

Are you...

- Thinking of becoming a Physiotherapist?
- Aiming to manage a Gym?
- Wanting to become a Personal Trainer?
- Wanting to influence the diet and exercise habits of the nation?
- Fascinated by the human body?
- Studying other sciences?
- Or do you just want to understand the why behind sports performance?

If so, A Level Physical Education is for you

Have you ever wondered...

- Why some people can run faster than others?
- How your personality affects your performance?
- How you could become an elite sports performer?
- Why people take drugs?
- How technology can help you?

Study A Level Physical Education to find out the answers.

A Level Physical Education

Studying A Level Physical Education will give you a fantastic insight into the amazing world of sports performance. Not only will you have the chance to perform or coach a sport through the non-exam assessment component, you will also develop a wide ranging knowledge into the how and why of Physical activity and sport.

The combination of physical performance and academic challenge provides an exciting opportunity for students. You can perform, and then through the academic study improve your performance or coaching through application of the theory.

Physical Education is studied through a range of different contexts and the impact it has on both ours and other's everyday lives. You will learn the reasons why we do things, why some people outperform others, mentally and physically. You will also delve into the ethical considerations behind the use of drugs and also the influence that modern technology is having in and on physical activity and sport.

Key features

- Simple, straightforward assessment structure
- All key areas of study covered
- Opportunities to either coach or perform in an activity
- Provides an excellent grounding for further study in this or many other areas

CONTEXT: You are going to be expected to apply the names of the muscles and joint movements to actual sporting movements throughout the two years of the course.

TASK: You are going to produce a 'Sporting Anatomy Textbook' which you can refer to throughout the course. You are going to research sporting images which involve all of the different movements and ALL of the muscle groups listed below. There is an example on page 3.

You must include examples of the types of contractions and detailed analysis of movement

shoulder:

- flexion, extension, abduction, adduction, horizontal flexion/extension, medial and lateral rotation, circumduction
- deltoid, latissimus dorsi, pectoralis major, trapezius, teres minor

elbow:

- flexion, extension
- biceps brachii, triceps brachii

wrist:

- flexion, extension
- wrist flexors, wrist extensors

hip:

- flexion, extension, abduction, adduction, medial and lateral rotation
- iliopsoas, gluteus maximus, medius and minimus, adductor longus, brevis and magnus

knee:

- flexion, extension
- hamstring group: biceps femoris, semi-membranosus, semi-tendinosus
- quadriceps group: rectus femoris, vastus lateralis, vastus intermedius and vastus medialis

ankle:

- dorsi flexion, plantar flexion
- tibialis anterior, soleus, gastrocnemius

Functional roles of muscles and types of contraction



- roles of muscles:
 - agonist
 - antagonist
 - fixator
- types of contraction:
 - isotonic
 - concentric
 - eccentric
 - isometric.

Analysis of movement



- analyse movement with reference to:
 - joint type
 - movement produced
 - agonist and antagonist muscles involved
 - type of muscle contraction taking place.

Task success criteria

	TICK WHEN complete
Has every muscle (26) and muscle group been labelled? You can label more than one muscle/muscle group per image/sporting example.	
Has every form of movement been identified through a well-chosen sporting image?	
Has the type of muscular contraction, agonist, antagonist and fixator been identified?	
Has the anatomy guide been produced electronically, with clearly chosen sporting diagrams?	
Has the work been personalised using acronyms, highlighting patterns in the language, colours or highlighted text to draw the attention of the reader to the material?	
Are there at least 6 pages showing a different section of the body (shoulder, knee and ankle, hip, elbow and wrist)	

Quadriceps

The Rectus Abdominis are acting as the **FIXATORS**.



In this example the muscles are producing an **ISOTONIC** contraction

The **QUADRICEPS** are about to **EXTEND** at the knee acting as the **AGONIST** whilst the **HAMSTRINGS** act as the **ANTAGONISTS**.

Vastus Lateralis

Rectus Femoris

Longest of 4 Quad muscles runs down the front of the Femur

Vastus Intermedius

In the middle (under the rectus femoris)

Vastus Medialis

To the middle of the body



There is a sporting example for each of the 26 muscles, in the tables of the following pages -You can use these sporting examples or select your own.

1.3

Type of synovial joint



Ball and socket

The shoulder joint

The four main muscles responsible for rotation of the shoulder joint are the Rotator Cuff muscles. Just one of these (teres minor) is named on p.9 of OCR spec.




Joint movement	Plane of movement	Agonist muscle	Antagonist muscle	Fixator muscle	Sporting example
Flexion	Sagittal	Anterior deltoid	Posterior deltoid	Trapezius	Upward ball toss of tennis serve.
Extension	Sagittal	Posterior deltoid	Anterior deltoid	Trapezius	Backstroke start.
Abduction	Frontal	Medial deltoid	Latissimus dorsi	Trapezius	Outward arm movement as GK prepares to save penalty.
Adduction	Frontal	Latissimus dorsi	Medial deltoid	Trapezius	Inward arm movement as footballer sets up defensive wall.
Horizontal flexion	Transverse	Pectoralis major	Teres minor	This is a muscle not named on p9 of OCR spec.	Execution phase of discus throw.
Horizontal extension	Transverse	Teres minor	Pectoralis major	Trapezius	Preparation phase of discus throw.
Medial rotation	Transverse	Anterior deltoid Latissimus dorsi Pectoralis major	Posterior deltoid Teres minor	Trapezius	Execution of topspin forehand drive.
Lateral rotation	Transverse	Posterior deltoid Teres minor	Anterior deltoid Latissimus dorsi Pectoralis major	Trapezius	Execution of topspin backhand drive.
Circumduction	Multiplane	A combination of all the shoulder joint muscles.			Complete cricket bowling arm action.

