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Examine open and closed control of motor skills in relation to individual, racket and team activities?

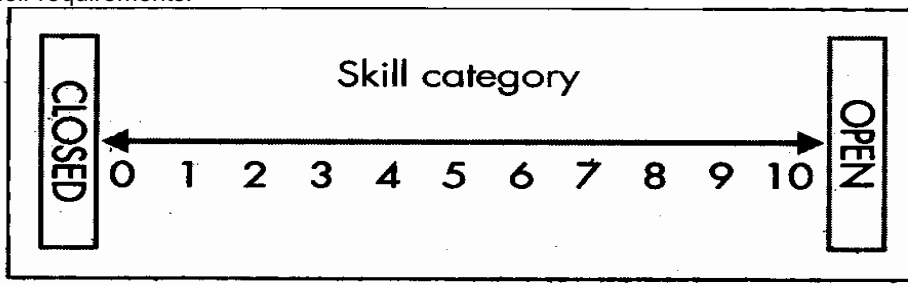
In sport a skill is seen as a co-ordinated act involving complex movements brought together in a consistent and smooth manner. There are some qualities, which are needed in order to be skilful, for example consistency, accuracy and control. There are a Number of different types of skill. Cognitive skills are also often known as intellectual skills and involve thought processes; an example of this is measuring the length of a long jump. Perceptual skills involve interpretation of stimuli. We may see the same information as someone else, but our brain might interpret it differently from him or her. E g. In athletics at the start of a hurdles race, the stride to the first hurdle we each see differently. Motor skills involve the muscular system and concern movement and muscular control. For an example, walking and running are motor skills as they involve movement and muscular control, to run fasts ability is needed. E.g. In athletics a long distances runner or a marathon runner such as a Kenyan runner which have slow twitch muscles fibres which are slower-firing nerve fibres. A perceptual motor skill, is an extremely complex process. It does not just involve one type of skill, but several. Most skills are referred to as perceptual motor skills as they involve thought interpretation and movement cognitive skills, perceptual skills and motor skills.
See – Interpret – Think – Move

Schema is a store of information developed through practice. The idea that motor programmes store all the information needed for movement was challenged by Schmidt in 1977. We would need massive memory capacity to store details of every movement pattern we perform. Schmidt suggested that we modify the motor programmes by use of schemes or rules of information. Practice and varied experiences allows us to adapt and modify out motor programmes so that we can cope with new or different situations.

Every sport requires a different type of skill and so each has very different requirements. The importance of being able to categorise skill becomes important when we look at teaching/learning and practice of different skills. If we know the general skill, we can decide the most appropriate learning and ways to practice. Identifying the requirements of each skill is important if we are to optimise the learning and development of sporting skills. There are various different ways of categorising skills, all of which demonstrate the need for a flexible approach.

Skill category

Classification continuums are not an exact science and there is room for individual interpretations. Many of the theories are based on the concept of continua, that is, skills can be classified on sliding scale depending on their requirements.



Barbara Knapp recognised two basic classifications of skills. She suggests that skills can fit on a continuum between open and closed skill. Open skills are those, which are directly influenced by the environment in which they are performed. They are skills that require adaptation may depend on a range of environment conditions such as the weather, the pitch conditions, the speed on a ball, the position of an opponent. Closed are those that have no out-side physical influences acting upon them. They are the same each time they are performed. The performer will go through 'a pre-learned sequence of motor activities' with no reference to the environment in which the skill is being performed. E.g. In athletics a sprinter which uses fast twitch and slow twitch muscles is a closed skill.

Specific abilities required in sport include hand eye co-ordination, flexibility, speed etc. For an example of speed is a long distance run and sprinting, an example of hand eye co-ordination is a tennis serve. Without these abilities, it would not be possible to learn skills. You would find it hard to be able to do the sprint start without being taught what to do, so you would have to learn what to do. You will have to be taught how to get into the position to start. Speed is ability that can be coached by practise and training will also enhance basic ability.
"An organised co-ordinated activity in relation to an object or situation which involves a whole chain of sensory, central and motor mechanisms" this was said by Welford.

