FACTORS AFFECTING PERFORMANCE

SKILL ACQUISITION

PARTS 1 AND 2

Grades: 11-12

Part 1 – 24 mins
Part 2 – 25 mins
WHAT IS A SKILL?

(1) ‘A coordinated set of movements which can be learnt through practice and have a desired outcome.’ (Wright 1994)
(2) ‘A skill satisfies certain criteria:
   - The task involves sequences of movements that are reasonably complex to the individual performing them and,
   - The individual must undertake a period of learning.’ (Davis, Kimmet, Auty, 1990)
(3) ‘A motor skill is defined as a motor act that requires movements or the repetition of movement to achieve a predetermined goal’. (Parker, Patterson, Hearne, 1994)

Examine the definitions above. Use this information to write your own definition of a skill.

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Explain the difference between simple and complex skills.

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THE LEARNING PROCESS

Draw a diagram representing the four stages of the skill learning process

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Describe how the students learnt to juggle using the model drawn above. In your response;
- Detail how the students improved
- And why some students were better than others.

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‘Without feedback there can be no learning.’ Discuss this statement in relation to learning how to juggle three balls.

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CHARACTERISTICS OF THE LEARNER

1. **Personality** - characteristics such as cooperation, willingness to listen, determination, enthusiasm, dedication, high levels of motivation, aggression and willingness to learn. These characteristics will enhance skill acquisition.

2. **Heredity**
   (a) Muscle fibre type i.e. percentage of fast-twitch as opposed to slow twitch muscle fibre. Explain how muscle fibre composition could affect skill acquisition.

   (b) Somatotype- endomorph (round), mesomorph (muscular), and ectomorph (linear) body shape will determine our suitability for many sports. Discuss how an individual’s somatotype may affect skill acquisition.

   (c) Gender- males tend to have more muscular strength; females tend to be more flexible. Outline some skills that may be more suited to males due to genetic factors.

   (d) Intelligence- the ability to process information, problem solving and comprehension. Explain how intelligence may improve an individual’s ability to learn how to juggle.

3. **Confidence** - the belief in one’s ability. To improve confidence the learner must experience success. Explain how a coach may improve the confidence of an athlete whilst they are learning a new skill.

4. **Prior experience** - of same or related tasks. This is called positive transfer of learning. Outline two examples of positive transfer of learning.

5. **Ability** - Write your own definition of ability. Use examples to clarify your definition.

6. **Other Factors**
   List any other factors, which need to be considered. Explain how each of these factors may influence the rate of skill acquisition.
Skill Learning Activity

1. Using double star space place a brightly coloured pen in between the two star spaces of star A. Without the pen leaving the paper draw around the smaller star without touching either line.
2. Repeat 1. Using a different coloured pen whilst looking in a mirror.
3. Using double star B repeat 2. This time using your non-dominant hand.

Comment on the transfer of learning observed during this exercise.

THE LEARNING ENVIRONMENT

1. The Physical Environment
   Discuss how a learner’s physical environment can influence the rate at which a new skill is acquired?
2. The Nature of the Skill
All sports have a number of skills that are required e.g. soccer passing, trapping, and tackling. These skills become proficient with practice. Each skill can be broken down into subroutines, or components, of a skill e.g. a golf swing involves grip, stance, back swing, contact and follow through. The nature of each skill can be classified on continuums as follows:

(i) Open ______________________________ closed
(ii) Gross motor __________________x____________________ fine motor
(iii) Discrete ____________________________ continuous
(iv) Self-paced __________________________ externally paced

Another classification is Serial skills. These skills have a number of parts or sub skills. Describe each skill classification and include specific examples.
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Each of these groups of classifications can be represented on a continuum, e.g. when shooting a basket in basketball the skill is largely a gross motor skill though it does require some fine motor control in the release from the fingers (represented by the x on the continuum).

Degree of complexity of the Task
Complex skills involve many sub-routines and therefore take longer to learn than simple skills. The performance environment can increase the skill’s complexity e.g. open skills.

