

Study Design

This study was a Single-Blind Randomized Controlled Trial. Participants were placed into either a long education group or short education group. The long education group was provided with 10-15 minutes of education regarding exercise induced hypoalgesia (EIH), while the short education group only got 1 minute of education.

Purpose

Our study aimed to determine if the length of education on exercise-induced hypoalgesia (EIH) had any effect on EIH.

Background

Pain is an unpleasant sensory and emotional experience that is associated with actual or potential tissue damage. There are many mechanisms to control pain including (EIH). The EIH mechanism is not fully understood. In past literature, education on EIH has been shown to have significant effects on perceived pain. Currently, no appropriate dosage of education has been found to maximize EIH.

Methods

Subjects
Both male and female participants between the ages of 18 and 64 were recruited from a nearby university. Inclusion criteria consisted of refraining from vigorous exercises, alcohol, or pain medication for 24 hours prior to participation. Exclusion criteria included participants who were pregnant, previous injury that prevented exercises, and any chronic pain condition that has been present for 3 or more months. 10 participants were involved in this study.

Procedures/Materials

Procedure followed the flow chart listed below. A handheld algometer was used to assess participants' pain pressure thresholds (PPTs) at the dominant quadriceps and non-dominant trapezius and was performed by normal industry standards using the average of three tests at each site. Participants were asked to wall squat for 3 minutes or until fatigue, whichever came first. During the wall squat, study personal were asking participants for their rate of perceived exertion and visual analog scale values at the 1, 2 and 3 minute mark.



Data Analysis

All statistics were performed using IBM SPSS Statistics for Windows, version 27.0 (IBM Corp., Armonk, N.Y., USA) using the significance threshold of $\alpha < 0.05$. Descriptive statistics of means, standard deviations, and frequencies were be calculated for the sample participants. An independent samples t-test were calculated to compare differences between PPT at the two locations sites for the SEG and LEG before and after exercise as well as the change in PPT from the exercise.

Results

	Group 1	Group 2
Age (yr)	23.80	24.20
Race	White (100%)	White (100%)
Female, n (%)	4 (80%)	3 (60%)
Previous Injury, n (%)	1 (20%)	0 (0%)
Participated in College Athletics, n (%)	2 (40%)	4 (80%)

	Group	Mean (SD)	T-test
Pre Quad	1	4.34 (1.94)	
	2	4.53 (1.53)	
Post Quad	1	5.47 (4.07)	
	2	5.25 (1.24)	
Difference	1	1.13 (2.39)	0.089
	2	0.72 (0.58)	

	Group	Mean (SD)	T-test
Pre Trap	1	3.22 (1.49)	
	2	3.19 (1.80)	
Post Trap	1	3.8 (1.77)	
	2	3.13 (1.66)	
Difference	1	0.60 (0.60)	0.777
	2	-0.06 (0.624)	

There were no significant differences between groups when comparing age, race, gender, previous injury and former collegiate athlete status.

No significant difference was seen in PPT pre and post exercise at the quadriceps muscle. Larger changes in PPT were observed in the LEG vs the SEG.

No significant change was observed in PPT pre and post exercise at the trapezius muscle. The LEG demonstrated a minor increase in PPT while the SEG saw a decrease in PPT after exercise.

Overall, changes were more so observed at the quadriceps than at the trapezius, which indicates more of a local response to EIH than a global response.

Conclusion

Based on the results of our study, there was not any significance to the length of education and its effects on EIH. However, with this study being underpowered, there is a risk for Type I error (false-positive) which may result no differences even when a difference truly exists. That being said, a study that is not underpowered may prove to be more telling on education length and its effects on EIH.

Limitations

Limitations to our study included not having enough participants and having participants who were young, pain free, and a sample of convenience. Additionally, all subjects were PT students who had previous exposure to EIH through class.

Clinical Relevance

EIH is a productive way to reduce pain. EIH was produced with both sets of education in this study, which was similar to previously reported study results. Further studies with appropriate sample sizes are needed to fully understand if the length of education time can affect changes in EIH in people.

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