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MOTOR LEARNING AND COACHING

Dr Brendan Lay and Dr Peter Whipp



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Transfer of Learning

What is it and Why is it Important?

Transfer of learning is the gain (or loss) in proficiency in one skill as a result of practice on some other skill.

Understanding transfer of learning will assist with decisions about what to practice and how that will best improve performance.



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Transfer of Learning

Why Does Transfer of Learning Occur?

Previously learned skills that are very similar to new skills can be used to physically execute the new skill.

Skills that require similar cognitive processing transfer to other skills with similar needs.



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Transfer of Learning

Positive Transfer of Learning

Positive transfer of learning occurs when previous experience facilitates performance of a skill in a new context or the learning of a new skill.



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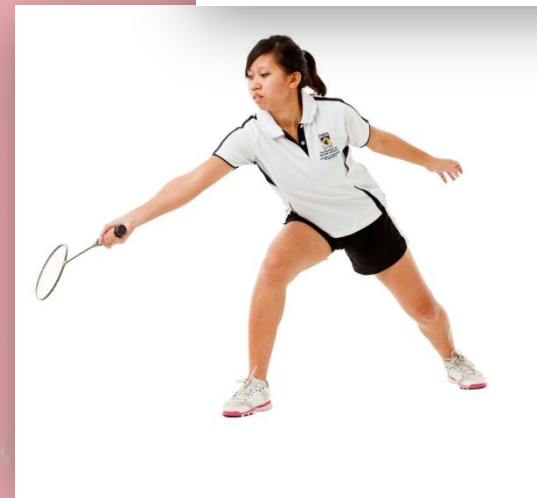


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Negative Transfer of Learning

Negative transfer of learning occurs when previous experience inhibits or negatively affects performance of a skill in a new context or the learning of a new skill.



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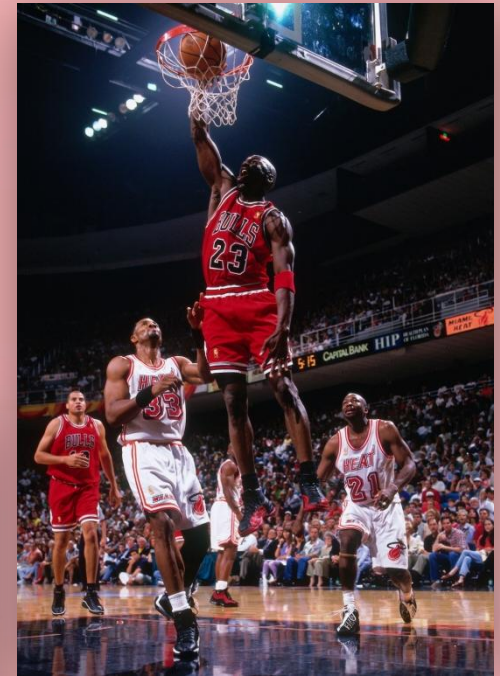


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Transfer of Learning

Zero Transfer of Learning

Zero transfer of learning occurs when previous experience has no influence on the performance of a skill in a new context or the learning of a new skill.



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Categories of Transfer of Learning

Skill-to-Skill

Skill-to-skill transfer of learning occurs when previous experience or practice of a skill impacts on the execution of the skill in a new context or performance of another skill.



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Categories of Transfer of Learning

Proactive Skill-to-Skill Transfer

Proactive transfer of learning occurs when skills practiced in the past have an effect on motor skills that you will learn in the future.



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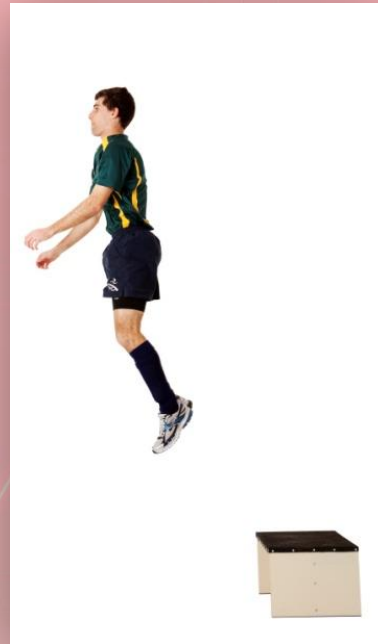


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Categories of Transfer of Learning

Retroactive Skill-to-Skill Transfer

When a skill that you have learned previously is altered by a new skill that you learn, that is retroactive transfer of learning.



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Categories of Transfer of Learning

Theory-to-Practice

Theory-to-practice transfer of learning refers to transferring knowledge of sport or skill into the actual performance.



