

# Movement skills

## U3 AOS 1

**Motor skills** → any activity involved in moving the body to achieve a specific goal

Motor skills can be classified according to precision of movement and the corresponding size of musculature required:

- **Gross motor skills** → skills involve recruiting large muscle groups, and place less emphasis on precision (e.g. running, swimming, high jump etc.)
- **Fine motor skills** → skills involve recruiting smaller muscles for precision movements (e.g. finger/hand movement in darts)

Motor skills can be classified according to the type of movement:

- **Continuous motor skills** → have no definite beginning or end with continuous movement (e.g. swimming, running, rowing, cycling)
- **Discrete motor skills** → have a clear beginning and end (e.g. netball pass, footy kick)
  - Has a clear/defined beginning and end
  - Is not performed continuously
  - Have to explicitly say what the start and finish of the skill is (e.g. basketball free throw → *start* = setting up at the line, *finish* = ball leaves hand)
- **Serial motor skill** → several discrete skills are performed in a sequence (e.g. gymnastics floor routine, triple jump)

Motor skills can be classified according to the extent to which they are influenced by environmental factors:

- **Open motor skills** → performed in a less predictable environment where the conditions are constantly changing, and the performer has limited control over their environment (e.g. surfing) – usually outdoor or team sports
  - *Environmental unpredictability* (e.g. wind, weather, crowd etc.)
  - *Externally paced* (etc. defenders, teammates etc.)
  - *Inter-trial variability* (each game/situation is different)
- **Closed motor skills** → performed in surroundings where the performer has the greatest control over the performance environment (e.g. indoor, individual diving routine)
  - Predictable/controlled environment (e.g. floor/pitch size, time, indoor etc.)
  - Internally paced
  - Limited inter-trial variability (performing the same every time)

e.g. basketball free throw:

- performed **indoors** (therefore factors of weather, wind etc. do not affect skill performance – predictable environment)
- **playing surface** (court remains constant and therefore does not affect skill execution)
- **internally paced** (player can throw the ball whenever they want)
- **limited inter-trial variability** (every attempt is quite consistent – less variability with success of throw)

Skills can be both open and closed within 1 sport:  
e.g. netball

*Closed drills/skills:*

- Passing to a standing player
- Shooting repeatedly without defenders
- Passing a ball against a wall

*Open drills/skills:*

- Running to receive a ball
- Passing to a running player
- Passing around defenders
- Shooting a goal with a defender

**Fundamental motor skills** → foundation skills that provide the basis for developing sport-specific motor skills

- Most skills used in sports are advanced versions of fundamental motor skills
  - o Pitching in softball
  - o Tennis serves
  - o Javelin throw
 (all advanced forms of the overhand throw)

*Classification of fundamental motor skills:*

- **Stability skills** → involving balance and control of the body (e.g. standing on 1 leg)
- **Locomotor skills** → enable us to move through space (e.g. walking/running)
- **Manipulative skills** → involving the control of an object (e.g. kicking, catching, throwing)

| Classification of fundamental motor skills | Description   | Examples   |
|--|---|--|
| <b>Stability skills</b>                    | Involve balance and control of the body in stillness and in motion  | <ul style="list-style-type: none"> <li>• Static Balance</li> <li>• Dynamic balancing</li> <li>• Balancing on a log/beam</li> <li>• Rolling</li> <li>• Stopping</li> <li>• Landing</li> <li>• Stretching</li> <li>• Twisting and turning</li> <li>• Bending and swaying</li> <li>• Swinging and climbing</li> </ul> |
| <b>Locomotor skills</b>                    | Enable us to move through space, allowing us to transport our bodies in any direction from one point to another | <ul style="list-style-type: none"> <li>• Walking</li> <li>• Running</li> <li>• Hopping</li> <li>• Jogging</li> <li>• Skipping</li> <li>• Leaping</li> <li>• Galloping</li> </ul>   |

|                            |  |   |
|----------------------------|--|---|
|                            |  | <ul style="list-style-type: none"> <li>• Jumping</li> <li>• Dodging</li> <li>• Sliding</li> <li>• Side Stepping</li> </ul>  |
| <b>Manipulative skills</b> | Involving controlling objects (eg balls) or implements (bats, racquets or hoops) either with hands or feet | <ul style="list-style-type: none"> <li>• Throwing (underhand, overhand, chest pass)</li> <li>• Catching</li> <li>• Kicking (kick/punt)</li> <li>• Forehand strike</li> <li>• Two-hand Strike</li> <li>• Dribbling (hand or foot)</li> </ul> |

Stages of motor skill learning (**not** a whole sport – only a skill)

**1. Cognitive stage** → mentally comprehending the movement requirements of the motor skill

- Attention is on movement production
- Performance will be often unsuccessful (large number of errors)
- Movement is often inconsistent, jerky, stiff and unrefined
- Lack of error detection and correction abilities
- Lack confidence
- Rapid improvement

**2. Associative stage** → beginning to refine technique and movement pattern

- **More consistent** and make fewer errors
- Can detect the cause of **some errors** and identify strategies to eliminate them
- More attention can be directed to **external** stimuli (able to train in higher levels of variability)
- Beginning to **refine technique**
- Slow progress
- E.g. practice stage

