PERFORMING UNDER PRESSURE

A SPECIAL REPORT FROM

PEAK PERFORMANCE

The research newsletter on stamina, strength and fitness

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From the editor

"He choked out there… She bottled it… I just froze!" However poetically you choose to describe it, failing to perform under pressure can be one of the most tragic aspects of sport. An athlete can have all the talent in the world, spend weeks, months or even years meticulously preparing, and then lose it all through anxiety or loss of confidence on one particular day. Just think of Greg Norman in the 1996 US Masters Golf, or Jana Novotna in the 1993 Wimbledon Tennis final.

This report aims to help eliminate the dreaded 'choking' curse with articles focused specifically on performing on the day. The opening chapter is an account from a sport psychologist describing where he felt the British Swimming team went wrong in the 2004 Olympics, and how these athletes needed to address focusing and concentration techniques more thoroughly in the future.

With this in mind there is a comprehensive article on competition anxiety, with different methods offered to control such anxieties. The next chapter is on developing self-confidence in sport, with the final chapter applying such methods to the game of tennis.

I hope this report helps you avoid the dreaded 'choker' tag.

Sam Bordiss
Editor

Beset by 'Olympic phobia' and lacking in focus and toughness: a sport psychologist's damning verdict on the under-performing GB swim team

This article was originally published shortly after the Athens Olympics in 2004. Interesting reflections and considerations are made by a sport psychologist who winced as the British swimming team wilted under pressure. His conclusion stipulates a need for research such as that found in the following chapters

Introduction

The Olympic Games of 2004 have been and gone and, thankfully, fears about the host city of Athens not being prepared proved unjustified. As ever, some performers rose to the occasion and delivered in terms of world records, Olympic records and personal bests, while others wilted under the gigantic pressure that accompanies this most prestigious and high-profile international sporting event.

As the dust settles and British athletes reflect on their performances and, in some cases, set goals that may lead them to Beijing in four years' time, it is right and proper that those responsible for preparing them for the Games reflect on their own contributions to our successes and failures.

Before the opening ceremony, I watched the coach of the GB swimming team confidently asserting that they were probably

the best prepared swimming team ever. A bold statement indeed: but with the squad boasting a world champion and – on paper at least – a number of serious medal contenders, there seemed every reason to be optimistic.

Unfortunately, I wasn't so convinced when I saw TV footage of the squad half-heartedly responding to the coach's attempts at motivational chanting. Sorry, but it is naïve to imagine that such exhibitions constitute satisfactory psychological preparation.

At the conclusion of the swimming events, GB performance director Bill Sweetenham was quick to defend the team's performances, pointing out that they were represented in 14 finals, a considerable improvement on the last Olympics in Sydney. However, with only two bronze medals to show for the team's efforts, this could hardly be judged a successful meet.

'At least some of our swimmers were not menatlly prepared for the pressures of Olympic competition'

Halfway through the swimming events, BBC commentator and former Olympian Adrian Moorhouse echoed my thoughts exactly. For a team supposedly so well prepared, why were the performances falling so far short of expectations? Had we, as observers, expected too much? Of course we have to accept that, as a nation, we will have peaks and troughs in terms of emerging talent. Potential Olympic champions are not mass-produced and there are limits to what coaching can achieve. Nevertheless, when comparing the team's Olympic performances with its members' past successes, a serious discrepancy was evident.

To me, this suggests that we should have worried less about whether Athens would be ready for the opening events and more about the preparation of our own competitors.

Adrian Moorhouse pointed out that being prepared for such a major event involves many components, including technical, physical and mental readiness. And he was dismayed at the number of British swimmers who reported problems with focus and concentration.

Why Marshall pulled out

I, like Moorhouse, was amazed when medal prospect Melanie Marshall withdrew from her second event because she felt exhausted. When you compare this athlete's swimming schedule

with those of other, much busier Olympic swimmers, including Michael Phelps, Ian Thorpe and Inge de Bruin, you have to wonder how these swimmers were able to perform so consistently well with such heavy workloads.

Two possible explanations occur to me: either the fatigue was physical, caused by overtraining, or psychological, caused by competitive stress. As a sport psychologist who paid close attention to post-race interviews, I have to conclude that at least some of our swimmers were not mentally ready for the pressures of Olympic competition.

Let's take the issue of concentration and focus first: mental preparation should be an integral part of a swimmer's training, and techniques for obtaining an optimal focus, and refocusing following distractions, can be learned.

If this was the best-prepared swim team ever, why was this aspect of training apparently neglected? I am sure our athletes did work on their psychological skills in preparation for competition, but it appears that there is still much work to do and it is important to target areas for improvement.

In summing up the team's performances at the Olympics, Bill Sweetenham admitted to the BBC that a certain degree of 'Olympic phobia' existed within the squad. He singled out mental toughness as a key area for improvement before the Beijing Games and has made a number of recommendations for how this might be achieved. This might sound obvious – churlish even – but shouldn't developing the mental skills of our swimmers have been a cornerstone of their preparation for Athens? There appears to be an element here of closing the stable door after the horse has bolted.

Of course I am only an observer who was not present at the training sessions of these performers, but I have worked as a sport and exercise psychologist for more than seven years and coached various sports for much longer. Having worked with international-level performers in some sports, I continue to be amazed at the imbalance between time spent on physical and mental training.

Almost everyone involved in sport will admit that getting your mindset right before competition and maintaining mental

control during your event(s) is an essential aspect of successful performance. The profile of sport and exercise psychology has risen hugely over the last few years, with enhanced coach education and a heavy media focus. Unfortunately, though, there is still a residual reluctance on the part of some performance directors, coaches and athletes to make a full commitment to mental preparation.

'In my view it is time for a cultural change in planning training schedules'

The problem is not so much convincing people that psychological skills training is important, but persuading them to commit resources to it in a systematic fashion so that it becomes culturally integrated – *ie* the norm.

I have always stressed the need to practise rather than look for a quick fix. I still have performers who call me for advice and a consultation when they are experiencing a slump in performance and this is to be expected. Often we will work together to identify the problem, plan an intervention strategy and implement changes in the athlete's training schedule.

However, when performances start to improve there is a tendency for some athletes to believe that the problem has been solved. There then follows a 'quiet period' when such athletes believe they now have the skills to cope by themselves. This can last a few weeks or even months, but there comes a time when, following another slump, the telephone rings once again and a new quick fix is sought.

In some cases, athletes have continued with their psychological skills training during the intervening period, but no planning or adaptation of this programme is possible if the psychologist is excluded from the proceedings. This is frustrating and obviously not conducive to achieving consistent high performances. And in my view it is time for a cultural change in planning training schedules.

Not nearly enough research is being conducted. Knowledge gained from scientific research should be the lifeblood of performance enhancement, but that research also has to be applied in a consistent and systematic fashion.

