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Q / How much does weight loss affect hypertension?

EVIDENCE-BASED ANSWER

A / **WEIGHT LOSS OF 4 KG** by diet reduces systolic and diastolic blood pressure (BP) by 4.5 and 3.2 mm Hg, respectively (SOR: **A**, systematic review with consistent findings).

Weight loss of 1 to 1.2 kg by exercise

may produce small reductions in systolic or diastolic BP (SOR: **B**, mixed quality of studies).

Available evidence is inadequate to examine the combined effects of diet and exercise.

Evidence summary

A meta-analysis of 8 randomized controlled trials (RCTs) with a total of 2000 patients found that weight loss through diet reduced BP in hypertensive patients.¹ Investigators recruited adult outpatients, 45 to 66 years of age, with primary hypertension (systolic BP, 128-178 mm Hg, diastolic BP, 72-107 mm Hg) and randomized them to dietary advice or usual care for 6 to 12 months.

Dietary advice resulted in greater weight loss over 6 to 12 months of follow-up (weighted mean difference [WMD], -4.0 kg; 95% confidence interval [CI], -4.8 to -3.2 kg) and greater BP reduction (WMD for systolic BP, -4.5 mm Hg; 95% CI, -7.2 to -1.8 mm Hg; WMD for diastolic BP, -3.2 mm Hg; 95% CI, -4.8 to -1.5 mm Hg).

Investigators didn't report how long patients maintained the weight loss. Although 3 RCTs included encouragement to exercise, this meta-analysis didn't evaluate benefits of combining these interventions.

The effects of exercise are less clear

A meta-analysis of 24 RCTs examined exercise and weight loss in adult outpatients with a mean age of 51.6 years; baseline body mass index (BMI), 25.9 kg/m²; resting systolic BP, 127 mm Hg; and resting diastolic BP, 77.7 mm Hg.² On average, participants walked

for 38.3 minutes, 4.4 days per week, for 34.9 weeks at a relative intensity of 70.1% of predicted maximum heart rate (in 6 studies) or 56.3% oxygen consumption intensity (VO₂) (in 14 studies).

Walking significantly reduced body weight (WMD, -0.95 kg; *P*<.001) and BMI (WMD, -0.28 kg/m²; *P*=.015), leading to a significant reduction in diastolic BP (WMD, -1.54 mm Hg; *P*=.026) but not systolic BP (WMD, -1.06 mm Hg; *P*=.316). The authors didn't report whether participants maintained the weight loss after the interventions.

In a meta-analysis of 8 RCTs and 18 observational studies, adult outpatients described as generally normotensive and overweight (mean age 49 years) wore pedometers to encourage weight loss with the goal of decreasing BP.³

Pedometer use for 3 to 104 weeks increased physical activity (for RCTs, a 2491-steps-per-day increase; 95% CI, 1098-3885 steps per day; for observational studies, a 2183-steps-per-day increase; 95% CI, 1571-2796 steps per day) and decreased BMI by 0.38 kg/m² (95% CI, 0.05-0.72 kg/m²). For an 80-kg, 170-cm tall person with a BMI of 27.7 kg/m², reducing BMI by 0.4 units translates to a 1.2-kg weight loss. This weight loss reduced systolic BP by 3.8 mm Hg (95% CI, 1.7-5.9 mm Hg), but not diastolic BP (-0.3 mm Hg; 95% CI, 0.02 to -0.46). Using a

10,000-steps-per-day goal ($P=.001$) and a step diary ($P<.001$) further increased walking.

Recommendations

The National Heart, Lung, and Blood Institute's Joint National Committee says that healthy lifestyles are critical to preventing hypertension and reducing BP in people who are already hypertensive.⁴ Specifically, the Committee recommends weight reduction in overweight or obese individuals by increas-

ing physical activity and using the Dietary Approaches to Stop Hypertension (DASH) eating plan. Combining 2 or more lifestyle modifications may enhance results.

The Committee also notes that a positive, empathetic relationship with a clinician is crucial in building trust and enhancing motivation to make lifestyle changes. It recommends setting mutual goals, ensuring adequate patient education, using frequent feedback, and involving all members of the health care team. **JFP**

References

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