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Categories of Transfer of Learning

Training-to-Competition



To increase the positive transfer between practice and competition, the practice should imitate the competitive situation, by incorporating into the training session:

- the aspects of the skill
- the context of the skill
- the perceptual stimuli (visual, proprioceptive and auditory cues)
- the time critical nature of making decisions and responding to those stimuli.

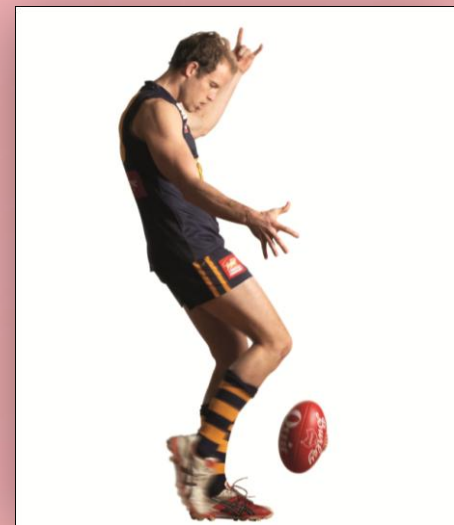
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Transfer of Learning

Exam style question



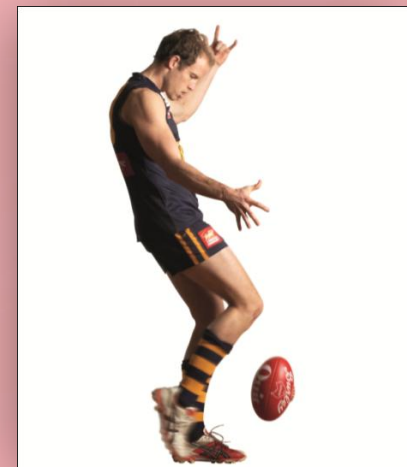
An AFL coach is deciding on the sequence of training activities. They are not sure if they should include time for the forwards to rehearse kicking for goal as part of the warm-up or after the aerobic and anaerobic fitness component of training. Using your understanding of training principles to enhance positive transfer of learning from practice to competition provide a rationale for choosing the time period after the fitness activities are completed.



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Transfer of Learning

Answer



An AFL coach is deciding on the sequence of training activities. They are not sure if they should include time for the forwards to rehearse kicking for goal as part of the warm-up or after the aerobic and anaerobic fitness component of training. Using your understanding of training principles to enhance positive transfer of learning from practice to competition provide a rationale for choosing the time period after the fitness activities are completed.

To enhance the positive transfer of learning it is important for training to replicate the context with which the skill is performed in competition. In the case of AFL, rehearsing a kick for goal whilst experiencing some level of fatigue accumulated during the fitness activities, serves to more accurately replicate the game context.

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Analyse Movement Skills of Self and Others

Considering the Type of Movement Analysis

- The aim or purpose of the analysis.
- The need to assess the product (what the outcome is) or the process (how the action is performed) of the motor skill.
- Skill level of performers/athletes.
- Environment that the analysis will be performed in.

