Factors That Affect Blood Pressure

Everyone has a blood pressure. It is the force of blood against the walls of the arteries caused when the heart pumps blood to the body parts. Your blood pressure doesn’t always remain the same; it changes constantly day to day, moment to moment, according to your body’s needs. For some individuals, blood pressure can elevate above the normal range and cause health risks. There are some factors that can increase the chance of having high blood pressure over which you have no control. These include heredity (has a tendency to run in families); gender (men are more likely to develop it then women); age (tends to occur most often in people over the age 35); and race (African-Americans develop it more frequently than Caucasians.)

However, there are some factors over which you can have control. The good news that it is possible to change behaviors and improve your health through awareness of these factors:

Exercise

Exercise is an essential component for well-being. Regular exercise and/or an active lifestyle contributes to a healthy body. In fact, the benefits of regular exercise and an active lifestyle can help to lower mildly-elevated blood pressure and maintain weight. Scheduled aerobic exercise, such as walking, cycling, swimming, etc. for 20-30 continuous minutes, at least 3-4 times a week, is considered optimum. Increasing daily activity by walking to and from class and work (rather than taking the bus) as well as walking up and down stairs (rather than riding an elevator) for combined 30-40 minutes throughout the day, will contribute to an active lifestyle.

Diet

Sodium is a mineral that is required for normal body function. High intakes of sodium can increase blood pressure in sodium-sensitive people. Limiting sodium to 3 grams per day is recommended. This can be accomplished by avoiding cured, pickled, or processed foods and not adding salt to them when cooking or eating them.

People with low or moderate calcium intakes may be at risk for developing high blood pressure. This can be modified by consuming by 2 or more serving of low fat dairy products (such as skim milk or low fat yogurt) each day.

Fats can affect blood pressure, especially if they lead to consuming too many calories and becoming overweight. Keep fat intakes to less than 30% of daily calories, with the largest portions of fat intake coming from polyunsaturated sources (such as vegetable oils).

Potassium may help to keep blood pressures in a normal range. Including three to five servings of fruits and vegetables in your daily diet can help assure that your diet is high in potassium.
**Obesity**
Studies have shown that obese individuals (those whose weight is 20% or more above ideal body weight) are likely to develop high blood pressure. Gaining excess weight, especially between ages 24 and 36, usually raises blood pressure. Losing weight at a moderate pace can help to slowly lower blood pressure.

**Alcohol**
Alcohol is a drug – and regular over-consumption can raise blood pressure dramatically, as well as cause an elevation upon withdrawal. Try to limit alcohol intake to a maximum of twice a week and a maximum of two drinks per sitting (equivalent to 2 four-ounce glasses of wine, 2 eight-ounce glasses of beer or 2 shots of spirits). Also, remember that alcohol is very high in empty calories and can be a factor in weight gain.

**Stress**
The effects of stress can vary, but long-term chronic stress appears to raise blood pressure. Various relaxation techniques such as deep breathing, progressive relaxation, massage and psychological therapy can help to manage stress and help to lower stress-induced blood pressure elevations.

**Smoking**
Smoking is the third leading cause of death in the United States. Smoking causes peripheral vascular disease (narrowing of the vessels that carry blood to the legs and arms), as well as hardening of the arteries. These conditions clearly can lead to heart disease and stroke, and are contributing factors in high blood pressure. Don’t start smoking, and try to seek assistance about quitting if you do smoke.

For more information about high blood pressure, contact your health care provider.
Your Resting Heart Rate

The resting heart rate represents the minimum number of heart beats needed to sustain the body. The resting heart rate should be taken first thing in the morning upon waking and before getting out of bed. Attempt to do this on a day when you are not wakened by a noisy alarm that gets your adrenaline pumping. Your blood levels are lowest first thing in the morning, thus this is the ideal time to take the count.

**Step 1: Use the correct fingers**

Use the index and middle finger to find the pulse. The thumb is never used as it has a pulse of its own that could interfere with a correct count.

