

Lactic Acid

- **Blood lactate threshold** = the point where lactate levels in the blood increases suddenly beyond resting values
- Aka **anaerobic threshold**



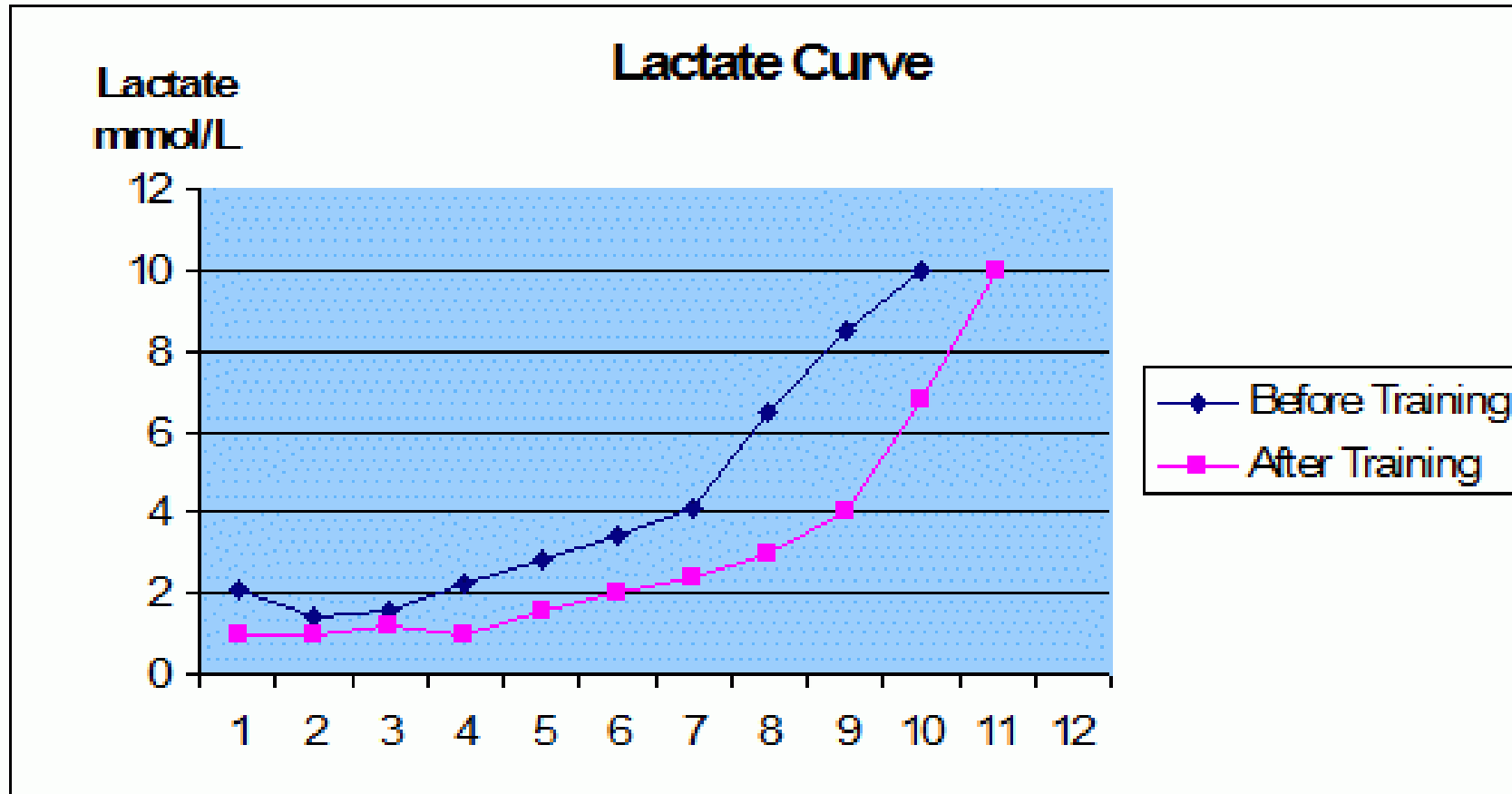
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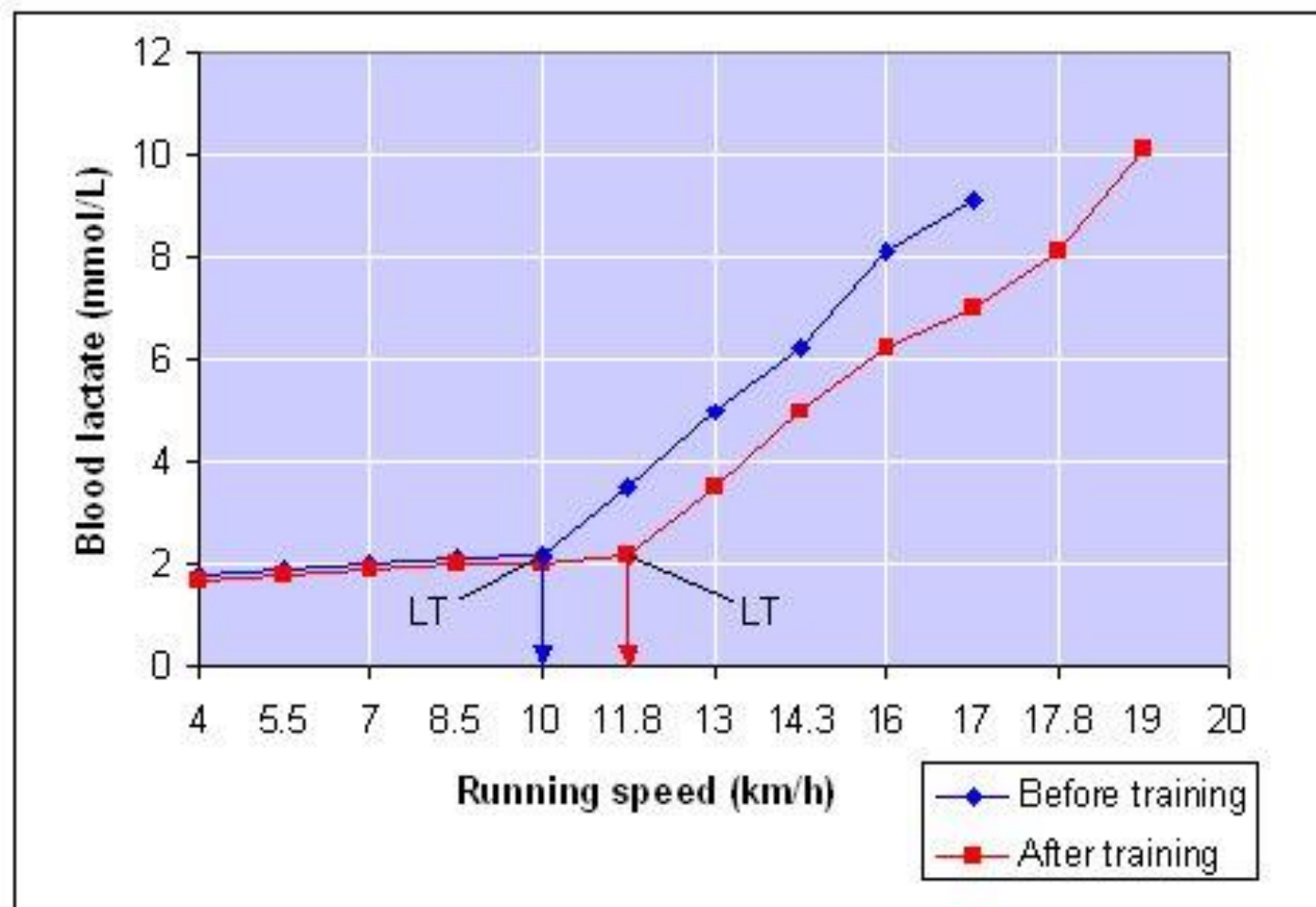
- Varies from person to person
- Generally, untrained people have a low anaerobic threshold and reach their threshold at 50-60% of their VO₂ max.
- Elite endurance athletes have a high threshold and do not reach their threshold until 70-80% of their VO₂ max.

