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COMMENT

Comment on "Prescription of exercise training for hypertensives"

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I have read with interest the recently published work "Prescription of exercise training for hypertensives" by Sakamoto [1]. The purpose of this study was to examine appropriate exercise prescriptions (e.g., type, intensity, duration per session, and frequency) for the prevention and treatment of hypertension.

The author elegantly discussed epidemiology, the pathophysiology of hypertension, factors considered to cause hypertension and the current status of exercise prescription for hypertension. Although the current study has interesting practical applications for endurance training, there are some methodological issues that might be of interest to readers, especially regarding the prescription of resistance training (RT) for hypertensive patients.

For example, there is no scientific evidence that RT should be performed at low intensity and should be used as supplementary exercise. The American Heart Association [2] recommends the practice of dynamic RT for the prevention and treatment of hypertension [90–150 min/week, 50–80% one repetition maximum (RM), six exercises, three sets per exercise and ten repetitions]. In addition, 60–70% 1RM represents moderate intensity, and 80% represents vigorous or high intensity. The prescription of RT should respect the biological principles of training, such as progressive overload, and hypertensive patients should not train until momentary concentric failure.

Several randomized controlled trials (control group and resistance training group) found that RT reduces systolic and diastolic blood pressure in prehypertensive [3] and hypertensive subjects [4–7] (Table 1). A meta-analysis by Sousa et al. [8] showed that RT alone reduces systolic and diastolic blood pressure in prehypertensive and hypertensive subjects. Furthermore, RT programs were found to be safe and well tolerated by hypertensive patients.

RT might have several benefits for patients with hypertension, such as decreasing peripheral vascular resistance [9], resting heart rate, resting double product [7], arterial stiffness, sympathetic tonus and neurohumoral alterations [3] (e.g., increased nitric oxide and reduced renin), which are factors that should influence postexercise hypotension. Furthermore, previous studies have reported that muscle strength has cardioprotective properties and that higher levels of muscle strength are associated with lower mortality rates in both the general population and hypertensive people [10].

Table 1 Variables of resistance training in prehypertensive and hypertensive subjects

Author	Intensity	Training volume	Exercises	Frequency	Results
Mota et al. [5]	Progressive 60–80% 1RM	3 × 8–12	10	3 days/week	↓ SBP ↓ DBP
Oliveira-Dantas et al. [4]	5–7 OMNI-RES	1–3 × 9–15	9	2–3 days/week	↓ SBP ↓ DBP
Son et al. [6]	Progressive 60–80% 1RM	2–4 × 10–20	9	3 days/week	↓ SBP ~ DBP
Terra et al. [7]	Progressive 60–80% 1RM	3 × 8–12	10	3 days/week	↓ SBP ~ DBP
Tomeleri et al. [3]	Progressive	1 × 10–15	8	2 days/week	↓ SBP ↓ DBP

DBP diastolic blood pressure, *OMNI-RES* resistance exercise scale of perceived exertion, *RM* repetition maximum, *SBP* systolic blood pressure

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Compliance with ethical standards

Conflict of interest The author declare that he has no conflict of interest.

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