Sport psychology still has a long way to go, and we have much to learn, but when we have attained knowledge about

techniques and strategies that can help our athletes to perform better, it is disappointing when it appears not to have been practically applied.

The performance results of British swimmers, apparently entering the Olympic pool without focusing skills, has put paid to any suggestions that they were the best prepared team ever. Now is the time to evaluate that experience and learn the necessary lessons so that in four years' time our swimmers are properly prepared for the distractions and pressures that are part and parcel of the Olympic Games.

Lee Crust

Competition anxiety needn't get you down

'Meet with triumph and disaster and treat these two impostors just the same.' Rudyard Kipling

Sport is littered with the broken dreams of those who wavered when they most needed to be in control of themselves and focused on the task at hand. Here we explore the nature of anxiety and its common symptoms, reviews the latest competition anxiety research, and provides you with five techniques that either control anxiety or channel it positively into your performance

Introduction

When a competitor 'freezes' in the big moment or commits an inexplicable error, anxiety, in one of its many guises, is very often the root cause. The precise impact of anxiety on sporting performance depends on how you interpret your world. Unfortunately, far too many athletes accept high levels of anxiety as an inevitable part of the total sporting experience and fail to reach their potential.

What precisely is anxiety?

Anxiety is a natural reaction to threats in the environment and part of the preparation for the 'fight or flight' response. This is our body's primitive and automatic response that prepares it to 'fight' or 'flee' from perceived harm or attack. It is a 'hardwired' response that ensures survival of the human species. Sporting competition promotes similar psychological and bodily responses because there is often a threat posed towards the ego; your sense of self-esteem. Essentially, when the demands of

training or competition exceed one's perceived ability, anxiety is the inevitable outcome.

Sport places a wide variety of stressors upon participants; it can be physically exhausting, it pitches you against superior opponents, hostile fans might verbally abuse you, the elements may need to be overcome and your emotional frailties are constantly laid bare for all to see. Despite this, sport offers participants an opportunity for growth – a chance to push back personal boundaries, and a means by which to liberate the body and the mind.

Ostensibly, there is nothing damaging about the stress associated with a sporting contest, and in fact stress can be a very positive influence that leads us to tackle the challenges that make life far more rewarding. However, when we perceive stress to be negative, it causes anxiety and therefore, much depends upon how we view the demands placed upon us.

The main causes of anxiety

At the same time as providing challenge and stimulation, sport also provides considerable uncertainty. At the precise moment the Olympic archer releases an arrow, or the rugby fly-half kicks for goal, the outcome is unknown. The stress that sport provides therefore is inevitably linked with its inherent uncertainty. Sport is a cultural focal point because it is a theatre of unpredictability.

While stress and uncertainty may motivate some athletes, they induce anxiety in others. There are some distinct factors that can increase athletes' level of anxiety. For example, the more important the contest the greater the stress, and the more likely it is that a competitor will be prone to anxiety[1].

'While stress and uncertainty may motivate some athletes, they induce anxiety in others'

Also, spectators can have a huge impact on how athletes feel. In fact, studies of the home advantage phenomenon show that teams playing at their home venue win on average, around 56-64% of the time[2,3], depending on the sport. The impressive medal count of host nations during Olympic Games is also notable, in particular the record-breaking haul of medals won by Australia in Sydney (2000) and by Greece in Athens (2004).

Participants in individual sports have been shown generally to suffer more anxiety before, during and after competition than

participants in team sports[4]. This is because the sense of isolation and exposure is much greater in sports such as triathlon, tennis and snooker than in the relative anonymity of field sports.

For athletes in high-contact sports such as boxing and martial arts, the possibility of getting hurt can also be a source of anxiety. Typically, this anxiety causes some critical changes in technique. For example, anxious boxers will often lean too far forward, be clumsy in their leg movements or fight defensively, any of which may result in them getting knocked out.

An additional factor that causes anxiety is the expectation of success. The expectations held by British tennis fans for Tim Henman and Greg Rusedski to win the men's singles title at Wimbledon have hung over these players like a dark cloud. Some athletes rise to the challenge imposed by public expectation while others can choke.

The symptoms of anxiety

Anxiety can be recognised on three levels:

- On the cognitive level – *ie* by particular thought processes;
- On the somatic level (bodily) – *ie* by physical responses;
- On the behavioural level – *ie* by certain patterns of behaviour.

Table 1, overleaf, lists some of the symptoms on each level. You might use this as a reference for recognising anxiety. Not all of the responses are a cause for concern; increases in heart rate, respiration and adrenaline production can be very positive influences on performance, but the appearance of further somatic symptoms, and the emergence of the cognitive responses listed, means that excitement has turned to anxiety and appropriate anxiety control techniques may need to be applied. The trick is to become sufficiently 'psyched-up' without becoming 'psyched-out'.

Competition anxiety theory and research

British sport psychologist Graham Jones developed a model of competition anxiety that has been widely used in the last decade (*see figure 1*)[5]. Jones contends that it is the perception

Table 1: Common symptoms of anxiety

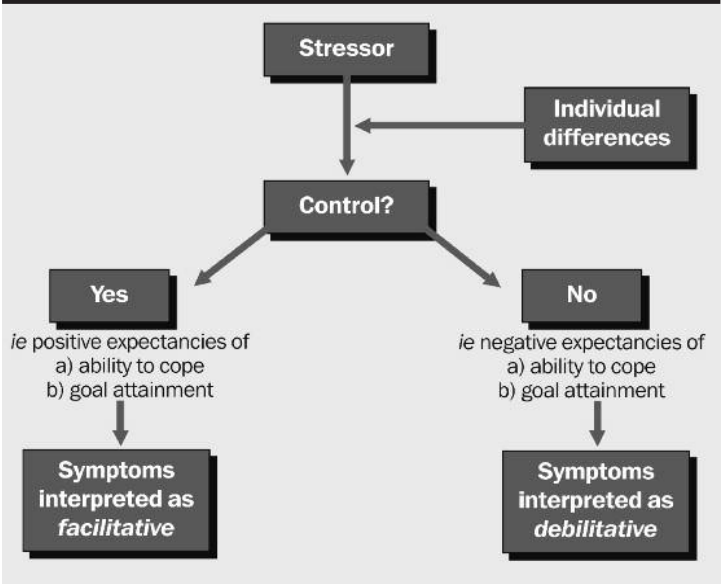
Cognitive	Somatic	Behavioural
Indecision	Increased blood pressure	Biting fingernails
Sense of confusion	Pounding heart	Lethargic movements
Feeling heavy	Increased respiration rate	Inhibited posture
Negative thoughts	Sweating	Playing safe
Poor concentration	Clammy hands and feet	Going through the motions
Irritability	Butterflies in the stomach	Introversion
Fear	Adrenaline surge	Uncharacteristic displays of extroversion
Forgetfulness	Dry mouth	Fidgeting
Loss of confidence	Need to urinate	Avoidance of eye contact
Images of failure	Muscular tension	Covering face with hand
Defeatist self-talk	Tightness in neck and shoulders	
Feeling rushed	Trembling	
Feeling weak	Incessant talking	
Constant dissatisfaction	Blushing	
Unable to take instructions	Pacing up and down	
Thoughts of avoidance	Distorted vision	
	Twitching	
	Yawning	
	Voice distortion	
	Nausea	
	Vomiting	
	Diarrhoea	
	Loss of appetite	
	Sleeplessness	
	Loss of libido	

