Does one bout of high intensity resistance training change circulatory levels of irisin?

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Introduction

The recently novel identified myokine, irisin, has gained attention as a way to increase energy expenditure by enhancing metabolic function. Exercise and active lifestyle increase the synthesis of contraction-regulated myokines that have direct effect on cells metabolism.

The objective of this study is to analyze the effects of one bout of high intensity exercise on circulatory levels of irisin in healthy young adults.

Methods

- ***Sample***:

A total of 24 participants were recruited. Subjects were blocked by sex, BMI, and LBM and randomized to either control (n=13) or intervention (n=11) (Table 1). One control was excluded for not fulfilling the inclusion criteria (Figure 1).

- ***Assessments***:

Physical fitness was assessed through Body Composition, Muscular Strength, Cardiorespiratory Fitness, and irisin Levels. Strength assessments were performed after 3 familiarization sessions in order to acquire appropriate exercise techniques, and prevent the learning effect (Figure 1).

- ***Intervention***:

High-Intensity circuit training consisting on 7 whole body exercises, 3x10 with resting periods of 30 seconds/exercises and 1-2 min/sets. Intensity was set at 7-10 of the 10-point Rating of Perception Exertion (RPE) scale [1]. Lactate levels were measured to cross-check intensity (Figure 2).

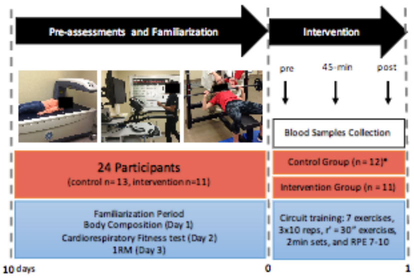
Pre-assessments and Familiarization
Intervention
pre
45-min
post
Blood Samples Collection
24 Participants
(control n= 13, intervention n=11)
Control Group (n = 12)*
Intervention Group (n = 11)
Familiarization Period
Body Composition (Day 1)
Cardiorespiratory Fitness test (Day 2)
1RM (Day 3)
Circuit training: 7 exercises,
3x10 reps, r' = 30" exercises,
2min sets, and RPE 7-10
10 days
0
1

Figure 1. Pre-assessments, familiarization, and intervention summary

Note: 1RM – 1 repetition maximum, RPE – Rating of Perception Exertion Scale, pre – baseline, 45-min – minute during the session, post – after session. *One control was excluded for not fulfilling the inclusion criteria.

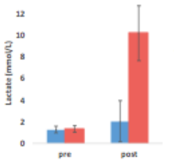

Figure 2. Lactate levels

Note: pre – baseline, post – after session.

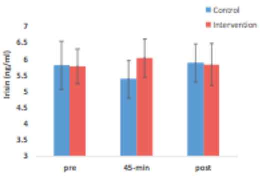

Figure 3. Irisin responses to acute exercise

Note: pre – baseline, 45-min – minute during the session, post – after session.

Results

Interaction effect (time x intervention) ($F[2,42]=2.281$, $p=0.115$), time ($F[2,42]=0.325$, $p=0.724$) and intervention ($F[1,21]=0.239$, $p=0.630$) effects were not significant (Figure 3) when circulating irisin levels (ng/mL) were analyzed.

Table 1. Sample descriptive

	Control (n=12)		Intervention (n=11)	
	Mean	SD	Mean	SD
Weight (kg)	69.01	10.73	63.74	7.06
Height (cm)	173.02	0.09	170.83	0.09
BMI (kg/m^2)	22.92	2.13	21.81	1.35
LBM (kg)	49.18	11.58	47.32	10.95
Irisin (ng/ml)*	5.80	1.31	5.77	0.91

Note: LBM – Lean Body Mass, BMI - Body Mass Index, SD - Standard Deviation.
*Analyses were performed with a total of n=12 in the control group due to a one participant failing to fulfill the inclusion criteria.

Discussion and Conclusion

In addition to heterogeneous research findings, the lack of changes on serum concentrations of irisin after a resistance training intervention shown in this study adds controversial results to the literature [2-4].

If irisin is an exercise-induced hormone, other confounding variables such as room temperature, body temperature, daily variation, physical fitness levels, or exercise intensity, and more rigorous designs - with control group - might be critical factors for future studies.

References:

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Acknowledgements: CALUE, FY2015 Scholarship Catalyst Program at TTU, participants, and Research Assistants.