Identifying learning preferences to develop teaching of sport and the relationship between coach and athlete

TABLE OF CONTENTS

3.0 Identifying learning preferences to develop coaching and the relationships between coach and athlete

3.1 INTRODUCTION

Sport can contribute positively to the development of individuals, not just physically, but also socially and emotionally. This can only happen if sport is 'in the right hands' – by which we mean those belonging to the informed, thinking and enlightened coach. Due to the time-sensitive nature of sport and Physical Education it is necessary that coaches and athletes understand each other. Athletes and coaches will communicate in a variety of ways, be it hand outs, demonstrations, verbal instructions or using movement.

A debate is raging in the profession of coaching concerning the treatment of athletes. Coaching styles are at the forefront of the argument as coaches, physchologists, parents and athletes try to agree which is best to practice.

Developing a clear understanding of how to use students' or athletes' learning preferences to enhance teaching and coaching methods is essential for any sports coach or physical education teacher (Dunn, 2009).

During the literature review I explore the learning styles required to be an effective coach or teacher of Physical Education. I will then offer some examples of how these learning styles could be used including some real-life successes and then finally offer a conclusion.

Identifying learning preferences to develop coaching and the relationships between coach and athlete

Let me begin with a definition. Coaching is not easy to define. The key purpose of coaching is defined as follows:

'Sports coaching develops people through improving their performance' (Sports coach UK, 2005).

There are numerous definitions of learning, but most agree that it is the process of acquiring knowledge, understanding, attitudes or skills from study, instruction or experience, which results in permanent changes in an individual's behaviour.

Confucius, around 450 BC, is quoted as suggesting that:
'What I hear, I forget. What I see, I remember. What I do, I understand'.

Most definitions imply that experience is essential if some sort of relatively permanent shift in behaviour is to take place.

Neurolinguistic programming (NLP) suggests that, when we are born, we have no language – simply the ability to learn language. We learn language later to filter out thoughts. Our thoughts, the ways of processing experience, are based on five main senses: seeing, hearing, feeling, tasting and smelling.

We all have preferences for how we would like the information to be presented. Some people like to see what you mean, while others prefer to hear ideas, or experience or feel what is being said. We also have preferences for the ways in which we evaluate and analyse information;

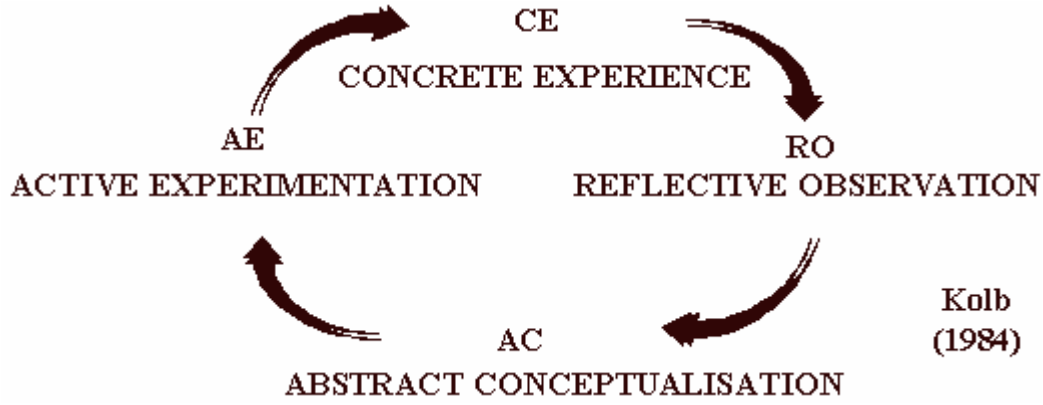
some people decide based on how things look to them. Others decide by how things sound to them, or by how things feel.

3.2 Literature review

Williams, Anshel and Jin-Jong (1997) suggest that cognitive style consists of psychological, emotional, physiological, emotional, psychological and behavioural dispositions that reflect the individuals' perceptions, interactions and responses to the current environment. However, other researchers stated that because cognitive styles reflect individual differences in a learning situation it is often referred as learning style (Cawley et al, 1976; MacGillivary, 1981; Pargman, 1993; Schmeck, 1988).

