

# Brain in gear - Activity



Write a paragraph describing what job you think the process of vascular shunting is.

(Help)

Vasoconstriction, vasodilation, widening, narrowing, active areas and blood vessels.

Extension – why is it important for athletes, that blood flow is increased to active areas during exercise and diverted away from inactive areas?

## End

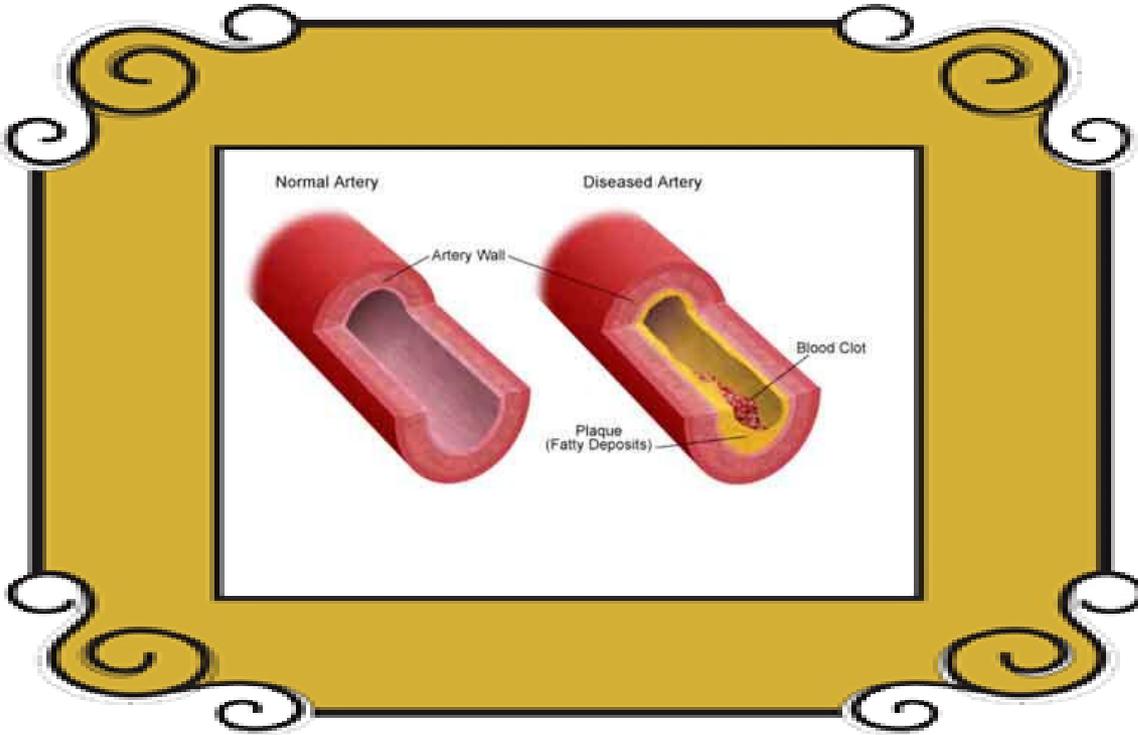


# Brain in gear – Check your paragraph- how many correct points did you get 7/7



- Vascular shunting is the process of redistribution of blood. 😊
- Blood diverted to active areas and diverted away from inactive areas. 😊
- Occurs through vasoconstriction (narrowing of arteries) and vasodilation (widening of arteries). 😊
- Active areas during exercise = brain and working muscles. 😊
- Inactive areas = digestive systems. 😊
- Did anyone get the importance to an athlete? 😊 😊

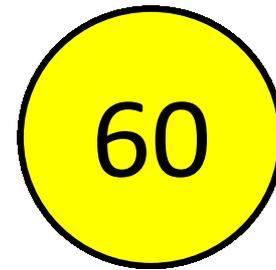




**In pairs discuss the following:**

- What impact will this have on your health?
- What impact will this have on society?
- What impact will this have on Sports performance?

