"BOWLS SET"

Introducing Mental Imagery

To

Lawn Bowlers

"Bowls – Set"

a

Submission to

The South Australian State Coaching Panel

(Lawn Bowls)

The aim of this submission is to suggest a strategy for improving mental skills when applied to "Lawn Bowls". And to investigate the relationships between motor skills and mental skills necessary to formulate a "Bowls Set". The following introduction is a possible representation of a typical scenario used by Sports Psychologists to develop a mind training programme. In this case, the representation has been modified to be lawn bowls specific.

INTRODUCTION why does a top lawn bowler draw the perfect shot and with the next bowl drops 6 feet short? In order to answer this question, it is necessary to consider the proposition that we live in two realities simultaneously:

(1) The inner reality of the mind.

(2) The outer reality of the environment.

Firstly, The inner reality of the mind is a "storage area" of all the information that you as an individual has accumulated during your lifetime.

Secondly, The outer reality of the environment is a vast cache of information that is constantly changing.

This close relationship between the mind and the environment is symbiotically monitored by the brain, and, in particular, by two complex nervous systems, the central nervous system and the peripheral nervous system. It is important, therefore, that we understand how environmental information is transformed into useable thought processes. But it is more important in order to develop mental bowling skills that we understand the following established fact:

That the inner reality of the mind and every thought process that is ever conceived is based on past experiences; but the outer reality of the environment is happening now.

As an example consider the following:

"You need to draw the shot, to win".

You step onto the mat.

You assess the bowling environment and you send relevant information about your bowling requirements to your central nervous system.

The central nervous system processes this information and responds by sending selected signals back through your Psychoneuromuscular System (skeletal/muscular frame.)

You play the shot!

Your bowl is six feet short and you lose the game – why?

The answer is simple. You sent the wrong information to your brain. In less than a second you set up a chain reaction, and the information you sent the brain about the reality of the bowling environment was then processed by the inner reality of your mind. Consequently millions of nerve cells (neurons) went into action and in response to your message "sifted" through thousands of past bowling experiences looking for a match.

By way of explanation, the information you sent to the inner reality of your mind might have gone something like this:

1. I need the correct "green".
2. I need controlled weight for about 75 feet
3. I need smooth consistency as I bowl.
4. I need to remember what I did at practice.

For you to play the perfect shot, the information sent to the brain must connect with the millions of neurons in a specific way. There must be simultaneous activity from the outside world to the inner world, but this activity must be based on the correct information being presented to affect a positive and correct response and must not contain irrelevant

information. The psychologists have a word for this interrelated phenomenon. It is called Neurobiotaxis. However, this phenomenon as it relates to lawn bowls could be called the "Bowls Set".

Consequently, the messages (bowls set) which the brain chose to send to your psychoneuro - muscular system gave you a bowl that was six feet short. That is not what you wanted; but it is exactly what you asked for. The reason for this is that the information you sent to the brain contained misleading or irrelevant information which influenced the train of thought processes necessary to bowl the perfect shot. The latest research in sports psychology shows that training in mental skills (in two directions) can be improved. The following outline to develop such skills could be introduced, therefore, to form the basic programme to introduce lawn bowlers to the principles of "Bowls Set".

MENTAL SKILLS

BASIC REQUIREMENTS

The latest research into Cognitive Neuroscience accepts the fact that how the mind works is still beyond human understanding. However, two theories of Cognitive Neuroscience have been put forward as reasonable explanations for the existence of "mind states". The first is the Computational Theory of the Mind and the second is the theory of the Natural Selection of Replications (Horn 1992).

The challenge in the future for coaches when teaching mental skills to bowlers will be to present the above research in a form which will be accepted by the bowler and which can be reduced to a basic programme of understanding. As in any other sport, the degree to which the individual decides to study to improve performances will be a matter of choice. But as is the case with any advanced coaching the rewards will be a more systematic approach to the study and application of that sport. It was interesting to note during the "Adelaide Masters" tournament (1999) that the performance of some bowlers, who were inexperienced in stress management, dropped off due to their inability to pay attention to task- relevant clues (line

and length). If as one coaching theory suggests, performance drops off in complex tasks as stress increases because of the athletes inability to pay attention to tasks relevant clues, then stress management must become part of a coaching programme for bowlers.