of our ability to control our environment and ourselves that determines the anxiety response. Hence, if you believe you can cope in a particular sporting situation, you will tend to strive to achieve your goals with positive expectations of success. Having positive expectations will invariably mean that you will be more confident and therefore more likely to perform close to your best.

The feeling that you can control a particular stressor such as a menacing rival or a niggling injury will mean that the symptoms of anxiety – butterflies in the stomach, elevated heart rate, sweat secretion, and so on – are interpreted as facilitative or helpful towards performance. If your judgement is that you do not have control over the situation – that your opponent is too strong or that a sore calf muscle will hold you back – then those same symptoms will be interpreted as debilitative, or likely to impair performance. The probable consequence is that this interpretation will become a self-fulfilling prophecy and your performance levels will plummet.

The extent to which we expect to control various competition stressors depends on factors that are specific to individuals, such as their personality, upbringing, experiences and trait anxiety – the degree to which individuals are predisposed to feel anxious. These are known as individual differences because they are the factors that serve to make each of us unique. In Jones's model,

Figure 1: Jones's control model of competition anxiety



individual differences mediate the relationship between a stressor and one's perception of control.

The propositions of Jones's model have generally been supported in the literature. One of the most recent studies examined the intensity and direction of anxiety as a function of goal attainment expectation and competition goal orientation[6]. The intensity of anxiety is how much anxiety one feels, whereas direction has to do with whether they interpret the symptoms as being facilitative or debilitative to performance.

Team sport players who reported positive expectations of goal achievement and indicated some input into the goal generation process experienced the most facilitative interpretations of anxiety symptoms. The implications of this study are that athletes should set their own goals rather than have goals imposed upon them by a coach or team manager.

Research has shown that coaches and team managers may, however, have a key role to play in buffering the effects of anxiety[7]. When researchers examined the influence of perceived coach support on anxiety among high school tennis players, their results indicated that for players who were predisposed to feeling anxious (trait anxious), the perceived support of their coach tempered their anxiety and helped them to cope far better with the psychological demands of competition.

Very recent work has examined the impact of motivational climate on young athletes' anxiety[8]. The results showed that coaches who promoted a mastery climate – one in which personal skill development was emphasised rather than superiority over peers (performance climate) – enabled their athletes to experience a significant decrease in anxiety from pre-season to late-season. This was in contrast to the anxiety of a control group of athletes, which increased over the season.

If you are interested in measuring competition anxiety, the instrument of choice for almost 15 years has been the Competitive State Anxiety Inventory-2[9]; however, this instrument has been severely criticised and its validity challenged[10]. Researchers have recently attempted to address the limitations of the original 27-item CSAI-2(11) and the result

is a new version – the 17-item CSAI-2 Revised (CSAI-2R), which is more valid and reliable than its predecessor. I strongly recommend use of the CSAI-2R should you wish to assess competition anxiety.

Five techniques to help you control competition anxiety

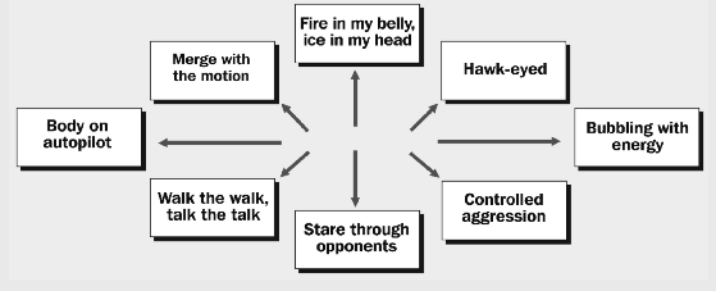
To reach an optimum psychological state, you need to understand your own natural responses to stress and be sensitive to your bodily signals. Learning to handle the demands of competition involves learning to read your thought patterns and physical responses, and to develop the skills necessary to find your ideal arousal level. Stress management requires excellent self-awareness because, if you know yourself well, you will better understand the roots of your anxiety.

I will begin by outlining a self-awareness technique that allows you to 'capture in a bottle' the feelings you associate with success – 'the winning feeling'. I will then present the popular 'centering' exercise which relieves tension through focusing attention to the centre of your body. Following this, the 'five breath technique' will be described; an ideal prelude to competition for over-anxious athletes. The penultimate exercise is 'thought-stopping' which deals with the cognitive symptoms of anxiety such as negative thoughts and images. Finally, 'letting go' will be presented – the deepest relaxation exercise of the five and ideal for the night before competition.

1. Establishing your 'winning feeling'

Reproduce figure 2 on a page of A4 but leave the boxes blank. Think carefully about the last time you were performing at the top of your game then list every detail you might associate with your 'winning feeling'. Pick out the eight most important aspects of this positive feeling and write them neatly into the boxes. The example provided in figure 2 came from a female basketball player. You can use your winning feeling to help create an optimum competition mindset through consciously reproducing the desired elements.

Figure 2: The winning feeling



2. Centering

The second technique is known as 'centering' because it involves focusing attention on the centre of your body, the area just behind your navel. This is a technique that is particularly effective during sports that have breaks in the action, such as in between sets in tennis, or prior to a penalty in soccer. Centering has a calming and controlling effect, providing a simple but effective way to counteract the negative effects of anxiety:

- Stand with your feet flat on the ground, shoulder width apart, arms hanging loosely either side of your body;
- Close your eyes and breathe evenly. Notice that when you breathe in, the tension in your upper body increases, but as you breathe out, there is a calmer, sinking feeling;
- Inhale deeply from your abdomen and, as you do, be aware of the tension in your face, and your neck, and your shoulders, and your chest. As you exhale, let the tension fall away and focus on the feeling of heaviness in your stomach;
- Continue to breathe evenly, focusing all your attention internally on the area immediately behind your navel;
- Maintain your attention on that spot and breathe normally, feeling very controlled and heavy and calm;
- On each out-breath use a word that encapsulates the physical feelings and mental focus that you want *eg* 'loose', 'calm', 'focused', 'sharp', 'strong' *etc*.

