

Mediational Learning (Old Way / New Way) for accelerated skill correction: A new paradigm and technique for elite sport

K. Baker*¹ & G. Tan² ¹South Australian Sports Institute, Australia ²The University of Southern Queensland, Australia

The skill mediation technique (Mediational Learning) has been used in a number of different learning domains. The majority of research in the area deals with its effectiveness in the educational domain. Sports psychologists are already using the skill mediation technique with both elite and non-elite athletes, based on observation and anecdotal evidence of its effectiveness in the sporting domain, as well as empirical evidence for its effectiveness in the educational domain.

Theoretical Underpinning

Mediational Learning has successfully been demonstrated in a wide variety of applications where stable changes in habits, skills, concepts are required (e.g., Baxter & Dole, 1990; Baxter, Lyndon, Dole Cooper, Battistutta, & Blakeley, 1997; Dole, 1991; Lyndon, 1989; Rowell, Dawson, & Lyndon, 1990). The use of this methodology is based on the proactive interference effects - interference caused by conflicting prior learning (Lyndon, 2000) -, in that it has as a central element, the joint practice of two competing responses. It has been shown to have positive results for skill acquisition, conceptual development, and affect (Lyndon, 2000).

The technique reflects the necessary conditions for learning when there is a conflict between prior learning and any new learning. The technique is cognitive in nature and can be applied in any domain in which an individual has previously learned a skill and now wishes to change. The skill mediation technique is the same irrespective of the intended content of the learning (Lyndon, 2000). The technique consists of three stages; firstly the initial preparation stage, the mediational stage, and the final application stage.

Outline of Method

In the preparation stage, both the old and new ways are identified. The individual must elicit the old way and where necessary the relevant elaboration of this old way must be undertaken (Lyndon, 2000). The individual must then learn or demonstrate prior learning of the new way and actively differentiate between the two approaches. This process can take vary in amount of time taken, depending on the nature of the new skill or concept involved.

It can be said that to this point, the skill mediation technique is simply describing what can be considered effective teaching practices. In this 'regular' teaching approach, the next phase would be for the individual to practice or apply this new skill or concept as broadly as possible. The 'regular' approach is based on the belief that practice of a new skill always improves the retention of what is being learned. This can be

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considered to be true for the relationship between learning, practice and retention when the skill being learned is new and/or non-conflicting. However, this is not the case when the individual is attempting to change existing habits or skills (Lyndon, 2000).

Following the preparation stage of the technique, the next step involves the re-elicitation of the individual's old way, and the elicitation of the new way. The individual then is required to reflect upon and verbally state the differences between the alternative approaches to the skill. This is perhaps the most important part of the skill mediation technique. This stage of the technique in which first the old way and then the new way is elicited, followed by the comparison and differentiation between the two, is called mediation (Lyndon, 2000). The individual then re-mediates a total of five times, during which time they become more able to articulate the similarities and differences between the alternative approaches to the skill. This results in a differentiation that has developed in a progressive manner, rather than from the rote learning of any relevant differences (Lyndon, 2000). The repetition of the mediation process is another significant difference between the skill mediation technique and 'regular' teaching methods.

The third and final stage of the skill mediation technique is the application stage. This stage is common to other methods of teaching and learning. The application stage involves the individual generalising and applying their newly developed skill. Another aspect of this technique that is different from 'regular' teaching practice is that re-mediation successfully facilitates transfer of new learning when other methods do not (Lyndon, 2000).

Research Findings

In a study conducted by Baxter et al (1997) the relative effectiveness of skill correction in a group of vocational education students, using skill mediation compared to that obtained by conventional methods of re-mediation was examined. The results showed that those students who were exposed to conventional teaching methods in order to correct pre-existing skills, experienced only a 20 per cent retention rate of the new skill. This result would seem consistent with research examining the effects of proactive inhibition. The participants in the study, experienced accelerated forgetting of the new skill, that is 80 per cent loss of retention. However, those students who undertook the skill mediation technique demonstrated only 20 per cent loss of retention, thereby experiencing a normal rate of forgetting of the new skill. This result would also seem consistent with research on normal rates of forgetting (Baxter, et al., 1997).

Furthermore, the results of this study also showed that all of those participants who used skill mediation progressed to skill mastery over the

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following two weeks. However, only certain individuals in the conventional teaching group demonstrated a reasonable degree of progress toward master of the new skill, in the same period of time (Baxter, et al., 1997).

In addition, the students who used skill mediation showed improved affect, self-detection, and self-correction of incorrect skills, improved understanding of the complex nature of the skill being learned, and an awareness of the value of the method for accelerated skill development (Baxter, et al., 1997). It is also relevant to note that the treatment effectiveness of the method was not teacher dependent. These results are significant in that they provide direct support for the method and more importantly for its theoretical underpinning (Lyndon, 2000).