The following subject matter, I believe, would from a suitable basic framework for introducing the subject of mental skills training to bowlers. And from which, it should be possible to formulate a methodology for combining both motor skills and mental skills. In other words the development of a "Bowls Set"

THE BRAIN

In order for bowlers to appreciate fully the implications of what it outlined above it will be necessary to briefly describe the working of the brain. However a full understanding of the principles of sensory perception is not really necessary. The following should suffice. The brain is the primary organ of the nervous system. It regulates bodily functions, sensory experiences, intellectual processes and emotional activity. The brain comprises a structured mass and contained within this mass is a complex system of inter-related neurons. It is estimated that there are twenty thousand million neurons in the central nervous system and roughly ten thousand million in the peripheral nervous system. Other brain structures also contain millions of symbiotic neurons. Neurones vary in size and shape, and the way these structured masses work in conjunction with the reality of the outside world is by means of mental images. (Eccles 1989).

It is the information about the outside environment that is processed by neuronal activity and similarly it is information that is passed through the central nervous system to the skeletal/muscular system that is also processed by neuronal activity. It should be explained that the rate of this activity can travel at the fastest speed of around 300 feet per second and the slowest speed of around 3 feet per second. (Important knowledge for the bowler).

If a bowler has a reasonable knowledge of how the brain functions, then such knowledge can be used to formulate mental predictions about the external environment. Accordingly, the

bowler will learn how to modify the reality of the bowling green and in doing so will also learn to quickly improve his performance.

An individual who has a reasonable understanding of "brain states" will learn to use cues and use certain kinds of consequences to rapidly increase learning. (Bolles 1975)

If we return to the example of the 'short bowl', external clues and predications can be made to "reason" why the wrong information was sent to the brain when making a decision about the length required to draw the perfect shot.

Possibly, judgement of the length was wrong. Probably, one reason for this could be that there were distractions by a player in the next rink. Another reason could be that sun-glare was not taken into consideration. But whatever the reason, it was obvious that the 75 feet length asked for, and the inner thought process which responded to it, was incorrect.

Similarly, in the example other irrelevant information about the bowling environment was probably processed by the brain. Past experiences about a practice session were called upon which had no relevancy, to the here and now reality of the game being played. Nevertheless, inner thought processes came to the bowler's assistance and gave what was asked for. In other words, the brain responded by supplying the bowler with PAST information not PRESENT information.

IMAGERY

Imagery is a very deep, focused type of mental practice. Researchers know that some athletes are able to imitate the actions of others because their minds take mental snapshots of the activities, and then they use these mental pictures as models for their performance. Would this work in lawn bowls in competitive situations? The answer us definitely, yes. Essentially, imagery is the process of receiving information through all of our senses from the external environment. However, images can also be generated as information from our own memories, so that we create our own internal environments or personally enhanced images. Thus, the

combination of these two environments, both the imagined and the real-life ones, has a very powerful effect on our nervous systems. (Pinker 1997).

In lawn bowling, both motor skills and mental skills are essential for good consistent performance. In the past, most bowlers have been taught the motor skills necessary to "draw the shot" but very little work has been done with respect to teaching the mental approach to lawn bowls.

Consequently, there appears to be a mental block, mostly due to tradition, that new ideas are not welcome by bowlers. The following information could help to change this attitude. There are two possible psychological explanations (among many) behind why mental practice works. The first is known as the Symbolic Learning Theory. The second, as the Psychonuromuscular Theory (Shane and Jowdy 1992). It is, therefore, suggested that these two theories could form a framework on which to build a "bowls set"

SYMBOLIC LEARNING THEORY

First theory:

Imagery may be part of coding system that actually helps us to understand physical movement. The theory states that every move we make in our pshychoneurological life is first coded like a blueprint in our minds and in nervous systems, so that if we mentally rehearse an event, we are actually blueprinting each move, thus making the gestures symbolic and making them more symbiotic with to our body chemistry. By developing our skills of mental practice we are setting the stage for physical movement to become quite automatic and easy to recall. Consider, therefore, that imagery is an important process in the symbolic learning phase which would eventually improve a bowlers performance.

PSYCHONEUROMUSCULAR THEORY

Second Theory

This very long word means literally that our brain state effects our body state. The current theory argues that mental practice works because even when we sit quietly at rest, we are

actually producing very small muscle contractions, similar to those involved in our particular sport. Mental signals and other electronic impulses are constantly sent to the muscles and tendons to remind them how to work. These messages travel at lightning speed and cause the muscles to effect appropriate sequences so they can perform the correct body movement. And this is exactly what happens when bowling. The bowler examines the environment i.e. green, length, weight and other conditions and sends this information to the brain. What usually happens though, because of lack of training in mental skills, is that wrong information is sent to the brain, usually in a short or wide bowl. If mental imaging has not accurately designed a suitable conceptual framework the bowler will seldom achieve a positive outcome. In other words, if the bowler has not done the mental homework in practice sessions, then the bowler cannot expect to have anything to fall back on to improve bowling motor skills. Another word for psychonuromuscular activity is "brain mapping", and is very much a part of the coaching theory adopted by other sports. It is important, therefore, to accept brain mapping as an essential part of coaching in lawn bowls. For those who might be opposed to the introduction of new coaching techniques in lawn bowls consider the following statement by Steven Ungerleider Ph.D Olympic committee sports psychology registry.

