

UNDERSTANDING PSYCHOLOGICAL PREPARATION FOR SPORT

Theory and Practice of Elite Performers

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interested reader is referred to Barnard and Teasdale (1991), Gilligan and Bower (1984), and Tulving (1983).

Studies of mood congruent recall have generally used either laboratory-based mood inductions, or naturally occurring moods such as happiness and depression (for a brief review, see Eysenck and Keane, 1990). However, one study by Godden and Baddeley (1975) examined subjects' recall of lists of words which had been learned either on land or 6 m (20 ft) under water. Subjects who learned on land recalled more words on land than under water, whilst subjects who learned under water recalled more words under water than on land. Although Godden and Baddeley did not measure the anxiety levels of their subjects, their results are at least consistent with the suggestion that material which has to be recalled under conditions of high anxiety may be best learned in the same conditions. There are clearly extremely important ethical and practical considerations that would have to be considered before any recommendations could be made based on this finding. However, if such an interpretation of Godden and Baddeley's findings were confirmed it could radically alter current thinking regarding the "ideal" coaching environment for elite performers.

Summary

The relationship between anxiety and attention is a complex one, and one is forced to look beyond past and current research in sport psychology to begin to comprehend the "nature of the beast". The "beast" can clearly be examined from a number of different perspectives, including information processing, attentional resources, selective attentional biases, mood congruence, etc. This is an under-researched area in sport psychology where researchers have tended to rely on over-simplistic explanations in the form of, for example, Easterbrook's (1959) cue utilisation theory or Wine's (1971) theory of reduced processing capacity. Whilst not necessarily being inaccurate, such approaches to a great extent lack the specificity and detail required for further understanding. Sport psychology researchers need to progress beyond simplistic explanations of what are very complex phenomena, and begin to explore the relationship between attention and anxiety from some of the different perspectives outlined in this section.

STRATEGIES FOR ENHANCING CONCENTRATION AND ATTENTION CONTROL

Given the relatively under-developed theoretical framework in the attention-sports performance domain, it is not surprising that there is a paucity of experimental research which has examined the efficacy of attention control strategies. Even the work which has emanated from Nideffer's

(1976) original proposals on attentional style is devoid of firm recommendations for strategies and techniques that can be employed to enhance performers' ability to switch in and out of the various styles (see Nideffer, 1993). Consequently, the content of this section is heavily dependent on three sources: firstly, athletes' published accounts of strategies and techniques used for attention control; secondly, published accounts of researchers' observations and surveys of elite performers; and thirdly, the strategies and techniques advocated in mental training packages as methods of developing attention control. Whilst the rationales which have been presented for the majority of the techniques discussed below are largely intuitive, an attempt will be made to encompass them within the theoretical framework addressed in the previous sections.

Simulation training

The competitive environment clearly includes numerous factors which are not present to the same degree, or even at all, in the training environment. Physical factors such as the presence of the opposition, perhaps a noisy and restless crowd and an official during competitive events, undoubtedly produce a very different environment from training. Even if a competition venue is the actual site of the normal training venue, the psychological environment will be very different in the two types of situation. Levels of perceived stress, anxiety, confidence, and motivation are all likely to differ in such situations. All of these factors are also, of course, potential distractions to the athlete and so may impair performance. The ability to remain focused and not be distracted in such an environment is clearly crucial. One technique which is used by many sports performers to enhance their attention control in highly pressured and potentially distracting situations is that of simulation training.

Orlick and Partington's (1988) reports of Olympic athletes emphasised the importance they attributed to simulation training as part of their preparation:

the best athletes made extensive use of simulation training. They approached training runs, routines, plays, or scrimmages in practice as if they were at the competition, often wearing what they would wear and preparing like they would prepare. (p. 114)

Jones and Hardy's (1990a) reports of interviews with named elite athletes also demonstrate very clearly the valuable contribution of simulation training in enhancing attention control skills. Indeed, simulation training was a high priority for all of the athletes interviewed. This training took two forms; physical practice in the presence of simulated competition stressors and mental rehearsal of the actual competitive event.