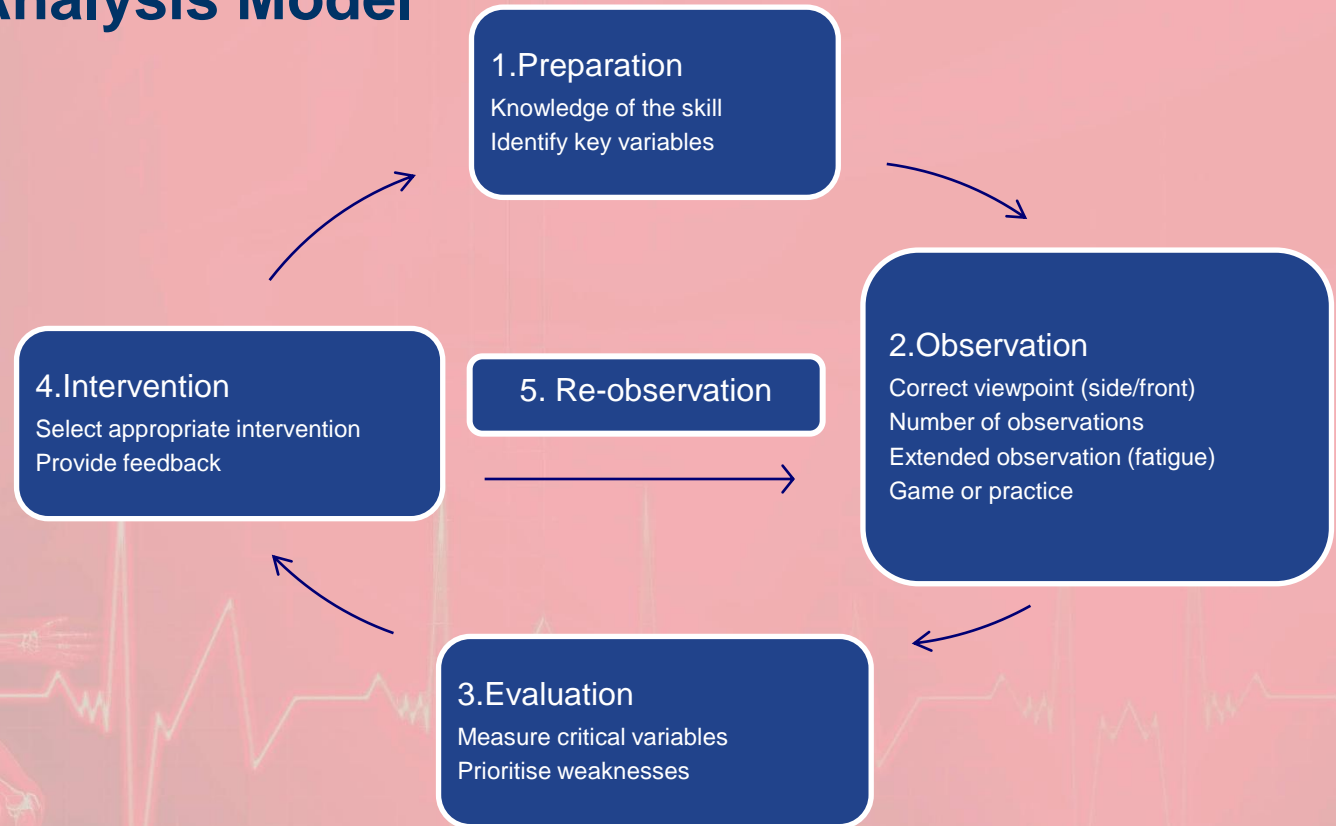


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Analyse Movement Skills of Self and Others

The Motion Analysis Model





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Analyse Movement Skills of Self and Others

Movement Analysis to Identify Errors

The primary aim of analysis is to identify errors that may be limiting performance or injury prevention and is undertaken during the 'evaluation (or diagnosis) phase of motion analysis'.



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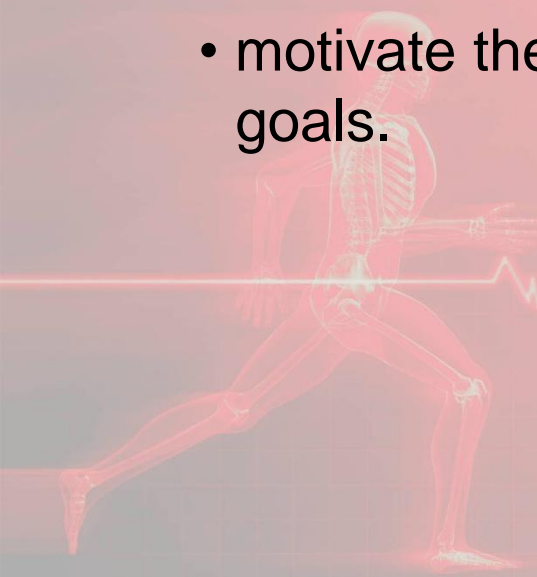
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Analyse Movement Skills of Self and Others

Movement Analysis to Provide Feedback

Feedback has three main purposes:

- provide information about performance
- reinforce aspects of the movement just performed
- motivate the athlete to continue to strive towards their goals.



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Analyse Movement Skills of Self and Others

Movement Analysis to Provide Feedback

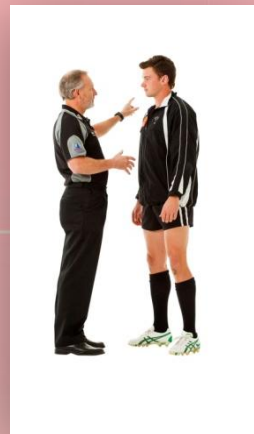
Augmented feedback is extra information given about the performance of a skill that is not inherent to the performing task through the performer's senses.

Augmented feedback can be provided as:

visual



verbal



written



kinaesthetic.





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Analyse Movement Skills of Self and Others

Movement Analysis to Provide Feedback

When learners are able, augmented feedback should not be presented continuously nor immediately after performance. Learners should be encouraged to self-evaluate using inherent feedback.

