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Perceived impact of anger and anxiety on sporting performance in rugby players ☆

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Abstract

Objective: The main purpose of the study was to extend the notion of directional perceptions beyond anxiety to anger in order to assess rugby players' perception of the facilitative or debilitative effects of trait anger symptoms.

Design: A cross-sectional study design was employed using normative measures of anger and anxiety.

Method: The frequency and direction of symptoms of competitive trait anger were assessed in 197 Italian rugby players together with the intensity and direction of multidimensional trait anxiety.

Results: Findings revealed a general tendency of rugby players to experience a moderate frequency of anger symptoms and to interpret their symptoms as facilitative rather than debilitative. Regarding the direction of symptoms, cognitive anxiety was a significant predictor of anger, while self-confidence was a significant predictor of control of anger.

Conclusions: Support was provided for assessment of individual's interpretation of anger symptoms.

Keywords: Athletic performance; Anger; Anxiety; Directional perceptions; Contact sports

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Introduction

A wealth of research in sport psychology has been devoted to the study of the debilitative or facilitative effects of competitive anxiety symptoms on performance. The multidimensional conceptualisation of competitive anxiety has contributed largely to the expansion of knowledge within the field (Martens, Burton, Vealey, Bump, & Smith, 1990; see Burton, 1998; Woodman & Hardy, 2001). The multidimensional anxiety theory describes a series of two-dimensional relationships between cognitive anxiety, somatic anxiety, self-confidence and performance. Cognitive anxiety (or worry) is viewed as the mental component of anxiety typified by negative expectations and cognitive concerns about oneself, the situation and potential consequences. Somatic anxiety is conceptualised as the physical component of anxiety that reflects the perception of one's physiological responses. Finally, self-confidence is conceived of as one's belief of being able to successfully perform a desired behaviour. The relationship with performance is predicted to be negative linear in the case of cognitive anxiety, quadratic (inverted-U shaped) for somatic anxiety, and positive linear for self-confidence.

To assess multidimensional anxiety, Martens et al. (1990) developed the Competitive State Anxiety Inventory-2 (CSAI-2). Although the original inventory was designed to gauge the level (i.e., intensity) of symptoms purported to indicate the presence of anxiety, further research has focussed on the directional perception of anxiety (Jones, Hanton, & Swain, 1994; Jones & Swain, 1992). Directional perception refers to whether athletes interpret their level of experienced anxiety symptoms as facilitative or debilitative towards performance (Jones, 1995; Jones & Hanton, 2001). The interest in the directional perception derived from limitations in the measurement of only the intensity of competitive anxiety symptoms (Jones, 1995). As a result, a growing number of authors have advocated the need to address additional dimensions of the stress response (see Mellalieu, Hanton, & Fletcher, 2006). Traditionally, a high level of anxiety symptoms was thought to be debilitative and thus would be predictive of a negative influence on performance. However, research results have challenged the assumption that anxiety is always detrimental to athletic performance (Hanin, 1980, 1986; Raglin, 1992; Raglin & Hanin, 2000).

The introduction of the modified version of the CSAI-2 (Jones & Swain, 1992) enabled researchers to measure both the intensity and the direction of anxiety symptoms. In some studies, anxiety direction scores were found to be better predictors of the performance level of athletes than anxiety intensity scores. Specifically, findings indicated that good performance was associated with a more facilitative and less debilitative perception of anxiety than poor performance (Jones, Swain, & Hardy, 1993), and that elite athletes interpreted their anxiety symptoms as being more facilitative than those of non-elite performers (Jones et al., 1994). Yet, Robazza and Bortoli (2003) found that both the intensity and the direction of the multidimensional anxiety response (i.e., symptoms of cognitive anxiety and somatic anxiety) differentiated athletes across a range of individual or team sports as a function of the competitive standard. Elite athletes reported lower levels of cognitive and somatic anxiety symptoms, and experienced those symptoms as less debilitative than those of non-elite athletes. They also exhibited higher self-confidence, which they perceived to be more facilitative. In general, the importance of measuring the directional interpretation of anxiety symptoms in addition to intensity levels has received strong support in sport psychology studies examining the anxiety trait-state relationship (Hanton, Mellalieu, & Hall, 2002) and variables such as skill level (Jones

