar program duration including sedentary individuals, our Vibration REHIT protocol also induced a ~15 to 25% increase in cardiorespiratory fitness. This is a clinically significant finding given that a 10% increase in CRF significantly reduces the risk of mortality and morbidity by 15%. Moreover, this investigation showed that this CRF improvement following REHIT is superior to that elicited by a five-fold larger volume MICT.

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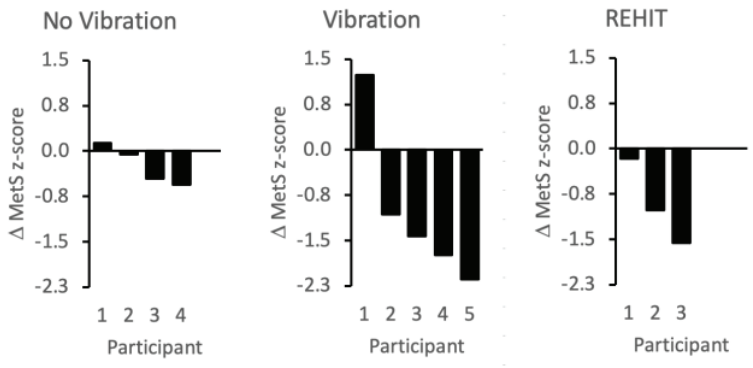
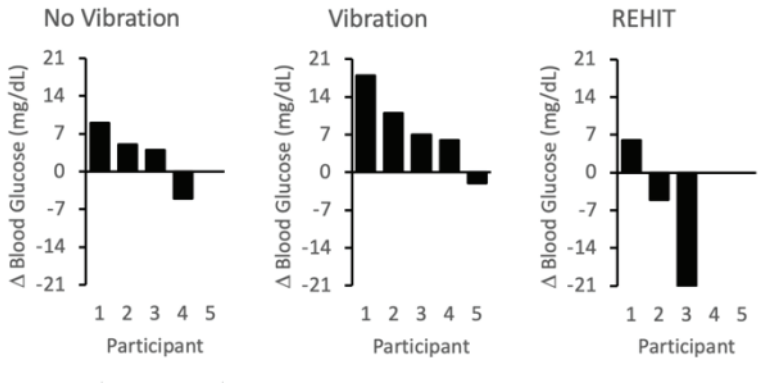


Change in MetS z-score from pretest to posttest for no vibration (N=4), Vibration (N=5), and REHIT (N=4) groups.



Change in Fasted Glucose from pretest to posttest for no vibration (N=4), Vibration (N=5), and REHIT (N=4) groups