

A critical assessment of psychological skills training in sports

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■ ABSTRACT

Sport psychology is the scientific study of people and their behaviours in sport and exercise activities. The aim of the study of sport psychology is to be able to apply the knowledge learned about these to practical uses. Sport psychology is an interdisciplinary science that draws on knowledge from the fields of kinesiology and psychology. It involves the study of how psychological factors affect performance and how participation in sport and exercise affect psychological and physical factors. In addition to instruction and training of psychological skills for performance improvement, applied sport psychology may include work with athletes, coaches and parents regarding injury, rehabilitation, communication, team building, and career transitions. Psychological Skills Training (PST) is an individually designed combination of methods selected to attain psychological skill needs. There is no single idyllic PST package, each programme must be individualised based on the psychological state of the individual and the sport. To assemble a successful PST programme, it is important to distinguish between PST skills and PST methods. PST skills are the psychological qualities or attributes that need to be developed (*i.e.* confidence, concentration), the PST method is the tool that will be used to help improve the PST skill.

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Psychological skills training (PST) is an individually designed combination of methods selected to attain psychological skill needs (Gill, 2000). There is no single idyllic PST package and each programme must be individualised based on the psychological state of the individual and, the sport. To assemble a successful PST programme, it is important to distinguish between PST skills and PST methods. PST skills are the psychological qualities or attributes that need to be developed (*i.e.* confidence, concentration), the PST method is the tool that will be used to help and improve the PST skill (Calmels *et.al.*, 2003). Much of the early research utilizing prescriptive PST programmes used single PST methods and examined their effect on performance (Garza and Feltz, 1980). Thelwell and Greenlees (2001) argued that when implementing a PST programme, it is improbable that a single method will be employed by a sports psychologist. Thelwell and Greenlees (2001) highlight that it is more effective

to employ a combination of mental skills that relate to the specific sport.

Sport psychology is the scientific study of people and their behaviours in sport and exercise activities. The aim of the study of sport psychology is to be able to apply the knowledge learned about these to practical uses. There are two objectives that the field of sport psychology aims to meet. These are:

- To understand the effects of psychological factors on physical performance.
- To understand the effects of participating in physical activity on psychological development, health and well-being.

Typical questions that a sport psychologist might ask are:

- “How does anxiety affect the accuracy of an athlete’s movements?”

- “Does lacking self-confidence influence a person’s ability to learn a certain *sport*?”
- “How does a coach’s reinforcement or punishment influence a player’s performance?”
- “Does imagery training help the process of recovery in injured athletes?”
- “Does running reduce anxiety and depression?”
- “Does participating in youth sports cause young athletes to be overly aggressive?”
- “Does participation in daily physical education classes improve a child’s self-esteem?”
- “Does participation in athletics enhance personality development

Gymnastics :

Men’s artistic gymnastics is competition on which the athlete must perform on a total of six pieces of apparatus; these include vault, high bar, parallel bars, rings, pommel horse and floor. During major competitions such as the Commonwealth games the athlete must perform three pieces on two consecutive days. The athletes are given a score out of 10 for their performance on each piece. Athlete score more marks for more difficult sequences and less for easier routines. For each apparatus the athlete is scored based on: difficulty of routine, composure, timing, combination of movements and execution of movements.

To compete at the Commonwealth games 2006 the athlete must have attained scores higher than the lowest qualifying scores from the commonwealth games apparatus finals in 2002 (Table 1). These scores must be achieved during recognised gymnastics competitions such as: Northern European Championships, Scottish Championships, Welsh Open and British Championships.

Apparatus	Grade	Apparatus	Grade
Floor	8.80	Vault	9.125
Pommel horse	8.90	P Bar	8.70
Rings	8.80	High Bar	8.65

Source : Adapted from Gibson (2011)

Thelwell and Greenless (2001) noted that the effectiveness of PST packages is positive within sports of all natures. Fournier (2005) reported a 10 per cent improvement in the bars, beam, and floor when compared to the control group. The PST programme used by Fournier *et al.* (2005) consisted of a five step intervention using relaxation, self talk, goal setting, focusing and visualisation. Fournier *at al.* (2005) also reported that imagery and relaxation were the most effective methods utilised.