et al., 1994), experience (Mellalieu, Hanton, & O'Brien, 2004), performance (Jones et al., 1993), competitiveness (Jones & Swain, 1992), anxiety antecedents (Hanton & Jones, 1997), psychological skills (Fletcher & Hanton, 2001), sport type (Hanton, Jones, & Mullen, 2000), hardiness (Hanton, Evans, & Neil, 2003), and coping strategies (Ntoumanis & Biddle, 2000).

Besides the intensity and direction of anxiety, the frequency with which competitors experience anxiety symptoms (i.e., the amount of time an athlete's mind is occupied by thoughts and symptoms about the forthcoming event) has generated research interest, although to a lesser extent. For example, Swain and Jones (1993) employed a modified version of the CSAI-2 to investigate both intensity and frequency dimensions of anxiety across four occasions, during a 2-day period leading up to a competition. For each item of the questionnaire, participants were asked how frequently they experienced a particular thought or feeling at that stage. Ratings were on a 7-point scale ranging from 1 (''not at all'') to 7 (''all of the time''). Findings showed that cognitive anxiety symptoms were experienced progressively more frequently as the competition approached, while intensity of symptoms remained essentially stable. More recently, Hanton, Thomas, and Maynard (2004) used the modified CSAI-2 to assess intensity, direction and frequency dimensions across five pre-competition times (1 week, 2 days, 1 day, 2 h, and 30 min). A different pre-competition pattern was observed for the three dimensions, thus warranting their assessment. In general, results were in accordance with the view of emotional researchers (Diener, Larsen, Levine, & Emmons, 1985; Kardum, 1999), who observed that, although related, intensity and frequency are separate dimensions of the emotional response (see Hanin, 1997, 2000, for a holistic description of dimensions of emotions and psycho-bio-social states related to performance).

On a parallel with the study of anxiety and self-confidence, researchers have begun to expand their interest in a wide range of emotions related to performance (Cerin, 2003; Cerin, Szabo, Hunt, & Williams, 2000; Gould, Greenleaf, & Krane, 2002; Hanin, 1993, 1997, 2000). In predicting athletic performance and for a better understanding of the athlete's experience, looking just at the effects of anxiety is not enough. There is, instead, a need to examine a variety of emotional states evident in the sport environment (Gould & Udry, 1994; Hanin & Syrjä, 1995, 1996; Jones, 1995; Vallerand & Blanchard, 2000). Of the many emotions, anger is frequently experienced and expressed as aggressive behaviour in the athletic domain, particularly in combative and contact sports such as ice-hockey, American football, boxing and karate (Maxwell, 2004; Ruiz & Hanin, 2004a, b; Terry & Slade, 1995). In proposing a reformulation of the frustration-aggression hypothesis, Berkowitz (1989) argued that the experience of provocation, frustration or aversive stimuli tends to elicit negative affects that the individual interprets as anger leading to aggression. Frustration, although it does not necessarily result in aggressive behaviour, creates a readiness for aggression through anger, hostility, or other negative feelings. In the attempt to dissipate conceptual ambiguity surrounding the constructs of anger, hostility, and aggression, Spielberger (1991) defined anger as an emotional state typified by feelings varying in intensity from mild annoyance to fury and rage, with corresponding changes of arousal in the autonomic nervous system. Hostility was described as a complex set of attitudes that motivates aggressive behaviours directed towards destroying objects or injuring another human being. Hostile aggression usually involves angry feelings on the part of the aggressor. Anger has the potential to strongly affect performance by either disrupting or enhancing the focus of attention, information-processing and decision-making, execution, and control of action (Jones, 2003). For

example, dysfunctional anger can be aroused in a rugby player in consequence of an opponent's illegitimate and intentional act. The offended player may then divert the focus of his attention from the task at hand to the offender for retaliation with the purpose of inflicting harm. Anger is thus dysfunctional because it results in wasted energy, decreased achievements, and illegitimate acts of violence. Alternatively, the player may use his anger instrumentally to direct more energy towards the legitimate, functional, and assertive behaviours of tackling and shoving in order to block the opponent's attack. Hence, anger can disorganise and impair performance or, conversely, energise and organise behaviour towards the attainment of a task.