Experiential learning is characterised by the involvement of the whole person (physically, intellectually and emotionally involving feelings and senses), prior experiences, and reflection upon experience (Anderson, Boud & Cohen, 1995). In Kolb's (1984) Experiential Learning Model, reflection is seen as the second stage in the cycle (see figure x), followed by conceptualisation and then action. Kolb defines experiential learning as 'a process wherby knowledge is created through the transformation of experience' (p.38). Kolb (1984) addressed two conflicts described with this model. First, the conflict between concrete experience and abstract concepts, and second the conflict between observation and action. He suggests that it was the resolution of these conflicts that resulted in learning.

Diagram 3.2.1 The Experiential Learning Cycle (Kolb, 1984)



The quality of reflection is also dependant on the time available and the context within which it occurs (Eraut, 1995); it may also take time for the significance of an experience to become clear (Roberts, 2002). Moon (2000) suggested the following sequence of stages in the process of learning from experience: 'noticing', 'making sense', 'making meaning', 'working with meaning' and in some cases 'transformative learning'.

Gallwey (1974) highlighted the athlete's awareness of body position in space and body movements is crucial to learning and performing. Playing well in team sports means choosing the right course of action (effectiveness) at the right moment and doing it well (efficiency) (Grehaigne, Godbout & Bouthier, 2001). What differentiates the elite athlete from the novice is the speed at which decisions are made and the amount of systematic and long-term technique, skill and practice.

Learning style theory, with its origins in cognitive psychology, has been particularly influential in management development circles (Duff 2004). According to Peters *et al* (2008) learning style theory is most commonly discussed currently in relation to the work of Kolb, whose conception of an experimental learning cycle (Kolb 1984), and related learning style inventory, provoked many and varied attempts to capture and describe

learning styles (Dunn, Dunn and Price 1987; Reid 1987; Honey and Mumford 1992; Fleming and Bonwell 1998). A learning style industry has grown up around these ideas offering a variety of commercial inventories, tools and measurement instruments, and policy makers are increasingly taking an interest in these ideas (Coffield et al. 2004). Peters et al. (2008) go on to say that while the categories of learning style vary from the activist, reflector, theorist and pragmatist of Honey and Mumford (1992), to the visual, aural, read/write and kinesthetic of VARK (Fleming and Bonwell 1998), the key underpinning assertion of many theorists is that such styles are personal attributes of the leaner (Ramburuth, 1997).

Fleming suggests it is considerably easier to change learning and teaching strategy than to attempt to change the learner's learning preference, but does allow that individuals may change their learning preference with age or life experience (Fleming and Bonwell 1998). Kolb (1984) also admits that an individual's learning style may develop, or at least vary, over time and that, at higher adult levels of learning, individuals can display 'adaptive flexibility' and apply the appropriate learning style to a given task (Kolb and Kolb 2005).

According to Dunn *et al* (1987) there are five major variables that affect individuals learning styles that are determined by any individual's needs. The variables are:

- ✓ The immediate environment (light, sound, design, temperature)
- ✓ Physiological needs (perceptual mode, time of day, intake)
- ✓ Psychological needs (type of reasoning, brain hemisphere functioning)
- ✓ Sociological needs (parents, teachers, coaches, peers, self)
- ✓ Emotionality (motivation, responsibility, persistence).

Owens and Stewart (2006) offer the opinion that in the coaching environment, one of the most important of these variables is preferred

perceptual mode – that is, how athletes take in and process information or 'learning style'. Research shows us (Dunn, 1987; Peters, 2008, Coker, 1994) that people absorb and utilize information in different ways and that there is no single preferred method of learning.

Four modes of input are most likely for information processing and should be considered when designing instructional input for sporting situations. These four are: vision, auditory, kinesthetic and thinking (Braden & Zeitchick, 1991; Kolb, 1985).

Peters, Jones & Peters (2008) suggest that, only, individual learning style preference, relates positively to higher grades in sport. Therefore if, according to Dunn and Griggs (2000) every individual has the capability to learn regardless of academic aptitude; however, each individual learns in a different manner, it would imply that various differing learning styles are required of the sports coach.

As a Triathlon coach and someone who wants to go into teaching of Physical Education in schools I am fascinated in ways to develop children's skills and ability in sport.

Are the athletes or students kinaesthetic learners? Visual? Multimodal? Knowing who is which and how to find out who is which will help me coach and teach more effectively.

