

## Hypertension

<b>SR/MA</b> <b>Citation:</b> Cao L, Li X, Yan P, Wang X, Li M, Li R, Shi X, Liu X, Yang K. The effectiveness of aerobic exercise for hypertensive population: A systematic review and meta-analysis. The Journal of Clinical Hypertension. 2019 Jun 6.	
<b>Purpose:</b> <b>duration of aerobic exercise on blood pressure and heart rate</b>	<b>Abstract:</b> The study aims to evaluate the effectiveness of different durations of aerobic exercise on hypertensive patients. Four electronic databases (PubMed, Embase, Cochrane Library, and Web of Science) were searched from their inception until July 2018. English publications and randomized controlled trials involving aerobic exercise treatment for hypertensive population were included. Two reviewers independently extracted the data. The Cochrane's Risk of Bias tool was used to assess the quality of included studies. In this systematic review, a total of 14 articles were included, involving 860 participants. The quality of the included studies ranged from moderate to high. The results of the meta-analysis showed that compared with the control group, significant effects of aerobic exercise were observed on reducing systolic blood pressure (SBP) (mean difference [MD] = -12.26 mm Hg, 95% confidence interval [CI] = -15.17 to -9.34, $P < 0.05$ ), diastolic blood pressure (DBP; MD = -6.12 mm Hg, 95% CI = -7.76 to -4.48, $P < 0.05$ ), and heart rate (MD = -4.96 bpm, 95% CI = -6.46 to -3.43, $P < 0.05$ ). In addition, significant reductions were observed in ambulatory DBP (MD = -4.90 mm Hg, 95% CI = -8.55 to -1.25, $P < 0.05$ ) and ambulatory SBP (MD = -8.77 mm Hg, 95% CI = -13.97 to -3.57, $P < 0.05$ ). Therefore, aerobic exercise might be an effective treatment for blood pressure improvement in hypertensive patients. However, the effectiveness between the duration of different treatment needs to be well-designed and rigorous studies will be required to verify the dataset.
<b>Timeframe:</b> <b>inception to July 2018</b>	
<b>Total # studies included: 14</b>	
<b>Other details (e.g. definitions used, exclusions etc)</b>	
<b>Outcomes addressed:</b> <b>Diastolic BP</b> <b>Systolic BP</b> <b>Heart Rate</b> <b>Amulator DBP</b> <b>Abulatory SBP</b>	

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<b>Citation:</b> Costa EC, Hay JL, Kehler DS, Boreskie KF, Arora RC, Umpierre D, Sz wajcer A, Duhamel TA. Effects of high-intensity interval training versus moderate-intensity continuous training on blood pressure in adults with pre-to established hypertension: a systematic review and meta-analysis of randomized trials. Sports Medicine. 2018 Sep 1;48(9):2127-42.	
<b>Purpose: high intensity vs. moderate intensity for reducing BP in adults with pre or established hypertension</b>	<b>Abstract:</b>
<b>Timeframe: June 1996 to June 2016</b>	<b>Background</b> Aerobic exercise reduces blood pressure (BP), but it is unknown whether a high-intensity training approach can elicit a greater BP reduction in populations with elevated BP. This systematic review compared the efficacy of high-intensity interval training (HIIT) versus moderate-intensity continuous training (MICT) for reducing BP in adults with pre- to established hypertension.
<b>Total # studies included: 9</b>	<b>Methods</b> Five electronic databases (MEDLINE, EMBASE, CENTRAL, PEDro, and SPORTDiscus) were searched for randomized trials comparing the chronic effects of HIIT versus MICT on BP in individuals with resting systolic BP $\geq$ 130 mmHg and/or diastolic BP $\geq$ 85 mmHg and/or under antihypertensive medication. Random-effects modelling was used to compare changes from pre- to post-intervention in resting and ambulatory BP between HIIT and MICT. Changes from pre- to post-intervention in maximal oxygen uptake ( $\dot{V}O_{2max}$ ) between HIIT and MICT were also meta-analyzed. Data were reported as weighted mean difference (MD) and 95% confidence interval (CI).
<b>Other details (e.g. definitions used, exclusions etc)</b>	<b>Results</b> Ambulatory BP was excluded from the meta-analysis due to the limited number of studies (two studies). Comparing changes from pre- to post-intervention, no differences in resting systolic BP (MD - 0.22 mmHg [CI 95%, - 5.36 to 4.92], $p = 0.93$ , $I^2 = 53\%$ ) and diastolic BP (MD - 0.38 mmHg [CI 95%, - 3.31 to 2.54], $p = 0.74$ , $I^2 = 0\%$ ) were found between HIIT and MICT (seven studies; 164 participants). HIIT improved $\dot{V}O_{2max}$ to a greater magnitude than MICT (MD 2.13 ml/kg/min [CI 95%, 1.00 to 3.27], $p < 0.01$ , $I^2 = 41\%$ ) with similar completion rates of the intervention and attendance at the exercise training sessions (nine studies; 245 participants). Limited data were available to compare the incidence of adverse events between HIIT and MICT.
<b>Outcomes addressed: Systolic BP Diastolic BP VO2 max</b>	<b>Conclusion</b> HIIT and MICT provided comparable reductions in resting BP in adults with pre- to established hypertension. HIIT was associated with greater improvements in $\dot{V}O_{2max}$ when compared to MICT. Future randomized trials should investigate the efficacy of HIIT versus MICT for reducing ambulatory BP in adults with pre- to established hypertension. Registration PROSPERO registration

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<b>Citation:</b> De Sousa EC, Abrahim O, Ferreira AL, Rodrigues RP, Alves EA, Vieira RP. Resistance training alone reduces systolic and diastolic blood pressure in prehypertensive and hypertensive individuals: meta-analysis. Hypertension Research. 2017 Nov;40(11):927.	
<b>Purpose: Resistance training along on blood pressure</b>	<b>Abstract:</b> The purpose of this study was to evaluate the effects of resistance training alone on the systolic and diastolic blood pressure in prehypertensive and hypertensive individuals. Our meta-analysis, followed the guidelines of PRISMA. The search for articles was realized by November 2016 using the following electronic databases: BIREME, PubMed, Cochrane Library, LILACS and SciELO and a search strategy that included the combination of titles of medical affairs and terms of free text to the key concepts: 'hypertension' 'hypertensive', 'prehypertensive', 'resistance training', 'strength training', and 'weight-lifting'. These terms were combined with a search strategy to identify randomized controlled trials (RCTs) and identified a total of 1608 articles: 644 articles BIREME, 53 SciELO, 722 PubMed, 122 Cochrane Library and 67 LILACS. Of these, five RCTs met the inclusion criteria and provided data on 201 individuals. The results showed significant reductions for systolic blood pressure (-8.2 mm Hg CI - 10.9 to - 5.5; I2: 22.5% P value for heterogeneity=0.271 and effect size=- 0.97) and diastolic blood pressure (-4.1 mm Hg CI - 6.3 to - 1.9; I2: 46.5% P value for heterogeneity=0.113 and effect size=- 0.60) when compared to group control. In conclusion, resistance training alone reduces systolic and diastolic blood pressure in prehypertensive and hypertensive subjects. The RCTs studies that investigated the effects of resistance training alone in prehypertensive and hypertensive patients support the recommendation of resistance training as a tool for management of systemic hypertension.
<b>Timeframe: inception to Nov 2016</b>	
<b>Total # studies included: 5</b>	
<b>Other details (e.g. definitions used, exclusions etc)</b>	
<b>Outcomes addressed: Diastolic BP Systolic BP</b>	