A term associated with skill and ability is technique. Technique is often confused with skill. There is a strong relationship between the three term's skill, ability and technique. In order to perform a particular skill in sport, we must learn the required technique. In order to learn the technique fully, we must have the necessary abilities.
Skill = Ability + Technique.

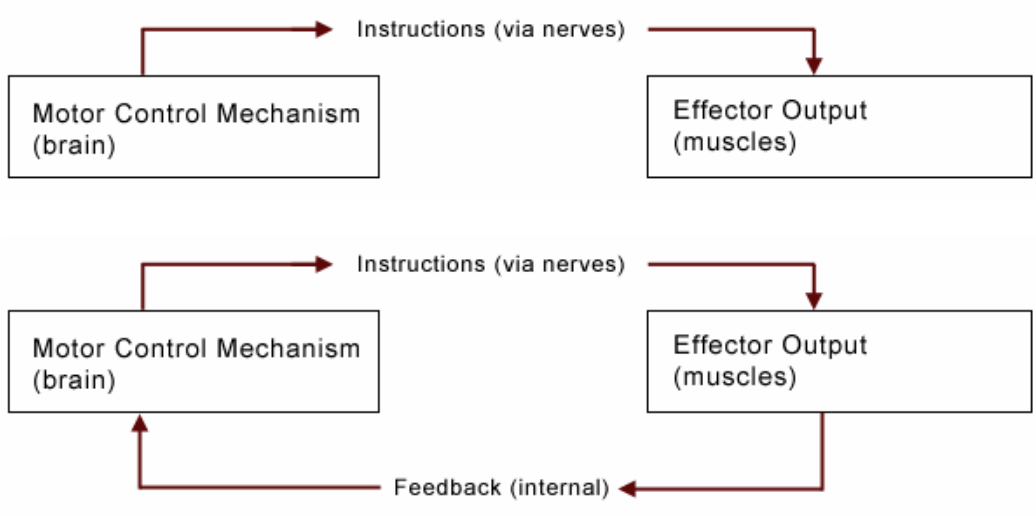
A major factor that influences the development of skill is practise. There is a commonly used phrase about practise that is practise makes perfect. The type and appropriateness of practise will influence the skill development. There are different types of practise and there are fixed practise and variable practise. Fixed practise involves repetition of an activity. This allows the skill to be over-learn or automatic to learn. Repetition will allow the movement patterns to become second nature. An example of repetition is a tennis serve or a drop shot in tennis the more you practise it will become second nature. This type of practise is ideal for skills that are always performed the same way that does not require adapting to the environment. Closed skills, interactive skills and coactive skill tend to require fixed practice to allow the motor sequence to be perfected. Since they will remain the same in practice as they are in a competitive situation. Variable practice involves a variety of activities or situations. The leaner applies the skill to a number of different environments in practice, allowing both the developments of the skill and the ability to adapt the skills to range the situations. This is an open and interactive skill, as they are not the same twice. The movement patterns required performing the skill.

Learning in its simplest form is the development from a position where we can't perform a skill to a stage when we can perform it,
"Learning is a more or less permanent change in performing brought about by experience." (Knapp, 1973)
This is saying that we learn to perform skills through practice and performance. Knapp is suggesting that once something is learn, it remains

with us.

When we learn a skill, we must develop the particular movement pattern for that skill. The movement pattern (executive/motor programme) is made of different movements that have to be controlled and preformed in that way at the correct time. The smash in tennis uses a number of executive programmes. The way we perform a certain skill is stored in our motor memory and then accessed whenever we want to perform.
Once a decision has been made to produce a movement the brain has to decide how to control the muscles needed to execute the action. Some movements that we perform quickly, especially in closed situations seem to happen automatically. The brain sends all the necessary information in one chunk to the muscles that need to move.

This is known as Open Loop Control. Feedback is available to the performer but not used to control the action. E g. Sprint race start with a gun . This theory explains how we can control and perform fast movements but doesn't explain how we are able to change and reposition ourselves during some movements. Closed Loop Control - A decision to move is made in the motor control centre (brain). Some of the information is sent to the effector organs (muscles). The rest is sent during the action and feedback monitors the effectiveness of the movement. Because of the feedback changescan be made during the movement.



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