



Objective : understand the relationship between diet and fitness .

Resources:

- Book pages 120 /121
- Workbook page : 54

Atherosclerosis : <https://www.youtube.com/watch?v=bx99qQoHk5I> 3

Animation <https://www.youtube.com/watch?v=OAPXw9AHPE0> 1

<https://www.youtube.com/watch?v=y6QJceOAVY0> 2

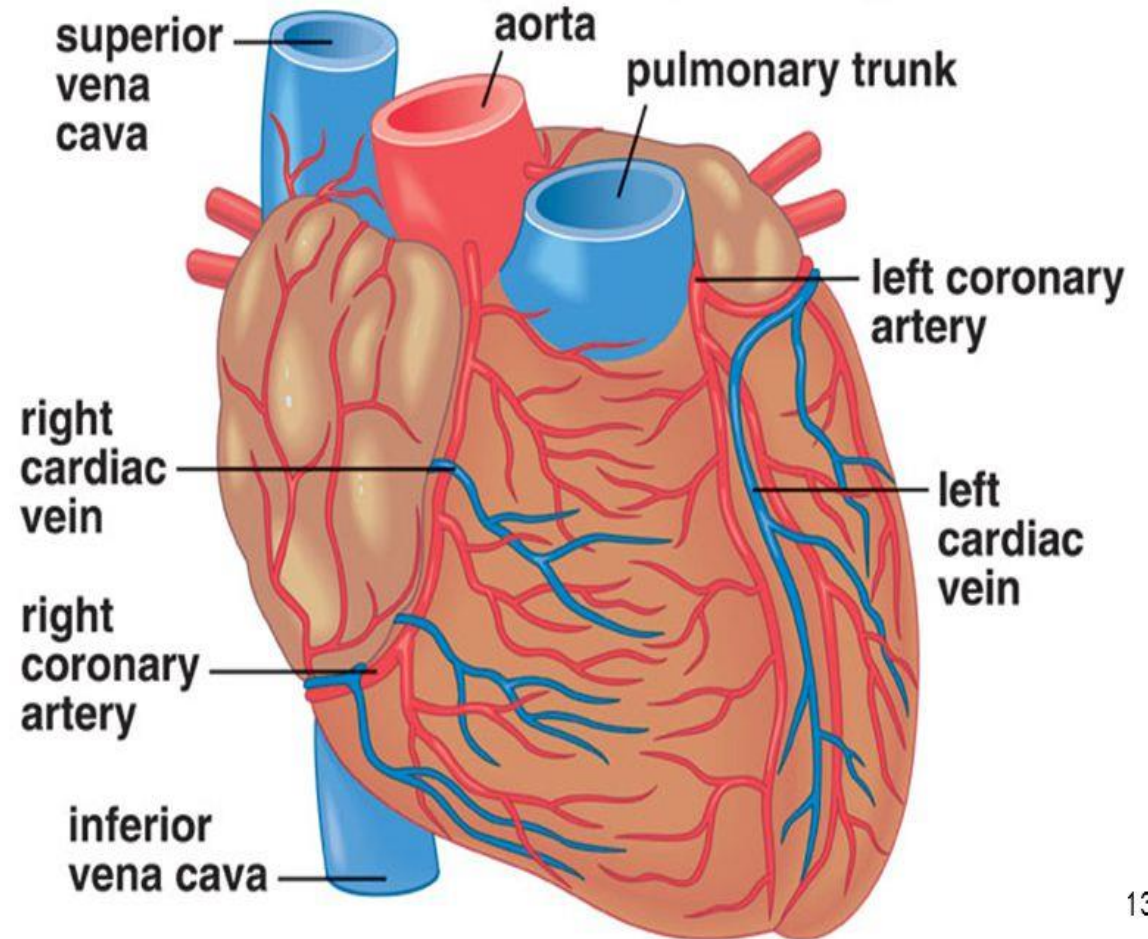
## Circulatory system diseases :

### Blocked tubes

The heart has its own blood vessels called **coronary arteries** and **veins**. They transport blood to and from the heart muscle .