The purpose of the study it to develop a PST programme

for an elite male gymnast. The PST program will be implemented to optimise performance for the forthcoming Commonwealth games in Australia with specific consideration to emotions and self-confidence.

Self-confidence :

Self-confidence may be the most critical self-perception in sport psychology (Gill, 2002). Self-confidence is defined as a global and stable characteristic which, in reality bares little use within the sports domain (Gill, 2002). The athlete must be confident they can perform well when placed in their competitive environment, *i.e.* Tiger Woods would be confident of making the final putt on the 18th green at Augusta in the Golf Masters, however, may not feel too confident taking the final penalty kick in the world cup final. Self-efficacy is a situation form of self-confidence or the belief that one is confident and can perform within a specific situation (Gill, 2002). Gill (2002) suggests that the most consistent difference between elite and less successful performance is that elite athlete possess greater levels of self-efficacy.

Self-confidence/self-efficacy :

Theories Bandura (1977) stipulates that self-efficacy is directly related to athletic performance. Increases in self-efficacy are mirrored by improvements in performance (Silva and Stevens, 2002). Subsequently decreases in performance limit both performance and training (Silva and Stevens, 2002). Prior experiences effect efficacy expectations, the probability performing to a high standard is much greater if you believe in your abilities, therefore efficacy has tremendous explanatory power when comparing fluctuations in performance (Silva and Stevens, 2002).

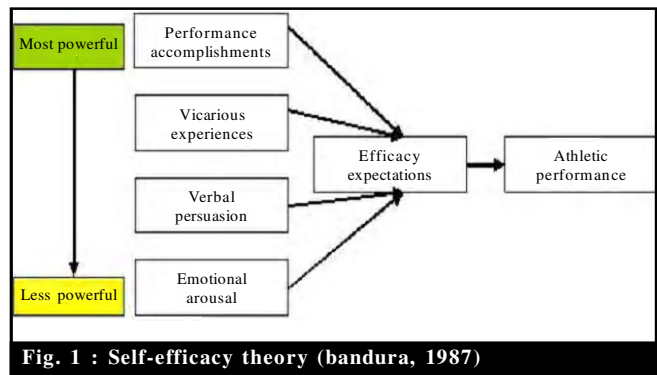


Fig. 1 : Self-efficacy theory (bandura, 1987)

Self-efficacy is very important in a sport like gymnastics, the performer must believe they can perform well at the required time (Gill, 2002). Efficacy can fluctuate between apparatus, therefore, within gymnastics it is important to increase self-efficacy for each piece of apparatus. Initially low levels of self-efficacy may transfer from piece to piece and

negatively influence the whole performance. Therefore, initially high levels of efficacy will improve performance and should be maintained throughout the duration of the competition. As with many psychological components rarely do a single component work in isolation. Decreases in self-efficacy could alter important performance variables such as arousal, stress and anxiety which may have a snowballing effect on performance.

Emotions :

Emotion in sport is much more than a reactive expression to victory or defeat. Sports scientists have argued that pre-competitive and competitive emotional states can influence the athletes ability to perform (Hackford, 1991). Emotion is not a single construct, it can be sub-divided into emotional components (Horn, 2002). Researchers have demonstrated that a wide range of emotions are associated by changes in performance (Jones, 2001). Many athletes report that heightening levels of arousal facilitates their performance (Gould *et al.*, 1992). It is reported to increase anaerobic power (Jones, 2001). However, emotions can have a negative effect on some motor skills through increasing muscular tension which ultimately effect co-ordination (Jones, 2001), both detrimental to a sport like gymnastics.

Arousal :

Arousal is referred to as a unitary construct that embraces both the psychological and physiological energetic systems (Horn, 2002). Landers and Boucher (1998) defined arousal as an energizing function that is responsible for harnessing the body's resources for intense and vigorous activity. Arousal is perceived to vary along a continuum which runs from 'deep sleep' to extreme excitement. Arousal can be measured using self-report questionnaires such as the Thayer (1967) Activation-Deactivation Check-list (Horn, 2002). Arousal can also be measured using simple physiological tests; heart-rate, blood pressure, respiration rate and biochemical indicants such as; epinephrine or adrenaline.