"The importance of brain mapping has led to some exciting discoveries about imagery. As visual signals from frontal lobes, associative memory lobes of the brain send information in one direction; visual signals also send information in the other direction. That is, information is flowing in both directions at all times. The key point here is that imagery is the result of this two-way communication system. So instead of processing visual information from the outside, a visual signal is processed from within. This is the essence of mental imagery."

CONCENTRATION

Concentration can be defined as increased attention upon a decreased number of stimuli. This usually means a narrower and more restricted area of attention, but sometimes it can also mean reacting to a limited number of significant clues but from a wider area of attention.

Concentration is a passive process, a process of being caught by something, it cannot be forced. Asking someone to try and concentrate is meaningless, as concentration and voluntary effort do not go together. It is true that concentration requires purpose, motivation, determination and even effort, but it has to be an effortless effort. Even a sudden awareness of concentrating may cause the concentration to disappear.

The most common way of concentrating is to start with directing the attention towards something. This is often the only active part of the whole process. Let the object, act, task, thought or feeling predominate interest, then the concentration will come. If the intensity increases up to the highest form of concentration, the mind will be at one with the task. In this state the subject and object can not be differentiated, they are welded together as one (alternative state of consciousness). (Cratty 1989). In other words the bowler should be coached in "How not to concentrate."

Consider the following analogy – watching a film. If a film is good, the concentration will come automatically. Thus, one obstacle to concentration is boredom or regarding a task as too easy. Another obstacle is the opposite to boredom. A high degree of activation in the form of anxiety and nervousness will affect concentration. A third obstacle is voluntary effort. The hard and tense attempts to force concentration to come, will have the opposite effect. Total concentration is a very difficult state to reach. It comes and disappears. The concentration has to be there already, therefore learning how not to concentrate should be part of standard coaching for all bowlers. The coaching manual suggests that concentration is very important and a skill that should be developed but it does not tell us how to do this. However, if methods adopted by others in sports psychology is the way to go, then bowlers must follow this trend.

Concentration training in lawn bowls should be introduced for just that purpose. This does not only mean developing programmes to increase the ability to concentrate; but also means developing programmes to condition this increased concentration to a performance situation

in order to "automatically" release the feeling when the performance starts. If concentration is looked upon as an equation between signal and noise-values, then concentration can be trained both by increasing signal-intensity and /or by decreasing the noise. (For a more detailed account of 'signal detection theory' see Green and Swets 1966). Other obstacles for concentration are too low or too high an activation level. One method that could be used to form a coaching system for lawn bowlers it to introduce the application of "Triggers" into coaching procedures. The following method is one that is commonly used in various sports and one which could be readily adopted by the bowling fraternity.

A trigger is something you do or think in order to produce an effect, which cannot be created directly. One form of a trigger could begin by holding a bowl in your left hand, taking a deep breath and exhaling. The learned feelings of muscular and mental relaxation will then come and spread throughout the body. Relaxation cannot be forced but it can be conditioned and released by such a trigger.

When a bowler begins to train a complicated pattern of movements, the perfect movement will be bound to several cues (releasing factors), in general, on an unconscious level. After a decision (goal programming) one then starts the movement with a trigger. Top golfers often start the swing with a movement of the knee, hip or some other part of the body. A bowler could start by doing something similar like holding the bowl in the non bowling hand. It is interesting to note that most bowlers are already using some form of trigger without realising the fact. A bowler is already using such a conditioning process every time they perform some regular behaviour, as they probably already have a rather strict and routinized (sometimes almost obsessive) activation level. Each sport has its specific moves: how to grip a golf club, how to kick the soccer ball, how to flick the wrists when bowling. Bowlers could be coached, therefore, into a new phase of their sport, and look for their Triggers.

COACHING EFFICACY

Concentration, centering, visualisation, focus are basically one of a kind – Imagery.

These subjects should be enlarged upon to create a "Bowls Set". Imagery practice involves using all the senses to create an experience. All the senses means not only seeing the experience but smelling, tasting, touching and feeling it as well. The emotions associated with all of these images are also quite important in understanding the power of this technique. In using imagery to help deal with performance anxiety, reduce pain and control frustration and anger, bowlers must be able to create emotions in their minds. If a bowler is struggling with anger and rage during the heat of a pennant match, for example, one goal of mental rehearsal might be to practice impulse control and anger management so that it does not interfere with the focus of playing. In practising imagery, bowlers must be able to use the emotions associated with performance to help them better understand and cope with the competitive experience.