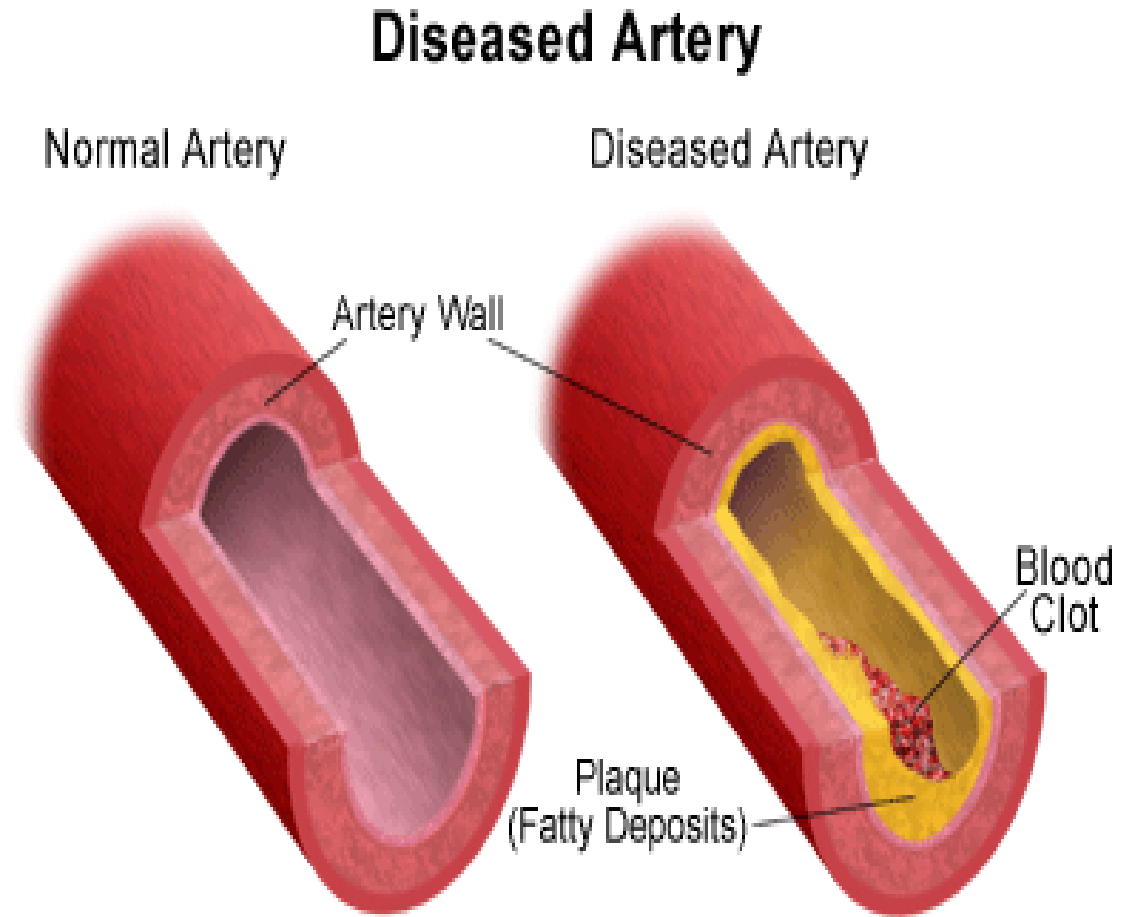
## Coronary artery circulation

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# Heart attacks and strokes

- ✓ If the blocked artery supplies your **heart** muscle it will cause a **heart attack**
- ✓ If the blocked artery supplies your **brain cells** it will cause a **stroke** .





# 9.5

## Diet and fitness

### Fitness

#### Objective

Understand the relationship between diet and fitness



↑ A poor circulatory system can leave you short of energy.

Syed isn't fit. He doesn't have as much energy as he did when he was young. He often has to stop and rest. Less blood is able to reach his muscles so they don't get enough glucose and oxygen. They cannot respire as fast as they need to. He gets a sharp pain in his leg muscles when he tries to run.

