



PURDUE UNIVERSITY NORTHWEST

How to Manage Blood Pressure

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Introduction to the Integrative Physiology and Health Sciences Center Team

- Matthew Ladwig, PhD – Co-Investigator
- Ezra Mutai, PhD – Co-Investigator
- Grant Thivierge, MS – Project Coordinator
- Reagan Bishop, MS Student



Exercise
is Medicine®
On Campus

Purdue University Northwest

Today's Outline

1. Overview of Life's Simple 7
2. AHA Blood Pressure Categories
3. Tips on How to Check BP
4. Ways that we Assess Blood Pressure for Research
5. Factors that Contribute to Elevation of Blood Pressure
6. Lifestyle Changes that Help to Control Blood Pressure
7. Questions & Discussion
8. BP Monitor Giveaways



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More recent CDC data shows that about 116 million U.S. adults (~47%) have hypertension.



Get your My Life Check® Assessment now at heart.org/mylifecheck.

*Note that data shown in infographic is from 2017.

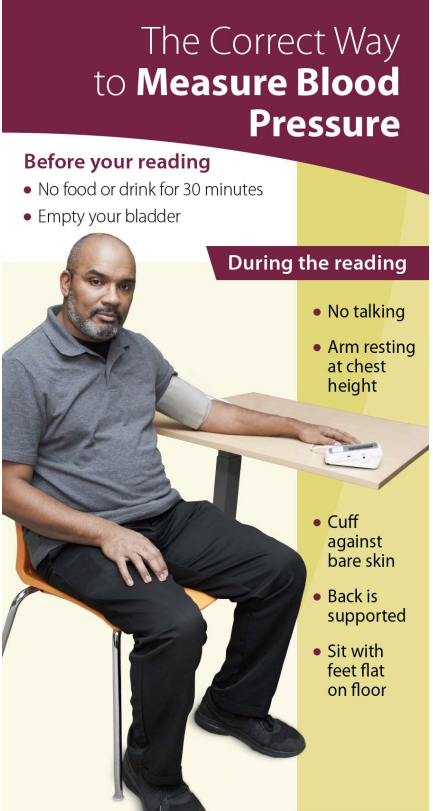
Blood Pressure Categories



BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

Tips on How to Check Blood Pressure

- Do not consume caffeine for at least 1 hour before
- Avoid vigorous exercise for 12 hours prior
- Sit relaxed and quiet for at least 5 minutes prior
- Check your BP at the same time of day



The Correct Way to Measure Blood Pressure


Before your reading

- No food or drink for 30 minutes
- Empty your bladder

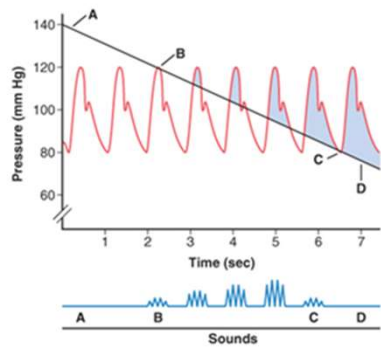
During the reading

- No talking
- Arm resting at chest height
- Cuff against bare skin
- Back is supported
- Sit with feet flat on floor

Visit [cdc.gov/bloodpressure](https://www.cdc.gov/bloodpressure) for tips and resources.

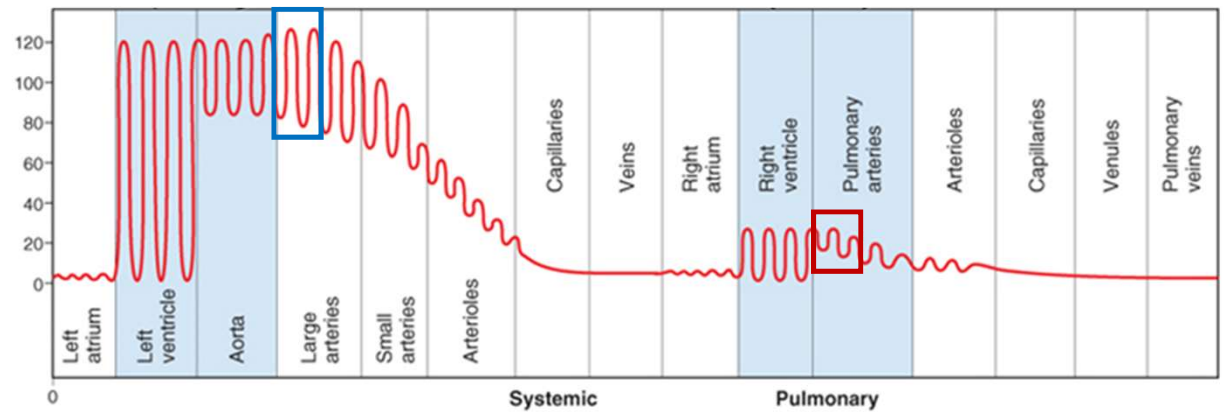


Seated Manual Blood Pressure



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Large artery systemic pressures average about 120/80 mmHg, while pulmonary arteries average only about 25/8 mmHg.



