

HEALTH & MOVEMENT

Stage 6

Smarter
Ed

Body and Mind

Filter by topic.

Skill acquisition and development

Branded with your
school emblem.

Stages of learning

Teacher: Smarter Maths

Customised with your name.

Exam Equivalent Time: 60 minutes (based on allocation of 1.5 minutes per mark)

Timed
worksheets.

Questions

1. HMS, BM EQ-Bank 58149 MC

The table below shows characteristics of different skill acquisition stages.

Focus	Error Recognition	Movement Efficiency
How to do the skill	Can identify errors	Moderately Efficient

Which stage of skill acquisition is being described?

- A. Cognitive stage
- B. Associative stage
- C. Autonomous stage
- D. Preparatory stage

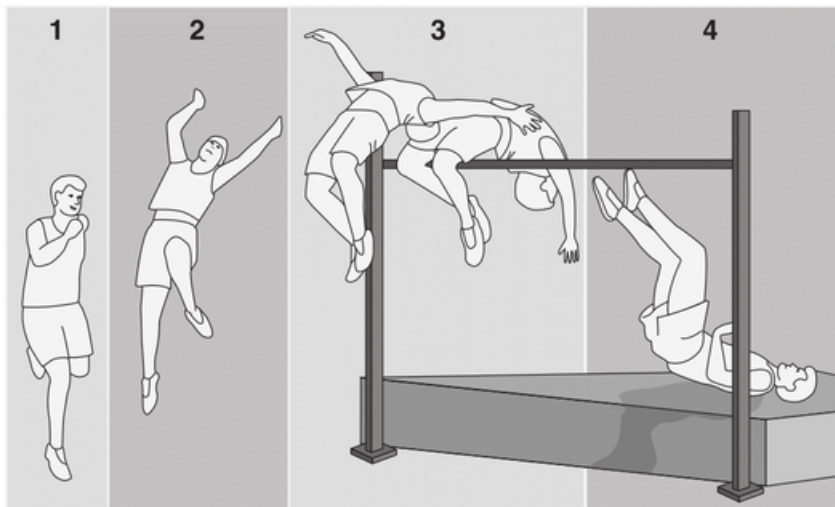
2. HMS, BM EQ-Bank 63489 MC

During a tennis match, a recreational player observes the scoreboard after each point. This represents:

- A. Knowledge of results
- B. Knowledge of performance
- C. Task-intrinsic feedback
- D. Concurrent feedback

3. HMS, BM 2024 HSC 5 MC

An athlete creates the following sequence of images in their mind as part of their training.



Which psychological strategy best describes the process being used by the athlete?

- A. Goal setting
 - B. Concentration
 - C. Mental rehearsal
 - D. Relaxation techniques
-

4. HMS, BM 2023 HSC 15 MC

Which of the following best describes an athlete who is a skilled performer?

- A. Displays high levels of confidence and natural ability in their chosen sport
 - B. Displays superior technique when executing discrete movements autonomously
 - C. Possesses inherited physical attributes essential for success in their chosen sport
 - D. Possesses instinctive awareness and the ability to adjust movements mid performance
-

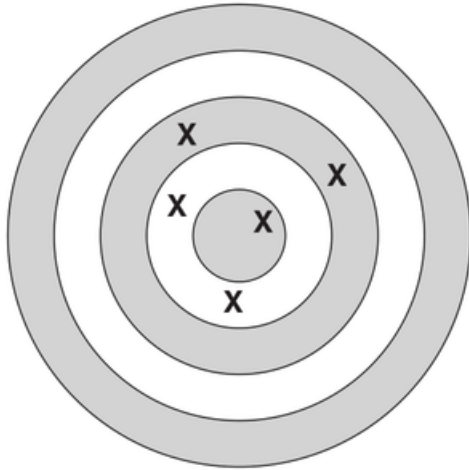
5. HMS, BM 2023 HSC 18 MC

Four Year 7 students on a school camp are participating in archery. Each student had five shots at the target. The centre of the target represents the best possible shot.

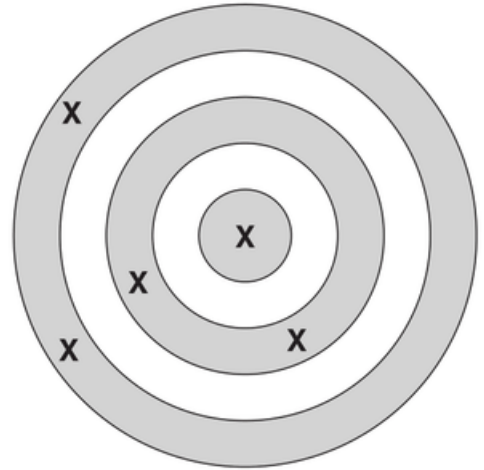
The location of each student's five shots are represented by X on the targets shown.