3. The five breath technique

This anxiety control exercise can be performed while you are standing up, lying down or sitting upright. It is ideally used just before competition, or whenever you feel particularly tense. You should inhale slowly, deeply and evenly through your nose, and exhale gently through your mouth as though flickering, but not extinguishing, the flame of a candle:

- Take a deep breath. Allow your face and neck to relax as you breathe out;
- Take a second deep breath. Allow your shoulders and arms to relax as you breathe out;
- Take a third deep breath. Allow your chest, stomach and back to relax as you breathe out;
- Take a fourth deep breath. Allow your legs and feet to relax as you breathe out;
- Take a fifth deep breath. Allow your whole body to relax as you breathe out;
- Continue to breathe deeply for as long as you need to, and each time you breathe out say the word 'relax' in your mind's ear.

4. Thought-stopping

When you experience a negative or unwanted thought (cognitive anxiety) such as 'I just don't want to be here today' or 'She beat me by five metres last time out', picture a large red stop sign in your mind's eye. Hold this image for a few seconds then allow it to fade away along with the thought. If you wish, you can follow this with a positive self-statement such as 'I am going to hit it hard right from the off!' Thought-stopping can be used to block an unwanted thought before it escalates or disrupts performance. The technique can help to create a sharp refocus of attention keeping you engrossed in the task at hand.

5. Letting go

You will need to lie down somewhere comfortable where you are unlikely to be disturbed. If you wish, you can also use this exercise to aid a restful night's sleep. Allow your eyes to close

and let your attention wander slowly over each part of your body – starting from the tips of your toes and working up to the top of your head. As you focus on each part of the body, tense the associated muscles for a count of five and then 'let go'. If this does not relieve the tension in a particular body part, repeat the process as many times as you need to. Once you have covered each body part, tense the entire body, hold for five and then 'let go'. You will feel tranquil and deeply relaxed.

Benson's relaxation response

Benson's technique is a form of meditation that can be used to attain quite a deep sense of relaxation and can be ideal for staying calm in between rounds of a competition. It can be mastered with just a few weeks' practice and comprises of seven easy steps:

1. Sit in a comfortable position and adopt a relaxed posture;
2. Pick a short focus word that has significant meaning for you and that you associate with relaxation (*eg* relax, smooth, calm, easy, float, *etc*.);
3. Slowly close your eyes;
4. Relax all the muscles in your body;
5. Breathe smoothly and naturally, repeating the focus word;
6. Be passive so that if other thoughts enter your mind, dismiss them with, 'Oh well' and calmly return to the focus word – don't concern yourself with how the process is going;
7. Continue this for 10-15 minutes as required.

Summary

The major problem in competition is letting your mind work against you rather than for you. You must accept anxiety symptoms as part and parcel of the competition experience; only then will anxiety begin to facilitate your performance. The techniques I have presented herein are but a small selection from the pantheon of stress management interventions. You should adapt these techniques to suit your needs or those of your athletes. Remember that pressure is your ally and will invariably bring out the best in you, just as coal under pressure can produce a diamond!

Dr Costas Karageorghis

References

1. *Percept Mot Skills 2000; 90:847-850*
2. *J Sports Sci 2006; 24:495-499*
3. *Sports Med 1999; 28:221-236*
4. *J Sport Beh 2002; 25:41-56*
5. *Br J Psychol 1995; 86:449-478*
6. *J Sci Med Sport 2005; 8:423-432*
7. *Current Psych: Developmental, Learning, Personal, Soc 1999; 18:381-393*
8. *J Sport Ex Psych 2007; 29:39-59*
9. *Competitive Anxiety in Sport, Champaign, IL: Human Kinetics 1990*
10. *J Sports Sci 1999; 17;505-512*
11. *J Sport Ex Psych 2003; 25:519-533*

Self-confidence in sport – make your ego work for you!

'I don't think it's bragging to say I'm something special.'
Muhammad Ali

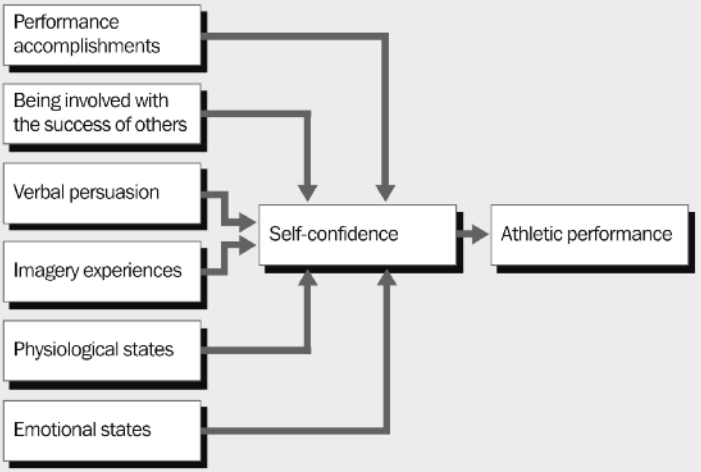
When athletes feel confident, they are more readily able to turn sporting potential into superior performance. Conversely, when they feel unsure of themselves, the slightest setback or smallest hurdle can have an inordinate effect on their performance. Here the nature of self-confidence is explored and a theory underlying the causes of self-confidence in sport is presented. Also recent research is reviewed and some powerful techniques that you can apply to enhance your own confidence or that of athletes in your charge are presented

What is self-confidence?

For many athletes, an explanation of the concept of self-confidence is hardly necessary as they know intuitively what it is. Indeed, self-confidence is so palpable in some athletes you can almost reach out and touch it. Their confidence is reflected in everything they say and do, in what they wear and how they look.

Self-confidence is commonly defined as the sureness of feeling that you are equal to the task at hand. This sureness is characterised by absolute belief in ability. You may well know someone whose self-belief has this unshakeable quality, whose ego resists even the biggest setbacks. In such people, confidence is as resilient as a squash ball: the harder the blow, the quicker they bounce back. Nonetheless, although confidence is a desirable characteristic, arrogance – or a sureness of feeling not

Figure 1: Model of self-confidence (adapted with permission from Feltz, 1984)



well founded in one's ability – is undesirable. If self-confidence is perhaps the 'guardian angel of sports performers' then arrogance is their nemesis.

Confidence is related to personality and those who exude self-confidence across a range of contexts, say at work, socially and in their sport, are said to be high in trait confidence. However, confidence can also be very specific – to a particular situation or with reference to a set of circumstances – in which case it is known as state confidence or self-efficacy.

For example, a professional football player may give off vibes suggesting they are high in trait confidence; however, when they are faced with the prospect of saving their team in a penalty shoot-out at a major championship, their state confidence can plummet and this has the potential to wreak havoc on their performance. This is precisely what happened to David Beckham when England faced Portugal in the quarter finals of the European Football Championships in June 2004. In the throws of a nail-biting penalty shoot-out, he lost focus and hoofed the ball over the crossbar.