Descriptive augmented feedback identifies the errors, while *prescriptive* augmented feedback identifies the errors and a means to correct them.

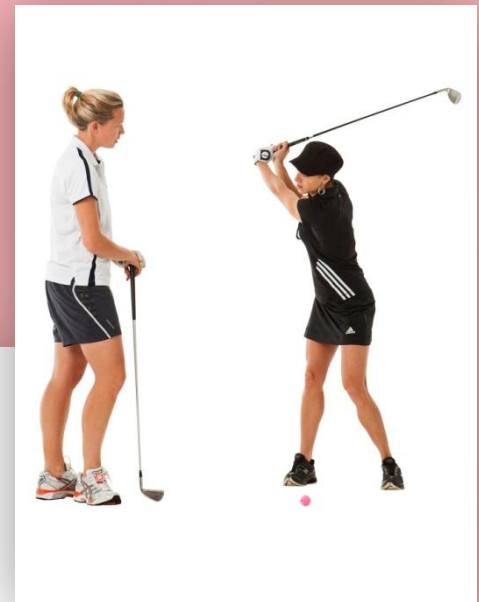


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Analyse Movement Skills of Self and Others

Movement Analysis to Suggest Corrections to Improve Performance

Visual cues used to improve performance include demonstrations, visual aids, and enhancement of the visual environment.



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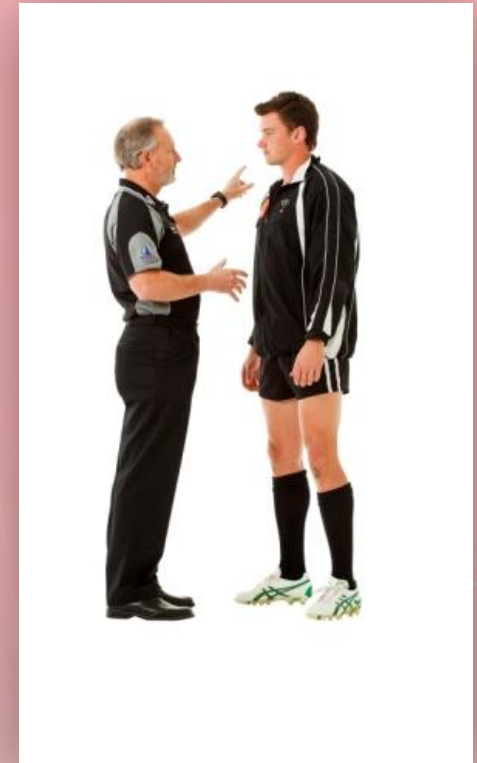


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Analyse Movement Skills of Self and Others

Movement Analysis to Suggest Corrections to Improve Performance

A verbal cue is a concise phrase that directs attention to the most important feature(s) in the environment, or prompts performers to attend to key components of the skill.



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Analyse Movement Skills of Self and Others

Movement Analysis to Suggest Corrections to Improve Performance

Proprioceptive feedback refers to internal sensory information that informs us about our own joints, muscles and the orientation of our bodies in space (kinaesthesia).



It often involves the coach physically moving the athlete through the required action to enhance their understanding of what a successful performance feels like.

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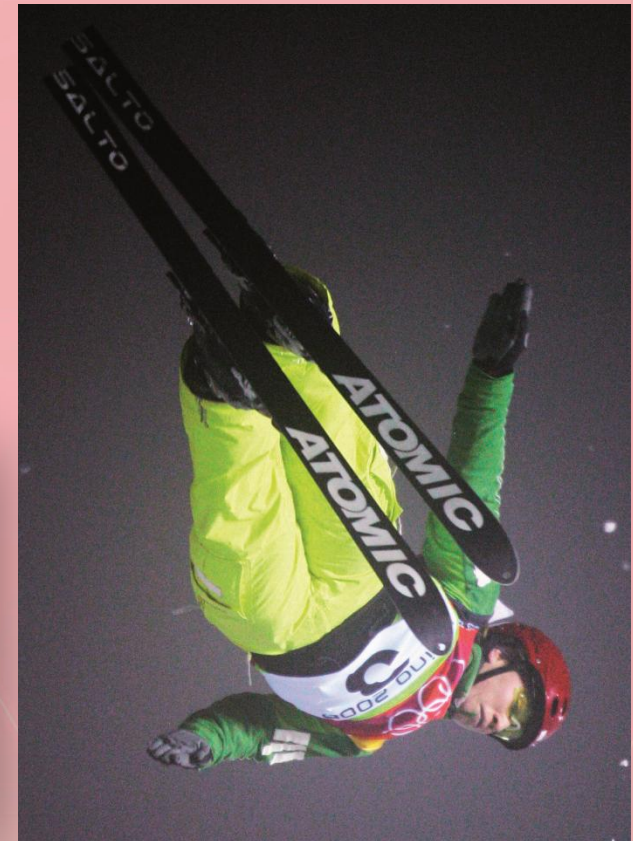
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Improving Performance in Selected Skills

Complex and Simple Skills

Complex skills have a large number of components and demand a lot of attentional resources.

