

## Unit 1 Extended response questions worksheet 3 - Exercise 2

## NCFE Level 1/2 Technical Award in Health and Fitness: Unit 1

## Question 1

Using your knowledge of muscle fibre types **and** specificity of training, evaluate why an individual who completes a short distance sprint in a quick time may not be as effective at long distance running. [9 marks]

## Band 3 learner response

*There are 2 types of muscles fibres. Type 1 are slow twitch muscle fibres and are red in colour due to large amounts of oxygen, slow to contract and slow to fatigue. Type 2 are fast twitch muscle fibres and are white in colour, fast to contract and fast to fatigue.*

*Specificity means that the training you do should match the needs of the physical activity in order to bring about improvements. For example, a short distance sprint will use fast twitch muscle fibres and to be effective at long distance running an individual would need to have more slow twitch muscle fibres.*

*Fast twitch muscle fibres are quick to fatigue and most suitable for short duration exercise. Slow twitch muscle fibres are slow to fatigue and most suitable for long duration exercise. An individual who is good at sprinting will have a high number of fast twitch muscle fibres. An individual who is good at sprinting will train specifically for the key requirements for sprinting rather than the key requirements for long distance running.*

*Sprint training will train fast twitch muscle fibre types as the duration of sprinting is shorter and therefore will not need oxygen to perform and requires fast bursts of power. Fast twitch muscle fibres are not suitable for long duration activities such as long distance running, as they fatigue quickly.*

*An individual who is good at sprinting will probably have a lower number of slow twitch muscle fibres and will most likely struggle at long distance running activities. If an individual who was good at sprinting wanted to get better at long distance running, they would need to change their training to concentrate on developing slow twitch muscle fibre types. If they did not develop their slow twitch muscle fibres, there is a high chance that the individual would tire quite quickly when undertaking long distance running activities as the fast twitch fibres fatigue more quickly. The more that they undertake specific training linked to the long distance exercise, the more that the slow twitch muscle fibres **may** develop and become acclimatised to participating in long distance activities.*

## Mark scheme commentary for band 3 allocation

The learner has demonstrated a wide range of knowledge and understanding to cover the different muscle fibres types, characteristics and specificity of training accurately and in detail. Subject specific terminology is used consistently throughout. The responses are relevant and in context in relation to short distance sprinting and long distance running. The learner has provided an effective response that demonstrates the analysis of muscles fibre types / specificity of training in response to two different types of exercise and evaluated whether an individual may not be as effective in long distance running if they were able to complete a short distance sprint in a quick time. The learner has

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supported this with effective judgements and also covered how specific training could support improvements to long distance running. The conclusions drawn have been fully supported in the learner's responses.

**Band 2 learner response**

*Slow muscle fibres are slow to contract, slow to fatigue and are suited to long duration exercise.*

*Fast twitch muscle fibres are fast to contract, fast to fatigue so are suited to short duration exercise.*

*Specificity of training is where you create a training programme that is specifically tailored to your training goals. For example, if you want bigger legs, you would make heavy squats and deadlifts a regular part on the training programme. This is similar to short and long distance running.*

*Someone who is good at sprinting will have a high number of fast muscle fibres compared to an individual who is good at long distance running.*

*A sprinter could train to become better at long distance running but this may take time.*

*Therefore, an individual who completes a short distance sprint in a quick time may not be as effective at long distance running as their body is not used to completing this type of activity.*

**Mark scheme commentary for band 2 allocation**

A range of relevant knowledge and understanding is shown in this response, but it's lacking in sufficient detail, to provide enough detail for the characteristics of Type 1 and 2 muscle fibre types, with a few errors around subject specific terminology, for example, type 1 and 2 muscle fibre types is not mentioned and the word 'twitch' is also missing from some sentences. The application of knowledge and understanding is mostly appropriate but does sometimes lack clarity around specificity of training and how a sprinter could train to become better. Analysis and evaluation is present, but is lacking in some areas, where attempts have been made to draw conclusions supported by judgements, although some are irrelevant.

**Band 1 learner response**

*Slow twitch fibres are slow to fatigue and are better for long exercises.*

*Fast twitch fibres are fast to fatigue so are better for short exercises.*

*Someone who is good at running fast will have more fast muscle fibres compared to someone who is good at long distance running.*

*Overall someone who is good at sprinting will have more fast fibres and therefore will not be as good for long distance running.*

**Mark scheme commentary for band 1 allocation**

A limited range of relevant knowledge and understanding is shown and is often fragmented.

Subject specific terminology is used, but is not consistent and a lack of understanding is evident.

Analysis and evaluation is of limited effectiveness and attempts to draw conclusions are irrelevant.

**Activity 1**

Using a highlighter pen, can you identify the differences in responses between each answer?

## Activity 2

What's different in the Band 2 learner response compared to the Band 1 learner response?

What's different in the Band 3 learner response compared to the Band 2 learner response?