Anxiety :

Martens (1977) in Horn (2002) advocates levels of anxiety as a result from an objective demand interpreted as threatening by an individual. Horn (2002) highlights that anxiety is viewed as feelings of nervousness and tension, which is linearly associated with levels of arousal. Anxiety can be further sub-divided into somatic and cognitive anxieties. Somatic anxiety refers to the bodily symptoms of autonomic reactivity; butterflies, sweating, increased heart-rate and shaking. Cognitive anxiety refers to the negative concerns about performance, lack of concentration and poor attention (Horn, 2002). Levels of anxiety can affect athletes individually, there not a single optimal level of anxiety, the effects of anxiety on

performance is largely attributable to whether the athlete perceives anxiety to be facilitating or debilitating (Gill, 2000).

Stress :

Stress can be described as both an environmental variable and an emotional response to a specific situation (Horn, 2002). Much like anxiety, the effects of stress on performance is down to how the athlete perceives this stress. Selye (1974) in Horn (2002) highlighted that not all stress is negative, eustress (good stress) and distress (bad stress). Environmental stresses often deemed as distresses are somewhat unavoidable unpredictable, therefore the sports psychologist has very little control over their effects on performance. Emotional stresses however, can be improved, the athlete can be thought how to better 'cope' with stresses where they may perceive an imbalance between the demands of the situation and his or her response capabilities (Horn, 2002).

Psychological skill training programme :

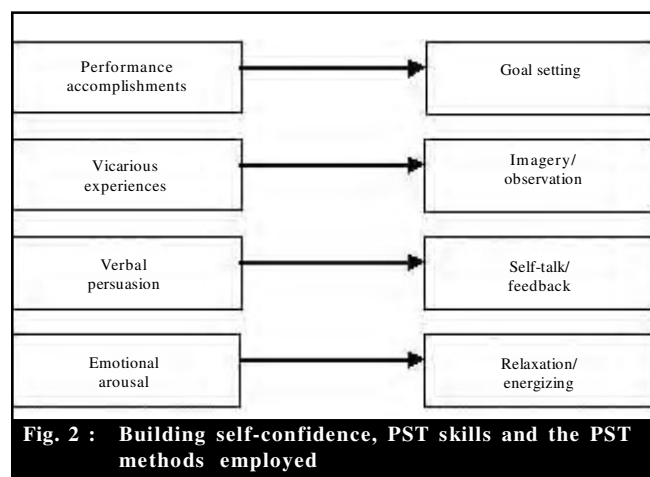
The PST programme will focus on optimising performance by improving self-efficacy and emotional control. To improve these psychological skills, the athlete will complete sessions using goal setting, imagery and relaxation. The programme will follow an educational approach as advised by Gill (2000) and Horn (2002). The programme consists of three main phases: Educational phase-developing the understanding and importance of PST and how it can affect performance. Acquisition phase - Athletes learn how to use PST methods and how best to implement them. Practice phase - devote time and effort to PST and complete training in both competition and practice (Horn, 2002). Fournier *et al.* (2005) reported that four gymnasts out of nine improved on the vault by 10 per cent and seven out of nine on the asymmetrical bars improved by 10 per cent. These findings support the use of PST programmes to optimise performance within gymnastics.

Goal setting sessions :

The first mental skill to be used within the programme is goal setting. To fully educate the athlete on how goals should be implemented, both short and long term goals will be discussed (Horn, 2002). The athlete will be informed of the benefits of setting 'smarter' goals, and will be educated on the use of outcome, process and performance goals (Kingston and Hardy, 1997) and a mixture of these will be used to best improve performance. The coach will be fully involved in the goal setting process, especially when process goals are used, the coach will provide the relevant technical information and needs analysis for each piece of apparatus. The athlete will be set goals to; perfect each individual piece of equipment (process goal), win minor



practice competitions (outcome goal) and to achieve a point boundary for competitions (performance goals). (Fig. 2).