1.4 The elbow joint			The wrist joint		
Type of synovial joint	Hinge		Type of synovial joint	Condyloid	
Joint movement	Flexion	Extension	Joint movement	Flexion	Extension
Plane of movement	Sagittal	Sagittal	Plane of movement	Sagittal	Sagittal
Agonist muscle	Biceps brachii	Triceps brachii	Agonist muscle	Wrist flexors	Wrist extensors
Antagonist muscle	Triceps brachii	Biceps brachii	Antagonist muscle	Wrist extensors	Wrist flexors
Fixator muscle	Deltoid	Deltoid	Fixator muscle	This is a muscle not named on p9 of OCR spec.	This is a muscle not named on p9 of OCR spec.
Sporting example	Recovery phase of freestyle stroke.	Execution phase of tennis serve.	Sporting example	Recovery phase of basketball set shot.	Grip in a javelin throw.

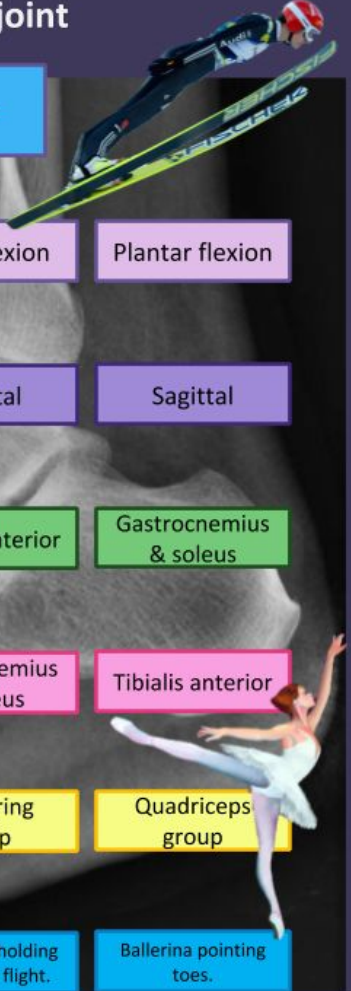
1.5 The hip joint					
Type of synovial joint	Ball and socket				
Joint movement	Plane of movement	Agonist muscle	Antagonist muscle	Fixator muscle	Sporting example
Flexion	Sagittal	Iliopsoas	Gluteus maximus	Latissimus dorsi	Recovery phase of kicking a ball.
Extension	Sagittal	Gluteus maximus	Iliopsoas	Latissimus dorsi	Driving back leg in sprint start.
Abduction	Frontal	Gluteus medius & minimus	Adductor longus, brevis & magnus	Latissimus dorsi	Outward leg movement to stop a ball going wide of body.
Adduction	Frontal	Adductor longus, brevis & magnus	Gluteus medius & minimus	Iliopsoas	Inward leg movement when landing from a cartwheel.
Medial rotation	Transverse	Gluteus med & min Adductor group x 3	Gluteus maximus	Latissimus dorsi Iliopsoas	Turning leg inwards to kick ball with outside of boot.
Lateral rotation	Transverse	Gluteus maximus	Gluteus med & min Adductor group x 3	Latissimus dorsi	Turning feet out for breast stroke lag action – propulsive phase.

1.6 The knee joint



Type of synovial joint	Hinge	
Joint movement	Flexion	Extension
Plane of movement	Sagittal	Sagittal
Agonist muscle	Hamstring group: Biceps femoris Semi-membranosus Semi-tendinosus	Quadriceps group: Rectus femoris Vastus lateralis Vastus intermedius Vastus medialis
Antagonist muscle	Quadriceps group: Rectus femoris Vastus lateralis Vastus intermedius Vastus medialis	Hamstring group: Biceps femoris Semi-membranosus Semi-tendinosus
Fixator muscle	Gluteus maximus	Iliopsoas
Sporting example	Driving phase of rowing stroke.	Preparation phase of a kick.

The ankle joint



Type of synovial joint	Hinge	
Joint movement	Dorsi flexion	Plantar flexion
Plane of movement	Sagittal	Sagittal
Agonist muscle	Tibialis anterior	Gastrocnemius & soleus
Antagonist muscle	Gastrocnemius & soleus	Tibialis anterior
Fixator muscle	Hamstring group	Quadriceps group
Sporting example	Ski jumper holding position in flight.	Ballerina pointing toes.

In a movement analysis you only need to name one of each group.

Some suggested resources

Link	Description
http://www.pponline.co.uk/	PEAK PERFORMANCE: Loads of interesting articles linking physiology and research to sport.
http://www.brianmac.co.uk/index.htm	BRIAN MAC SPORTS COACH: Very applied anatomy and fitness testing section
https://www.amazon.co.uk/Introduction-Exercise-Physiology-Colin-Clegg-ebook/dp/B00A9D6JWG/277-3234972-4820105?ie=UTF8&*Version*=1&*entries*=0	CLEGG, C: Introduction to Exercise Physiology. A brilliant companion text to accompany the physiology part of the A-Level