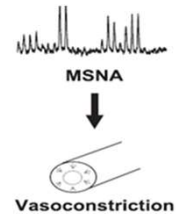
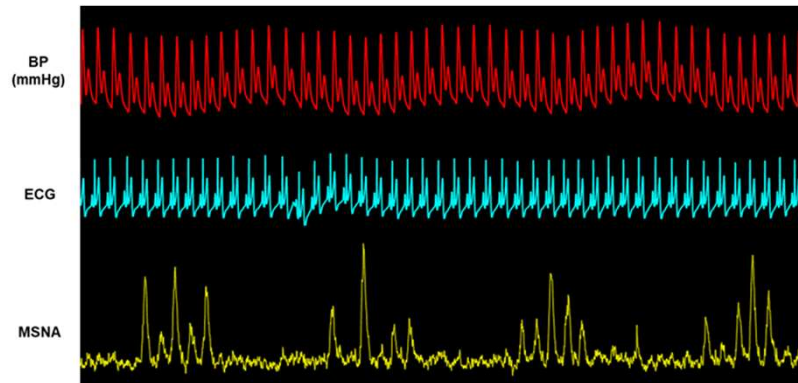
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Ways that we Assess BP for Research

Seated Clinical Measurement



Autonomic Continuous Measurement



24-hr Ambulatory Measurement



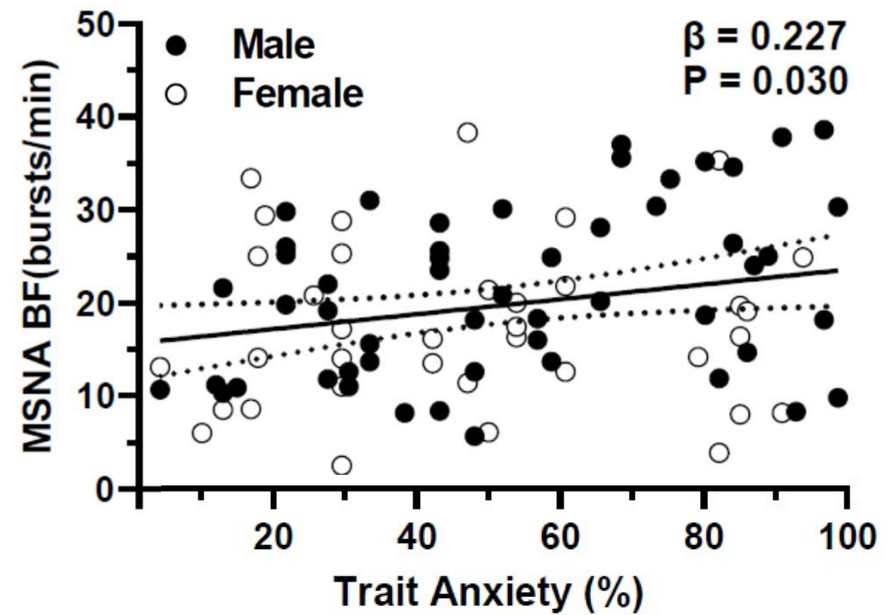
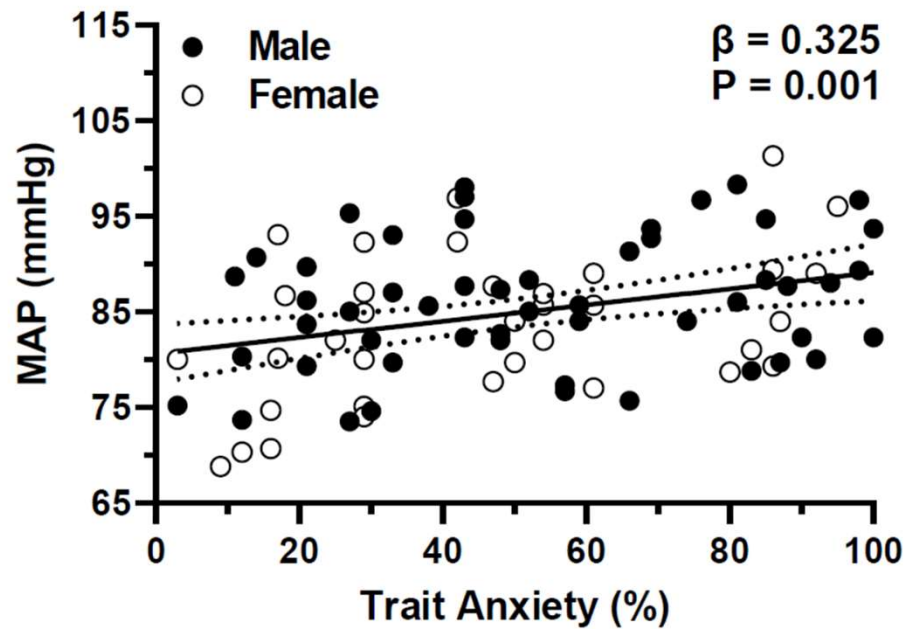
Snapshot of Our Research Findings

