**Practical Exercise Physiology Synoptic Past Paper Questions, Mark Schemes and Reports**

June 2015

**Question**

You have been asked to deliver a weight training programme using visual guidance.

Outline the principles of weight training. (6 marks)

**Mark Scheme**

A. Involves free weights/suitable examples

B. Resistance machines/ fixed weights/ suitable examples

C. Exercises relate to muscle group being developed/specific movement pattern

D. Uses number of repetitions / sets

E. Resistance is calculated using 1 rep max / Work at a percentage of 1 RM

F. Develop strength (and/or) power through heavier resistance / high weight and less repetitions / sets

G. 60 - 80% plus of 1 RM

H. Develop muscular endurance through lighter resistance / lower weight and more repetitions / sets

I. 50 - 60% of 1 RM

J. Principles of training / FITT/ specificity/rest/SPORT/intensity

June 2009

**Question**

You have been asked to help with the fitness training and coaching of a group of performers within an AS level Physical Education class. Describe the various ways that flexibility can be improved and, using examples, explain the benefits to the performer of improved flexibility.

**Mark Scheme**

Flexibility is the range of movement of a joint. Ways in which flexibility can be improved, addressing points such as:

- Active stretching – holding a stretched position by contraction of your own agonistic muscles

- Passive (or relaxed) stretching – stretch position being held by something other than the agonistic muscles

- Static/PNF stretching – stretching to limit of range and then isometrically contracting the stretched muscles

- Ballistic stretching – using movement to ‘bounce’ in and out of a stretch position

 Benefits to the performer of improved flexibility, addressing points such as:

- Increased range of movement/reduce injury

- Adopt held or aesthetic positions in gymnastic activities/alternative example

- Can reach ball or player in games/alternative example

- Can apply more power/longer levers in athletic activities/alternative example

**Report**

This question asked candidates to describe methods to improve flexibility and explain the corresponding benefits. This was a very poorly answered question. Responses clearly showed a lack of detail in the candidates’ knowledge and lack of preparation for this specific question. Only a small minority of students made reference to the different methods of stretching that could be used to improve flexibility. Even then, most candidates were content with simply naming the method and were unable to describe it. The most frequent answer would only suggest that ‘flexibility could be improved by stretching’. The idea that stretching could be static or dynamic was common, but again without explanation. The types of stretching that candidates need to be able to describe and explain are clearly stated on page 6 and again on page 9 of the specification (and it doesn’t include dynamic stretching). Even the benefits of improved flexibility were not particularly well explained. The most common benefit provided was ‘reducing the risk of injury’; very few sports specific examples beyond the idea that performers could stretch further, were given. Candidates were assigned a level of response depending on the quality of their answer and the majority were marked at level 1 (out of four) for this part of the question.

June 2010

**Question**

You have been asked to improve the skills of a group of AS level Physical Education students. Explain why a warm-up is needed to start the session.

**Mark Scheme**

Reasons for a warm-up, addressing points such as:

A. Reduces possibility of injury/ increase flexibility/elasticity of muscle tissue;

B. Release of synovial fluid/elasticity of connective tissue;

C. Increases body/muscle temperature;

D. Better oxygen delivery/ blood flow/ vasodilation to muscle tissues;

E. Better chemical reactions/higher metabolism;

F. Increased sensitivity of nerve receptors/ speed of nerve conduction/reaction time;

G. Allows for rehearsal of movement/ same skills as in activity;

H. Mental rehearsal/stress or anxiety reduction/psychological preparation/

relaxation/alertness

I.Supplies adequate blood flow to heart so increasing its efficiency.

**Report**

As was the case in the summer 2009 examination, most responses lacked any real depth of knowledge. Superficial answers from candidates would suggest that warm-ups prevented injury and increased blood flow to muscles. Many candidates decided to describe in detail how to warm-up, with detailed descriptions of the exercises involved. Many candidates tended to talk about a warm-up literally warming up the muscles or the body. This superficial type of answer was considered to be too vague to receive credit. Concepts such as increasing release of synovial fluid, increased metabolic activity, and increased sensitivity of nerve receptors were rarely offered as responses. Many candidates referred to the psychological benefits of warming up, and its potential to reduce stress, arousal and/or anxiety. Simplistic responses such as ‘get the mind right’ or ‘prepare the brain’ were considered to be too vague for credit, and as an extension of this, the idea of ‘mentally prepare’ was also considered too vague.

Jan 2010

**Question**

You have been asked to develop the flexibility of a group of AS level Physical Education students. Describe the different ‘types of stretching’ that could be safely used with the group.

**Mark Scheme**

The different types of stretching that can be safely used, addressing points such as:

A. Active – position held by agonist/muscles

B. Passive – position held by another body part or position held by partner

C. Static – position held with isometric contraction

D. Ballistic – bounce in and out of stretch

E. PNF – position held and isometric contraction

F. Warm-up prior to stretching

G. Make stretch sports specific

H. (Begin) slowly

I. Hold stretch for few/no more than (30) seconds

J. Never hold a painful stretch – injury

K. No bouncing/ballistic

L. Balance/equalise stretches/agonists and antagonists.

**Report**

As was the case in the summer 2009 examination, most responses lacked any real depth of knowledge. Superficial answers from candidates named different types of stretching, but they rarely further developed their answers to include some idea of how that particular type of stretching worked. The notion that in this type of stretch the position was held gained no credit, as all the different types of stretching mentioned in the specification involve the stretch being held. It is how the stretch is held that distinguishes them from each other. On a similar vein, a large proportion of the candidates talked in relative depth about ‘dynamic’ stretching. This topic is not in the specification, does not get examined and is therefore not in the mark scheme. Many candidates described in detail how to measure flexibility, or provided detailed descriptions of stretching exercises and programmes, as well as describing using stretches as a warm up rather than only stretching after warming the muscle up.

Jan 2011

**Question**

You have been asked to develop a training programme to improve the fitness and skills of a group of AS level Physical Education students. Identify the main reasons for conducting fitness tests and discuss the possible limitations of fitness testing.

**Mark Scheme**

Main reasons:

A. Identify strengths and/or weaknesses in a performance/success of a training

programme/show improvement;

B. Physiological potential/identifies (starting) level of fitness/some (maximal) tests

increase fitness/aid training;

C. Compared against norms of the group;

D. Helps motivate performer/sets goals;

E. Provides variety to training programme;

Limitations:

F. They are not sport specific/too general;

G. They do not replicate movements of activity;

H. Do not replicate competitive conditions required in sports;

I. Many do not use direct measuring/sub-maximal – therefore inaccurate/some need

motivation/some have questionable reliability;

J. Tests used often/may lack validity/eg;

K. Validity – test what they are supposed to test.

**Report**

Many candidates misunderstood the question, going into great depth about the training programme they would use for a group of AS students. The average response of most candidates was at a very low level and tended to lack any real depth of knowledge. Superficial answers from candidates would often simply name various fitness tests and go into great detail of how to conduct these tests. Many candidates tended to just write down what they knew, rather than specifically answering the question. Few candidates knew more than the simplistic idea that fitness tests measure initial fitness and any improvements in fitness, and that some fitness tests were not that accurate.