A *simple skill* has few components and low demand on attention.



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Improving Performance in Selected Skills

Simplifying Complex Motor Skills

Method of Simplification	Skill Acquisition Example
Reduce object difficulty	Using silk scarves for juggling Using a foam bat and ball for baseball or cricket
Reduce attention demands	Decrease the number of opponents in a drill Reduce the number of options or cognitive processing
Reduce speed	Slow down speed of tennis serve, emphasise accuracy
Add auditory cues	Using a metronome to learn a piece of music
Sequencing skill progressions	Chaining and shaping skills (see further in this section)
Simulators or virtual reality	For driver and pilot training



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Improving Performance

Exam style question

Using your understanding of the strategies that can simplify a complex skill, explain how someone learning to hit a softball may benefit from practising in the sequence represented by the following images.



2



3

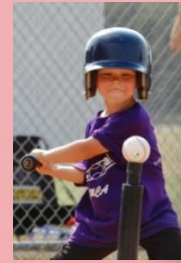




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Improving Performance

Answer



Using your understanding of the strategies that can simplify a complex skill, explain how someone learning to hit a softball may benefit from practising in the sequence represented by the following images.

Sitting the ball on the T in the first task (eliminating the ball motion) and using a bigger ball and lighter bat in the second learning task (reducing the difficulty of the objects used, and reducing the speed of the task) – all serve to reduce the attention demands when compared to hitting a pitched ball. By simplifying the task, the teacher enhances the opportunity to focus on the important cues for learning.



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Improving Performance in Selected skills

Shaping a Skill

Shaping is when simplified or incomplete versions of a skill are rehearsed initially and then missing components are gradually added.



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Improving Performance in Selected Skills

Chaining a Skill

Chaining is when the skill is broken down into components that are rehearsed separately, as if they were isolated skills. Over time, the components of the skill are then put together to perform the whole skill.

- *Forward chaining* – skill components are rehearsed in the order that the whole skill is performed.
- *Backward chaining* – last component is practised first and the whole skill is built by working backwards.



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Improving Performance in Selected Skills

The Decision to Break Down a Motor Skill

Whole practice involves practicing the entire motor skill. Used for skills that are low in complexity and high in organisation.

Part practice involves breaking the skill down into parts that can be rehearsed separately. Used for skills that are high in complexity and low in organisation.



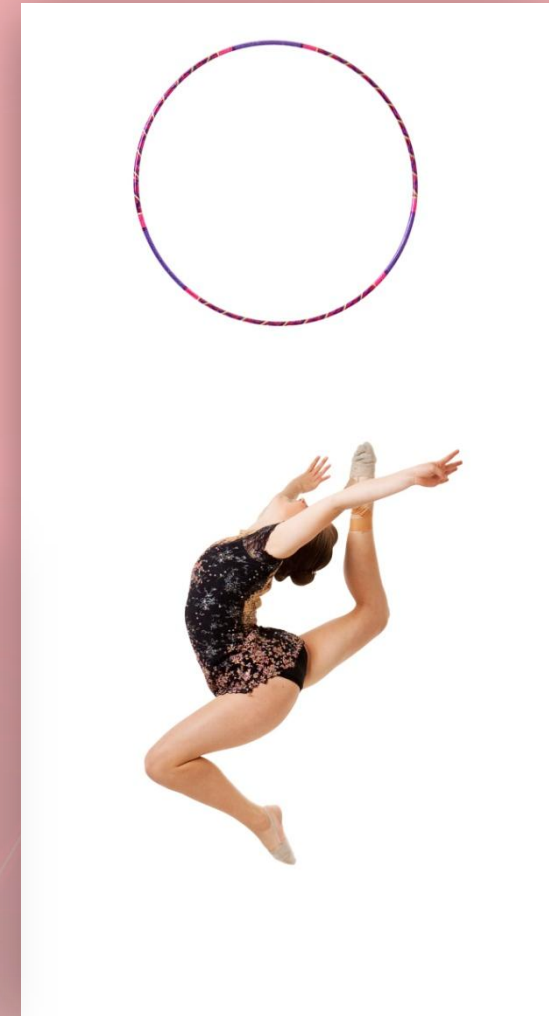
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Improving Performance in Selected Skills

Static and Dynamic Drills

Static drill – the athlete will stay on the same spot and perform the skill. They reduce the attention demands.