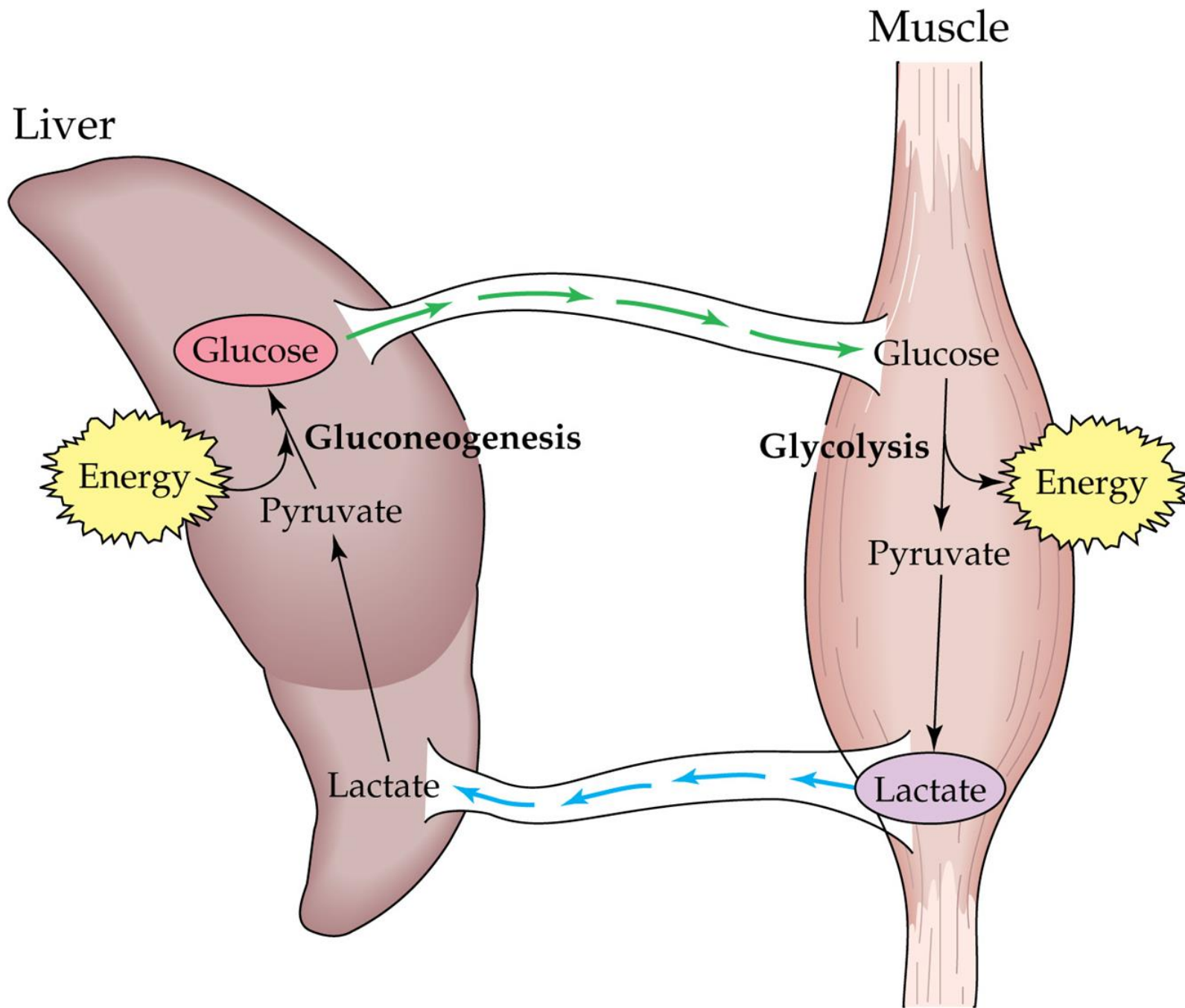
Raising the Lactic Acid Threshold

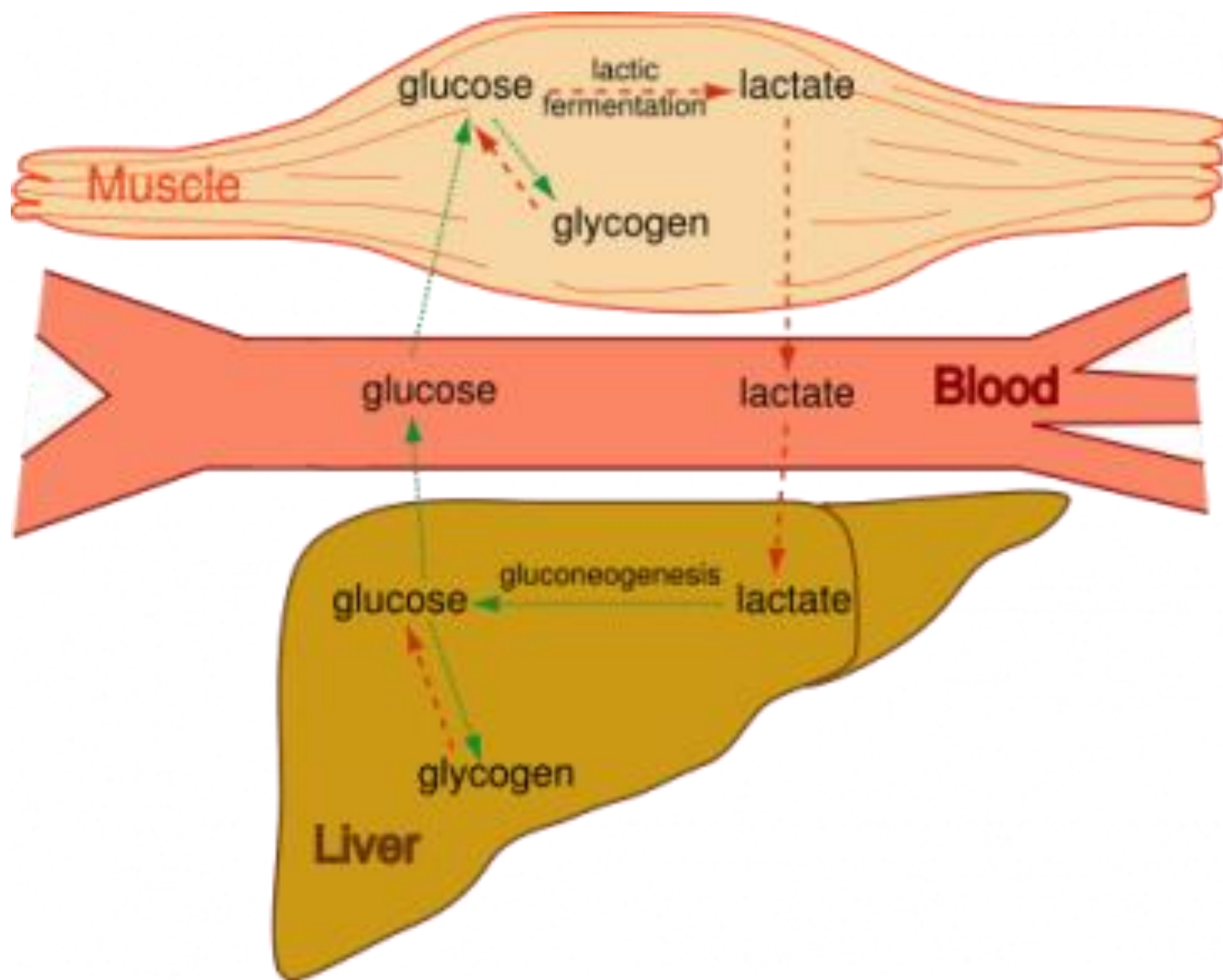
- Main objective in physical training (exercise)
- Two ways to achieve this: 1. Use anaerobic training to extend the amount of time before lactate buildup occurs
- 2. Use aerobic-style (endurance) training to improve cardiorespiratory capacity
 - This will help to increase the concentration of mitochondria + myoglobin in muscle fibres = improved efficiency of oxygen transfers

