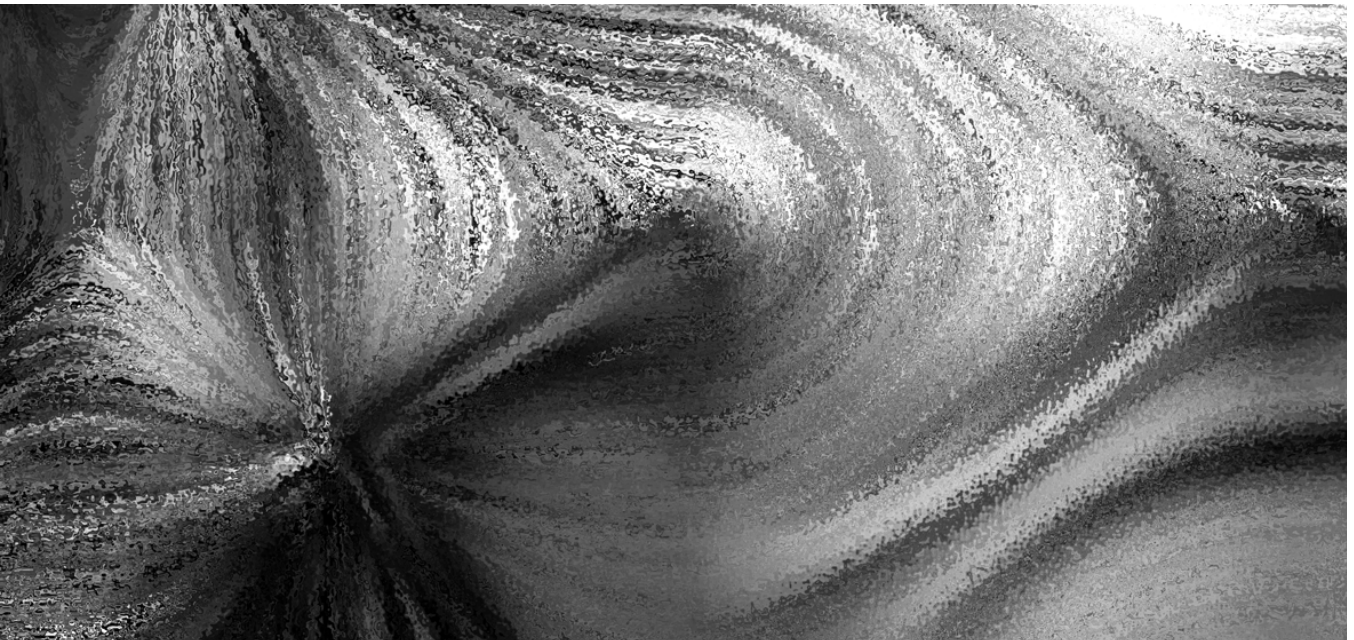


---

# Exercise Physiology Assignments & Solutions



## General Introduction

These questions are specifically designed to help provide you with a measure of your understanding of the subject.

A wide variety of styles of question are used; for example multiple choice, matching pairs, multiple completion, structured and essay; each designed to assess different levels of understanding, and to maintain interest. Some will also provide experience of the types of question found in most examinations.

# Contents

Muscles and Bones in Action Questions ... ..	3
Energy Relations in Action Questions ... ..	18
Circulations in Action Questions ... ..	29
Breathing, Gas Exchange and Transport Questions ... ..	42
Exercise Fitness and Health Questions ... ..	56
Training Principles ... ..	63
Answers and Example Essays... ..	70

# Muscles & Bones in Action Questions

## Multiple Choice Questions

For each of the following questions, choose the **ONE** response which best answers the question.

- 
- 1** Which one of the following is the basic unit of the sliding filament mechanism?
- A** Sarcomere.
  - B** Myofibril.
  - C** Sarcoplasm.
  - D** Muscle fibre.
- 
- 2** Which one of the statements below, referring to the sliding filament mechanism, is **NOT** correct?
- A** A single cross bridge may undergo many reconnections per second with the actin filament during a muscle contraction.
  - B** In isometric contractions where the contracting muscle is prevented from shortening, the cross bridges do not operate.
  - C** The coupling and uncoupling of the cross bridges continues if sufficient calcium ions are present.
  - D** In the absence of free calcium ions, tropomyosin and troponin prevent the connection of cross bridges between myosin and actin.
- 
- 3** Which one of the following features is **NOT** characteristic of typical slow twitch (Type I) muscle fibres, when compared to fast twitch (Type II) muscle fibres?
- A** More myoglobin.
  - B** More and larger mitochondria.
  - C** Same amount of actin.
  - D** More myosin.
  - E** Better blood supply.
-

## Structured Questions

92

Study Table HC I and answer the following questions.

**Table I** *The cardiac output and blood flow to various parts of the body whilst standing at rest, and during running (after Mitchell & Blomquist, 1971).*

cm <sup>3</sup> /minute	Standing	Exercise
<b>CARDIAC OUTPUT</b>	6000	24 000
<b>Blood flow to:</b>		
Heart ( <i>Coronary supply</i> )	250	1000
Brain	750	750
Active Skeletal Muscle	650	20 850
Inactive Skeletal Muscle	650	300
Skin	500	500
Kidney, Gut & Liver	3200	600

- i How is the large increase in cardiac output brought about?
- ii What must parallel the increase in cardiac output?
- iii What is it about exercise that helps the phenomenon described in the answer to (ii), and therefore the cardiac output to be maintained?
- iv How is it possible to deduce from the figures that at rest the cardiac muscle has a high extraction rate of oxygen from the blood?
- v What additional reasons, other than anaerobic respiration by the active skeletal muscle, contribute to the increase in blood lactic acid (lactate) accumulation?
- vi Why does the drastic reduction in blood supply to the kidney and gut not lead to them respiring anaerobically?
- vii How is the shunting of blood to and from different regions achieved?

# Solutions Muscle & Bones in Action

## Answers to Multiple Choice Questions

1 A	2 B	3 D	4 A	5 D
6 D	7 B	8 C	9 A	10 C
11 D	12 D	13 C	14 A	

## Answers to Matching Pairs Questions

15	i C	ii D	iii B	iv A
16	i B	ii A	iii D	iv A
17	i A	ii B	iii D	
18	i A	ii B	iii C	
19	i A	ii C	iii B	
20	i A	ii B	iii C	
21	i A	ii C	iii B	
22	i C	ii A	iii D	

## Answers to Multiple Completion Questions

23 C	24 A	25 E	26 A	27 D
28 E	29 E	30 B	31 D	32 E
33 A	34 A	35 A	36 B	37 C