3. Practice Methods

(i) Massed and Distributed Practice – This refers to the time spacing between practice sessions. Massed practice involves longer practice periods and short rest intervals e.g. an athlete practising a certain skill until it is mastered. Distributed practice has relatively short practice and longer rest periods e.g. juggling for 10 minutes then resting for 1 hour.

Complete the following statements. Massed practice is best suited to
•
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Distributed practice is best suited to
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(ii) Whole or Part Method
Skills are often taught in their entirety (whole) or broken down into parts (part). Discuss where part practice would be best used.
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(iii) Speed vs. Accuracy
Speed means learning the skill at pace whilst accuracy refers to the precision of the movement. When teaching new skills most coaches prefer to focus on accuracy then incorporate a speed component.

Can you think of an example of a skill that would be best taught initially at speed? Discuss the reasons for your choice.

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(iv) Mental and Physical Practice
Mental practice involves cognitive abilities of perception, decision-making and visualisation. Physical practice is the motor movement used to practice a skill.

Describe when mental practice is most appropriate.

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4. Feedback

Feedback refers to the information gained about the performance of a skill.
Discuss the benefits of feedback.

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There are two main types of feedback, knowledge of performance (KP) and knowledge of results (KR). Explain the difference between KR and KP.

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Describe the sources of feedback.

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Explain how an individual receives intrinsic feedback.

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Discuss what part feedback plays in acquiring a new skill.

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Describe the feedback received by the athlete when a basketball player shoots for goal and the ball hits the ring.

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STAGES OF SKILL ACQUISITION

The learning of motor skills has been categorised into a three-stage process.
1. The cognitive or understanding stage
2. The associative or practice stage
3. The autonomous or automatic stage

1. **The Cognitive Stage** – during this stage the learner gains an understanding of the task required e.g. what to do, what to know.
   Outline the characteristics of the cognitive stage of skill learning.

2. **The Associative Stage** – during this stage the learner must practice in order to improve.
   Outline the characteristics of the associative stage of learning.

3. **The Autonomous Stage** – during this stage the learner gains the ability to automatically execute the skill.
   Outline the characteristics of the autonomous stage of learning.

Explain how a coach could assist an athlete to progress through the stages of skill acquisition.
Revision Questions

1. Discuss how the characteristics of the learner can influence the rate of skill acquisition.

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2. Classify the following skills as;
   (a) Open or Closed
   (b) Gross or Fine motor
   (c) Discrete or Continuous
   (d) Self-paced or Externally Paced
   (e) Simple or Complex

   i. Throwing a baseball
   _____________________________________________________________________________
   _____________________________________________________________________________

   ii. Riding a surfboard
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   _____________________________________________________________________________

   iii. Threading a needle
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   iv. Clean and Jerk
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   v. 100 metres Freestyle
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   vi. Receiving a serve in tennis
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3. Describe the types of practice that would be most appropriate for a performer learning how to juggle 3 balls in the cognitive stage of learning.