Given the relevance of anger in the athletic context, it is regrettable that specific instruments for assessing anger in sport are lacking. Indeed, in a review of anger, aggressive behaviour, and performance, Isberg (2000) noted that almost all sport-specific measures relate to aggressive behaviour rather than to the emotion of anger. Yet, in a series of studies assessing karate athletes, Ruiz (2004) employed Spielberger's (1991) State-Trait Anger Expression Inventory (STAXI) to investigate anger within the theoretical framework of the Individual Zones of Optimal Functioning (IZOF; Hanin, 2000). The STAXI is intended to measure the experience of a state of anger, the disposition towards anger as a personality trait, the expression of anger as aggressive verbal or physical behaviour, the suppression of angry feelings by directing them inward, and the control of anger. State anger is assessed on an intensity scale ranging from 1 (''not at all'') to 4 (''very much''), while trait anger and anger expression, suppression and control are assessed on a frequency scale ranging from 1 (''almost never'') to 4 (''almost always''). Persons who experience a high frequency of trait anger symptoms tend to perceive a wide range of situations as anger provoking, and to react to annoying or frustrating conditions with a high intensity of state anger. In line with the IZOF model predictions, findings demonstrated large inter-individual variability in optimal and dysfunctional experience of anger symptoms.

Ruiz and Hanin (2004a, b) and Ruiz (2004) also examined the content of anger states using a variety of techniques, including metaphoric descriptions, emotion profiling and open-ended questions. The perceived functional impact of anger on performance indicated that athletes can use anger in preparation for or during competition. The facilitative effects of anger were related to positive feelings of increased motivation, confidence and powerful skill execution, whereas the debilitative effects were associated with tension, lack of confidence and perceived inability to cope with the situation. According to the IZOF constructs of energy mobilisation and utilisation (Hanin, 2000), the experience of the facilitative or debilitative impact of anger, anxiety or other negatively toned emotions would depend on an individual's perception of the energising or de-energising effects of these emotions, and the correct use or misuse of these energies. Hanin (2004) has recently proposed the concept of meta-emotion, or meta-experience, to account for knowledge, attitudes, beliefs and preferences for (or rejection of) an emotion that athletes develop through a range of successful and less than successful performances. For instance, an athlete who notices that anger symptoms are usually associated with feeling powerful, vigorous and alert can interpret this state as an indicator of readiness to accomplish a task. Meta-experiences are also influenced by culturally determined beliefs of performers regarding the expected effect of specific emotions on performance and the rules of expression or suppression of emotions in a particular context.

Like the IZOF model, the directional perception of anxiety framework endorses individual differences in the interpretation of emotional symptoms. Jones (1995) proposed a model of

debilitative and facilitative competitive anxiety based on Carver and Scheier's (1988) control-process perspective on stress and coping. The model attempts to explain how the symptoms associated with anxiety (and emotions) experienced by performers in relation to stressors of competition may be viewed in a facilitating or debilitating manner towards performance. Anxiety would be facilitative as long as the individual's expectancies of being able to cope and of goal attainment remained favourable. If expectancies became unfavourable, anxiety would be perceived as debilitative. Thus, directional interpretations of anxiety symptoms (i.e., facilitative or debilitative) would depend on the performer's cognitive appraisal of being able to control the environment and the self. The direction of anger, however, has not been the focus of investigation of directional proponents who so far have been involved in the study of anxiety (see Mellalieu et al., 2006) and a range of feeling states (Jones & Hanton, 2001; Mellalieu, Hanton, & Jones, 2003).