Research conducted by Solomon and Becker (2004) suggests that coaches often hold inaccurate perceptions of the type, timing and quality of instruction and communication that they provide their athletes.

Dunn (2009) states that students learn best when teachers present new raw material through main perceptual preferences and reinforce that

material through secondary preferences. Whilst that is undoubtedly true every child, student or athlete will have a different learning preference.

Obviously when coaching within a school environment it needs to be considered that you would be coaching a variety of abilities, sexes, age groups, sports and activities.

What would be the best way to engage with the girls who don't want to play because 'they look fat' or the class academic who doesn't do sport. Which learning method would be best?

I am basing this project on the VARK inventory (Fleming & Bonwell, 2006) which uniquely examines participants' preferences for the learning through modalities. VARK as an acronym corresponds to the different modalities through which we prefer to learn: Visual (V), Auditory (A), Read / write (R) or Kinesthetic (K). Research shows that the VARK inventory is a valid and reliable instrument for understanding students' learning preferences.

Teachers often present new material in the way that they themselves were presented to by their teachers and so may well be presenting the material in ways that are out of date and it must be considered that this may only be using one learning preference. We've all been through the 'Death by PowerPoint' experience….

As a teacher and coach I will need to present information using all four styles, as within a class of 30 each child will be different. This will allow all athletes or students, no matter what their preferred style, the opportunity to engage in the activity and develop their abilities on the pitch, in the pool, on the track and, heavens above, in life too.

Dunn (2009) suggests that students learn best when teachers present new material through main perceptual preferences and reinforce that material

through secondary preferences. The ways in which people prefer to receive and share information is accounted for by perceptual preferences.

In a traditional classroom the teachers usually present information and new material in a manner similar to how their own teachers presented the material to them, and so they often pitch material in ways which are outdated or not wholly conducive to learning (Dunn, 2009). Students then absorb the information, transform it into useable form, process it and then translate it back into a form that will facilitate their assessment.

Teaching then becomes a matter of providing appropriate frameworks, experiences and learning opportunities which allow the learner to construct and test understanding, knowledge and skills (Peters, Jones & Peters, 2008).

Prior to the work of Peters *et al* (2008) previous investigations had clearly identified that the elements under the teacher's or coach's control 'can and do, positively influence both the way students approach their study, and the learning outcomes they may achieve' (Lizzio, Wilson and Simons, 2002; Gibbs and Coffey, 2004). However, it is contended by Chio and Forde (2002) that the role, and effective identification, of learning styles in student groups is a potentially important element to the understanding of suitable teaching and learning methods, and then adopting those methods.

Teaching and learning in a physical education class or athletic setting presents distinct challenges that are often absent from the traditional classroom setting (Dunn, 2009). Students in a classroom have time to process information presented in different ways, often outside their primary learning preference. However, athletes have to make split second decisions in a time constrained environment. Responses between coach and athlete which are delayed could, end up with a missed opportunity or accident or injury. Dunn (2009) goes on to explain that the time-sensitive

nature of sport necessitates that coaches and athletes speak a common language of instructions, verbal cues, and appropriate motor responses. Hence, a coach or teacher, developing a distinct understanding of differing student's learning styles to develop their coaching or teaching is essential.

As a consequence teachers and coaches who take the time to assess who they are as a teacher, in terms of the teaching methods they prefer, and then take the time to assess who their students are, what learning preferences they may have, will inevitably develop their ability to present new material, physical education or athletic environments which can be very challenging.

Using a version of the VARK inventory which was developed by Dunn (2004) could provide a clearer understanding of a teacher's or coach's teaching preferences and the preferences of the students or athletes.

As we have already discussed coaches and teachers who understand the athletes' preferences for receiving information will be able to enhance their ability to deliver. Of course the opposite also applies. Athletes or students who understand what learning styles they prefer will be able to ask their coach to offer information in a particular way. An obvious advantage of this new found understanding will be to lessen opportunities for potential miscommunication.

Solomon and Becker (2004) suggest that coaches often hold inaccurate perceptions of the type, timing and quality of communication and instructions which they provide to their athletes.