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<table>
<thead>
<tr>
<th><strong>GLOSSARY</strong></th>
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<tr>
<td><strong>Ability</strong></td>
<td>Refers to the how well an individual can perform a movement or sequence of movements.</td>
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<td><strong>Kinaethesis</strong></td>
<td>The feedback received from muscles and tendon receptors about the body’s position in space.</td>
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<td><strong>Accuracy</strong></td>
<td>The precision with which a skill or routine is executed.</td>
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<td><strong>Knowledge of Results (KR)</strong></td>
<td>Information linked to the pattern of movements used to execute a skill.</td>
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<td><strong>Acting</strong></td>
<td>The ‘doing’ phase in the learning process.</td>
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<td><strong>Learning Environment</strong></td>
<td>Refers to the factors apart from the learner.</td>
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<td><strong>Associative Stage</strong></td>
<td>The practice stage of skill learning.</td>
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<td><strong>Learning Process</strong></td>
<td>The cyclic process of skill learning.</td>
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<td><strong>Augmented Feedback</strong></td>
<td>Relates to information that the athlete would not ordinarily receive e.g. video replay of a performance.</td>
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<td><strong>Massed Practice</strong></td>
<td>Extended practice with relatively short rest periods.</td>
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<td><strong>Autonomous Stage</strong></td>
<td>The automatic stage of skill learning.</td>
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<td><strong>Mental Practice</strong></td>
<td>The use of mental rehearsal and visualisation.</td>
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<td><strong>Closed Skill</strong></td>
<td>Skills performed in a predictable environment.</td>
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<td><strong>Mesomorph</strong></td>
<td>A body type characterised by high muscle mass and low body fat compared to height.</td>
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<td><strong>Concurrent Feedback</strong></td>
<td>Received whilst performing the skill.</td>
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<td><strong>Motivation</strong></td>
<td>The drive from within.</td>
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<td><strong>Continuous Skill</strong></td>
<td>Have no distinct beginning or end.</td>
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<td><strong>Negative Feedback</strong></td>
<td>This occurs when the skill is unsuccessful.</td>
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<td><strong>Deciding</strong></td>
<td>Processing the information gained from the senses in the learning process.</td>
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<td><strong>Open Skill</strong></td>
<td>Skills performed in an unpredictable environment.</td>
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<td><strong>Delayed Feedback</strong></td>
<td>Received after completing a skill.</td>
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<td><strong>Part Practice</strong></td>
<td>Practice where the skill is broken down and learnt in parts.</td>
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<td><strong>Discrete Skill</strong></td>
<td>A skill with a definite beginning and end.</td>
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<td><strong>Perceiving</strong></td>
<td>A step in the learning process where information is collected by the senses.</td>
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<td><strong>Distributed Practice</strong></td>
<td>Rest periods are longer than practice periods.</td>
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<td><strong>Positive Feedback</strong></td>
<td>This occurs when the skill is performed correctly.</td>
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<td><strong>Ectomorph</strong></td>
<td>A body type characterised by low body fat and muscle mass compared to height.</td>
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<td><strong>Physical Practice</strong></td>
<td>Involves motor movements to practice a skill.</td>
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<td><strong>Endomorph</strong></td>
<td>A body type characterised by high body fat and low muscle mass compared to height.</td>
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<td><strong>Positive Transfer of Learning</strong></td>
<td>Prior experience of the same or related tasks that aids in skill learning.</td>
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<td><strong>Executive Plan</strong></td>
<td>Our memory of movements that are required to perform a skill.</td>
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<td><strong>Self-paced Skill</strong></td>
<td>Skills where the performer is in control of the timing and the speed of execution.</td>
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<td><strong>External Feedback</strong></td>
<td>Feedback received from external sources.</td>
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<td><strong>Serial Skill</strong></td>
<td>A skill that consists of subroutines.</td>
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<td><strong>Externally Paced Skill</strong></td>
<td>Timing of movement is controlled by external sources.</td>
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<tr>
<td><strong>Skill</strong></td>
<td>A sequence of movements that are learnt through practice and have a definite outcome.</td>
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<td><strong>Feedback</strong></td>
<td>Information received from the performance of a skill.</td>
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<td><strong>Somatotype</strong></td>
<td>Body shapes, linear, round and square.</td>
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<td><strong>Fine Motor Skill</strong></td>
<td>A skill involving small precise movements using small muscle groups.</td>
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<td><strong>Speed Practice</strong></td>
<td>Practice that focuses on increasing the rate of execution.</td>
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<td><strong>Gross Motor Skill</strong></td>
<td>A skill involving large muscle groups and big movements.</td>
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<td><strong>Subroutine</strong></td>
<td>Parts of a skill.</td>
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<td><strong>Intrinsic Feedback</strong></td>
<td>Feedback received from kinaethesis.</td>
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<tr>
<td><strong>Whole Practice</strong></td>
<td>Practicing the skill in its entirety.</td>
</tr>
<tr>
<td><strong>Knowledge of Performance (KR)</strong></td>
<td>Information linked to the outcome of the skill.</td>
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</tbody>
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