Which student is most likely to be at the associative stage of skill acquisition?

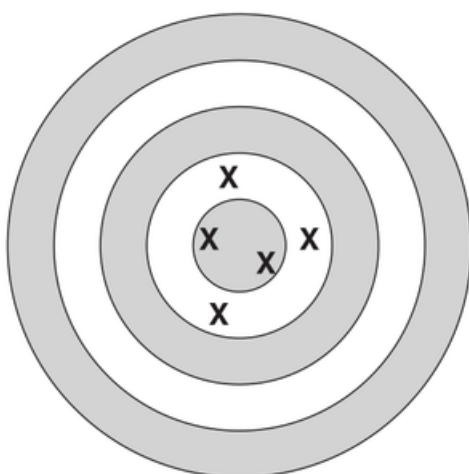
A.



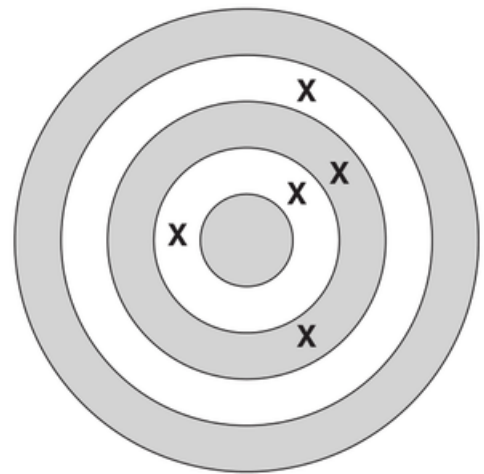
B.



C.



D.



6. HMS, BM 2024 HSC 7 MC

After training, an elite athlete watches a video recording of their gymnastics routine.

Which TWO types of feedback is the athlete receiving from the video?

- A. Internal feedback and concurrent feedback
- B. External feedback and concurrent feedback
- C. Internal feedback and knowledge of performance
- D. External feedback and knowledge of performance

7. HMS, BM EQ-Bank 58238 MC

A basketball player demonstrates the following behaviours during practice:

1. *Can shoot free throws without consciously thinking about technique*
2. *Consistently maintains proper shooting form even when fatigued*
3. *Simultaneously reads defensive positioning while dribbling*
4. *Automatically adjusts technique when shots are missing*

Which skill acquisition stage is the player demonstrating?

- A. Early cognitive stage
 - B. Late cognitive stage
 - C. Associative stage
 - D. Autonomous stage
-

8. HMS, BM EQ-Bank 63400 MC

An elite gymnast feels a slight imbalance during a handstand and automatically adjusts their weight distribution to maintain the position. This adjustment demonstrates:

- A. Augmented feedback
 - B. Knowledge of results
 - C. Delayed feedback
 - D. Task-intrinsic feedback
-

9. HMS, BM 2024 HSC 24

How can technique be used to appraise an athlete's performance? Provide an example to support your answer. (5 marks)

[illegible]

10. HMS, BM EQ-Bank 58772

Analyse how elite and recreational athletes might progress differently through the stages of skill acquisition when learning a complex movement skill. (8 marks)

[illegible]

11. HMS, BM EQ-Bank 59039

Discuss how the concept of information processing affects progression through the stages of skill acquisition. (6 marks)

[illegible]

12. HMS, BM EQ-Bank 59306

Explain how temporal patterning develops across the three stages of skill acquisition for a gymnast learning a complex floor routine. (5 marks)

This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

13. HMS, BM EQ-Bank 64023

Evaluate the effectiveness of different types of feedback for an elite athlete in the autonomous stage of learning who is attempting to refine a complex gymnastics routine. Justify your response with reference to specific feedback types. (8 marks)

This image shows a full page of primary-ruled paper. It features multiple sets of horizontal dashed lines spaced evenly down the page, providing a guide for handwriting practice. The background is white, and there are no margins or other markings present.

Worked Solutions

**Best practice
worked solutions.**



Worked Solutions

1. HMS, BM EQ-Bank 58149 MC

- B is correct: Focusing on “how to do the skill,” being able to identify errors, and moderately efficient movements are key characteristics of the associative stage.

