



Transfer of learning

Andy Wrathall looks at the theory and practical implications of transfer of learning.

At every stage of life you have been learning and acquiring skills, from walking as a baby to driving a car as a teenager. The acquisition of skills is based on previous experience and will form the basis of further skill development. Basically, a skill you have previously learned is being transferred or adapted to a new skill.

Transfer of learning is the effect that the learning or performance of one skill has on the learning or performance of another. It can have positive or negative results. Transfer occurs when you learn a new skill or when you return to skills already known after learning a new one. If a coach can apply the technique correctly

they can decrease learning time, thus maximising the use of the time available, develop relevant conditioned practices associated with the full competitive version of the sport and identify areas that may hinder learning.

Types of transfer

There are eight types of transfer.

Positive transfer

This occurs when the learning of a new skill is aided by the knowledge of how to perform a previously learned skill. Common examples would be transferring the overarm throwing technique



Techniques learned in tennis can be used in other sports, such as volleyball

to throwing a javelin or transferring the overarm tennis serve to the overarm volleyball serve. In order for positive transfer to occur there has to be some similarity between the techniques for the two skills. The transfer can be enhanced if the coach highlights the similarities between the two skills.

Negative transfer

This is the opposite of positive transfer and occurs when the effect of a previously learned skill hinders the learning of another. It tends to occur when skills appear similar in technique but may contain some essential, often subtle, differences. A classic example is the difference between throwing a javelin and a cricket ball. Essentially they appear to have the

same throwing action but a javelin is thrown over the shoulder while a cricket ball is often thrown at a lower trajectory and so requires more movement at the elbow. It is unlikely for the effects of negative transfer to last for a prolonged period of time as the human body is able to adapt quickly to the differences in technique.

Negative transfer is also apparent if the practices undertaken do not require the same response as the competitive situation. Examples of this are continually practising for invasion sports (e.g. rugby, hockey) without any opposition or swimmers focusing on land drills and not spending enough time in the water.

There can also be short-term negative transfer when a skill is moved into a new situation, such as changing from an

outdoor version to an indoor version of a game (e.g. hockey) or altering the tactics required for the sport. A classic example is the difference between 15-a-side and seven-a-side rugby. In the former there is a lot of physical contact but to be successful at the latter requires the team to try and avoid contact. Players often find the transition between the two difficult at first but quickly adapt to the different requirements. Short-term negative transfer can also occur within a match when there is a change of tactics (e.g. switching from man-to-man to zone defence in basketball).

Proactive transfer

This is the process of taking a previously learned skill and using it so that it has an effect on a later skill. It forms the basis of



Negative transfer can be seen in the differences between cricket and the javelin



Training for invasion sports with no opposition can have a negative effect, and swimmers need to spend enough time in the pool rather than just focusing on land drills



If you play both tennis and badminton you need to be aware of the differences in technique between the sports

skill improvement practices as the coach aims to develop new skills from already established ones. An example would be using the basic passing technique in football to progress to a 40 m aerial pass or developing the basic forehand or backhand ground strokes in tennis into more advanced shots, such as top spin or slice.

Retroactive transfer

This is the opposite of proactive and takes place when the current learning of a skill is having an effect on a skill that has already been learned. For example, a tennis player who plays badminton in the winter to stay fit may not be able to generate the power needed to hit the shuttlecock effectively

as they are used to playing with a firm wrist in tennis rather than the flexible one required for badminton.

Bilateral transfer

This occurs when skills are transferred from one side of the body to the other, from limb to limb. Often the kinaesthetic awareness from the dominant limb can improve performance when applied to the non-dominant limb. This enables the performer to develop a wider range of skills that can be applied to a larger variety of situations. Examples are a basketball player attempting to lay up with their left hand after perfecting it with the right or a footballer kicking with the non-dominant foot. If a player can use both limbs equally

well they will have a distinct advantage over those who cannot.

Near transfer

This is when a coach uses a realistic approach by practising in situations as close to the real game as possible. An obvious example is playing small sided games or attack vs defence in invasion sports, which highlight different aspects of the game for the players to focus on. These can then be transferred into the full competitive version of the sport.

Far transfer

This is when an unrealistic approach is used, often with beginners. It aims to emphasise a particular skill or technique

but is not closely related to what actually happens within the sport. Examples are a hockey coach using cones to dribble round to improve stick control or a rugby coach using tackle bags instead of real opponents to improve tackle technique. Both do not relate to what the player will encounter within the game but they enable the practice to focus on certain technical aspects required for the sport.

Zero transfer

This is when the previous learning of one skill has no impact whatsoever on the learning of a new skill. It happens when the two skills have no similarities, when the situations are dissimilar or when the cognitive processes required are different, e.g. swimming and golf.

Use in coaching

The key to being a good coach is to ensure that positive transfer occurs within the practices so that the players develop their skills from what they have previously

learned. There are a number of techniques that a coach can use to promote positive transfer. These are:

- Make practices realistic by using game-related situations and real opposition. This links with Thorndike's identical elements theory, which states that the more similar the components of practice are to a real game, the more likely it is that positive transfer will occur.
- Learn activities requiring similar skills, such as combining passing and catching drills so that the coordination of the players improves.
- Move from basic to complex skills so that the player experiences positive reinforcement of their ability by being successful, which in turn will encourage positive transfer. The performers will become more confident in their own ability and will be more willing to attempt more complicated skills. If a coach starts with more complex skills the players may become demotivated due to a lack of success and this will hinder positive transfer.

Further reading

Atherton, C. et al. (2008) *AS AQA Physical Education Textbook*, Philip Allan Updates.
Atherton C. (2009) *Physical Education: Skills Acquisition & Sports Psychology Resource Pack* (2nd edn), Hodder Education.

- Identify when transfer can be used and as a coach ensure that you give praise and positive reinforcement so that the players are motivated to learn and develop new skills.

To conclude, transfer of learning is vital to skill acquisition and development. If a coach is aware of the different types of transfer then they can ensure that their practices are purposeful and maximise the use of the available time. This in turn will enable the performers to develop faster and become more advanced at the sport they are competing in.

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