- Healthcare workers on a fixed 12-hr night shift slept less than 6 hrs./night on workdays and had elevated 24-hr blood pressure.
- College students undergoing 24-hrs. of total sleep deprivation had elevated blood pressure and anxiety scores.
- Evening binge alcohol consumption heightened the morning sympathetic, blood pressure, and heart rate responses to the Valsalva maneuver.
- Standing for more than 50% of the workday was not enough to lower arterial stiffness or blood pressure.
- Meditating for 1-hour can lower anxiety and cardiovascular stress for at least 1-hour after completion of introductory meditation.

Blood pressure and muscle sympathetic nerve activity are associated with trait anxiety in humans

Jeremy A. Bigalke, John J. Durocher, Ian M. Greenlund, Manda Keller-Ross, and Jason R. Carter✉*

17 FEB 2023 // <https://doi.org/10.1152/ajpheart.00026.2023>



Factors that Contribute to Elevated BP

1. Fatty and processed foods
2. Physical inactivity
3. Being overweight or obese
4. Smoking
5. Drinking too much alcohol
6. Acute and chronic stress
7. Inadequate sleep
8. Family history and race
9. Age

Four Pillars of Proactive Health



Lifestyle Changes that Help to Control BP

Impact of Lifestyle Changes – JNC 7

LIFESTYLE MODIFICATION RECOMMENDATIONS		
MODIFICATION	RECOMMENDATION	AVG. SBP REDUCTION RANGE†
Weight reduction	Maintain normal body weight (body mass index 18.5–24.9 kg/m ²).	5–20 mmHg/10 kg
DASH eating plan	Adopt a diet rich in fruits, vegetables, and lowfat dairy products with reduced content of saturated and total fat.	8–14 mmHg
Dietary sodium reduction	Reduce dietary sodium intake to ≤100 mmol per day (2.4 g sodium or 6 g sodium chloride).	2–8 mmHg
Aerobic physical activity	Regular aerobic physical activity (e.g., brisk walking) at least 30 minutes per day, most days of the week.	4–9 mmHg
Moderation of alcohol consumption	Men: limit to ≤2 drinks* per day. Women and lighter weight persons: limit to ≤1 drink* per day.	2–4 mmHg

Review of Controlling Blood Pressure

1. What is a “normal” blood pressure according to AHA? **<120/80**
2. To take a blood pressure the person should first rest quietly for 5 minutes, have their feet Flat on the floor, and arm at Heart Level.
3. The monitor used for 24-hour assessment of blood pressure is called an Ambulatory Blood Pressure Monitor.
4. Of the 9 factors I mentioned that contribute to elevated blood pressure, how many were controllable? **7**

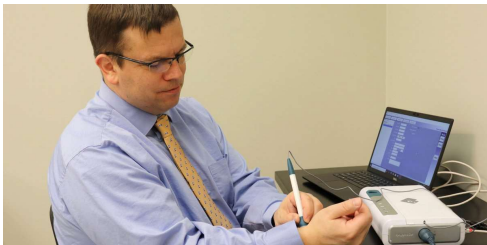
Questions and Discussion



- How to Control Cholesterol
- How to Eat Better



- How to Stop Smoking
- How to Manage Weight
- How to be More Active



- How to Manage BP
- How to Reduce Blood Sugar

Interested in learning to improve your heart health?

Participants Needed

PNW

PURDUE UNIVERSITY NORTHWEST

Free Seminar Topics:

- How to Manage Blood Pressure.
 - February 27th
- How to Control Cholesterol.
 - March 6th
- How to Eat Better.
 - March 20th
- How to Stop Smoking.
 - March 27th
- How to Manage Weight.
 - April 3rd
- How to Be More Active.
 - April 10th
- How to Reduce Blood Sugar.
 - April 17th
- Special Topic
 - April 24th

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IRB: 2022-798
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- Free health education seminars, led by Purdue Northwest Professors from the Integrative Physiology and Health Sciences Center, will be offered **Mondays from 11:00am to 12:00pm** on both Hammond and Westville campuses **beginning February 27th**. Seminars are available regardless of research participation.
- **Research Participants Needed:** The goal of this project is to discover whether attendance of Life's Simple 7 seminars can help you make health changes in your own life.
- Free health screenings will be offered weekly on both Purdue University Northwest campuses. During these screenings, **our team can measure your blood pressure, cholesterol, blood sugar, and body composition.**

If you would like more information on the seminars, screenings, or participating in the research study, please contact the project coordinator at gthivier@pnw.edu, call (219) 989-2602, or by scanning the QR code.