Dynamic drill – performed while the athlete is in some form of locomotion.





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Improving Performance in Selected Skills

Exam style question

Using the example of learning a spike in volleyball, explain and justify your choice to teach this skill with the whole or part method with chaining.



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Improving Performance in Selected Skills

Exam style question

Using the example of learning a spike in volleyball, explain and justify your choice to teach this skill with the whole or part method with chaining.



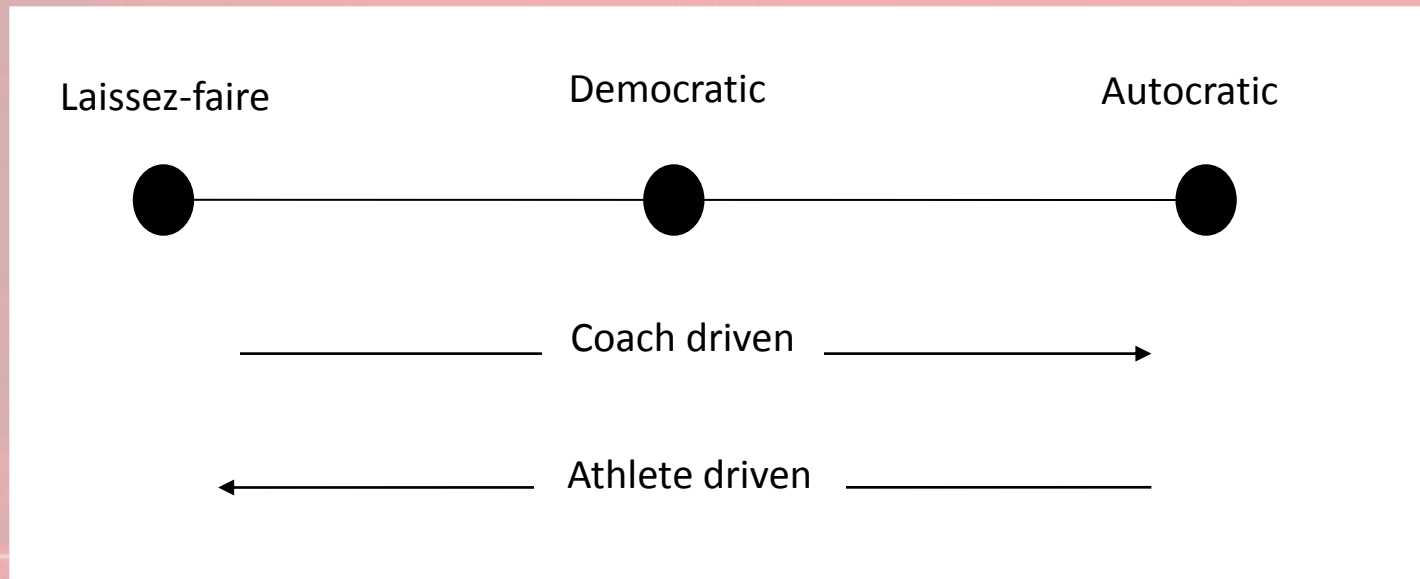
The volleyball spike is a skill that is high in complexity and low in organisation. The spike can also be easily broken into and taught as separate components, such as the approach and take-off, the preparation to hit, the hit, the hit and landing. Therefore, it should be taught using the part method and with chaining.



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Leadership Styles

Using Different Leadership Styles to Suit Audience Needs





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Leadership Styles

Using Different Leadership Styles to Suit Audience Needs

An autocratic leader makes the decisions

Suits athletes who:

- need support and answers
- value extrinsic motivation
- value extrinsic setting of benchmarks and are goal driven.



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Leadership Styles

Using Different Leadership Styles to Suit Audience Needs

A democratic leader consults, asking the group to be a part of any decision-making process.

Suits athletes who:

- have their own answers
- are intrinsically motivated
- want to contribute.





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Leadership Styles

Using Different Leadership Styles to Suit Audience Needs

Laissez-faire describes a leadership style where the teacher or coach will 'let people do as they choose'.

Suits athletes who:

- want to focus on participation, socialisation and enjoyment
- are intrinsically motivated
- determine self-defined standards of performance
- are experienced or Masters level.



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Leadership Styles

Exam style question

Justify a leadership style that a coach might employ to best suit the needs of one of the world's most successful tennis players - Roger Federer.