Other Options:

- A is incorrect: The cognitive stage focuses on “what to do” with limited error recognition and inefficient movement.
- C is incorrect: The autonomous stage would show automatic movement execution with high efficiency.
- D is incorrect: “Preparatory stage” is not a recognised stage in the three-stage process of skill acquisition.

2. HMS, BM EQ-Bank 63489 MC

- A is correct: Knowledge of results provides information about the outcome of the skill execution (the point outcome) rather than the quality of technique used, which is what the scoreboard displays.

Other Options:

- B is incorrect: Knowledge of performance relates to technique quality rather than simply the outcome.
- C is incorrect: Task-intrinsic feedback comes from internal proprioceptive mechanisms, not external scoreboard information.
- D is incorrect: Concurrent feedback occurs simultaneously with performance, while scoreboard feedback is observed after each point is completed.

3. HMS, BM 2024 HSC 5 MC

- C is correct: The sequence of images shows the steps of performing a high jump, which the athlete is visualising in their mind as a form of mental rehearsal/visualisation/imagery.

Other Options:

- A is incorrect: Images show visualisation, not establishing performance targets.
 - B is incorrect: Concentration involves focusing attention, not mentally rehearsing a sequence.
 - D is incorrect: Relaxation involves tension reduction methods, not skill visualisation.
-

4. HMS, BM 2023 HSC 15 MC

- D is correct: Skilled performers demonstrate kinaesthetic awareness and can make automatic adjustments during performance.

Other Options:

- A is incorrect: Confidence and natural ability don't necessarily indicate skilled performance.
 - B is incorrect: Superior technique is important but adaptation is key to skilled performance.
 - C is incorrect: Physical attributes alone don't define skilled performance.
-

5. HMS, BM 2023 HSC 18 MC

- A is correct: The associative stage shows improved consistency (grouping of shots) but not perfect accuracy, indicating the learner is refining their technique.

Other Options:

- B is incorrect: Target B shows shots scattered widely across the target (cognitive stage – inconsistent and inaccurate).
 - C is incorrect: Target C shows shots clustered around the centre (late associative/early autonomous).
 - D is incorrect: Target D shows shots widely dispersed (cognitive stage).
-

6. HMS, BM 2024 HSC 7 MC

- D is correct: The video recording provides external feedback (comes from outside the athlete) and knowledge of performance (information about how the skill was performed, not just the result).

Other Options:

- A and C are incorrect: Video is external feedback, not internal.
 - B is incorrect: The feedback is delayed (after training), not concurrent.
-

7. HMS, BM EQ-Bank 58238 MC

- D is correct: Performing without conscious thought, maintaining technique under fatigue, attending to other cues (defensive positioning), and automatically making adjustments are all characteristics of the autonomous stage.

Other Options:

- A and B incorrect: Any cognitive stage would involve conscious focus on technique and inability to attend to other aspects simultaneously.
 - C is incorrect: The associative stage would still require conscious attention to technique execution rather than automatic adjustments.
-

8. HMS, BM EQ-Bank 63400 MC

- D is correct: Task-intrinsic feedback occurs through proprioceptive mechanisms (internal senses) during skill execution. This allows athletes to detect and correct errors.

Other Options:

- A is incorrect: Augmented feedback comes from external sources, not internal sensory information.
 - B is incorrect: Knowledge of results relates to the outcome of a skill, not the sensory information during execution.
 - C is incorrect: Delayed feedback occurs after execution, not during the skill as described in this scenario.
-

9. HMS, BM 2024 HSC 24

Keyword - "How": Not an official keyword. Explain the process, cause and effect. Make relationships between steps or ideas clear, and support your answer with evidence or examples.

Sample Answer

- A qualified sports biomechanist can appraise an athlete's performance quality. They use technique criteria and systematic observation to assess movement patterns.
 - For example, high jumpers' Fosbury Flop technique is evaluated based on specific elements that include:
 - curved approach speed,
 - appropriate lean on takeoff,
 - extended takeoff leg, horizontal to vertical conversion, and
 - efficient back arch over the bar.
 - These observations help coaches identify technical efficiency in movement. They provide a structured method to appraise the athlete's performance against established biomechanical principles.
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10. HMS, BM EQ-Bank 58772

Keyword - "Analyse": Identify components and the relationship between them, draw out and relate implications.