**Step 2: Locate your pulse**

Most people find their pulse in the side of the neck or at the wrist. If you are locating it on the side of your neck, do not press too hard or you could block blood flow to one side of the brain. Tilt your head back slightly and place your fingers in the groove that is to the side and slightly above the Adam’s apple. If you are trying to locate the pulse in your wrist, tilt the hand back slightly and place your fingers on the thumb side of your wrist, not in the middle.

**Step 3: Count the beats that you feel**

The first count begins with zero. Each successive beat you feel is counted 1, 2, 3 and so forth. Continue counting for one full minute.

**Step 4: Record the count**

The number should lie somewhere between 45 and 80. An elite athlete will have a low resting heart rate. An older person who is sedentary will have a higher resting rate. The higher resting heart rate does not indicate cardiovascular disease, but rather lack of aerobic conditioning.

Drugs affect the resting heart rate. Drugs such as caffeine and those found in cold medications raise the heart rate and do not give a true indication of the resting count. Some drugs, such as LSD, have been known to increase the resting heart rate for months after a single dose has been taken.
Determining Your Target Heart Rate Range

To begin to determine your target heart rate range, you must first understand how to take your pulse rate accurately. You may take your pulse at the base of the neck by pressing lightly on the carotid artery located to the left or right of your Adam’s apple. However, too much pressure placed on the carotid artery may stimulate a reflex mechanism that causes the heart to slow down. A more accurate place to count the pulse is at the wrist (radial pulse).

You will need your resting heart rate to calculate your target heart rate range. The ideal time to find your true resting rate is in the morning, before you get out of bed. Count your pulse for one whole minute to find your resting heart rate (or you can count your pulse for 6 seconds and multiply by 10).

Computing Your Target Heart Range

Minimum Exercise Heart Rate:

\[
\frac{220 - \text{age}}{\text{resting heart rate}} - \frac{\text{resting heart rate}}{\text{age}} = \frac{\text{resting heart rate}}{\text{age}} \times 0.5 + \frac{\text{resting heart rate}}{\text{age}} = \left| \frac{\text{resting heart rate}}{\text{age}} \right| \\
\]

Maximum Exercise Heart Rate:

\[
\frac{220 - \text{age}}{\text{resting heart rate}} - \frac{\text{resting heart rate}}{\text{age}} = \frac{\text{resting heart rate}}{\text{age}} \times 0.85 + \frac{\text{resting heart rate}}{\text{age}} = \left| \frac{\text{resting heart rate}}{\text{age}} \right| \]

Example: \(\text{age} = 20, \text{resting hear rate} = 70\)

\[
\frac{220 - 20}{70} - \frac{70}{20} = \frac{70}{20} \times 0.5 + 70 = \left| 135 \right| \\
\frac{220 - 20}{70} - \frac{70}{20} = \frac{70}{20} \times 0.85 + 70 = \left| 180 \right| \\
\]

Target Heart Range is 135-180 beats/minutes, or 22-30 beats in ten seconds
Blood Questions
Worksheet Questions

1-4. Name 4 factors that you have no control over in relation to high blood pressure.
• ____________________________
• ____________________________
• ____________________________
• ____________________________

5. How does exercise affect blood pressure?
• ____________________________

6. What affect does sodium have on blood pressure?
• ____________________________

7. What affect does calcium have on blood pressure?
• ____________________________

8. What affect does potassium have on blood pressure?
• ____________________________

9. What affects do fats have on blood pressure?
• ____________________________

10. What can happen to people whose weight is 20% or more above their ideal body weight?
• ____________________________

11. How can alcohol affect blood pressure?
• ____________________________

12. What techniques can lower stress related high blood pressure?
• ____________________________

13. What affects does smoking have on blood pressure?
• ____________________________

14. What is your resting heart rate? _____

15. What is your maximum exercise heart rate? _____