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Leadership Styles

Answer



Justify a leadership style that a coach might employ to best suit the needs of one of the world's most successful tennis players - Roger Federer.

A democratic style of leadership, which is characterised by a process of consultation between the coach and Federer. This approach would serve to empower the athlete and potentially provides them with a sense of control over their current and future career. This style respects and would allow benefits from Federer's extensive experience, expert knowledge and motivation.



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Technique Evaluation and Performance Analysis

Using Checklists and Videos to Evaluate Movement Technique

Checklists and video provide a mechanism for feedback as part of the important ongoing process of performance evaluation and error correction.

Checklists are a record of performance in relation to a set of predetermined criteria.



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Technique Evaluation and Performance Analysis

Using Checklists and Videos to Evaluate Movement Technique

Coaches use checklists and videos to:

- supplement visual, verbal and written feedback
- improve the quality of performance analyses
- provide a more objective review
- de-personalise feedback.



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Technique Evaluation and Performance Analysis

Using Checklists and Videos to Evaluate Movement Technique

Athletes use checklists and videos to:

- improve understanding
- be more involved in correcting their own performance
- determine the impact of mental or physical performance
- engage in reflective learning.



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Technique Evaluation and Performance Analysis

Using Checklists and Video to Analyse Mental versus Physical Performance

The performance impact of mental functioning can be assessed by:

- comparisons with performance successes and errors
- quality and consistency recorded in checklists
- by video from training and past performances.



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Technique Evaluation and Performance Analysis

Using Checklists and Video to Analyse Mental versus Physical Performance

Also, athletes can undertake self-reflection using checklists and video.

Use the checklists and video to evaluate performance through discussion with the coach.





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Technique Evaluation and Performance Analysis

Using Checklists and Video for Error Correction

Obtaining feedback about errors in motor skill is the best way to improve performance.



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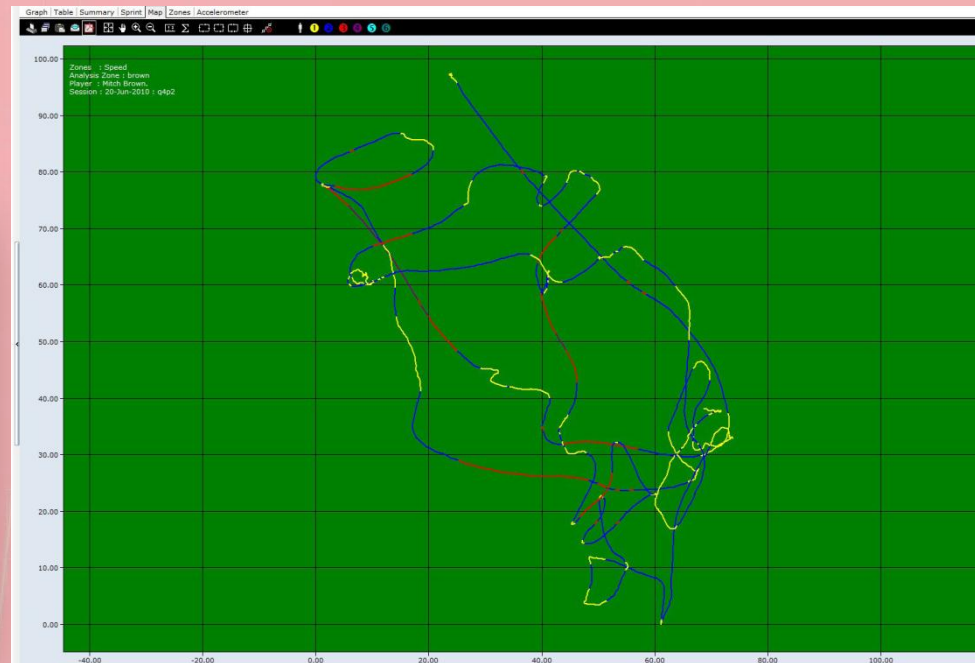


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Technique Evaluation and Performance Analysis

Performance and Notational Analysis

Observations made by coaches during the game are limited to what they see and remember. They can be biased by their own motives and beliefs.



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Technique Evaluation and Performance Analysis

Performance and Notational Analysis

A notational analysis of performance using checklists, live observation and video is an analysis of data for players:

- analysis of success or failure of skills performed
- tactical evaluation and patterns of play
- player movements on the field.



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Analysis of Learning for Improved Performance

Analyse Learning and Skill Development

Learning is the change in the capability to perform a skill that is derived from a relatively permanent improvement in performance as a result of practice or experience.