### Blocked tubes

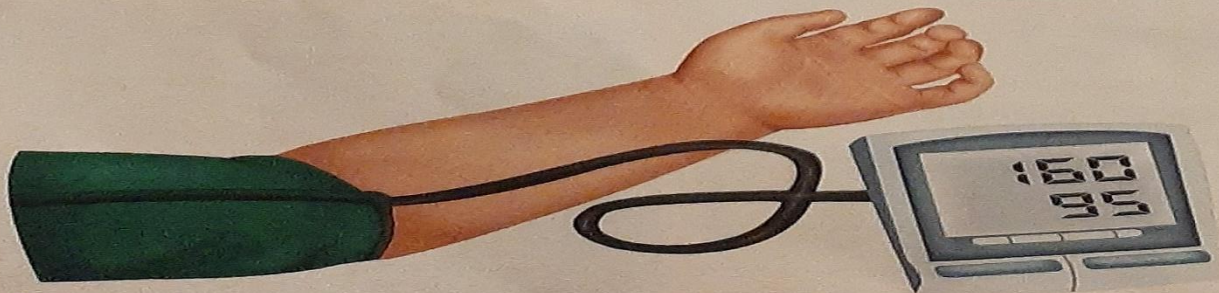
Syed has plaque in his arteries. They are narrower than they should be. The yellow plaque is a mixture of fat, cholesterol, and blood cells. Plaque can start forming when you are in your teens and it gradually builds up as you age. The plaque can reduce the blood flow to your muscles. If plaque builds up in the arteries supplying your heart, it may not get enough glucose and oxygen.



↑ Plaque narrows arteries and raises your blood pressure.

Syed's doctor measures his blood pressure to monitor his condition. The pressure keeps changing. When Syed was younger his blood pressure was 120/80. The high number is the pressure in his arteries when his heart pumps his blood out. The low number is the pressure between beats. Now Syed's blood pressure is 160/95. His heart has to pump much harder to push blood through his narrow arteries.

High blood pressure is serious. It can damage your heart, brain, vision, and kidneys.



↑ Blood pressure naturally rises with



## Heart attacks and strokes

Plaque can break away from an artery wall and travel in the blood to block an artery somewhere else. Platelets stick to it and form a blood clot, which can also block an artery. If the blocked artery supplies your heart muscles, a blockage causes a heart attack. A heart attack victim usually has chest pains and pains in their left arm. They feel as if their body is being squeezed. They also feel sick and struggle to breathe.

If the blood supply to your brain is blocked, it causes a stroke. Many stroke victims die. Some are left paralysed. Prompt medical treatment can reduce the brain damage a stroke causes. Most strokes cause these symptoms straight away: the victim's face droops to one side; they can't hold their hands in the air; and their speech is harder to understand. Fortunately, a healthy lifestyle lowers the chance of having a heart attack or stroke.

## Staying healthy

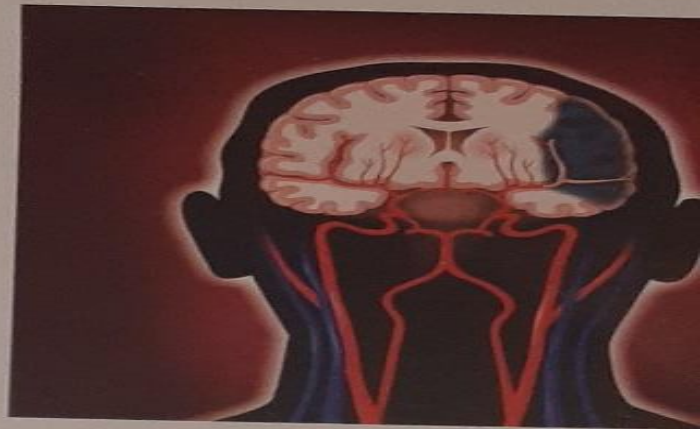
Some people have a greater risk of having a heart attack or stroke than others. But why? Scientists all over the world compared thousands of people for many years to look for clues. Those who died early had more of the risk factors in the table. More young people are having heart attacks than ever before.

## Eating right

Syed doesn't smoke or drink. His doctor advises him to improve his diet and start doing some exercise. The first thing he plans to do is cut down his salt intake.

Regular exercise and a good diet stop you gaining weight. They also lower your risk of developing high blood pressure. To make this simpler doctors have made a list of foods to eat and foods to avoid.

Nutrients	Try to eat	Aim to avoid
fat	oils, nuts, seeds, fish	processed foods, saturated fats in meat
carbohydrates	salads, beans, fruits	sweets, sugary drinks, potatoes, white bread
protein	fish, chicken	red meat, sausages



When a blood clot blocks an artery in the brain, large numbers of nerve cells die. The scan shows this on the right side of the image.

