

Moderate but not low intensity aerobic exercise promotes postexercise hypotension in older adults with hypertension and regular exercise participation

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INTRODUCTION

- The reduction in blood pressure as a result of a single session of exercise seems especially relevant for assisting in the control of blood pressure during day-time periods when blood pressure is typically at its highest levels⁽¹⁾ and to allow the performance of activities of daily living at lower levels of blood pressure.⁽²⁾
- Despite evidence related to post-exercise blood pressure reduction as a result of a single session of aerobic exercise in adults with hypertension,⁽³⁻⁷⁾ there is a lack of studies enrolling adults with hypertension and regular exercise participation. The results could be less predictable in this group of subjects, because the magnitude of the acute effect could be lower due to a better blood pressure control in response to the regular exercise practice.
- Previous studies showed that exercise intensity could influence the blood pressure response after exercise cessation.⁽⁸⁾

GOALS

- To compare the effects of low (30% heart rate reserve, HRres) and moderate (60% HRres) intensity on the blood pressure response immediately following aerobic exercise in older adults with hypertension and regular exercise participation. We aim to determine whether the phenomenon designated as postexercise hypotension, i.e. the transient reduction in blood pressure in the period after exercise to values less than those observed before exercise, is modulated by exercise intensity.

METHODS

Subjects

19 older adults (12 women; age: 66.0±1.7 years; weight: 65.8±8.5 kg; BMI: 24.8±2.6 kg/m²) who exercise at least 3 times per week on a regular basis, completed two randomly assigned aerobic exercise bouts at low (30% heart rate reserve, HRres) and moderate (60% HRres) lasting 30 minutes each. The exercise bouts were performed in the morning (9 a.m.), 7 days apart from each other, on a treadmill.

Procedures

Anthropometric variables, medication status and clinical history were collected. Blood pressure was measured at baseline after 10 min of rest, at 10 min after exercise, and at every hour until 6 hours postexercise.

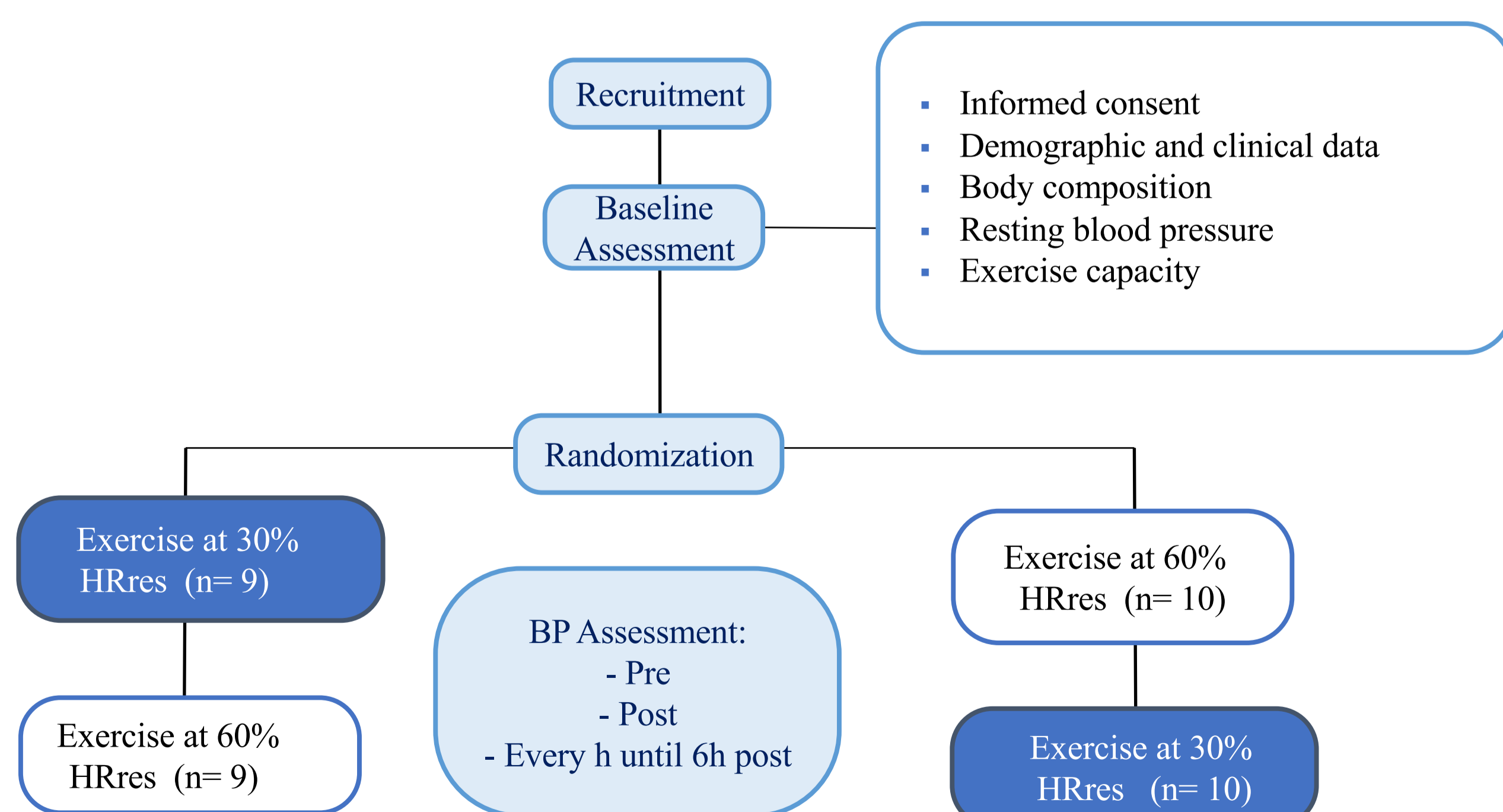


Figure 1. Study Flow Diagram

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RESULTS

Over the course of 6 hours, systolic and diastolic blood pressure did not change significantly after the low intensity exercise bout in comparison to the baseline values (134.9±14.5 mmHg and 80.0±8.0 mmHg, respectively). In the moderate exercise bout, the systolic pressure at 1 hour (125.3±15.3 mmHg, p=0.029) and up to 5 (126.2±17.1 mmHg, p=0.041) and 6 hours (126.3±13.8 mmHg, p=0.040) postexercise was significantly lower in comparison with baseline (135.0±16.0 mmHg). Diastolic pressure did not change (Table 1).