*Be prepared to share your thoughts/ideas*



## Fatty deposits

An unhealthy diet has an impact on the vascular shunting in the arteries.

It increases fat in your arteries, as it promotes a build up of cholesterol which ultimately impacts on the arteries ability to widen.

# Vascular shunting



# Progress check

## Learning Outcomes:

Objective	Grade
<b>Understand</b> the process of Vascular shunting	1-3
<b>Describe</b> the process of Vascular shunting and explain the terms of widening and narrowing of the blood vessels using the correct terminology.	4-6
<b>Explain</b> the importance of vascular shunting to athletes	7-9

## Key words:

Vasoconstriction, Vasodilation



# Vascular shunting

During rest, a high amount of oxygenated blood is sent to the organs. During exercise, it is not only important to breathe in more air and circulate oxygenated blood more quickly, it is also crucial to redirect the blood to the working muscles.

## Vascular shunting

- Achieved by vasodilation and vasoconstriction
- This is the process of altering the size of the artery lumens supplying different areas of the body.



Vasoconstrictors

Vasoconstriction is the narrowing of the internal diameter (lumen) of the blood vessel to restrict the volume of blood.



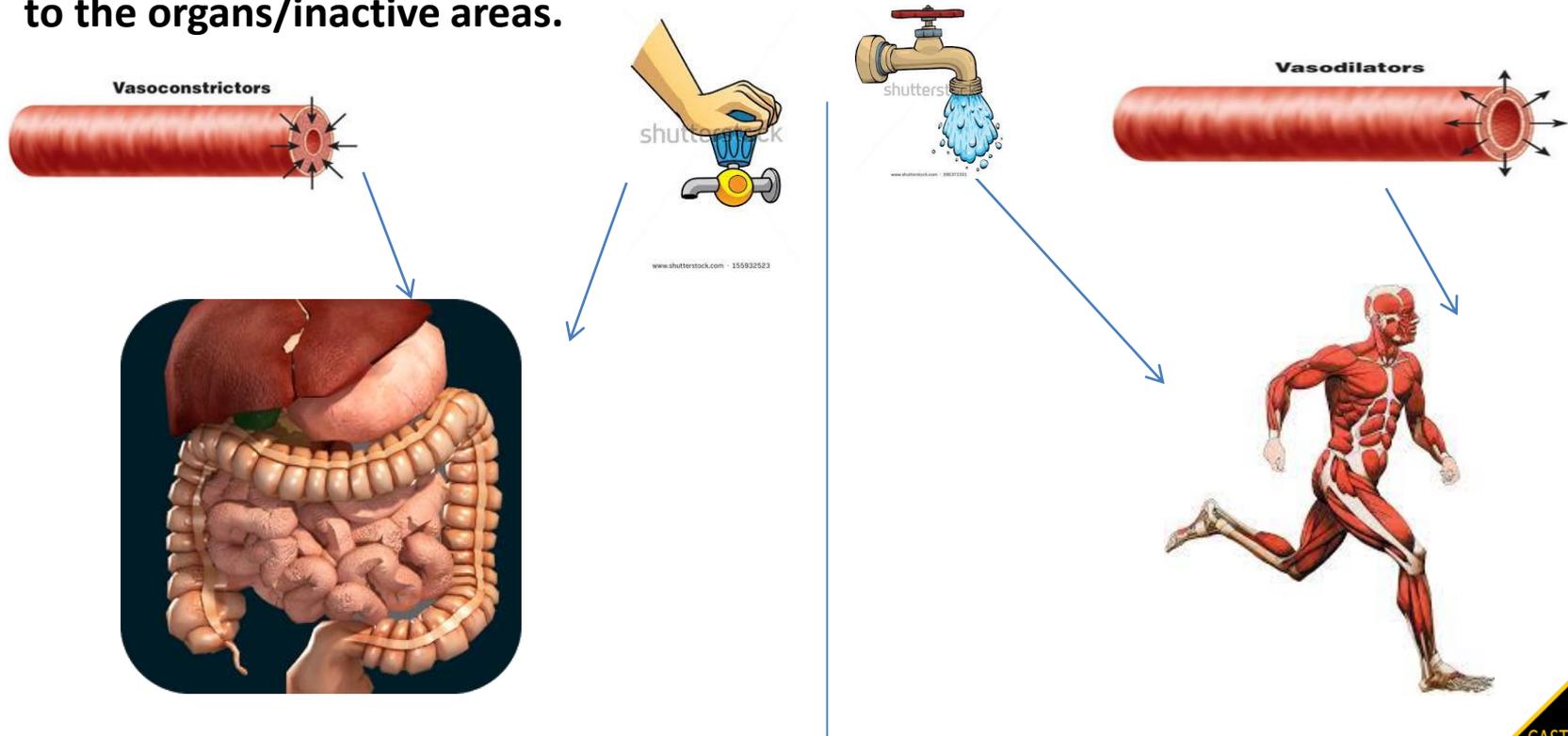
Vasodilators

Vasodilation is the widening of the lumen of a blood vessel to increase the volume of blood delivered to active areas.

