

Learning by strengthening the stimulus–response bond

Carl Atherton looks at how coaches use the early work of Skinner to promote learning.

One way for the coach to teach skills in sport is to use a manipulative approach during practice to ensure that the performer is able to link a stimulus to the appropriate response. The pioneering research into this tactic was carried out by Skinner, who studied rats in captivity. He

noticed that when a rat accidentally made contact with a lever which presented it with food, it quickly learned to hit the lever to obtain its reward.

Skinner's work showed that we can learn by trial and error. Simply having a go will help us to get it right next time — if our response was correct, we will be

motivated to repeat it; if our response was incorrect, we may be motivated to change it. A tennis player who hits the first serve into the net will lift the ball a little higher on the second serve.

Sports coaches can accelerate the trial-and-error learning process using two strategies:

- making the *adoption* of the correct response stronger
 - making the *neglect* of the incorrect response stronger
- Students studying this topic often forget that the tactics used to demote the significance of the incorrect response are just as important as the promotion of the correct response. Here



Positive reinforcement includes giving praise and rewards — even top professionals love to win a trophy.

Professional footballers who commit fouls are punished and hopefully will not repeat the action.

are some key concepts that will allow the coach to do both.

Promoting the correct response

To promote adoption of the correct response the coach should:

- use **positive reinforcement**
- **allow early success**
- encourage **mental rehearsal**
- make the performer **practise the task as a whole**

Positive reinforcement involves increasing the likelihood of the correct response being repeated. It includes the use of praise and rewards, such as the certificates given to children as they pass through the early swimming grades. Positive reinforcement means receiving something pleasant after the correct response — remember the rat that got its reward when it hit the lever?

The coach should make sure that the performer can succeed at the task in the initial stages of learning to promote motivation. For example, a player learning to serve in tennis might hit the ball to the right spot more easily if a marker is drawn on the court. If the player finds the serve difficult, he should be allowed to move towards the net to make sure he can do it.

Mental rehearsal can help the performer to learn the correct response. Going over the elements of the task mentally while having a break from physical practice can provide a basic picture of the skill.

Key box 1

Mental rehearsal is used to remind the athlete of key elements of the task by going over the phases of the skill or the tactics to be used in the mind, without movement.

Once the performer is capable, the coach should allow him/her to get a feel for the skill in its entirety, to promote fluency and an understanding of how all the parts of the task come together.

Strengthening neglect of the incorrect response

To help neglect the incorrect response the coach should:

- use **negative reinforcement**
- use **punishment**

Negative reinforcement is often confused with punishment. Think of the term negative as meaning taking something away. The coach might withdraw

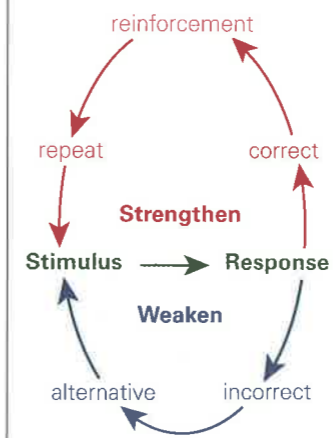


Figure 1 Learning by trial and error. The coach should try to strengthen correct actions and make sure incorrect actions are weakened.



The coach can withdraw praise when the performer begins to make mistakes, and this is negative reinforcement.

praise or encouragement that she has been giving to the performer for doing the task well when he begins to make mistakes. For example, a swimming coach could stop praising a swimmer who has been doing a nice leg action when the kick begins to deteriorate with fatigue.

Punishment should be used carefully by coaches to prevent the repetition of unwanted responses while avoiding lowering the confidence of the player. Punishment is something unpleasant given to the performer when his/her actions are incorrect. The professional player who receives a fine for foul play will not want to repeat the action.

Thorndike's laws

As a reminder of how to link the stimulus to the response the coach could use three laws applied by the sports psychologist Thorndike.

■ The **law of exercise** suggests that the performer should practise the task to improve skill levels.

■ The **law of effect** states that a satisfier such as praise should be given for correct responses and that an annoyersuch as criticism should be given for incorrect responses.

■ The **law of readiness** implies that any task set by the coach should be within the capabilities of the player, so that success provides motivation and reinforcement. However, the task should not be too easy, so that a sense of achievement is fostered — a challenge but within the player's reach is best!

By following the principles outlined, a coach should be able to encourage the players in his/her charge to develop good habits.

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