Extending Jones' (1995) model from competitive anxiety to anger, it could be predicted that perceived ability to handle anger and exert control in a competitive situation would enable the symptoms of anger to be perceived as beneficial or advantageous to performance, whereas low mastery expectancies would result in the perception of harm. As Skinner and Brewer (2004) noted in reference to anxiety, this argument is consistent with the view of perceptions of emotion as a type of coping response (Raffety, Smith, & Ptacek, 1997), and empirical findings showing that higher levels of self-confidence in athletes (i.e., the ability to control the self and the environment) have been associated with increasingly beneficial perceptions (Jones et al., 1993). Hanton and Connaughton (2002) have suggested that self-confidence may facilitate coping resources to deal with competitive anxiety (e.g., rationalisation of thoughts and feelings) and maintain control during competition. Self-confidence could also be hypothesised to moderate the interpretation of competitive anger symptoms, where high confidence should protect against debilitative interpretations.

The present study adopted the directional perception of anxiety framework to assess the individual's perceived impact of the frequency of anger symptoms. Therefore, we supplemented the STAXI customary rating scale with the direction scale that Jones and Swain (1992) added to the CSAI-2 to measure the direction of intensity of anxiety symptoms. The first objective was to assess the individual's perception of the facilitative or debilitative effects of trait anger on sporting performance, thus extending the notion of directional interpretation beyond anxiety to anger. Rugby players were involved in the study because feelings related to anger were deemed important in playing a high-impact collision sport. A rugby game, indeed, is typified by intense physical contact and rough assaults against the players of the opposite team. Coaches and players often place emphasis on anger and aggressive behaviour, and on the need to properly harness anger in order to outperform the opponent (D'Urso, Petrosso, & Robazza, 2002). Athletes might tend to appraise anger feelings as facilitative because these would be deemed helpful in increasing effort, focussing concentration on the task, and achieving goals. Thus, it was hypothesised that rugby players would feel personal control of angry feelings and, therefore, would perceive anger as exerting a more beneficial than detrimental effect on performance.

The second goal of the study was to assess whether the STAXI direction scores would enable a differentiation of athletes on the basis of their competitive standard as was consistently shown in research concerning the CSAI-2 direction scores (Jones & Hanton, 2001; Mellalieu et al., 2004; Robazza & Bortoli, 2003). As previously discussed, most studies have observed that although the

intensity of anxiety symptoms experienced do not differentiate between elite and non-elite performers, elite athletes report significantly more facilitative interpretations of symptoms than their non-elite counterparts (Jones et al., 1994; Perry & Williams, 1998). Mellalieu et al. (2004) also found more facilitative perceptions of symptoms in experienced performers than among their less experienced peers. Elite or experienced performers are expected to undergo natural learning experiences by which they acquire cognitive skills and strategies that enable them to attain control over the environment and the self (Hanton & Jones, 1999). According to Jones' (1995) control model of facilitative and debilitative anxiety, athletes who perceive themselves as being in control and able to achieve their goals are predicted to interpret their symptoms as facilitative. Extending Jones' notion of control from anxiety to anger, we suggested that high-level rugby players were able to exert more control over competitive anger than low-level players and, consequently, they would report more facilitative interpretation of anger symptoms. No specific predictions were made regarding anger frequency relying on anxiety findings, because trait anxiety investigations have provided equivocal results. In two studies, for example, elite athletes were found to report lower anxiety and higher self-confidence than non-elite participants (Robazza & Bortoli, 2003), or to exhibit the same level of anxiety and self-confidence (Jones & Swain, 1995). However, the two studies were consistent in their directional perception results, in that elite performers experienced more facilitative effects of symptoms than non-elite performers.