**3. Autonomous stage** → the skill is mostly automatic

- Errors can be detected and corrected
- Performance variables are small
- Focus is directed to strategy and tactics

*3 main points to make* (in order to justify which stage of learning they are in):

- Detection of **errors**
- **Success** of movement
- **Focus** (e.g. producing the movement or strategy/tactics)

Factors in choosing practise methods

**1. Part and whole practise** → practising a skill in full or in parts

- All motor skills can be broken into subcomponents (e.g. *tennis serve* – grip, stance, back swing, ball toss, forward swing, follow through)
- The complex task can be overwhelming for beginners so it can be broken into segments

- Motivational levels may increase if the beginner is able to achieve quick success with smaller segments of the task
- Task complexity and task organisation are considered when deciding whether to practise a skill in parts or as a whole
  - Task complexity = part practise may be appropriate for motor skills that have several segments (e.g. tennis serve)
  - Task organisation = how dependant each segment is on the previous segment (e.g. a cartwheel must be practise in whole)
  - ↓ Task complexity + ↑ task organisation = **whole** practise
  - ↑ Task complexity + ↓ task organisation = **part** practise

(In an exam question – *must* include justification = task complexity/organisation + definition of each)

## 2. **Amount** → amount of time spent practising a skill

- Amount of practise is a critical learning variable
- In early cognitive stages, changes in performance can be significantly increase relative to amount of practice
- Maximising practice sessions ('time on task') can ensure maximum gains due to the positive relationship between practice time and improvement

## 3. **Practice distribution** → scheduling of weekly practice sessions, depending on the availability of the participants, venue, coaches etc.

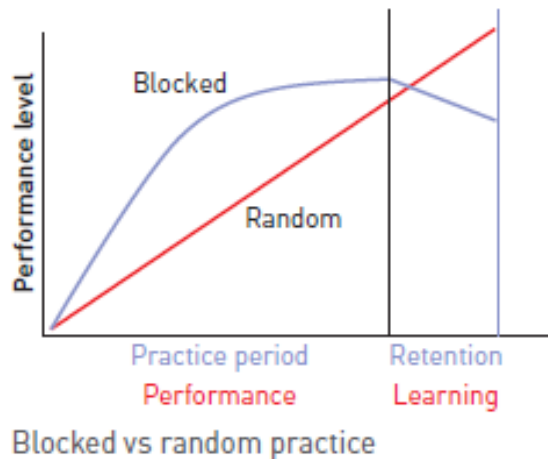
- *Distributed practise* = short but frequent training sessions. More time is given for rest between tasks within the training session, creating a better learning environment. More opportunities to practise a skill. Prevents mental and physical fatigue (best for cognitive learners and professional athletes e.g. weights session in the morning, skills session in the afternoon)
- *Massed practise* = less frequent training sessions that last for a longer period of time. Rest intervals between tasks are reduced, which is better for people with higher fitness levels. Requires more concentration and motivation. (e.g. club training) → can refer to a weekly schedule of grouping of a task during a session (better for associative/autonomous learners)

- Massed practise **maximises practise time**. This allows a player to practise a particular skill under **physical and psychological fatigue**

## 4. **Variability** → the order in which skills are practised

- *Blocked practise* = practising the same skill continuously without changing to a different skill. Appropriate for beginners who are trying to understand and reproduce the movement
- *Random practise* = the varied sequencing of different motor skills in the same training session. Suitable for performers in the associative and autonomous stages as it replicates a game-like situation:
  - Skills are practised in a random order
  - Multiple skills are practised in 1 training session
  - Focus is on decision making and tactics
  - Improves consistency of performance in competition due to its replication of game-like variability
  - Enables active learning

- Best for associative/autonomous learners. As the skill is becoming refined and is becoming more automatic, random practice best prepares an athlete for game situations as they need to improve their decision-making skills when they cannot prepare to execute a particular skill



- *Random practise* is more optimal for **retention**, as the player can learn in a more realistic environment, so are better able to retain and reproduce the skills they learn whilst in this higher-pressure environment

### Feedback

**Feedback** → the information a performer receives about the outcome of a task

- A critical part of skill development
- Can be intrinsic (internal) or augmented (external)

**Intrinsic/internal feedback** → when performers use their own senses including visual, auditory, proprioception (movement in the air) and touch

- *Proprioception* = how the body feels/its positioning in the air
- *Auditory* = sense of sound to assess performance based on what certain skills are supposed to sound like
- *Visual* = sense of sight to assess performance – (e.g. seeing your body/seeing where the ball goes/seeing other players/seeing the environment)
- *Touch* = sense of touch/feel to assess performance

**Augmented/external feedback** → feedback from a coach occurring during (**concurrent feedback**) or after (**terminal feedback**) a performance

- Can greatly enhance a performer's own internal feedback system
  - *Knowledge of results* = specific feedback about the outcome of the task (don't repeat 'results' of performance) (e.g. coach telling the athlete that they ran a 10 second 100m sprint)
  - *Knowledge of performance* = feedback concerns the characteristics of performing a task (e.g. coach telling the athlete of their elbow angle in a throw)

**Diminishing returns** → the longer a performer practises, the slower their progress (performance rate decreases as a performer becomes more advanced)