Imagery sessions :

The imagery sessions will incorporate internal (imagination) and external (video demonstration) of performances. All sessions will focus solely on optimal performances, participant will be encouraged to use imagery in real time and in slow motion, slow motion imagery will be encouraged especially when there is a certain technique which the athlete is performing incorrectly, this will allow them to imagine performing the skill correctly employing all the teaching points. The athlete will be encouraged to develop a competition-specific session. This session will be practiced intensely prior to and during competition (Horn, 2002).

Relaxation sessions :

The third mental skill to be employed throughout the PST programme is relaxation. This will be delivered via a three-stage approach (Thelwell and Greenless, 2001). The first stage which will focus on the use of Progressive Muscular Relaxation (PMR) this allows the athlete to feel what it is like to be completely relaxed and free from the aforementioned muscular tension (Gill, 2000). The athlete will be asked to practice the centring technique which helps control breathing. This will be performed while the athlete is warming up for training sessions so that it becomes habitual when they warm-up for a major competition (Thelwell and Greenless, 2001). Once these skill have been perfected participants will be asked to monitor their own tension levels pre and post relaxation sessions by responding to verbal descriptors, the athlete must scale their feeling from 0 (very tense) to 10 (very relaxed). Such a strategy will allow the athlete to be aware of their tension levels (self-reliant), and subsequently employ PMR or centring to reduce high levels of anxiety (Thelwell and Greenless, 2001).

Rationale for goal setting :

According to Bandura (1977) 'performance accomplishment' is the most effective method for improving self-efficacy (Fig. 1). The most commonly used tool used by sports psychologists is goal setting. Setting goals provides this focus and directed attention by agreeing a timed end point to their action (Locke, 1991). Researchers and practitioners in both sports and organizational literatures have argued that a combination of both short term and long term goals is most effective for improving performance and changing behaviour, short term goals should be enforced to directly reach the long term goal of the client/performer (Weinberg *et al.*, 2001).

Miller and McAuley (1987) tested free throw self-efficacy in 18 undergraduate students. The goal-training condition reported higher free throw efficacy when compared to the no-goal condition. Kingston and Hardy (1997) suggest that in sports which are highly complex (gymnastics) process goals should provide the framework for improving technical aspects of difficult skills. The support for the use of process goals is also evident in Kingston and Hardy (1997) as it is suggested that process goals are more beneficial for increasing self-efficacy as they are more controllable and flexible, this allows the coach/psychologist to mould goals so that the athlete constantly achieves their goals. This constant achievement will improve self-efficacy via increasing the performance accomplishments (Horn, 2002). Pierce and Burton (1998) found that goal setting improved performance, state self-confidence and perceived satisfaction within 25 female junior high school gymnasts.

Rationale for imagery :

According to Bandura (1977) 'vicarious experiences' is the second most powerful technique to improve self-efficacy (Fig. 1). The tools utilised sports psychologists to promote these vicarious experiences are imagery and observation. Horn (2002) suggests that motivational general-mastery (MG-M), a form of imagery which focuses on effective coping and mastery of challenging situations, is most effective for improving self-efficacy. Callow *et al.* (1998) found that MG-M imagery significantly improved sport confidence in two out of three elite badminton players, and it stabilised the other players confidence. Callow *et al.* (1998) used seventy-six subjects to whether external imagery (observation) would improve gymnastic performance to a greater extent than a combination of internal visual imagery and kinesthetic imagery. Performance was significantly higher within the external imagery group as opposed to the internal visual groups (Callow *et al.*, 1998). Therefore, for the imagery sessions within the PST program a mixture of internal and external imagery will be used as proposed by Callow *et al.* (1998).