The third purpose of the investigation was to verify to what extent the intensity and direction of competitive trait anxiety and self-confidence, assessed through a trait version of the CSAI-2 (Martens et al., 1990) would explain the STAXI direction scores. In a sample of high-standard swimmers, Jones and Hanton (2001) found that those performers who experienced pre-competitive symptoms to be facilitative on the direction scale of the CSAI-2 identified more positive and fewer negative feeling states than those swimmers who perceived symptoms to be debilitative. Moreover, facilitated performers selected the "confident" feeling state label more frequently. In contrast, those swimmers who perceived symptoms to be debilitative identified more negative and less positive states. The authors suggested that predispositions to experience competitive anxiety symptoms as facilitative to performance may be predictive of the direction and type of pre-competitive affective states. To test this assumption, Mellalieu et al. (2003) examined the differences in affective states of competitive athletes who reported facilitating or debilitating interpretations of pre-competitive anxiety. Those athletes who perceived anxiety as facilitative (facilitators) reported greater facilitative affective experiences than those who experienced anxiety as debilitative (debilitators). Interestingly, several facilitators labelled aggressive feelings and anger as helpful with regard to both preparation for and actual competitive performance.

From these findings, it was hypothesised that anxiety direction scores would be associated with STAXI direction scores more than anxiety intensity scores. This hypothesis is also consistent with research results showing that anger and anxiety tend to be highly inter-correlated (Diener & Emmons, 1985; Watson & Tellegen, 1985; Watson, Clark, & Tellegen, 1988), and that they can be associated with either facilitated or debilitated performance (Beedie, Terry, & Lane, 2000). Based on this evidence, Lane and Terry (2000) developed a model of mood in which both tension and anger are expected to show a curvilinear link with performance in the absence of a depressed mood. They explained the curvilinear relationship according to the cue utilisation theory (Easterbrook, 1959), suggesting that the augmented arousal closely related to tension or anger

causes a narrowing of the attentional field. A narrow focus of attention facilitates detection of relevant cues and exclusion of task-irrelevant cues. If arousal heightens above an optimum level for the task or the individual, task-relevant cues are also excluded and performance declines as a consequence. The similarity of the underlying mechanisms purported to explain the links between anxiety/anger and performance should be reflected in a positive association between anxiety and anger direction scores. Furthermore, self-confidence was expected to moderate the debilitating effects of anger and to exert a protective effect in the control of symptoms. As previously discussed, performers who perceive themselves as being able to cope with their emotional symptoms and achieve their goals can interpret their symptoms as being facilitative of performance.

Method

Participants

The sample consisted of 197 Italian male rugby players from several teams involved in the National championship during the regular competitive season. Participants were classified on the basis of their competitive standard level into high-level players ($n = 99$) or low-level players ($n = 98$). High-level players (M age = 26.60 yr; range 18–37 yr; SD = 3.89) were from teams playing in the first division; most of them had international experience and were professional players. Low-level players (M age = 26.23 yr; range 18–40 yr; SD = 4.70) were from teams playing in the third division and were not professional players.

Instrumentation

The Competitive Trait Anxiety Inventory-2. The Competitive Trait Anxiety Inventory-2 (CTAI-2; Albrecht & Feltz, 1987) is a modified version of the CSAI-2 (Martens et al., 1990), which is intended to gauge the usual intensity level of cognitive anxiety, somatic anxiety and self-confidence in sport. Albrecht and Feltz modified the ''How you feel right now'' direction of the CSAI-2 into ''How you usually feel prior to or during competitions'', so as to rate typical anxiety and self-confidence. The questionnaire, which was then referred to as the CTAI-2, includes 27 items, with nine items in each subscale. The cognitive anxiety statements include ''I am concerned about this competition'' and ''I am concerned about choking under pressure'', while the somatic anxiety items include ''My heart is racing'' and ''My hands are clammy''. The self-confidence statements comprise ''I'm confident I can meet the challenge'' and ''I'm confident of coming through under pressure''. Responses to each item are rated on a scale of 1 (not at all) to 4 (very much so), giving each subscale a range from 9 to 36.