Lactate Threshold







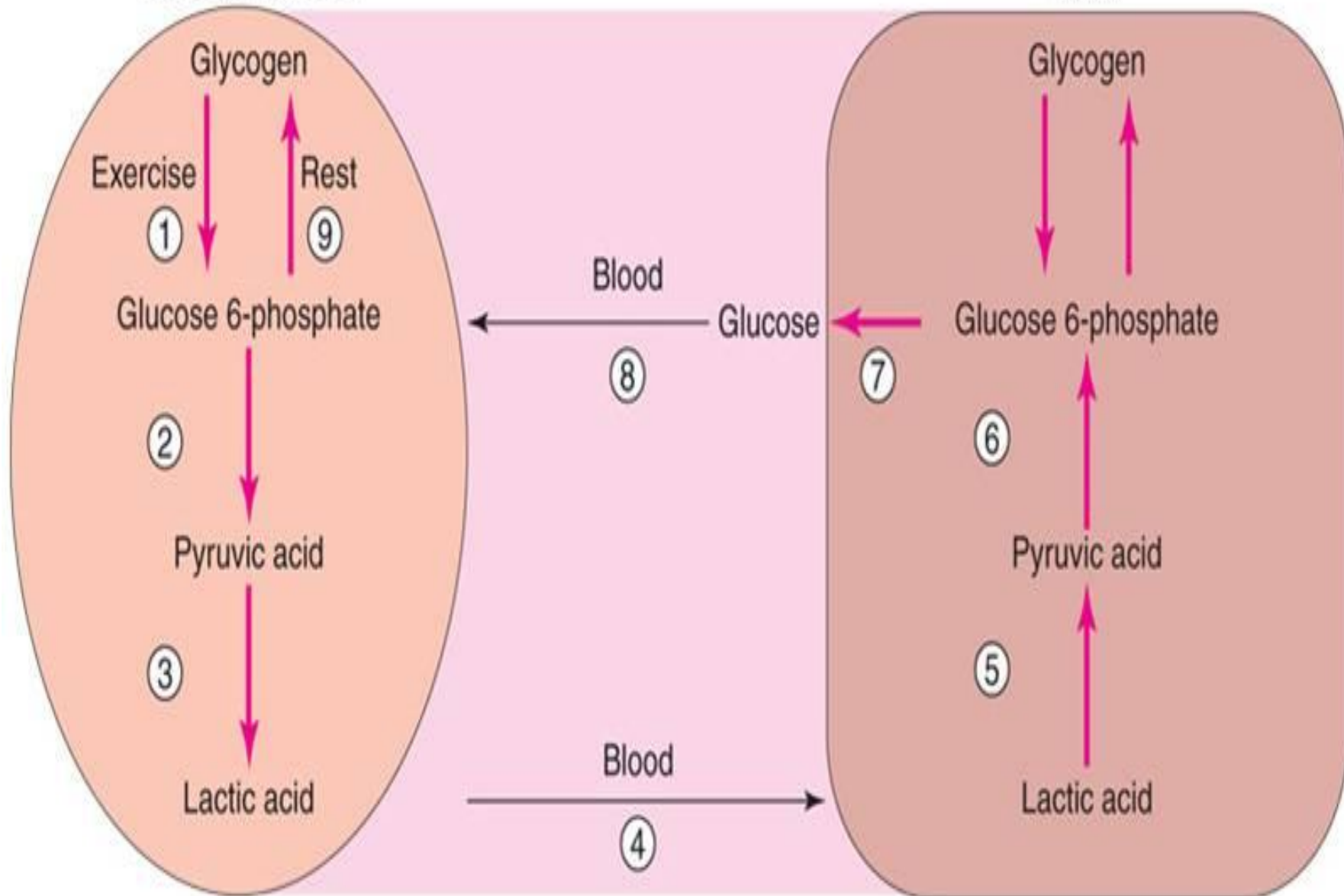


The Cori Cycle

- Process where lactic acid is converted to pyruvate
- Lactate is transported (by blood) to the liver and converted back to glucose
- It is then converted into glycogen so that it can be used for energy
- Occurs during anaerobic lactic exercise
- The opposite of glycolysis

Skeletal muscles

Liver



Fats

- Contain large quantity of stored energy (more than 2x carbohydrates and protein)
- **Fatty acids** = types of fat found in muscle cells and adipose tissue that are used for energy
- Fatty acids are stored in the body as **triglycerides**
- **Lipolysis** = process where triglycerides are broken down and the resulting fatty acids become available to be used as an energy source

Proteins

- Unlike carbohydrates and fats, there are no “protein reserves” in the body. It is not readily available
- All proteins are part of existing body tissue or actively engaged in the metabolic system



Cont...

- As a source of energy protein plays an important role in endurance-type activities
- More generally it is used in chronic conditions when glycogen stores have been significantly diminished
- In the absence of other energy sources the body breaks down protein as a backup

Cont...

- Protein is comprised of about 20 different **amino acids** which are used to form various body tissues
- To be utilized as an energy source protein must first be broken down into separate amino acids
- The aa **alanine** is the main contributor
 - It is converted to glycogen in the liver which is then transported as glucose through the bloodstream

In your own words...

- Using section 7.6 under “protein supplementation” explain why protein supplements are taken and the ramifications of having too much protein in your body