Theoretical approaches to sport confidence

There are two main theoretical approaches to sport confidence; one is Robin Vealey's model of sport confidence[1] and the other is Albert Bandura's self-efficacy theory[2]. Owing to its prevalence in the sport psychology literature and the empirical support it has attracted, I am going to focus solely on the latter. Bandura's theory was amended by Deborah Feltz[3] to form a sport-specific version while I have adapted it even further to suit the applied nature of this article *(see figure 1)*.

The six sources of self-confidence

The confidence an individual feels during a particular activity or situation is generally derived from one or more of the following six elements, which are presented in figure 1 in order of their relative importance:

- Performance accomplishments are the strongest contributor to sport confidence. When you perform any skill successfully, you will generate confidence and be willing to attempt something slightly more difficult. Skill learning should be organised into a series of tasks that progress gradually and allow you to master each step before progressing on to the next. Personal success breeds confidence, while repeated personal failure diminishes it.
- Being involved with the success of others can also significantly bolster your confidence, especially if you believe that the performer you are involved with (*eg* a team-mate) closely matches your own qualities or abilities. In effect, it evokes the reaction: 'if they can do it, I can do it'.
- Verbal persuasion is a means of attempting to change the attitudes and behaviour of those around us, and this includes changing their self-confidence. In sport, coaches often try to boost confidence by convincing athletes that the challenge ahead is within their capabilities: 'I know you're a great player so keep your head up and play hard!' An athlete might reinforce this by repeating the message over and over to him or herself as a form of self-persuasion. A tip here is to avoid stating what you want in the negative; so, rather than

'I really don't want to come off second best' try 'I really want to win this one'. Accordingly, your mind will not need to consider what is not required in order to arrive at what is.

- Imagery experiences have to do with athletes recreating multi-sensory images of successful performance in their mind. Through creating such mental representations, mastery of a particular task or set of circumstances is far more likely. What you see is what you get!
- Physiological states can reduce feelings of confidence through phenomena such as muscular tension, palpitations and butterflies in the stomach. The bodily sensations associated with competition need to be perceived as being facilitative to performance and this can be achieved through the application of appropriate stress management interventions such as the 'five breath technique' and 'thought-stopping'.
- Emotional states is the final source of self-confidence and relates to how you control the emotions associated with competition, such as excitement and anxiety. Very often, the importance of the occasion creates self-doubt, which is why it is essential to control your thoughts and emotions. Learning imagery and concentration skills such as those described in 'the spotlight of excellence' (*Exercise 2*) will help.

'This is a fantastic day for me and my family, this is historic. I have been ready for the win for quite some time, it was just a matter of where and when.'
Lewis Hamilton (after his maiden Formula One Grand Prix victory in Montreal)

Research into self-confidence

It is patent to the vast majority of athletes that self-confidence enhances performance. A large number of studies have shown that higher levels of self-confidence are associated with superior

How being involved with the success of others can boost confidence

A good example of this phenomenon came at the 2004 Athens Olympics when Kelly Holmes outstripped expectations to win two gold medals in the 800 and 1,500 metres. Immediately after Holmes's second gold medal, the Great Britain 4 x 100-metre relay team composed of Jason Gardener, Darren Campbell, Malcolm Devonish and Mark Lewis-Francis took to the track for a final in which they were the rank outsiders. Previously famed only for dropping the baton, the Brits romped home a whisker ahead of a formidable USA quartet to secure the third of the team's golds. Significantly, each of the American sprinters had won individual medals in either the 100 or 200-metre events at the Athens Games. The British sprinters attributed their extraordinary success to the mental boost they had received from seeing their team-mate Holmes winning her second unexpected gold.

performance. In one recent review, the average correlation reported between self-confidence and performance across 24 studies was 0.54, which indicates a moderately strong relationship[4]. Even under strict laboratory conditions, it has been demonstrated many times over that when confidence is manipulated either up or down, there is a significant effect on sports performance[5,6,7].

Very recently, research has shown that social support, such as that which comes from a coach or team-mates, can buffer the effects of competitive stress on self-confidence[8]. Social support also has a direct effect in enhancing athletes' self-confidence. Further, exposing athletes to mental training programmes from an early age is likely to have a very positive effect on their levels of self-confidence, which may carry into their adult sporting careers[9].

In terms of specific self-confidence interventions, it appears that motivational self-talk has a more positive effect on self-confidence than instructional self-talk[10]. That is, self-talk related to inspiring the athlete such as 'Come on, you can do it!' or 'I am just so up for this one' rather than self-talk relating to key foci such as 'keep your eye on the ball'. Another study examined the impact of hypnosis, technique refinement and

self-modelling (through a videotape) on the self-confidence of a cricket bowler[11]. As expected, results indicated significant long-term improvement in self-efficacy and bowling performance following intervention.

In a further recent study, it was shown that high self-confidence could reduce the intensity or strength of anxiety symptoms, and influence whether they were interpreted as facilitative or debilitative to performance[12]. Essentially, self-confident athletes interpreted their anxiety symptoms as being part and parcel of the competitive experience. In a related study, it was shown that both the intensity and interpretation of self-confidence were strong predictors of golf putting performance[13].

Five exercises that will boost your self-confidence

Exercise 1: Confident situations and situations of doubt

To achieve a greater sense of stability in your confidence, it is necessary to know exactly what causes it to fluctuate. Divide a clean page into two columns. Label the first column 'High-confidence situations' and the second 'Low-confidence situations'.

In the first column, list all of the situations or circumstances in your sport in which you feel completely confident. In the second column, list the situations or circumstances that sometimes cause your confidence to diminish. Clearly identifying the situations that make you feel uneasy is the first step towards building greater self-confidence. We will come back to these lists in some of the remaining exercises, but for now, it should have just served to increase your awareness of areas that can be improved.

Exercise 2: The spotlight of excellence

This visualisation exercise recreates the mental state associated with past performance success and will help you in bridging the gap between your ability and confidence:

- Imagine a huge spotlight beaming down on the floor one metre in front of you. The light beam is about a metre in diameter.l Now think back to a time in your sporting career

when you were performing at the very peak of your ability – perhaps using the first column from Exercise 1 to guide you. Each movement you made brought about a successful outcome and everything just seemed to flow without much conscious effort.

