Your notes

GCSE PE: revision notes

Muscles

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Muscles you need to know

- Deltoid (shoulder), biceps and triceps (upper arm), pectorals (chest), latissimus dorsi (back), rotator cuffs (shoulder joint).
- Abdominals (stomach), hip flexors (front of the hip), gluteals (buttocks).
- Quadriceps (front of thigh), hamstrings (back of thigh), gastrocnemius (calf) and tibialis anterior (front of shin).

Antagonistic pairs

- Muscles can only pull, so they work in pairs. The **agonist** (prime mover) contracts to cause a movement, and the **antagonist** relaxes.
- A **fixator** stabilises the origin of the **agonist** so it can work properly.
- Biceps and triceps: at the elbow, the biceps contract to flex the arm and the triceps contract to extend it.
- Quadriceps and hamstrings: at the knee, the hamstrings flex it and the quadriceps extend it.
- Hip flexors and gluteals: at the hip. Gastrocnemius and tibialis anterior: at the ankle.

Types of contraction

- **Isotonic contractions** change the muscle's length and cause movement.
- Concentric: the muscle shortens as it contracts, such as the biceps during the upward phase of a bicep curl.
- Eccentric: the muscle lengthens under tension, such as the biceps lowering the weight slowly.
- Isometric: the muscle contracts without changing length, so there is no movement, such as holding a plank.

Muscle fibre types

- Type I (slow twitch) fibres contract slowly and resist fatigue: they suit endurance events such as a marathon.
- Type IIa (fast twitch) fibres are fast but fairly resistant to fatigue: they suit events such as the 800 m.
- Type IIx (fast twitch) fibres contract very fast and powerfully but tire quickly: they suit sprints and jumps.

Key terms

Agonist	The muscle that contracts to cause a movement (the prime mover).
Antagonist	The muscle that relaxes to allow the movement.
Fixator	A muscle that stabilises the agonist's origin.
Antagonistic pair	Two muscles that work together, one contracting as the other relaxes.
Isotonic contraction	A contraction where the muscle changes length and causes movement.
Isometric contraction	A contraction where the muscle stays the same length.
Concentric contraction	The muscle shortens as it contracts.
Eccentric contraction	The muscle lengthens while under tension.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. Which muscle is on the back of the thigh?
2. Which muscle is the calf muscle?
3. What is the agonist?
4. Which muscle is the agonist when the elbow flexes?
5. Which muscle is the agonist when the knee extends to kick a ball?
6. What type of contraction is holding a plank?
7. What happens to a muscle in an eccentric contraction?
8. What happens to the biceps during the upward phase of a bicep curl?

Answers

1. Hamstrings
2. Gastrocnemius
3. The muscle that contracts to cause a movement
4. Biceps
5. Quadriceps
6. Isometric
7. It lengthens while under tension

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8. They shorten in a concentric contraction

What to do next

Practise 12 questions on this topic

Try 5 exam questions, with mark schemes

Read the lesson, one step at a time

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