Looking firstly at the methods of physical practice used by Jones and Hardy's subjects, Alan Edge (former Olympic kayaker) reported using simulation training as often as he could. This involved not only simulation of the moves which would probably be encountered on a course, but also where on the course they would come. For example, he would simulate a particularly hard move that might come late in a course by paddling very hard for five minutes and then going straight into the move. Olympic javelin thrower, Steve Backley, stated that he sometimes structured his training in such a way as to put himself under the same sort of pressure encountered on the qualifying day of a major competition:

I'd have three throws to get over 75 or 76 metres and put the mark out and actually go through the process of trying to simulate the pressure. If I've got a minor club competition, I'll slip in a "qualifying round" the day before to create the physical fatigue the day after and also the mental stress. (Jones and Hardy, 1990a, p. 270)

Former World Champion trampolinist, Sue Challis, regarded herself as being very good at simulating competitive conditions in training:

I actually do the routine in training and imagine that I've got one chance. I present to the judges and make it as near to the competition as possible. I often get quite uptight if I don't get it right, but if it's good it really boosts my confidence. (Jones and Hardy, 1990a, p. 271)

Jones (1993) has recently reported a psychological intervention with an elite racket sport player in which simulation training formed a major component. The player presented herself with a problem of losing concentration when she had what she perceived to be a bad call against her by the referee. Following training in a meditation-based relaxation technique, she then practised using this technique in practice matches in which a referee was primed to give bad calls against her. This helped to reinforce the use of the technique in such a situation which was then transferred successfully to the competitive environment.

Mental rehearsal was also identified as an important technique for developing attention control by the athletes interviewed by Jones and Hardy (1990a). Steve Backley, for example, said that he often used it to simulate the stress of competition by imagining that he was

in the last round of a major competition losing and with only one throw left . . . Imagining myself in that position and succeeding made me feel stronger. (Jones and Hardy, 1990a, p. 270)

David Hemery, Olympic 400 metre hurdles Gold Medal winner in 1968, mentally rehearsed a large number of variations prior to his Gold Medal winning race in an attempt to ensure that nothing would distract him:

he reported regularly mentally rehearsing "every lane and condition that I could conceivably think of: drawn in lane one, having people hare off, but maintaining my control; drawn in the outside lane and not being able to see (the other runners) and still having sufficient confidence in my going for world record pace, so if I couldn't see anyone I would still go for it, not letting them determine my aim. (Jones and Hardy, 1990a; p.269)

The theoretical rationale for using simulation training as part of an athlete's preparation for competition is a very strong one at a cognitive-behavioural level. However, the rationale for simulation training is also very persuasive at a cognitive level. The works of Hockey and Hamilton (1983), Humphreys and Revelle (1984), and Sanders (1983) (see Chapters 5 and 6; Jones, 1990; Jones and Hardy, 1989) all suggest that stress effects are situation-specific, so that different stressors have different effects upon attention and performance. This suggests that competitive anxiety, fatigue, pain, "bad calls", etc. may all have different effects, so that it is appropriate to simulate as many different conditions as possible, both internal and external, in order to fully prepare the athlete. In addition, the available literature on mood congruent recall (Barnard and Teasdale, 1991; Eysenck and Keane, 1990) provides further evidence of the importance of simulation training.

Competition plans, performance routines, and process-oriented goals

The findings of Orlick and Partington (1988) clearly indicate the importance of competition plans for elite athletes. The best athletes in their study have well-established and well-practised pre-performance plans in the form of routinised behaviours which help them to prepare for performance. As was indicated in Chapter 5, the precise means by which pre-performance plans affect performance are not known. However, Boutcher (1990) has proposed that attentional control is likely to be one of these means, and it is worth recalling that the focus of pre-performance routines is in the process of performing not the outcome (see Chapter 5).