Bowlers must address three major components of the guided imagery model in any training programme. They need to learn how to:

- **Develop vivid images.**
- **Control those images.**
- **Understand their perspective of imagery.**

Perspective simply means whether you experience your sport from within, as in the first person, or see yourself from the outside. The advantage of internal imagery is that you experience yourself performing a skill. External imagery might be similar to taking a movie camera and shooting a practice and then replaying it from the angle of the cameraman. It lets you step back from the experience and be an impartial observer.

Both perspectives are very important strategies in the guided imagery developmental process, and the exercises could be formulated that will help the bowler determine the difference.

Research in brain physiology has uncovered some startling clues to how imagery functions. The clues have led scientists to regions of the brain that control memory, pictures and vision. Martha Farah, Ph.D., professor at the University of Pennsylvania in Philadelphia, notes that "mental capacities such as memory, perception, imagery, language and thought processes are rooted in complex structures in the brain." Her research suggests that imagery is not part of language symbols but is simply the chemistry of the visual system.

The appeal of mental imagery techniques is that we know they work. Not only does research show that imagery works, but numerous athletes swear by it. Granted, we don't hear competitors talking about the impulses-from-the-brain-to-the-muscles theory on the imagery coding system. But we do hear numerous examples of cyclists, skiers, runners, tennis players, volleyball players, swimmers, weight lifting athletes and others who testify to the extraordinary power of this form of mental rehearsal. (Unestahl 1986). Why not bowlers?

To develop a guided imagery programme that will work for bowlers, it is necessary to first answer these basic questions:

- **How do bowlers experience images?**
- **Do bowlers perceive an image by sight, hearing, touch or feel?**
- **What are the sensory modes that allow bowlers to experience an image?**

Imagery, in a sense is "seeing things in reverse." The process begins at the higher enters of the brain and is then passed down to the visual cortex, where it is recognised.

VISUAL TECHNIQUE. In the bowler's mind, ask them to watch themselves playing and slow down their visualisation and correct any mistakes they see. (Videotape is a great tool here). Watch themselves drawing and bowling, study their footwork and the position of their arms and body. Identify the areas that need correcting and begin to work on them, both in their minds and on the greens.

The important thing to remember when designing a guided imagery programme is that it must fit style and preference - meaning, how can the bowler access their images. Are they mainly sight, sound or feel or a combination of all three? The ultimate programme of a course, would combine all three types, allowing greater imagery control and more effective outcomes with their performance.

Once a bowler identifies the error and corrects it mentally, they could then be encouraged to implement these changes on the lawn greens, the rinks, the clubhouse or at any bowling venue. Bowlers could use visual motor behaviour rehearsal to prepare for competition by imaging the details of the competitive situation and the ways in which they will meet challenges. This is the preparation for competition. The correct format both on the green and in the mind of the visual bowler becomes critical in preparing for competition.

Skill enhancement comes with practice, and lots of it!

The bowler could visualise themselves in a match; focus on enhancing their technique and analysing and mental correcting errors. If they lose their temper, practice watching themselves remain calm. If they routinely muff a certain type of bowl, practice a smooth, sure aim. While training, practice the corrected behaviour.

The 'Bowls Set' technique would combine relaxation and imagery in a format that allows individuals to desensitise themselves to a stressful situation. The bowler could use 'Bowls Set' to enhance their ability by imagining themselves performing well and feeling confident as they compete. How does this work? 'Bowls' Set has four goals.

1. **Technique enhancement.**
2. **Error analysis and correction.**
3. **Preparation for competition.**
4. **Skill enhancement.**

The method here is to coach that if you practice the correct response, you improve; if you practice the incorrect response, you might do worse. It's that simple. Bowlers with low skill levels might be performing the wrong movement, and by practising the incorrect mental picture, they distort the blueprint and send the incorrect signals to all the various muscle groups. This eventually leads to poor training and poor skill development. If the bowler has a mediocre draw shot and they correct the draw shot by aiming at the wrong focus of their draw, the result is a poor shot. (Ref: Coaching Manual)

The bowler should implement 'Bowls Set' to analyse and correct errors when preparing for a match. These are components of 'Bowls Set'. This is the process of creating a mental image before an event and then using it to analyse and correct errors that may occur in both real and imagined events.