- In a dissociated state (*ie* looking at yourself from the outside) examine each of your five senses. See yourself inside the circle and excelling. Imagine exactly what the 'you' inside the circle is seeing, hearing, feeling, and smelling. Notice the 'taste of success' in your mouth.
- Now step into the spotlight and become fully associated so that you are experiencing events through your own eyes and in real time. Again, notice what you are seeing, hearing, feeling, smelling and tasting.
- Notice exactly what this feels like so that you can reproduce it at will whenever your confidence is waning

Boxer	*'I have fists of steel'*
Basketball player (for free throws)	*'It's just me and the basket'*
Defensive linesman in American football	*'No one's gonna get through'*
Hammer thrower	*'I'm the king of the slingers'*
Judo player	*'I'm as strong as an ox'*
Ski-jumper	*'My timing is always spot on'*
Sprinter	*'Go on the B of the bang'*
Striker in soccer	*'I'll slot in every chance'*

Exercise 3: Positive self-talk

Positive self-talk will affirm to you that you possess the skills, abilities, positive attitudes and beliefs that are the building blocks of success. The statements you choose need to be vivid, should roll off the tongue, and be practiced well in advance of competition. Most of all, they must be totally believable. You should use these particularly in the low-confidence situations that you identified in the second column of Exercise 1. Here are some examples to help you in composing your own:

Make your own list of four or five positive self-statements and read them to yourself every night before you go to bed and every

morning as you wake up. Through repeated use, they will become embedded in your subconscious and have a profound influence on your sporting performance.

> 'I figured that if I said it enough, I would convince the world that I really was the greatest.'
> **Muhammad Ali**

Exercise 4: Exploiting weaknesses in your opponent

Your opponent will harbour doubts and fears that they will try hard to hide from you. Like any human being, they are susceptible to anxiety, fatigue and indecision. If you spend time thinking about your opponents, focus upon which weaknesses and frailties you might most easily exploit. Here are some specific guidelines to help you:

- Study video footage of your opponents and analyse what most often causes things to go wrong for them. It may be that they cannot perform under certain conditions – such as Paula Radcliffe in the heat and humidity of the Athens Olympics – or a particular part of their game has a distinct weakness. For example, British tennis player Greg Rudeski was known to have a weak backhand that opponents would often seek to exploit;
- If you play an individual sport that requires precision skills such as snooker or golf, make a point of congratulating your opponent when they have a lucky stroke but say nothing when they are genuinely skilful;
- In team sports, identify players who are easily wound-up and find out what triggers them to see red. Italian defender Marco Materazzi used this technique, albeit in a rather controversial manner, in the final of the 2006 Football World Cup. Materazzi allegedly uttered an insulting personal remark to French captain Zinedine Zidane who reacted badly. Zidane violently head-butted Materazzi and was immediately sent off as a result. Italy went on to win the match;

- Some opponents will get highly perturbed by what they perceive to be unfair refereeing decisions. Make a point of being friendly and respectful towards match officials and, in doing so, at a subconscious level at least, they are more likely to adjudicate in your favour in any 50-50 call;
- When your opponent is having a good run of form, use tactics that slow the match down in order to break their flow. American tennis star John McEnroe was the undisputed master of this; his on-court rants even earned him the epithet 'SuperBrat'!

NB – you will notice that some of these techniques are entirely ethical and 'sportsmanlike' while others push the boundaries of fair play.

Exercise 5: Using the power of sound

Music has unique properties, among which is its ability to inspire, motivate and boost one's confidence[14]. There are many tunes with inspirational lyrics or strong extra-musical associations that you can use to increase your confidence before competition. Good examples include *I Believe I Can Fly* by R Kelly (62bpm), *The Best* by Tina Turner (104bpm) and *Gold* by Spandau Ballet (143bpm). You may like to try playing some tracks on your mp3 player as part of a pre-event routine. I suggest that if you want to feel confident and keep your physiological arousal low, select tracks with a slow tempo (*ie* below 110bpm). Conversely, if you want to psych-up, go for a higher tempo (*ie* over 110bpm), and build-up to a tempo of over 130bpm just before competing.

Summary

This article should have convinced you that self-confidence is not solely in the hands of fate. Even when Lady Luck isn't shining, you are the person responsible for determining how confident you feel in a sporting encounter. Ideas for promoting confidence range from the simple principles of understanding what causes confidence to wane, to the techniques of visualisation and positive self-talk. You have also learned how to adopt a 'can-do'

attitude, exploit weaknesses in your opponents and use inspirational music to raise your game. The legendary American football coach Vince Lombardi once quipped, 'Confidence is contagious …but so is a lack of confidence.'

Dr Costas Karageorghis

References

1. *Handbook of Sport Psychology (2nd ed) 2001; 550-565*
2. *Psych Review 1977; 84:191-215*
3. *Cognitive Sport Psychology 1984; 191-198*
4. *Sport Psychology: Theory, Applications, and Issues (2nd ed) 2004; 344-387*
5. *J Psych 1972; 81:69-72*
6. *Cog Therapy Res 1979; 3:205-211*
7. *J Sport Psych 1979; 1:320-331*
8. *J Sports Sci 2007; 25:1057-1065*
9. *J App Sport Psych 2004; 16:118-137*
10. *Hellenic J Psych 2006; 3:164-175*
11. *The Sport Psych 2006; 20:94-111*
12. *Res Q Exerc Sport 2006; 77:263-270*
13. *Anxiety Stress Coping; in press*
14. *Proceedings of the 2007 European Congress of Sport Psychology, Halkidiki, Greece; in press*

Game, set, and match – developing resilient self-confidence in tennis

The mental qualities needed to be an elite tennis player are examined, with practical suggestions offered on how tennis players, and all athletes, can improve their mental game

Introduction

Imagine the scene. It's the Wimbledon final and the first game of the match. The game begins and scoring goes as follows; 15-love, 30-love, 45-love and game. After each point the umpire calls the score over the public address system for both players and spectators to hear.

A closer analysis of this sequence of events indicates that one player has been told they are winning five times, before winning the game, whereas the other player has received the same information about losing the game.

We know that success develops self-confidence, both in terms of our own performance (winning each point), and being told that we are being successful by significant others (the umpire, calling out the score, providing information of our success).

Tennis players are constantly bombarded during the course of the game on how well they are performing. Possibly, in no other sport is the score so clearly and constantly expressed to the players and spectators.

Despite constant reinforcement of the score, it is possible for a player to win more points, but lose the game. For example, if a player loses a match 6-4/6-4, but all the winning games are won to love and the losing games lost only after reaching deuce, he

or she would have actually won 40 points in each set, and lost only 24, despite losing the match overall!

In the hypothetical example described above, the difference between who won and who lost would be decided on just 8 points. In this article, we look at how the mental toughness of tennis players can be developed so that they can cope in an environment where confidence can be easily dented and where resilience and determination needs to remain high.

Ready for action

Tennis players need to develop a resilient degree of self-confidence. They are bombarded with information that can affect self-confidence and therefore need to focus on positive information, where sometimes positive information is hard to find.