The best athletes in Orlick and Partington's (1988) study also had very clear and detailed plans of action for events during performance which, in the vast majority of cases, were designed to facilitate attentional focus on the process of performance as opposed to factors over which they had no direct control, such as other competitors and final outcome. This strategy is aptly

described in the following quote from an Olympic pairs kayaker interviewed in Orlick and Partington's (1988) study:

My focus was very concentrated throughout the race. We have a start plan, and in it I concentrate only on the first few strokes . . . Then I concentrate on the next little bit of the race . . . Then it's getting to the end, we have to really push. Almost every 3 seconds or so towards the end I'd have to say, "Relax", and I'd let my shoulders and my head relax, and I'd think about putting on the power, and then I'd feel the tension creeping up again so I'd think about relaxing again, then power, then relax. . . . (p. 116)

Jones and Hardy's (1990a) report of their interview with kayaker, Alan Edge, similarly highlights the importance of carefully thought-out competition plans:

Alan always had a very detailed race plan with clearly defined process-oriented goals about how he wanted to paddle each section of the course. Because this plan included subgoals about what to do if he made any mistakes, it was theoretically possible for him to stick to the plan regardless of anything that happened during a run . . . Alan attached a great deal of significance to having this sort of plan, and used it to help him focus his attention and feel in control. (p. 269)

David Hemery's (Olympic hurdler) competition plan had as its cornerstone an internal focus of attention upon his body so as to monitor his process-oriented goals for the race:

I focused on the feeling that generated the pace. I couldn't tell you how it was . . . a percentage of effort was how it came . . . it had to do with how much effort you were going to put into each section of the race . . . going down the back straight at 80 percent, but then accelerating the legs and running wide because I hadn't learned to hurdle off the other leg sufficiently well, and I had to put in two extra strides so I revved higher round the bend intentionally . . . and took a foot off every stride. (Jones and Hardy, 1990a, p. 269)

The findings from Jones and Hardy (1990a), and Orlick and Partington (1988), indicate that elite athletes often use very detailed plans which specify how they can achieve the performance goals they set for themselves. These competition plans usually have process-oriented goals as their central feature. Little empirical research has been conducted to examine the influence of process-oriented goals, but several researchers have suggested that such goals should enhance attentional focus (cf. Beggs, 1990; Boutcher,

1990; Hardy and Nelson, 1988), and Kingston and Hardy (1994a) have recently provided empirical support for these proposals in a sample of golfers.

When viewed in the context of automaticity of skilled performance, the use of process-oriented goals to help elite performers focus their attention on important aspects of performance presents what, at first sight, may appear to be a paradox. The resolution of this apparent paradox requires some subtlety. First, process-oriented goals need not necessarily be problem-focused, but may, instead, be emotion-focused; for example, a golfer might have a goal of ensuring that she is relaxed prior to putting. Second, process-oriented goals require performers to reward themselves for successfully completing the process, not the outcome, and may therefore reduce the pressure which makes performers want to try to consciously control their performance. Third, the process goals that are used may be so well programmed into the performer's sub-conscious that they do not normally operate at a conscious level. Fourth, holistic process-oriented goals may not encourage lapses into conscious control because conscious control can only be exerted over parts of a movement (Anderson, 1982; Eysenck and Keane, 1990). In conclusion, the automatic processing versus process-oriented goals paradox can be resolved by a consideration of the appropriateness of specific process-oriented goals for the performer in question. Nevertheless, the extent to which elite performers actually use process-oriented goals remains an open question.

Overlearning of skills

A further feature to emerge from Jones and Hardy's (1990a) interviews was the emphasis placed on overlearning of skills as an aid to concentration in competitive situations. The general consensus amongst the athletes was that the skill they were required to reproduce in competition had to be overlearned to the extent that, no matter what situations or doubts arose, they would still be able to perform despite them. For example, Sue Challis (former World Champion trampolinist) stated:

I like to do what I'm going to do in competition over and over again . . . I like to have done the whole routine many times so I know that, whatever happens, I can do it. (Jones and Hardy, 1990a, p. 272)

Whilst no empirical research has directly addressed the question of how much overlearning is required to achieve such a state, it seems likely to be a very considerable amount from the anecdotal evidence which emerged from the interviews in Jones and Hardy's (1990a) study. On the other hand, there is, of course, a substantial empirical literature which indicates the value of

overlearning in general terms (cf. Eysenck, 1982; Hockey and Hamilton, 1983; Humphreys and Revelle, 1984; Parfitt *et al.*, 1990).