Application

It can be concluded that accelerated rates of forgetting caused by conflicting prior knowledge can be transformed to a normal rate of forgetting through the use of a relatively simple cognitive strategy. Furthermore, the original learning, the cause of proactive inhibition, is now itself subject to an accelerated forgetting effect thus reducing its influence in future skilled performance to a controllable and thus more acceptable level. Individuals are now able to pursue the development of skill mastery or, within the field of conceptual development, attainment of a stable level of knowledge representation that we may properly call understanding (Lyndon, 2000).

Mediational Learning has been applied, by the psychologists at the South Australian Sports Institute (SASI), with a variety of different athletes. These athletes include the following: Baseballers (pitching technique); basketballers (shooting technique – 3 point line, and jump shots); divers (hurdle technique on spring board, take-off technique on platform, and body posture); rowers (catch position), soccer players (kicking technique), and volleyballers (hitting and serving technique, as well as team concepts and beliefs). The technique is best applied when the psychologist acts as the facilitator, the coach provides technical feedback when requested by the psychologist, and the athlete is empowered to be the mediator (the master of change). While SASI athletes, undergoing Mediational Learning, have not been subjected to research, some have provided verbal and written feedback supporting the technique.

Reflections on Old Way New Way (soccer player)

For the first time I felt like...

- I was in charge, not the ball. I could control where the ball went, or predict where it would go. There was so much less guesswork

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involved – instead of relying on various tricks that sometimes worked and sometimes didn't, I knew that if I got my foot next to the ball, kept my head down and followed straight through that the ball would go straight ahead.

- I was in charge, not the coach. For the first time, I don't feel like kicking is something that I can only do well when a coach who I understand watching every my kicks and correcting poor technique. Now I don't only understand good technique in theory, I understand how my body needs to move to put into practice (I never found it very easy to learn kicking technique from my coach for whatever reasons. And I didn't know how to improve the technique on my own. Now I know how to do that.) It is a different kind of understanding or knowing than I had before.

Old Way New Way has been great because...

- I practice kicking less often and it improves significantly more than it used to (ie helps me work smart instead of just hard). The 'return' from old way new way (ie benefit gains for the time put in) is excellent.
- For the first time, I have seen a real improvement in my kicking during games as well as during training (I think this is because I know the technique well enough in my own mind that I can do it under pressure and quickly).
- My coach can see the improvement. He said that my kicking was much more accurate, the kicking didn't let me down in the following game and he even said that it was great! Miracles will never cease.
- It is a technique that I can use to obtain further improvements in kicking and in other areas of my game.
- I feel so much better about my kicking and am so much more confident in myself about it. Now, at club, players that I respect want me to cross the ball to them instead of someone else because I can cross a decent ball. I am sure that the confidence I feel with kicking is impacting on other areas of my game – for example, people are telling me I have really good 'vision' and I think it is because I can finally put a ball where I want to put it.

Why was Old Way New Way so helpful? What makes it work well?

- In my opinion, the presence of both sports psychologist and coach is critical, particularly in a situation where a coach has (possibly justifiable) preconceptions about the (in)ability of the player concerned to execute the relevant technique.

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- The old way new way sessions were the first time (I think) that I had ever had a coach actually work through with me in one session all the different things needed for good kicking technique. Most of what we talked about I had heard before – foot next to the ball, head down, follow through, toe down, etc. – but never all at the same time and in a way that helped me put all of them together into one kicking technique. It was really important to build up a ‘new way’ from *all* of those little things.
- As a learning a ‘new way’, I learned how to trigger it – that there were a few key things that if I got right the rest would follow.

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OUTLINE OF METHOD: In the preparation stage, both the old and new ways are identified. The individual must elicit the old way and where necessary the relevant elaboration of this old way must be undertaken (Lyndon, 2000). The individual must then learn or demonstrate prior learning of the new way and actively differentiate between the two approaches. This process can take vary in amount of time taken, depending on the nature of the new skill or concept involved.

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RESEARCH FINDINGS: In a study conducted by Baxter et al (1997) the relative effectiveness of skill correction in a group of vocational education students, using skill mediation compared to that obtained by conventional methods of re-mediation was examined. The results showed that those students who were exposed to conventional teaching methods in order to correct pre-existing skills, experienced only a 20 per cent retention rate of the new skill. This result would seem consistent with research examining the effects of proactive inhibition. The participants in the study, experienced accelerated forgetting of the new skill, that is 80 per cent loss of retention. However, those students who undertook the skill mediation technique demonstrated only 20 per cent loss of retention, thereby experiencing a normal rate of forgetting of the new skill. This result would also seem consistent with research on normal rates of forgetting (Baxter, et al., 1997).

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APPLICATION: It can be concluded that accelerated rates of forgetting caused by conflicting prior knowledge can be transformed to a normal rate of forgetting through the use of a relatively simple cognitive strategy. Furthermore, the original learning, the cause of proactive inhibition, is now itself subject to an accelerated forgetting effect thus reducing its influence in future skilled performance to a controllable and thus more acceptable level. Individuals are now able to pursue the development of skill mastery or, within the field of conceptual development, attainment of a stable level of knowledge representation that we may properly call understanding (Lyndon, 2000).

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