Performance is an observable behaviour at a specific time and location.

To analyse learning and skill development, focus on assessing a number of performances over a period of time.

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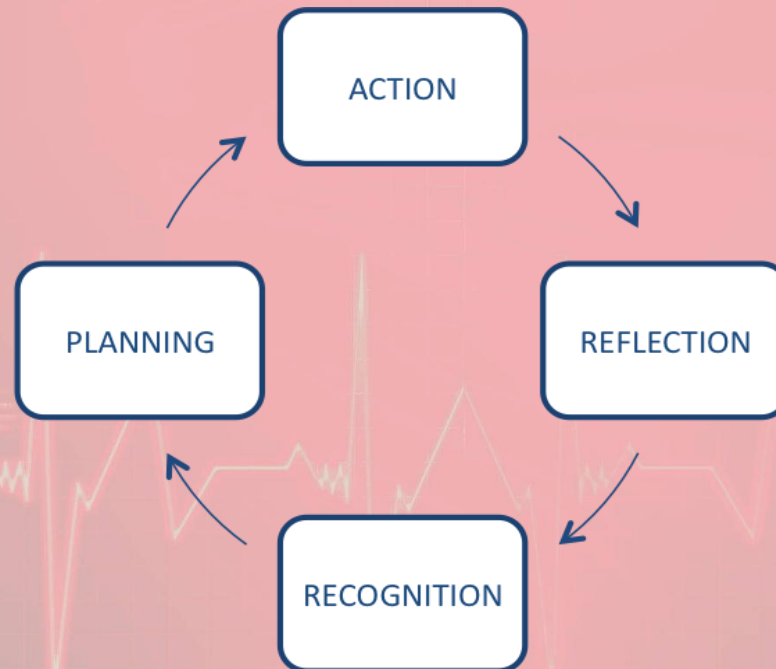


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Analysis of Learning for Improved Performance

Reflective Learning

Reflective learning sees the athlete actively involved in gaining and examining feedback to improve performance.



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Analysis of Learning for Improved Performance

Reflective Learning

Athletes make comparisons between the goals that have been set previously and what is actually occurring, planning for improvement and also monitoring improvement, by considering:

- what and how they are learning
- strengths and challenges
- how to improve
- working towards goals.



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Analysis of Learning for Improved Performance

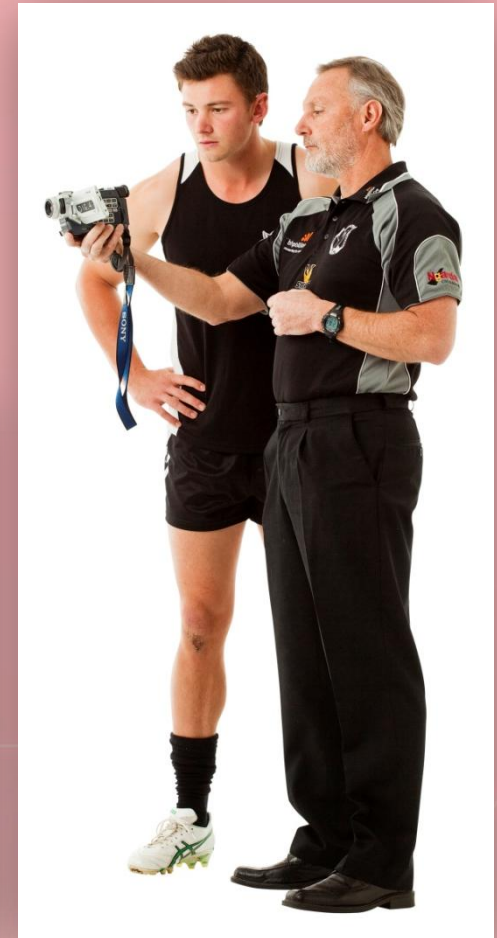
Methods of Reflection

Video analysis

Reflective journals

Peer/mentor/coach feedback

Questionnaires



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Analysis of Learning for Improved Performance

Exam style question

An athlete is seeking answers from the coach to assist future learning, but the coach said they would be a better athlete in the long term if they firstly try reflective learning strategies to sort it out for themselves. Justify the position taken by the coach and identify two self-reflective methods an athlete could use.



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Analysis of Learning for Improved Performance

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Sometimes learners become dependent on the augmented feedback from the coach and will not utilise task-intrinsic feedback or reflective learning to improve. For augmented feedback to be most effective, it is important to allow learners to problem solve for themselves and to utilise task-intrinsic error detection and self-reflective methods.

Two self-reflective methods include (a) peer/mentor feedback and (b) video analysis.



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