Dunn (2009) says that visual learners, who think spatially, are often limited to two dimensions, while kinesthetic learners can 'sense' their place within a three dimensional space. Simple instructions are misunderstood because of these differing learning styles. Danish *et al* (2007) imply that in

order for coaches to be successful, they must not only be technically sound but must be skilled communicators. Understanding different learning methods and styles will greatly aid coaches in communication.

Burnett (2006) makes a suggestion that learning-preference knowledge is perhaps most important in the high school and developmental arena, where many athletes stop playing because the gap between instruction and performance becomes too great. This is then supported by Dunn (2008) who says that the differences between the learning preferences of the coaches and of athletes are most at odds. Since the end of the 1990's according to Lyle (2002) sports national governing bodies have paid increasing attention to the education of coaches at all levels of performance and development.

Looking at the work done by Dunn (2008) as athletes rise in the ranks of elite performance, the difference between athletes' learning preferences and the learning preferences of the coaches diminishes. Dunn (2008) goes on to state that early data from the VARK database supports this. Not only does the number of modalities represented drop as athletes become more proficient; but additionally, within the modalities remaining represented, the number of modalities without kinesthetic or auditory components also drops (Dunn, 2009).

Research done by Dunn (2008) also demonstrates differences in how each gender prioritizes learning preferences and in which type of participation (individual vs. team sport). Dunn (2008) notes that while male and female athletes had similar profile patterns, the degree of prioritization differed; male athletes demonstrated a higher predisposition toward auditory modalities, while their female counterparts had similar tendencies in the kinesthetic mode.

This information has an implication for coaches – especially those who deliver coaching of individual sports such as: swimming, athletics, triathlon and skiing to both male and female athletes. A male athlete will have different learning styles to a female athlete. So in terms of the coach-athlete communication, what works for males may not work for females.

These subtle differences may also explain why a coach who has been successful at one level is not able to translate this success to a different level of competition or with a different gender group. This explanation may explain why if a high school uses one PE teacher, the football team may well be successful however the female athletics team may not.

Coaches who can switch successfully across disciplines, sports, gender are very likely to be multi-nodal coaches who have developed the ability to coach diverse groups.

All coaches can use learning style information to enhance their athletes' performance. Dunn (2009) implicates that there are five key stages to implementing the VARK questionnaire: (1) assess coaches' and athletes' learning preferences; (2) reflect on the relative success of current coaching methods; (3) develop diverse coaching methods for individual learning preferences; (4) match coaching methods with individual athletes' learning preferences; and (5) assess the relative success of the new methods on the athletes' performance.

However, it could be argued that Coker, (1994) came up with the theory first. Coker initially suggested there are five procedures that will help the coach enhance the learning of his or her athletes.

- First, know your learning style because coaches tend to teach using their preferred learning style rather than the athlete's.
- Second, know your athletes' learning style.

- Third, initially us an integrated/eclectic approach to teaching in the athletic domain and then adapt your teaching style to the individual learners.
- Fourth, create cue words to use with athletes.
- Fifth, create coaching strategies and incorporate cue words and instructional strategies.

Coker (1994) finally asks coaches to remember that the same teaching strategy will not necessary have the same degree of effectiveness with all athletes.

Many learning-preference inventories are available; however, because the athletic version of the VARK inventory (Dunn 2004) is free and easily accessible through the internet, it can provide coaches and athletes with immediate feedback regarding their respective learning preferences and thus a preliminary set of tools to employ toward enhancing coaching and athletic performance (Dunn, 2009).

Deakin and Cobley (2003) suggest that elite athletes and coaches are more efficient in their use of practice time, spending more time in practice than in instruction; in contrast to novice athletes and coaches spending almost half their time in instruction. Athletes and coaches in sport have a higher tendency to kinesthetic modalities than their non-sport counterparts do (Dunn, 2008; Fleming, 2002). Presenting information in an athlete's primary learning preference will help prepare the individual for the skill or task required. Fitzgerald (2006) points out that the coach should not only coach athletes in their preferred mode. Fitzgerald explains that this is unrealistic and will not help the athlete in exploring other avenues of learning. The idea behind presenting a new skill or tactic in the athlete's preferred learning style is that it provides a solid foundation on which to advance learning using instruction via other learning styles (Baldwin & Eckmann, 2007).