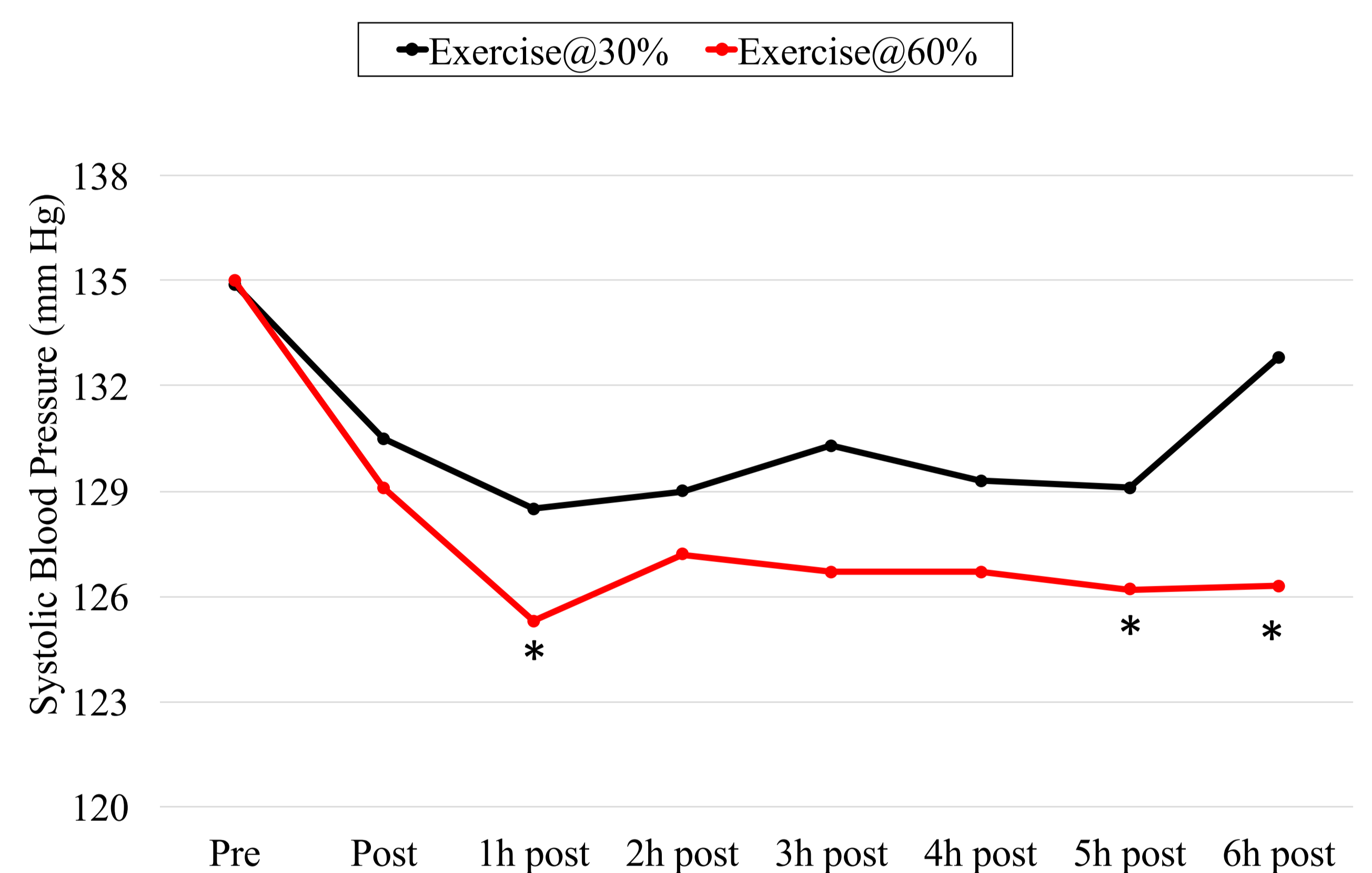


Figure 2. Diastolic blood pressure (mm Hg) response to the exercise bouts. *significantly different from preexercise, p<0.05

Table 1. Diastolic blood pressure (mm Hg) response to the exercise bouts

	Pre	Post	1h post	2h post	3h post	4h post	5h post	6h post
Ex@30%	80.0±8.0	80.5±7.9	80.1±9.8	79.2±10.6	78.0±10.9	75.9±11.9	79.0±10.1	81.3±9.1
Ex@60%	76.0±8.0	79.6±7.7	77.0±9.8	76.8±10.7	76.5±9.2	77.4±8.3	76.8±9.8	77.4±8.5

CONCLUSIONS

- A single session of moderate aerobic exercise acutely reduces blood pressure in hypertensive older adults with regular exercise practice and may be a nonpharmacological adjuvant tool to control hypertension in this age group.
- The intensity of exercise seemed to be a key factor to post-exercise blood pressure reduction.
- Even hypertensive subjects with regular exercise practice benefit from an acute bout of exercise.
- These results add evidence supporting the importance of aerobic exercise as a non-pharmacological strategy to control hypertension.

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