During a tennis match, players have only themselves for comfort as they are not allowed to speak with their coach during the game. Tennis players need to introspect, and call on inner reserves to maintain self-confidence during a game. Studies have shown that winning tennis players report high levels of self-confidence, and low anxiety[1], are able to control emotions before competition[2] and can use adaptive coping skills[3].

Research also shows that tennis players' psychological states can be enhanced with appropriate psychological skills training[4], and it is with this in mind that the present article will attempt to offer practical strategies to enhance tennis players' mental game, based on scientific evidence.

The first thing I do with tennis players is to explore their general self-confidence towards playing tennis. Self-confidence in tennis is different to a more general concept known as self-esteem, which relates to how they value themselves as a person (more later). The aim is to try and ensure that the inner dialogue that runs through a player's mind focuses on the recalling of previous successes.

The brain and memory are very complex. Sometimes we find it difficult to remove negative thoughts in situations that require us to be positive. When I work with athletes, I try to encourage

them to record as many positive features from their training and competition as possible. For example, where tennis players have had a very good session practising serves, it is important that they recall as much information from that practice session as soon as possible.

They should recall how they felt prior to serving excellently, what their thoughts were in the preparation phase before serving, what they were concentrating on while executing the serve, and how they felt about seeing the serve going where they wanted it to go.

Equally, it is important to record situations where performance didn't go as planned, and unravel how the athlete felt before, during and after those performances. By developing a performance diary it is possible to see individual trends in psychological states, particularly the inner dialogue and thought processes, and how they relate to performance.

Strategy 1: Developing positive self-affirmations

Once the performance diary has been developed, I can then develop with the athlete specific self-talk affirmations. Firstly, we develop general statements, followed by specific affirmations, and also achievement reminders. Some examples are described in box 1 (*below*).

This work is followed by strategies to replace negative or unpleasant thoughts and feelings with positive ones. This of course is very difficult to do, and we know that when athletes are

Box 1: Developing positive self-affirmations

Task 1: Resilient self-confidence

- **Affirmations (General)**
  - » 'I am confident in my ability'
  - » 'I can stay focused under pressure'
- **Affirmations (Specific)**
  - » 'Attack the ball'
  - » 'If he gets ahead, just stay calm and focused'
- **Achievement reminders**
  - » 'My fitness tests show that I'm much stronger'
  - » 'I came back strong after that terrible start in my last game'

experiencing intense emotions during a match, it's difficult to think strategically. However, most athletes have a strong desire to avoid unpleasant cycles of negative thinking, and through the use of imagery and by going through performances when unpleasant thinking has occurred, you can develop a positive script that can be used in such situations. The key point here is that tennis players need to plan carefully how they manage their mind between each point.

Strategy 2: Thought replacement

The initial quotes in box 2 *(below)* were taken from an athlete's performance diary. These are typical quotes and the positive thoughts proposed to replace them are also fairly standard. However, the athlete must practice this technique for it to be effective. If we think of the number of times that an athlete experiences negative thinking and try to balance these thoughts against the number of times that they have effectively managed negative thinking, then the likely outcome is that the negative experiences outweigh the positive strategies.

A winning mental strategy can seem effortless, and therefore it is important to document the experiences associated with it so that they can be used proactively when things are not going so well. When negative thinking kicks in, athletes require robust practices to overcome it and it's important therefore that athletes constantly reinforce replacing negative thinking with positive thinking.

Box 2 shows examples of how you can try to develop alternative ways of thinking about negative thoughts that you experience during competition or training.

Box 2: Thought replacement

Task 2: Thought replacement task

» 'My mistake was crucial' *becomes* 'I'll put it right next time'
» 'I can't' *becomes* 'I can ... if ...'
» 'It's a problem' *becomes* 'It's a challenge'
» '.....' *becomes* '.....'
» '.....' *becomes* '.....'
» '.....' *becomes* '.....'

Developing performance routines

Performance routines are most effective when the player has as much control of situational factors as possible. It is much easier to develop a performance routine for your own service than returning service. On your own service, you know when you will serve, where you will serve, and how much power and spin you will try to put on the ball. Players have to estimate these factors when returning serve and therefore developing performance routines is more complicated. Pre-performance routines are effective because they are patterns of behaviour and thoughts that can be reinforced. Athletes should practice skills sufficiently so that they can perform the action(s) without thinking, which will help to develop confidence in their ability.

The following is an example pre-performance routine developed with a tennis player.

- **PREPARATION PHASE** – Focus on physical preparation. Use deep breathing exercises to force yourself to concentrate on physiological processes. The rationale of this strategy is that when athletes are tired it is easier to focus on physiological cues because they are more salient. I use this as a conscious strategy to encourage athletes to think about physiological symptoms, and thereby to gain control of their concentration. I also encourage athletes to develop positive self-statements to focus on relaxing, although in some athletes it is just as important to turn off that inner voice and have no self-talk.
- **FOCUSING PHASE** – Take another deep breath, focus on target area, and visualise successful performance. When athletes use visualisation in this way, they should also try to feel the movements and rehearse how they can use emotions positively to enhance performance.
- **EXECUTION PHASE** – The execution phase should be characterised by an inner sense of calm, and a feeling that the athlete is in control of what will happen next. Once the athlete starts performing, over-analytical thoughts should be switched off and the athlete should switch to a mode of

being on autopilot, but one that is underpinned by an intense motivation to succeed.

- **ANALYSIS PHASE** – The analysis phase follows the execution phase and proceeds the preparation phase. It is important that athletes do not spend too long analysing the previous performance, whether they are successful or unsuccessful. Athletes can learn to park their mistakes, accepting that an error was made, but insisting that they will not repeat the same error again during that game. Equally, athletes must not become overconfident and assume that effort could be reduced in order to win the game.

Maintaining concentration under the spotlight

Playing sport can be a very public event. Players need to learn to cope with performing in front of others, and while this can be a celebration of success, when you're trying to battle through adversity, it can be like living out your nightmare in public.

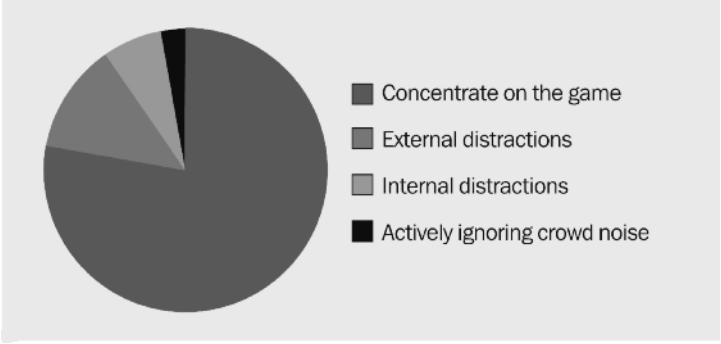
Playing sport, and particularly tennis (where players are constantly informed of the score) can be a lonely experience. Players need to be able to learn to cope with their own emotions and be able to ignore distractions from the crowd that might hinder their psychological state.