In 2004, Cassidy, Jones and Potrac, suggested that using reflective coaching practices can lead to enhanced athlete performance. As a coach becomes familiar with his or her own learning preferences, he or she can then assess how these learning preferences can help or hinder an athlete. Matching teaching methods to learning preferences can lead to positive results such as increased motivation, getting it wrong can have a negative effect on the teaching / learning environment (Felder & Brent, 2005). Athletes who might appear to be difficult to coach, could be simply unresponsive to the coaching methods being used which do not match their preferred learning styles (Wrisberg, 2007). Reflective practice will enable the coach to evaluate whether they have been relatively successful or failed with individuals. This practice will enable a coach to develop a more reliable understanding of their coaching skills and methods and highlight areas which could be improved (Wagner, 2006).

Coaches who increase and develop athletes' motivation, rather than quash it, create environments that improve athletes' perceptions of personal competence and hence improve athletic performance (Treasure *et al.* 2007). Baldwin and Eckmann (2007) support that when a coach uses different coaching methods to cater for specific learning preferences, as it can positively influence athletic performance.

According to Dunn (2009) coaches, in many cases, already have the necessary skills to coach a diverse pool of learners. The art comes in developing the means to control their coaching methods so they become more deliberate in how they are instructing specific athletes or groups of athletes. Dunn likens coaching visual, auditory, read/write and kinesthetic learners is like coaching in a multilingual setting.

3.3 Trends and applications

According to Mind Tools (2002) in society most individuals' preferred learning style is the visual learning style (65%), followed by auditory (30%) and kinesthetic (5%). Since athletes are students too it would be prudent to think that their learning style preferences would mirror those of the general population. However, when Jones (2010) assessed her athletes complete the Barsch Learning Style Inventory (Literacy Partners of Manitoba, 2002A), the results were as follows:

Table 3.3.1 Table showing preferred learning style of Athletes

LEARNING STYLE	NORMS	ATHLETES
Visual	65%	58%
Auditory	30%	24%
Kinesthetic	5%	18%

Jones (2010)

Peters *et al* (2008) took the VARK inventory a stage further using the Perceptual Learning Style Preference Questionnaire (PLSPQ) (Reid 1987) to analyse learning styles of students involved in sport. The PLSPQ consists of 30 items, with six preferred learning styles (visual, auditory, kinesthetic, tactile, group and individual) assessed using a total score from five items each. The items take the form of statements from which the respondent identifies whether they 'strongly disagree', 'disagree', were 'not sure', 'agree' or 'strongly agree'. Examples of items for each subscale included:

- Visual – 'When I read instructions, I remember them better';
- Auditory – 'When the lecturer tells me the instructions I understand better';
- Kinesthetic – 'I prefer to learn by doing something in sessions';
- Tactile – 'I learn better when I make drawings as I study';

- Group – ‘In sessions, I learn best when I work with others’; and
- Individual – ‘When I study alone, I remember things better’.

Each item of the PLSPQ is coded from 0 (strongly disagree) to 4 (strongly agree), the 30 items of the PLSPQ were subjected to analysis as recommended by Kember, Biggs and Leung (2004). Preferred learning styles are then identified.

From their research Peters *et al* (2008) concluded that the major perceptual learning styles for their athletes were auditory, kinesthetic and group, completely different to Jones (2010). They also noted there was no real distinction between gender or age. Peters *et al* also noted that over 90% of the sample demonstrated the use of more than one major preferred learning style and were therefore identified as multimodal (Reid, 1987).

Jones (2010) confirms that individuals have a ‘most’ and ‘least’ preferred mode for learning and each mode has its strengths and weaknesses. All learners show some combination and degree of all three styles, however, one or two normally dominate their approach to learning. Therefore the coach needs to be aware that “One learning style does not fit all!”

The objective for the coach, therefore is to help each athlete capitalize on his/her learning strengths. When instruction strategies match individual learning styles, coaches and athletes have indicated improvement in academic and athletic performance as well as enhanced self-esteem (Brunner & Hill, 1992).

Jones (2010) asks the real question, so how do we, as coaches, use learning styles in coaching?

3.4 Real Life examples

International coaches (New Zealand, Australia, Canada and Great Britain) are using their own results from the VARK inventory, alongside the results of their athletes to transform their coaching methods (Dunn, 2009).