**Language that helps to highlight relationships and draw out implications is bolded throughout the answer below.*

Overview Statement

- Elite and recreational athletes progress through skill acquisition stages at different rates and depths.
- Key components include learning capacity, practice patterns, and transfer abilities that **interact** to create distinct pathways.

Learning Capacity and Transfer Relationship

- Superior information processing **enables** elite athletes to move through the cognitive stage rapidly.
- This capacity is **connected to** their ability to transfer existing skills to new movements. For example, elite gymnasts grasp new vaults after few demonstrations while recreational gymnasts need multiple sessions.
- **This reveals** that prior experience **accelerates** learning for elites.
- **Consequently**, elite athletes bypass basic coordination struggles that recreational athletes must overcome.

Practice Patterns and Stage Progression

- Deliberate daily practice **influences** how deeply athletes progress through stages.
- Elite swimmers who train 20+ hours weekly **progress through** to the autonomous stage much faster than recreational swimmers whose 2-3 casual sessions cannot achieve skill automation.
- **This pattern shows** elite athletes reaching unconscious competence while recreational athletes plateau at associative stage.
- **In this way**, practice quantity and quality **determine** final skill ceiling.

Implications and Synthesis

- These relationships **form** a compounding system where initial advantages multiply over time.
- Superior learning capacity **combines with** intensive practice to create exponential skill development.
- **This means that** the gap between elite and recreational athletes widens progressively.
- **The significance is** that early identification and development programs can maximise athletic potential.
- Understanding these differences **enables** coaches to set realistic expectations and tailor programs appropriately.

11. HMS, BM EQ-Bank 59039

Keyword - "Discuss": Identify issues and provide points for and/or against.

Sample Answer

- During the cognitive stage, learners use most of their mental capacity just to understand basic movements. This creates a bottleneck that stops them from noticing other things around them.
 - Working memory is limited in the cognitive stage. Learners need simple instructions and feedback. In the autonomous stage, athletes can handle complex tactical information while performing skills.
 - Attentional narrowing happens in the cognitive stage. Learners must focus only on their own movements. They cannot watch opponents or think about strategy at the same time.
 - Motor programs develop through repeated practice in the associative stage. This gradually reduces the mental effort needed for basic movements. More mental resources become available for decision making.
 - Chunking happens as learners reach the autonomous stage. Complex movement sequences become single units in the brain. They no longer think about separate parts of the movement.
 - Automatic processing occurs in the autonomous stage. Athletes can process multiple things at once like technique, opponent position, and strategy. This parallel processing is impossible in the cognitive stage where learners handle one thing at a time.
-

13. HMS, BM EQ-Bank 64023

Keyword - "Evaluate": Make a judgement based on criteria.

**Recommended evaluation language is highlighted in bold throughout the answer below.*

Evaluation Statement

- Different feedback types show **varying effectiveness** for elite autonomous gymnasts refining complex routines.
- This evaluation looks at how well feedback improves technique and whether it disrupts performance for autonomous gymnasts.

Feedback and improvement

- Task-intrinsic feedback is **highly effective** for elite gymnasts to detect precise errors.
- This is due to autonomous athletes possessing exceptional body awareness to feel minor deviations. For example, gymnasts instantly recognise when landing positions shift millimetres off-center.
- In this regard, delayed video analysis can achieve **superior** refinement by revealing imperceptible errors. Slow-motion replay identifies slight arm positioning flaws that feel correct during execution.
- **A critical strength** is combining internal sensing with objective external viewing.
- This **comprehensive** approach **optimises** technical refinement.

Performance disruption

- Concurrent feedback is only **partially effective** because it risks disrupting performance flow.
- Elite gymnasts can process brief real-time cues like "extend" during tumbling passes. However, excessive concurrent feedback interrupts automatic flow states.
- Performance feedback is **most effective** when it is **highly specific**. For example, discussing precise hip angles rather than general form is much better feedback for autonomous gymnasts.
- **While strong for** isolated corrections, concurrent feedback **shows limitations** during full routines. **Although effective for** single skills, **it proves less suitable for** complete performances.

Final Evaluation

- **Weighing these factors shows** task-intrinsic and delayed video feedback are **highly effective**.
- **The strengths** in precision refinement **outweigh** minimal disruption risks.
- Concurrent feedback remains **moderately effective** when used judiciously.
- Overall, **this evaluation demonstrates** autonomous gymnasts benefit most from self-generated and delayed feedback.
- **Implications suggest** coaches should prioritise video analysis while minimising real-time interruptions.