



5.2.11 Describe a motor program

- Keele (1968) defined a _____ program as being a set of muscle commands that allow movements to be performed without any peripheral feedback.

- Examples of **motor programs** are _____ any skill that you can think of. Hitting a tennis ball, catching a baseball and doing a somersault are all examples of motor programs.

- A number of motor programs can be put together to form an _____ **motor program**, e.g. the triple jump (hop, step and jump).

- **Peripheral feedback** specifically refers to _____ feedback that is gathered outside of the central nervous system

A number of subroutines can be put together to make up an Executive Program.



Choose an executive program from your own sport and select the subroutines that are involved. (like above)

- The executive program itself can become part of an even _____ program.
- Many gymnastics routines involve the completion of a number of executive motor programs in quick succession.
 - To the _____ they have become one large executive program.

5.2.12 Compare motor programs from both open and closed loop perspectives

- Keele's (1968) model of motor programs is what we call an **open loop** _____.
- It accounts for the performance of a skill **without recourse** to _____. (doesn't take feedback into account)
- It explains how we can carry out very fast _____.

- For example, a boxer throwing a straight left will do so at about 60–70 msec. This is too fast for him to use feedback to alter the movement once it has begun.

- The same can be said for someone trying to hit a _____ pitched at over 90 miles per hour. Once the swing has begun, it cannot be changed.

Closed Loop

- However, not all movements take place this quickly.
- Many _____ can be altered during their execution.
- We can alter our movements when hitting a baseball pitched at say 50 kilometers per hour or returning a slow serve in tennis.
- These movements are under what we term **closed loop control**
- Closed loop – Have the ability to use _____ to influence decision

The **perceptual trace** is memory for the feel of _____ past movements.

- Once we have developed the perceptual trace, we can compare the trace with the feel of the **ongoing movement**.
 - This allows us to **correct** _____ **actions**.
- While the _____ trace controls an already ongoing movement, the selection and initiation of the movement is under the control of the memory trace. (Memory trace is when you select a movement before performing it)

What is meant by perceptual trace? Respond.

Richard Schmidt (1975) set out to develop an explanation of motor programs that included both **open and closed loop control**.

- This theory became known as **schema** _____. Schmidt described a schema as being a set of generalized rules or rules that are generic to a group of movements.

- Schmidt believed that we develop _____ kinds of memory for movements, which he called the recall and recognition schemas.
 - The recall schema is memory with regard to the choice and _____ of action.
 - The recognition schema is memory for the _____ of a movement and it allows us to make appropriate changes in the action. _____ schemas require the individual to recall memory
- Both schemas require the individual to recall memory of similar past situations from LTM.
- These are then stored in _____ and allow the person to decide the actual movement to be used.
 - Remember the schema is a generalized set of _____ but we must carry out a specific action.
 - So comparing what I hold in STM about the past situations with what I hold with regard to the present situation allows me to decide on the specifics of the movement.
 Schmidt called this process deciding the response specifications.

Performing a skill....

When you perform a skill in a situation, you subconsciously subtract 4 pieces of information.

- ◆ Initial conditions (start of the movement)
- ◆ Response specifications (parameters used in execution of the movement, such as speed)
- ◆ Sensory consequence of the movement
- ◆ Response outcome (end result)

Schema & Performing....

These four sources of information is stored in memory following a movement attempt.

The schema begins to develop.

With each additional movement attempt the schema become stronger.

What result from practice is the development of the motor response schema.

5.2.13 Outline the role of feedback in information processing models

- **Feedback** is the term we use to describe _____ resulting from an action or response. This feedback can be intrinsic or _____.
 - **Intrinsic feedback** is available to the performer _____ outside help. We can see the results of our actions without anyone needing to tell us what happened. The feel of a movement is intrinsic by definition.
 - **Extrinsic feedback** is information that is provided for us by someone or something else. This can be a _____ or teacher. It could be a stopwatch or tape measure. This feedback can be concurrent, being given during performance, or terminal, given after completion of the performance.
- There are two major forms of feedback, knowledge of results (**KR**) and _____ of performance (**KP**).
 - **KR is post-response information** concerning the outcome of the action.
 - **KP consists of post-response information** concerning the nature of the movement.
 - The most obvious form of KR is _____. We see the end product of our action. In some cases, however, we need outside help to be able to make sense of our actions.
- A long jumper needs to have the distance they jumped _____ in order to have KR. Similarly, a track athlete will need to know the time that they ran.
 - The most _____ type of KP is the “feel” of the movement or, to be more technical, knowledge of the sensory consequences.

- Interestingly KP can be both _____, such as the feel of a movement while doing it, or terminal, feedback from a coach about how we moved.
 - It can also be from video or film.
- An issue that concerns the giving of feedback is whether it should be _____ or negative.
- Positive feedback can be telling someone that he or she has done well. It can, also, be what we call **prescriptive** _____
 - Negative feedback concentrates on errors. Sometimes coaches point out errors and then follow up with prescriptive feedback.
 - Prescriptive feedback has been shown to be _____ following either a negative or positive approach.
 - However, negative feedback _____ includes “Don’t do it like that” or “You got it wrong, you did this and shouldn’t have”.
 - This type of feedback can be very _____ and is also of little use to beginners, as they need prescriptive information.

5.2.14 Outline the role of feedback in the learning process

- Feedback can be a great _____.
 - We all like praise, in particular praise from those whom we perceive as being important.
 - The failure of coaches to praise good performance can have disastrous effects on the athlete’s self-confidence.
 - It can also give learners the _____ impression that they are not improving when in fact they are.
- However, overdoing the giving of praise can have negative _____.
 - If all the athletes hear is “well done”, “great” and “brilliant” then these words either come to mean nothing or become so familiar to the learner that, in fact, they are not perceived by them at all.
- With regards to learning, the main factor is that the performer _____.
 - As we saw above, beginners need prescriptive feedback. They need to be told what to do in order to improve performance.
 - As they improve and increase their knowledge of the activity, all they require is KR.
- If they are making an error, they can resolve the problem themselves by comparing what is happening now with the store of knowledge they hold in their LTM.
- So we say that they now require _____ **feedback**.