For example, in New Zealand, their Olympic coaches divide world class athletes into learning preference groups, so that athletes with visual preferences are appropriately stimulated with diagrams and charts prior to the game.

Richard Smith, manager of coaching at the New Zealand Academy for sport (NZAS), began applying the VARK inventory to athletes in preparation for the Olympics in 2000 and 2004 in a variety of different sports (NZAS, 2007). Alongside coaching educator Graeme Robson, Smith regularly tested and ran educational sessions at NZAS to help coaches and athletes by using the information about their learning preferences (Sport & Recreation New Zealand, 2007). It worked, athletes, who all underwent VARK training, from sports including: equestrian, cycling, triathlon sailing and rowing all won medals in the 2000 and 2004 Olympics (Dunn, 2009).

3.5 How do we use learning styles in coaching?

Formal testing is one of the best ways to determine the dominant learner style of a coach's athletes. A second way of ascertaining an athlete's preferred learning styles is through observation. Specifically, observe what the athletes focuses on and know their tendencies (Coker, 1994). Jones (2010) presents an example, a comment from an athlete to a coach to "show me" would indicate a preference for visual style of learning. Another example might be an athlete's comments; "It does not feel right" suggests a kinesthetic style. Finally a coach needs to listen to the

descriptive words used by the athlete. For example, “I see”, would suggest a visual learner (Jones, 2010).

Coker (1994) explains that a coach needs to develop cue words for the individual perceptual modes for their specific sport. Listed below are some cue words for the visual, auditory and kinesthetic learning styles:

Visual

- Look
- Watch
- Show
- Demonstrate
- Observe
- Imagine

Auditory

- Hear
- Sound
- Repeat

Kinesthetic

- Perform
- Execute
- Try
- Feel
- Touch
- Move

Example of cue use for developing cycling technique:

- Visual

  “See your legs moving in a continuous motion like pistons of an engine.”

- Auditory

  “Hear the sound of the wheel rolling smoothly along the road as you.”
- Kinesthetic

  “Imagine scraping mud off your shoe at the bottom of the pedal cycle and then flicking mud off your toes at the top to complete the circle.”

Strategies for coaching are usually sport specific and need to be developed. Below are some example of ways of delivering those strategies:

3.5.1 Visual

Singer (1980) suggested that visual perception is probably the most important source of information for sports. The visual learner learns best receiving information through their eyes. The visual learner thinks spatially in terms of shapes, patterns, symbols, concept maps and word pictures (Dunn, 2009). Visual learners are very good at thinking laterally, tuning into the larger picture. Verbal clues stimulate the brain of visual learners in ways that further prepare them to engage in future tasks (Call, 2004).

The following are just some examples which can be used to pass on information to an athlete with a preferred learning style of visual:

- ✓ Films
- ✓ Videos
- ✓ Pictures
- ✓ Notes
- ✓ Imagery
- ✓ Diagrams
- ✓ Lists
- ✓ Schedules

- ✓ Demonstration

3.5.2 Auditory

An athlete who is a visual learner is focuses on sounds and rhythms to learn movement patterns along with verbal description of the movement (Coker, 1996). It would be easy to assume that auditory learners are the easiest to coach due to the way an athlete and a coach can talk. However, auditory learners are easily distracted, they find it hard to distinguish between good instruction, poor instruction, distracting noises and music (Baldwin & Eckmann, 2007). Coaches must be deliberate and concise and they must create feedback loops between athlete and coach to ensure clear understanding (Fleming, Robson & Smith, 2007). Auditory learners learn best through the use of language including lectures, group discussions and audiotapes (Dakin, 2002).

- ✓ Tapes
- ✓ Lectures
- ✓ Seminars
- ✓ Encourage
- ✓ Listening
- ✓ Discussion
- ✓ Music

3.5.3 Kinesthetic

Although frequently at a disadvantage in a traditional classroom (Stensmo, 2006), kinesthetic learners find that sport provides an invaluable environment to learn, think, flourish and teach others. Kinesthetic learners are in their element in sport (Martin & Gaskin, 2004). Kinesthetic learners learn by doing. Information is learned when the athletes are provided an opportunity to move. Traditionally, coaches have been told get athletes into simulation situations as soon as possible. A kinesthetic learner needs

to know what the movement feels like their environment needs to be dynamic. Eventually, the correct feeling becomes the frame of reference with which to compare all subsequent performances (Coker, 1996). Recognizing the need to offer the kinesthetic athlete the opportunity to practice a skill repeatedly is a key factor. However, it should be noted that a coach needs to attend to the accuracy and form of the practice. Practice does not make perfect, it makes permanent.

