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. 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. 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, −0.028 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.

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).
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 increasing 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.

References


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Assistant/Associate Professor
**Medical Director of International/Inner City/Rural Preceptorship Program**

Department of Family Medicine and Population Health
Virginia Commonwealth University, Richmond, Virginia

The Department of Family Medicine and Population Health, Virginia Commonwealth University (VCU) School of Medicine is seeking a non tenure-track professor (Assistant or Associate) to serve on our medical student education team as the Medical Director of the International / Inner City / Rural Preceptorship program and to provide direct clinical care at one of our department clinical sites.

Qualifications include the following:

- Medical Degree and board certification in Family Medicine
- Fluency in Spanish
- Significant work experience in an international setting with underserved populations
- Significant work experience in a rural setting with underserved populations
- Significant work experience in an urban setting with underserved populations
- 5 or more years of medical student teaching experience, some or all occurring within a medical school setting
- Experience working and teaching in clinical and educational interprofessional environments
- Excellent communication skills, both oral and written
- Excellent teamwork skills and practices

Please send a letter expressing your interest in the position, curriculum vitae, letter detailing your educational philosophy, and list of three references to Dr. Steve Crossman, MD, Director of Medical Student Education, Department of Family Medicine, Virginia Commonwealth University School of Medicine, MCV Campus, West Hospital, 14th Floor, 1200 East Broad Street, P.O. Box 980251, Richmond, Virginia 23298-0251.

For specific inquiries, please contact: Dr. Crossman (scrossman@mcvh-vcu.edu). Applications will be reviewed until May 31st. We are committed to developing an excellent and diverse community of scholars and students engaged in education and clinical care.

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