- Risk factors**
- smoking
- being overweight
- taking no exercise
- unhealthy food
- high salt intake
- excess alcohol
- inherited genes

read

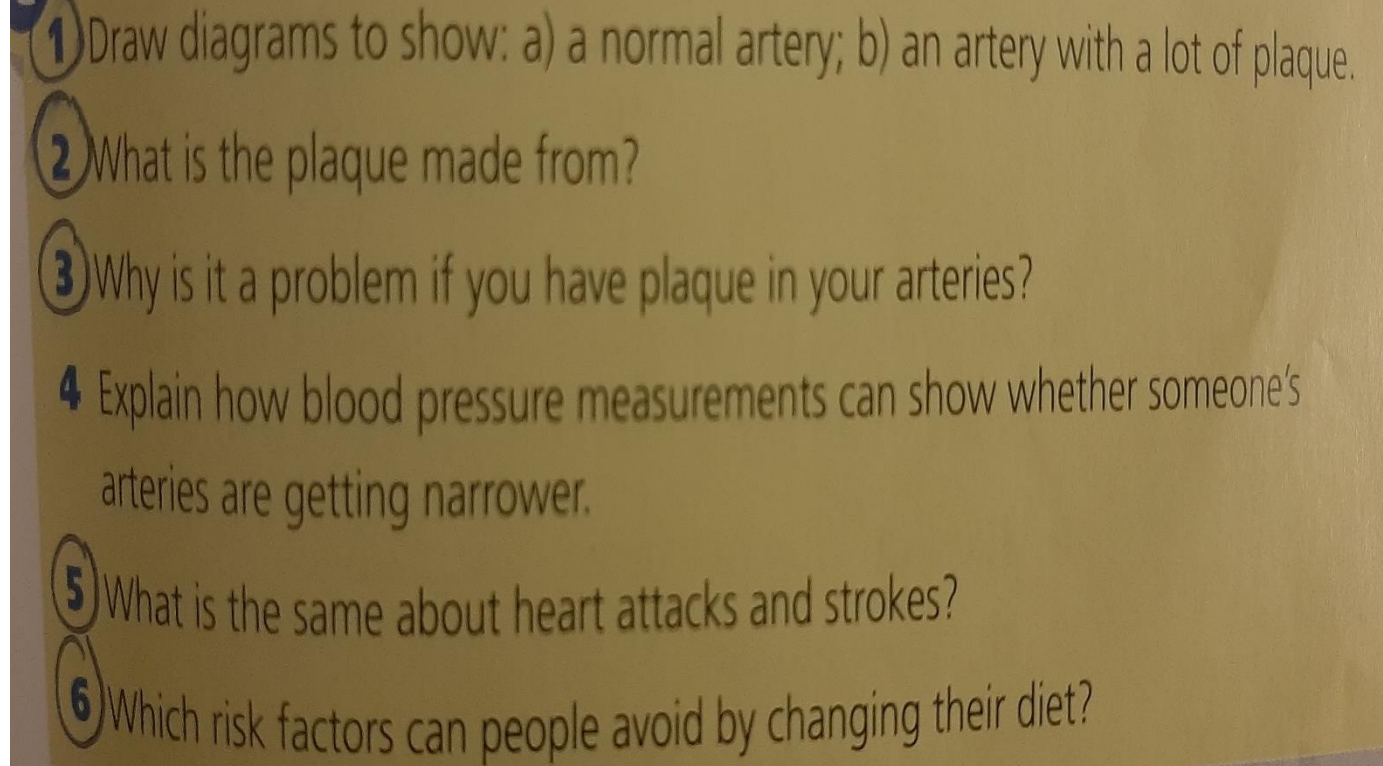
## Questions 1,2,3,5,6 page 121

**2. Plaque is a mixture of fat, cholesterol, and blood cells.**

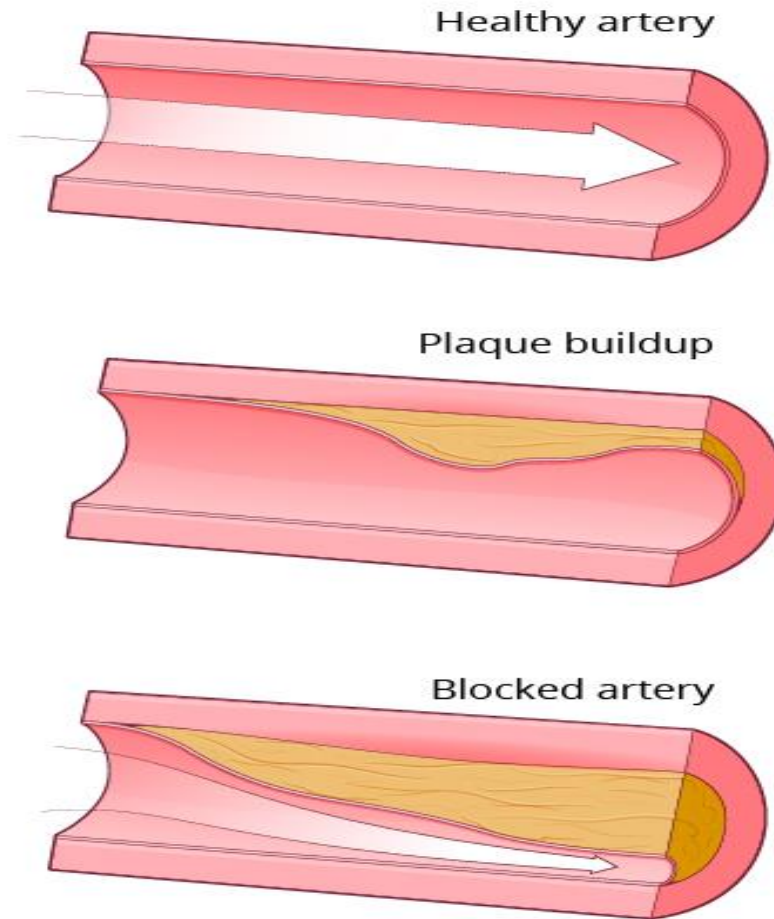
**3. Plaque narrows arteries and raises blood pressure. It can reduce blood flow to the body's tissues and organs.**

**5. Heart attacks and strokes can both be caused by a blockage in an artery.**

**6. By changing their diet, people can avoid being overweight, eating unhealthy food, and having a high salt intake.**

- 
- 1 Draw diagrams to show: a) a normal artery; b) an artery with a lot of plaque.
  - 2 What is the plaque made from?
  - 3 Why is it a problem if you have plaque in your arteries?
  - 4 Explain how blood pressure measurements can show whether someone's arteries are getting narrower.
  - 5 What is the same about heart attacks and strokes?
  - 6 Which risk factors can people avoid by changing their diet?

# Question 1 page 121





# Workbook questions 1,2 page 54

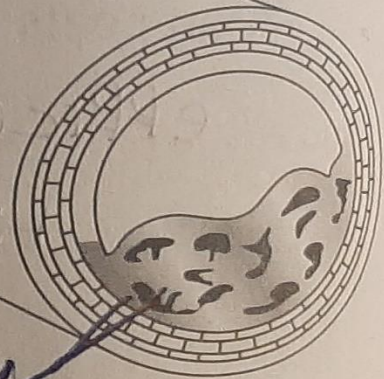
- 1 The diagram shows a partially blocked artery.
- Label the diagram to show what is causing the blockage.
  - Describe how blockages like this affect blood pressure.

..... It will raise blood pressure.....

- 2 The following statements describe how a poor diet can lead to a heart attack. Write the letters in the correct order on the line below. Start with statement C.

..... C, E, B, G, D, F, A, H.....

- Heart muscles die.
- His blood pressure increases.
- The patient eats food high in saturated fat and salt.
- The plaque blocks an artery that supplies the heart with oxygen.
- Plaque begins to form in his artery walls.
- Pain spreads across the patient's chest and left arm.
- Some of the plaque breaks away from an artery wall.
- The patient may die.



plaque - a mixture of fat, cholesterol and blood cells.



# Workbook : Question 3 page 54

3 Three patients were asked to record what they ate.

Meal	Patients		
	A	B	C
Dinner	fish, vegetables	processed food	chicken, rice
Snack	fruit	biscuits	nuts
Drink	fruit juice	cola	cola

Which patient's diet increases their risk of having a stroke? ..... **B** .....