One explanation of overlearning as an aid to concentration relates to the notion that practice facilitates the concurrent performance of more than one task (Eysenck, 1984). Overlearning may enable the athlete to establish automatic attention processes (Schneider and Shiffrin, 1977; Shiffrin and Schneider, 1977) which are supposedly of unlimited capacity and operate more rapidly than controlled processes. It should also be emphasised, however, that automatic processing is relatively inflexible so that athletes could encounter problems in situations which are novel. This provides a further argument, of course, for varied practice during simulation training in which the skills are overlearned in as many different situations as possible so that automatic processing is not disrupted during competition.

One final comment is worthwhile in the context of overlearning and automaticity. In just the same way that physical skills need to be overlearned in order to be performed automatically, so Gould *et al.* (1993a) have presented evidence that the automaticity of psychological skills and strategies is also a distinguishing characteristic of truly elite performers.

Attentional training programme

Boutcher (1992) has proposed an attentional training programme based upon his integrated model of attention and sports performance (see earlier section in this chapter). The programme comprises three phases: assessment of the performer's attentional strengths and weaknesses; basic attentional training; and advanced attentional training. The first phase involves a multifaceted approach to assessing attentional skills via a combination of some or all of a number of techniques, including questionnaires, interviews, thought sampling, observational analysis, performance tests, and psychophysiological measurements. Specific measures include sport-specific versions of the TAIS (e.g. Albrecht and Feltz, 1987; Van Schoyck and Grasha, 1981), the Stroop test (Stroop, 1935), concentration grid tests (e.g. Harris and Harris, 1984), facial/eye states, and EEG and cardiac patterns.

Boutcher proposed that the basic attention training phase could be structured around a variety of laboratory tasks, such as the Stroop and concentration grids. The use of biofeedback could also help the performer to acquire basic control over variables such as heart rate, respiration, and attentional focus. The advanced attentional training phase is more sport-specific and is aimed at the development of effective pre-performance routines which enable the performer to direct "competition-generated arousal into automatic processing of the task at hand while suppressing analytical processing" (Boutcher, 1992, p.262). Boutcher proposed that the most efficient attentional style is one in which the performer thinks of "nothing" so that skills can be

performed reflexively. Such a state is described in Newman's (1992) account of an interview with international soccer goalkeeper, Tony Meola:

When I'm really concentrating, I would say it's almost like I'm playing unconscious. (p. 95)

Research has shown that individuals can suppress cortical activity by learning to enhance alpha waves and also that they can self-regulate EEG activity (Bauer, 1976; Elder *et al.*, 1985; Jackson and Eberly, 1982). Whilst it must be emphasised that reduced cortical activity does not necessarily imply increased concentration, sport-specific EEG biofeedback is advocated by Boutcher as an effective means of teaching performers how to acquire such states. Although not mentioned by Boutcher, meditation-based relaxation techniques have also been shown to enhance concentration in sports performers (Jones, 1993).

Boutcher's (1990) programme is speculative and unsubstantiated by empirical evidence. Nevertheless, it does present some interesting ideas. However, there is an inherent danger that the extensive use of laboratory tasks and non-sport-specific content in the early stages of the programme could cause adherence problems in some performers. Furthermore, the extent to which such laboratory strategies will transfer to the sport environment remains questionable.

Training for trust

The notion of *trust* as a psychological skill in which athletes release conscious control over movements, thus inducing automaticity in movement execution, has recently been proposed by Moore and Stevenson (1991, 1994). They identified trust as representing a performance goal which depends upon three fundamental psychological skills: concentration, confidence, and composure (see Figure 7.3). *Concentration* refers to what athletes focus on (e.g. self-statements, mistakes, sensory cues) and is proposed to be a primary determinant of *confidence*, which refers to the athletes' belief that they have the specific abilities necessary to execute the sport skill. Moore and Stevenson then proposed that high confidence is expressed by *composure*, reflected by a quiet and relaxed mind prior to skill execution.