- ✓ Study sheets
- ✓ Real world association
- ✓ Activities
- ✓ Walk through
- ✓ Move the athlete through the skill
- ✓ Simulation
- ✓ Practice

3.5.4 Multiple Modalities.

Dunn (2009) suggests that learners with multiple modalitites in their learning profile will provide the greatest challenge and reward for coaches. It could be seen to be advantageous to coaching athletes with multimodal tendancies. However, if a coach provides a list statistics about an event, talks through different strategies and hosts a film of the event, instruction in all three preferences must be consistent. If the instruction is not consistent (for example: the statistics do not tie in with what is on the film, or the auditory summary of the strategies does not match with what is seen on the film or the statistics), athletes will assess the relative truths of each coaching example, and therefore delay any decision.

Multimodal learners are much more likely to detect wrong information or incorrect foundation knowledge, where as single preference athletes will take any input as truth – even when it is not. One example might be, read / write learners may be susceptible to negative write ups in the media,

even when in truth their performance and skills are solid (Fleming, Robson & Smith, 2007). With 56% of athletes reporting multimodal learning preferences, the critical lesson for coaches is to develop consistent instructions that can carry across all four modalities (Dunn, 2009).

3.6 Conclusion

A coach having knowledge of their own learning preferences and the different learning preferences of the athletes is crucial for the athlete / coach relationship. The amount of research being done in this area is expanding all the time. Coaches who arm themselves with this sort of knowledge will change coaching. Athletes across the world with auditory and kinesthetic learning preferences will be downloading podcasts or videos of techniques, races and skills.

The coaching world is already changing. Video analysis, such as Dartfish and Sports Motion, which allow specific aspects of technique, races and statistics to be analyzed in ways traditional video cannot do is becoming more and more advantageous. In addition, with the amount and capability of technology increasing professional in sport can easily apply learning style preferences as previously discussed.

A gradual implementation of new strategies will allow coaches to reflect on new practices and their success in working with specific athletes or groups of athletes (Lyle, 2002). Cassidy *et al* (2004) back up this but also suggest that introducing the new practices gradually will allow the athletes themselves to adopt reflective practices.

Peters *et al* (2008) surmise that it is not simple to read off possible changes in teaching methods and learning environment that could or should be made in response.

Peters *et al* (2008) go on to suggest that if learning styles are largely seen as personal attributes of the learner, it would seem the best response would be to tailor sports learning activities to best fit the learning styles of the group. However, it might be a matter of rebalancing learning opportunities to emphasise particular learning styles.

Just as athletes prefer to learn in different ways, coaches prefer to instruct in different ways. A simple analysis of the coach's strengths and weaknesses can provide guidelines to enhance professional skills and improve coaching methods and interaction with athletes.

Dunn *et al.* (1987) suggest several key factors for coaches to consider in their learning environment, however, Martin & Gaskin (2003) have developed those ideas and now suggest the following factors a coach should consider:

- Training methods used: auditory, visual, tactile or kinesthetic
- Session management: energising activities, relaxation
- Training room design: temperature, light, technology, music
- Program planning: athlete centred, learning tools, structure
- Social aspects: learning alone, in pairs or groups, level of supervision.

Finally, Jones (2010) concludes coaches are constantly searching for methods to improve the athletic performance of their athletes. One method that is often overlooked is the way in which athletes learn and process new information. Another "tool in the toolkit" for coaches is to consider the learning style of their athletes when presenting new information and giving feedback. Failure to individualize the teaching / coaching strategy through which instructions and feedback are presented denies athletes the necessary opportunities to learn in ways that align with how they learn most effectively. As coaches become better able to adapt their style of teaching and coaching to support the learning style needs of their athletes,

they create powerful learning relationships with their athletes that not only enhance the learning experience, but also accelerate it. That's no small thing when considering the length of a typical athletic season coaches have to work with. One of the most important lessons for coaches, however, is that…One teaching style does not fit all!

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