I was recently involved with a project investigating the effects of the crowd on the psychological states of athletes[5]. We were particularly interested in how elite athletes coped with being heckled by the crowd. We conducted three focus group interviews seeking to explore which aspects of crowd noise, including singing, were helpful for performance, and which aspects were harmful.

The results revealed that elite players are able to block out crowd noise very effectively. Players articulated very clearly, and described situations in which crowd heckling took place, where they developed strategies that help them cope with crowd noise.

However, while on one level it might be true that crowd noise has little effect on player performance, a closer inspection of the data suggests that players have to work harder to ignore heckling from the crowd than when the crowd are being

Figure 1: Allocation of concentration in front of a supportive crowd



supportive. If we view concentration as something similar to a percentage scale (*ie* it has a limit of 100% capacity) then when players are actively ignoring the crowd, a greater proportion of their concentration has to be given than when the crowd are being supportive.

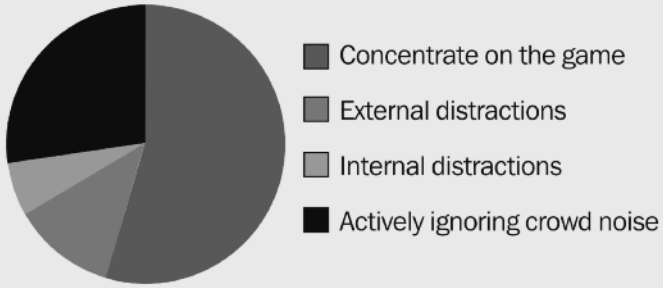
Further, when a greater proportion of concentration is focused on ignoring the crowd, then inevitably, a smaller proportion of it can be focused on winning the game.

Figure 1 shows how the concentration is divided between the game, external distractions, such as the weather, internal distractions, such as planning the next shot or daydreaming, and finally strategies used to actively ignore crowd noise. In figure 1, we can see that the player needs to make little effort to control their attention to ignore crowd noise.

By contrast, where the player is playing in front of a hostile crowd (*figure 2, overleaf*), it is clear that a greater proportion of concentration needs to be given to ignoring the ground. Therefore, even though experienced players are able to play in front of a hostile crowd, sustaining excellent performance does require more mental effort.

In tennis, crowd support tends to occur between points. While this clearly will not interfere with psychological states during performance, it can affect how an athlete responds to the previous point, and how an athlete prepares for the next point.

Figure 2: Allocation of concentration in front of a hostile crowd



It is arguable that crowd noise in tennis can be very helpful in developing psychological momentum. Players who respond positively to the previous shot and prepare effectively for the next shot are likely to perform better than players whose focus is still fixed on the previous shot and therefore unprepared the next point.

Dealing with external distractions

Players can be distracted both by external and internal distractions. By looking through the list of possible external distractions indicated below and simply placing a tick beside some of the distractions listed, you can identify what distracts you. Once you've identified these distractions, you can start developing strategies to cope with these distractions.

- Noise in the crowd;
- Clicking of a camera;
- Movement seen in peripheral vision;
- Verbal attempts to intimidate by opponents;
- Seeing coach get up and leave.

Dealing with internal distractions

Even when the crowd is silent, your mind can be a forest of internal distractions and an inability to identify the relevant cues can lead to anxiety. We know that becoming anxious leads to an

increase in physiological arousal, which in turn makes it more difficult for us to control and concentration.

It's not just about tennis

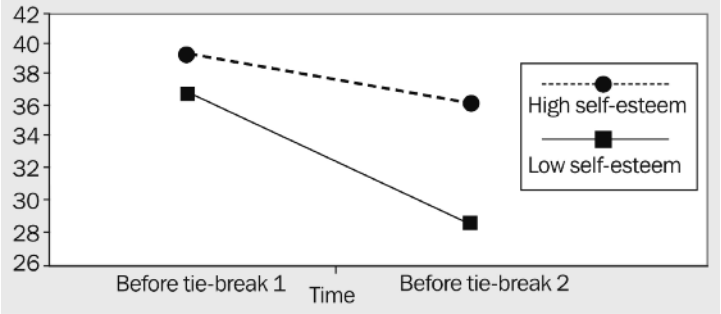
In a study, conducted by professional tennis coach Liz Jones and myself, we looked at the coping strategies, and how these interacted with self-esteem among tennis players following defeat. Anecdotal evidence is provided by the multitude of examples of how psychological momentum can be gained following winning or losing critical games.

A tie-break to decide a set is a good example of how psychological momentum can sway to the opponent. The study, using national level junior tennis players, examined changes in self-confidence following the loss of a tie-break[4] (*see graph 1*). Players were matched according to ability and played a single tie-break. We were particularly interested in the scores of losing players.

Results showed clearly that a loss of self-confidence was inevitably followed by a defeat – a result that was entirely expected. However, we also demonstrated that the self-confidence of players who were high in self-esteem was much higher than players who were low in self-esteem.

Self-esteem is a complex variable. Some individuals invest their self-esteem in a range of different situations; for example,

Graph 1: Changes in self-confidence following loss of a tie-break



(from Lane, Jones, & Stevens, 2002[4])

being a good tennis player, being good academically, being kind, having many friends and so on.

Among aspiring elite athletes, there is a tendency to invest self-esteem almost entirely in playing sport, and tennis players who are typically nurtured during adolescence provide a very good example of this. Those players who were low in self-esteem coped with defeat by using strategies such as self-blame disengagement; that is, they withdrew any serious intention to win the next game.

I suggest that players are encouraged to invest their self-esteem in a number of different activities. Coaches should therefore not overemphasise the importance of winning and losing to young athletes, as this can lead to self-esteem being coached solely in tennis performance, which can be detrimental in the long-term to not only the health of the player, but also to performance.

Summary

Psychological momentum in tennis is affected on a point-by-point basis and players need to develop strategies to cope with slumps during the game. Maintaining resilient self-confidence can be achieved by developing effective strategies such as using affirmation statements, thought replacement, pre-performance routines, and using concentration strategies. However, caution is urged when self-esteem is directly affected by changes in self-confidence following poor performance. Players should be encouraged to invest their self-esteem in a range of activities – not only tennis.

Andy Lane

References

1. Perceptual and Motor Skills 1996; 83:595-603

2. J of Sports Sci 2000; 18:559-560

3. J of Sport Behavior 2002; 25:331-345

4. J of Sports Sci 2005; 23:1247

5. J of Sports Sci, in press

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