The Effects of the Fight-or-Flight Response on the Performance of Margaria-Kalamen Power Test

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Fight-or-flight is the sympathetic response of the body allowing individuals to act in a situation deemed a threat, by releasing several hormones and neural transmitters. Although many studies have explored the mechanism behind this phenomenon, few have researched the effect of this response on performance. **PURPOSE:** To test the influence of external auditory stimulus on cardiovascular measures, exercise performance, skin conductance and felt arousal. **METHODS:** Twelve subjects (20.4±0.9 years, Height 1.71±0.1 m, Weight 72.1±16.0 kg) performed Margaria-Kalamen (MK) power test under three conditions; 1) control, 2) pre-auditory stimulus (AS), and 3) pre-auditory stimulus with prior notice (AS-P) of the stimulus. AS was introduced by blowing an air-horn prior to exercise. Each condition was separated by a minimum of one week. Blood pressure, heart rate, skin conductance, and psychological felt arousal were measured before and after the introduction of AS as well as after MK test. One way analysis of variance with repeated measures was used to compare differences amongst three conditions. **RESULTS:** AS and AS-P conditions showed increases in MK power output when compared to the control condition. However, these differences were not significant ($p>0.05$). On the other hand, AS and AS-P conditions did have significant impact on the heart rate and felt arousal when compared to control condition ($p<0.05$).

Conditions	MK Test (Watts)	HR (bpm)	SBP (mmHg)	Skin Conductance (AU)	Felt Arousal
Control	984.5 ± 499.1	140.8 ± 16.0	135.9 ± 13.8	N/A	3.17 ± 1.12
AS	1040.1 ± 562.9	124.7 ± 16.8*	130.8 ± 20.2	1.07 ± 0.42	4.08 ± 1.38*
AS-P	1060.5 ± 498.9	125.4 ± 13.7*	124.5 ± 15.3	1.04 ± 0.91	3.83 ± 1.34*

*Significantly different from control condition ($p<0.05$).

CONCLUSION: The application of the external stimulus to drive neurologic mechanisms appeared to have significant impacts on some of the cardiovascular and psychological measures. However, these stimuli did not enhance or hinder exercise performance.