Moore and Stevenson (1994) suggested a three-phase training programme comprising education, skills training and competition simulation phases. The emphasis during the education phase is on gaining the athlete's commitment to train for trust. In the second phase, the goals of the concentration training activities are twofold: "(a) to develop a reference point so that athletes know when they are connected to, and trusting in, skill execution, and (b) to identify when and how trust breaks down in terms of the specific

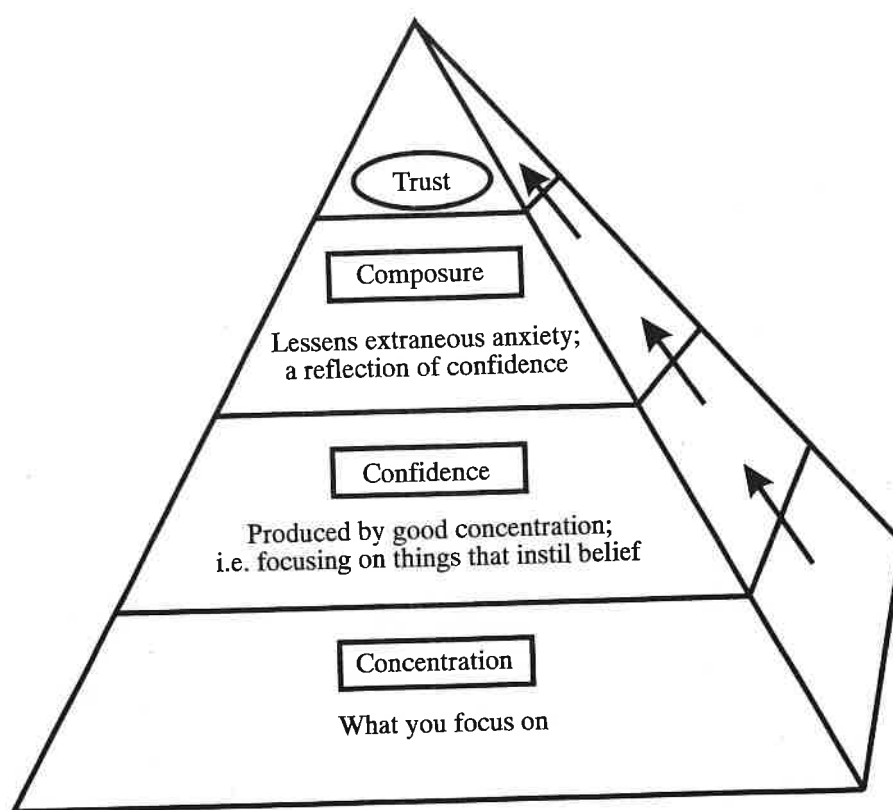


Figure 7.3: Fundamental psychological skill components of trust (modified from Moore and Stevenson, 1994 with permission)

skill and situation" (Moore and Stevenson, 1994; p. 7). Three types of drills are advocated for developing reference points for trust. Firstly, "feel" drills involve athletes attending to the kinaesthetic feel of specific movements, either through actual physical practice or imagery. Secondly, "quiet" drills involve athletes identifying distractions and practising refocusing. Thirdly, "connect" drills require athletes to attend to present moment sensations during skill performance in order to enhance sensory awareness. Similar strategies have also been proposed by Syer and Connolly (1984).

The final phase comprises structured competitive simulations in which the psychological skills acquired in phase two are monitored and evaluated. Monitoring sheets and the use of video are advocated at this stage. Athletes performing self-paced skills are encouraged to develop an execution routine prior to executing the skill. This routine moves through three stages: analysis ("check it out"), comprising recognising the situation at hand and then reviewing a plan of action; feel ("click it in"), involving accessing the correct

motor programme; and trust ("let it go"), which involves the initiation of movement by clearing the mind and releasing conscious effort.

