Effects of Post-Exercise Hypotension After a Graded Exercise Test

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ABSTRACT

The purpose of this study was to explore post-exercise hypotension (PEH) responses after a graded exercise test. PEH has been recommended by physicians to help physiologically control hypertension in patients. Recent studies have tried to find the relationships between PEH and hypertensive individuals but the results have been inconclusive, although certain studies have found that individuals with pre-hypertension tend to decrease their blood pressure the most. This study was approved by the TAMU-SA IRB and all subjects provided written consent. Subjects were asked to not eat a heavy meal or consume caffeine three hours prior to testing. After sitting for five minutes, subject's blood pressure was measured by the investigator using a mercury sphygmomanometer, after which they performed a treadmill test to exhaustion (VO2max) using the Bruce protocol. Immediately post exercise (IPE) subjects sat down and BP was again measured. Subjects remained seated and were measured again at 5, 10, and 15 minutes post-exercise. Based upon the VO2max results, the sample was divided into higher (> 40.8 ml/kg/min, Age=24.8±3.5 yrs, Ht= 170.0±8.6 cm, Wt= 72.2±13.3 kg BMI=24.8±3.0) and lower fit (< 40.8 ml/kg/min Age= 28.2±9.1 yrs, Ht= 164.9±7.4 cm, Wt= 82.8±20.8 kg, BMI=30.4±7.1) groups and a 2 (category) X 5 (time) factorial ANOVA was used to explore differences between groups and time-points. Alpha was set at .05 for all tests. While there were no significant differences in systolic and diastolic BP readings at any time-points between higher and lower fit groups (P>.05), there was a significant main effect of time on diastolic BP at the 5, 10, and 15 min points.

Table 1. Post-Exercise Blood Pressure Responses after a Graded Exercise Test.

	Total (N=35)	Higher Fit (n=18)	Lower Fit (n=17)
Systolic (mmHg)			
Pre Exercise	123.1±11.3	122.9±10.1	123.3±12.7
Post Exercise	178.3±19.3	178.3±19.3	169.9±23.2
Post 5 min	132.7±19.1	132.1±19.9	133.2±18.9
Post 10 min	122.6±13.4	120.6±12.1	124.7±14.7
Post 15 Min	119.5±13.9	117.6±12.2	121.5±15.6
Diastolic (mmHg)			
Pre Exercise	81.7±11.1	80.0±7.2	81.7±11.1
Post Exercise	78.6±14.6	73.0±8.4	78.6±14.6
Post 5 min	72.4±13.3*	69.0±9.5	76.0±15.9
Post 10 min	72.7±10.9*	70.1±6.2	75.4±14.0
Post 15 Min	74.1±10.4*	71.7±6.3	76.8±13.2

*Significantly different than Diastolic Pre Exericse, P<.05

CONCLUSION: Although fitness did not have a significant effect on PEH, higher fit subjects were more inclined to have lower 15 min PEH compared to lower fit subjects.