MENTAL PRACTICE

Regardless of the sport or the level of competition, mental practice can help attain peak performance. It does not matter if the bowler is a weekend bowler or a state player; using mental practice with the proper imagery and visualisation will improve the bowler's response to whatever challenge lies ahead.

Although some bowlers have specific and personalised formulas for achieving the optimum mental state of preparation, there are basics that all of us can follow. Proper breathing and relaxation before a competitive event are mandatory. We also know that having confidence and a sense of well-being and feeling tuned up are all part of the pre-bowling preparation.

The following is a suggested course of coaching to improve the state of mental preparation. It is a well proven method adopted by sports psychologists and one which should be introduced into a coaching programmes for all bowlers.

MENTAL METHODOLOGY

Set goals. It's a trite (but true) saying that if you don't know where you're going, you'll never get there. Bowlers need to decide what they want to accomplish and plan his training accordingly.

Use a verbal cue. Many bowlers should use cognitive mental training in their programs, both in training and in competition. Adopt these cues as part of the bowler's instructions. Verbal cues can reduce the tension during match or pennant play. These cues all of us can use during competition, but we have to first practice them in training.

Focus on the positive. Any top-level athlete will tell you that you can be your own worst enemy. If you think you're going to fail – you will. For any sport, think positively and keep telling yourself that you can do it.

Build in relaxation time. All work and no relaxation result in an overstrained bowler. It's important for them to build 'rest' into their training schedule to allow themselves to recuperate both mentally and physically.

Find the right tension level. In many sports, it's crucial to stay relaxed at the right moment. In tennis, for example, the most important element in learning this relaxation response is to hit hard and with passion, but learn to let down after each point. Sports psychologist Jim Lochr, Ph.D., known as the mental training expert in the tennis world, actually measures heart rate between points. He emphasises that your heart rate should be up during the heat of competition, but immediately following a point (regardless of who made the point) you must disengage, relax and let your heart rate return to resting baseline. He further emphasises the closer you get to this relaxation response, the better conditioned mentally and physically you will be. The same holds true for lawn bowls. Identify when you need to be relaxed and consciously work on relaxing at those times.

Take a look at your opponents. In just about any sport, you have to know the competition along with their strengths and weaknesses. You should visualise yourself competing; visualise all the players on the green and visualise yourself finishing and winning.

Study the course. Whether you're participating in a social game or playing a pennant match, it's crucial that you are aware of the details of the place in which you are going to compete. In order to increase the reality of your visualisation you need to study the green, thus, if you have never played at the venue before don't guess what the environment is like, study the greens in depth. This will improve your performance and enhance your chances of winning the match.

Conclusion

There are many misconceptions about the use of imagery in sport. The opinion of some of the traditionalists in lawn bowls is that it is a 'load of rubbish'. However in sports psychology today there is no question that mental imagery techniques can improve performance. The self report of athletes indicate that imagery is a basic cognitive function (brain state) in humans and is central to motor skill acquisition and execution. Future coaching methods in lawn bowls must address the need for a link between motor skills and mental skills. The future of lawn bowls may well depend on a better understanding of the roles that imagery plays in human performance so that bowlers can optimise their innate capabilities in order to compete in 21st century sport. Furthermore, there is a need to encourage teamsmanship is lawn bowls. Coaching must also address the problems of the individualistic status quo, which at present is endemic in the sport.

In this submission, so far, emphasis has been placed on the coaching of individuals to increase their motor / mental information processing skills.

In addition to how each individual may influence and be influenced by the team, the team 'itself has a personality and a life of its own'. (Cratty 1989). He goes on to say "that the team

is a social – psychological entity that displays qualities similar to those exhibited by a individual, such as motivation and goal setting, as well as characteristics that are unique to groups, such as cohesion, dynamics of interpersonal communication, and an overall climate that often reflects just how effective group performance is likely to be".

The point that is being made here is that whilst the above rhetoric is discussed at length in just about every other sport, the fact is that the socio – psycho cohesion of the bowler as a team member is practically non-existent. Yet, ask any bowler what is needed to improve the sport of lawn bowls and the reply would be better communication! A methodology for coaching lawn bowls should "therefore" encompass the paradigms of:

(a) Communication Skills

(b) Social Skills

(c) Technical Skills

(d) Motor Skills

(e) Mental Skills

(f) Empathetic Skills

Malaysia has adopted a "Participation for All" policy in its Integrated National Sports Programme. We in lawn bowls could follow a coaching programme, which could follow the example set by Malaysia that is:

> "The breaking down of all social and cultural barriers": by giving equal opportunities for all bowlers through an Integrated Coaching Programme based on the latest advances in Contemporary Sports Psychology.

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