This approach can be criticised on a number of grounds. Not least, it is conceptually weak and fails to take into account conceptual advances in both attention and confidence in recent years, and also the recent work of ecological psychologists. Secondly, the "performance" goals referred to by the authors are actually process-oriented goals. Third, it is not at all clear how the proposed training should enhance trust.

Associative versus dissociative attentional strategies

Associative versus dissociative attentional strategies were identified as a cognitive style dimension which distinguished elite from non-elite marathon runners (Morgan and Pollock, 1977). Specifically, elite runners were generally found to use associative strategies whereby their direction of attention was internalised towards the body's feedback signals, whilst non-elite runners tended to use dissociative strategies in which attention was externalised. However, Schomer's (1986) more rigorous investigation of elite and non-elite marathon runners showed that, regardless of the runner's status, increased running pace was accompanied by a predominantly associative cognitive strategy. It is likely, of course, that runners, whether elite or non-elite, do not use solely one or the other type of strategy, but a combination of the two. In any case, research findings have suggested that associative strategies are not always superior (Gill and Strom, 1985; Pennebaker and Lightner, 1980; Weinberg *et al.*, 1984). Gill (1986) has attempted to explain these inconsistencies. She proposed that dissociative strategies might enhance performance in endurance tasks where maintaining performance is the primary goal via reduced perception of pain and fatigue. Gill went on to argue that associative strategies are beneficial in achieving specific time or position goals when monitoring bodily sensations is an important part of pacing oneself.

The notion of athletes adopting dissociative strategies is very different from ideas discussed earlier in which the major concern is to remain focused on task-relevant cues. Dissociative strategies, on the contrary, involve a conscious effort to direct attention towards what may be task-irrelevant cues. Clearly, the application of this form of attentional control is at best limited to those sports which are relatively low in terms of skill complexity and which involve intense physical fatigue and pain.

Summary

One of the clear conclusions that can be drawn from the content of this section is that there are a wide variety of techniques and strategies used by

elite athletes as a means of enhancing their attentional control. Often, they appear to use a combination of techniques, in which process-oriented goals, imagery, and relaxation appear to be particularly prominent.

Several of the strategies discussed in this section have emphasised the importance of automaticity in elite sports performance. However, recent empirical work has illustrated the prominence of process-oriented goals in enhancing attention, thus highlighting the importance of conscious control. This apparent paradox has been addressed by Kingston and Hardy (1994b) who argued that the two perspectives are not necessarily contradictory so long as the process goals are "holistic" in nature. For example, a golfer might focus during her swing on "smooth", "slow" or "tempo". This does not involve focusing upon component parts of the skill of swinging a golf club, but rather on a generalised, holistic process-oriented goal. Kingston and Hardy (1994b) also suggested that since such routines themselves become automated with practice, so they help performers to get into a state of automatic processing prior to performing. Further support for the efficacy of such holistic process-oriented goals has been provided by Swain and Jones (1995) in a single-subject design study of basketball players.

IMPLICATIONS FOR RESEARCH

There is still much to unearth at both a conceptual and an empirical level in the area of attention in sport. The whole area is relatively underdeveloped and in need of concerted efforts. Studying and understanding how elite athletes, in particular, are able to control their attention appears to offer an important step forward.

Theoretical aspects of attention

There are essentially two options open to researchers working in this area. The first is to empirically examine and refine approaches currently available within the sport domain. Nideffer's (1976) attentional style approach could prove useful if refined at both the conceptual and measurement levels. Boutcher's (1992) model is interesting and in its very earliest stages of development; it would require substantial empirical investigation, and possibly considerable refinement before it could be used to guide training and interventions. The second option is to employ approaches available in the mainstream psychology literature, but which have received little attention in the sport domain. Generally speaking, these theories take such a strong cognitive position that they virtually ignore the motoric demands of sports skills. They therefore need to be empirically tested within the sport psychology domain, and modified as appropriate.