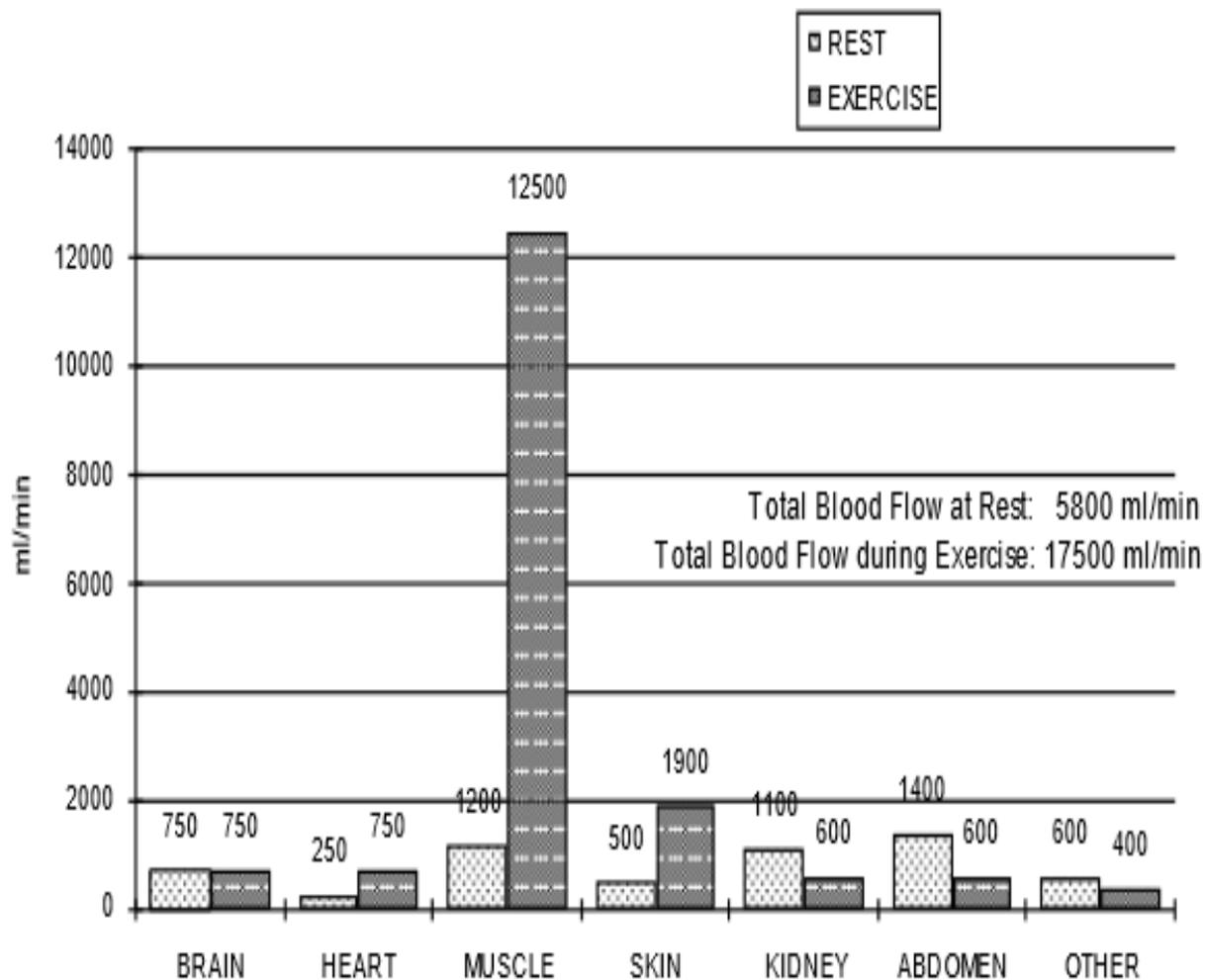
# Vascular shunting

Vascular shunting occurs during exercise. Think of arteries like taps.

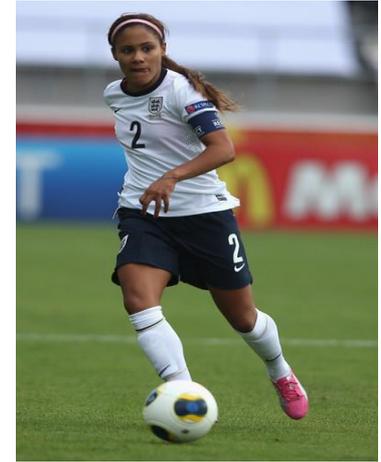
Vascular shunting is like turning the taps on to the working muscles and turning them off to the organs/inactive areas.



### Distribution of blood flow to selected body organs at rest and during strenuous exercise



# Importance of Vascular shunting



P E B

Explain the term **Vascular shunting** and its **importance** to one of the above athletes?

- Consider how the muscles would be forced to work if they didn't receive the oxygen to create energy?
- What would build up in the body as a result of this and how would it affect muscle performance?.
- Which areas wouldn't receive as much blood during exercise.
- What is the benefit to the performer if the working muscles receive oxygenated blood.



End



# Peer Assessment – Provide feedback to your partner

Vascular shunting is important to an athlete because:

- When we exercise our muscles need energy ✓
- To release energy we need oxygen ✓
- Oxygen is transported to muscles by blood ✓
- This oxygenated blood redirected by our blood vessels ✓
- Vasodilation occurs when the internal diameter of the vessel widens to allow the blood to be directed to the working muscles ✓
- Vasoconstriction occurs when the internal diameter of the vessel narrows to constrict the blood flow to the organs and inactive areas ✓
- The muscles would be forced to work anaerobically as they would not receive the oxygen to create the energy ✓
- This would lead to early lactate accumulation and muscle fatigue which would impact on their sport and would lead to a decrease in performance ✓



# Develop the point – A02/A03

- Vascular shunting works by vasoconstriction and vasodilation of the arteries.
- During rest blood is directed away from the muscles. Therefore it is important to eat 2 hours before exercise.
- Arteries increase in size to allow more blood to flow to working muscles during exercise.

End



# Develop the point – A03

- Which allows more oxygenated blood to be sent to active areas such as the working muscles. This will benefit a performer by energy being able to be released which would aid a footballer creating successful tackles throughout the game without fatigue. (A02) If this didn't happen the performer would work anaerobically which could lead to lactate accumulation and ultimately muscle fatigue. This would impact on a footballer as they may make mistakes when making passes throughout the game due to muscle cramps. (A03)
- **Use this example to check the answers of your partners work. Provide feedback on how to get full marks for:**
- **A02 (Benefit/performance)**
- **A03 (Evaluate)**



Plenary – to include WWW EBI

Partner task – Label yourself partner A and B.

1. Partner A explain to Partner B the process of vascular shunting.
2. Partner B explain importance to a performer.
3. Give each other a grade relating to the learning outcomes that you feel your partner has achieved and be prepared to say why.

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