Imagery techniques have been used within clinical

psychology to induce relaxation (Horn, 2002). In a study investigating the use of imagery in elite athletes, it was noted that imagery not only 'psyched up' the athlete, but helped to maintain composure during competition (Jones, 2001). Martin *et al.*, Moritz and Hall (1999) suggested that imagery which focuses on feelings such as relaxation, stress, arousal and anxiety could be used as an effective tool to control emotions. In addition to using imagery to regulate anxiety, athletes can also use imagery within practice to pre-plan and rehearse their emotional responses prior to competition (Horn, 2002).

Rationale for relaxation :

As previously mentioned high levels of somatic and cognitive anxiety are detrimental to performance (Horn, 2002), within a sport such as gymnastics, where movements have to be executed with finesse and composure excessive anxiety will undoubtedly hinder performance. Athletes in closed skill sports (such as gymnastics) report more concerns about anxiety management than other athletes (Grandjean and Taylor, 2002) Relaxation is often cited as the most important skills to learn (Fournier *et al.*, 2005). The ability for an athlete to control anxiety can be the difference between good and poor performance, within gymnastics it is vital that the athlete can overcome the debilitating effects of anxiety (Horn, 2002).

Relaxation not only improves emotional control within athletes, according to Bandura (1977) 'emotional control' directly affects the self-efficacy of the athlete. Although relaxation and energizing techniques are classified as the fourth most useful tool for improving self-efficacy (Fig. 1), relaxation techniques were incorporated within the PST programme for the positive effect on anxiety control.

Monitoring PST programme :

Assessing the progression of the athlete during a PST programme is essential (Pierce and Burton, 1998). The two main psychological skills which will be improved within this programme are anxiety and self-confidence. Anxiety levels and self-confidence will be measured using the CSAI-2-R. To help understand the mood state of the athlete the positive and negative affect schedule (PANAS) will also form part of the assessment.

In order to assess the multidimensional aspects of anxiety, Martens *et al.* (1990) developed the Competitive State Anxiety Inventory-2 (CSAI-2). The 27 item measure was constructed with three subscales: cognitive anxiety, somatic anxiety and self-confidence (Craft *et al.*, 2003). The CSAI-2 represents the best validated psychometric instrument with which to quantify competitive anxiety (Kremer and Scully, 1998). Cox *et al.* (2003) found significant psychometric weakness for the CSAI-2 and revised each subscale to improve the psychometric properties for cognitive anxiety,

somatic anxiety and self-confidence. It was concluded that the CSAI-2-R should be administered in place of the CSAI-2. The administration time was not highlighted within the study completed by Cox *et al.* (2003) therefore the administration time will be used 31-59 mins prior to competition as advised by Craft *et al.* (2003).

Time and implementation :

Throughout the educational and acquisition phases, the athlete will be required to spend increased time with the sports psychologist (Gill, 2000). When developing new psychological skills the performer and psychologist must work together to ensure techniques such as goal setting and imagery can be fully effective in optimising performance (Calmels *et al.*, 2003). Once in the practice phase of the PST the psychologist and athlete can reduce the time and frequency of sessions. Therefore, the educational and acquisition phases of the PST will be completed during the off season/pre-season when physical training time and frequency is low. Sessions within the practice phase can be reduced to 15-30 mins for 3-4 sessions per week in some instances (Gill, 2000).

Conclusion :

Research suggests that mental practice is as important as physical practice when trying to enhance a skill (Barr *et al.*, 1990), the present PST programme will enhance performance by optimising psychological variables related to performance. Self-confidence and anxiety will be the main focus of the skills to be improved. A combination of goal setting, imagery and relaxation techniques will allow the athlete to optimise their performance during 2006 Commonwealth games. Problems when implementing this programme may include:

- The athlete not liking the inventories/paperwork.
- The athlete having poor imagery ability.
- Poor athlete - psychologist relationship.
- Lack of time.
- Lack of sport knowledge.
- Lack of follow up.

However, as highlighted by Horn (2002), PST programme ineffectiveness is most commonly contributed to by the psychologist. A PTS programme will be ineffective if the athlete cannot see the effects psychology will have on performance (Gill, 2000). The educational phase is the most important phase to reduce such problems. Once the athlete understands the benefits of sports psychology he will allow the time and dedication required to complete PST sessions.

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