In addition to the intensity scale, a direction scale (Jones & Swain, 1992) was included for each item to enable the participant to rate the degree to which the experienced intensity of each symptom was either facilitative or debilitative to subsequent performance. The direction scale ranged from −3 (very debilitative) to +3 (very facilitative), where a score of zero denoted unimportant effects. Possible direction scores on each subscale ranged from −27 to +27, with a positive score representing a perceived facilitative impact of anxiety on performance and a

negative score indicating a perceived debilitative impact. Internal reliability coefficients for cognitive anxiety state ranged from 0.80 to 0.89 and for somatic anxiety state ranged from 0.72 to 0.84 (Jones & Hanton, 1996, 2001; Swain & Jones, 1996).

Researchers have successfully adopted the CTAI-2 to assess both intensity and direction of usual anxiety (e.g., Jones & Swain, 1995; Mellalieu et al., 2003; Ntoumanis & Jones, 1998; Perry & Williams, 1998). The Italian version of the CTAI-2 was derived from the backward translation technique and applied to a sample of track and field athletes (Robazza, Bortoli, & Nougier, 1998). The internal reliability values of intensity scores were 0.86 for cognitive anxiety, 0.85 for somatic anxiety and 0.90 for self-confidence.

The State-Trait Anger Expression Inventory. The State-Trait Anger Expression Inventory (STAXI; Spielberger, 1991) is a 44-item questionnaire that provides a measure of the anger experience as an emotional state (State anger), the disposition towards anger as a personality trait (Trait anger), and the expression of anger (Anger-in, Anger-out, and Anger control). The State anger scale was omitted in this study because this assessment was made outside of competition.

The Trait anger section asks participants how they generally feel by rating 10 self-descriptive statements. The global 10-item Trait anger scale comprises two 4-item subscales named Angry temperament and Reaction to criticism, and two additional items. Angry temperament (e.g., "I am quick tempered") measures the general disposition towards angry feelings with no reference to circumstances and without provocation, and Reaction to criticism (e.g., "It makes me furious when I am criticized in front of others") measures the tendency to become angry in the face of provoking situations. Participants rate themselves on a 4-point frequency scale: 1 = *Almost never*; 2 = *Sometimes*; 3 = *Often*; 4 = *Almost always*.

The expression of anger section comprises 24 descriptions of reactions when angered that are included in three 8-item subscales. Anger-in refers to an individual's tendency to hold in or suppress angry feelings (e.g., "I boil inside but I don't show it"). Anger-out involves the expression of anger through verbal or physical aggression (e.g., "I lose my temper"). Anger control is concerned with the extent to which the participant attempts to control the expression of anger (e.g., "I calm down faster than other people"). Ratings are again on a 4-point frequency scale. Higher scores indicate a greater tendency to feel angry in competition and suppress, express or control anger.

Instructions were modified to render the questionnaire a sport-specific measure of athletes' general anger dispositions in sport and their tendencies to react with anger. Specifically, athletes were required to refer to the feelings usually experienced during competition (i.e., competitive trait anger) and their reactions (i.e., anger expression during competition). As with the CTAI-2, a direction scale ranging from −3 (very debilitative) to +3 (very facilitative) was added for each item, so as to have participants rate the extent to which each item was either facilitative or debilitative to performance.

The STAXI has been validated on a variety of normal and clinical samples showing good psychometric properties (Cornell, Peterson, & Richards, 1999; Forgays, Forgays, & Spielberger, 1997; Watt & Howells, 1999). The questionnaire has also been used in the athletic domain (Ruiz, 2004). The Italian version of the STAXI (Spielberger, 1992) has been shown to reflect the original factorial structure. Acceptable internal consistency of the subscales has been revealed in a sample of adult males with α coefficients ranging from 0.64 to 0.84.

Procedure

Cooperation from the team managers, coaches and athletes was acquired after the main purposes of the study were explained to them. Measurements were completed at the practice sites in a secluded location near to training facilities but not directly before or after competitions in an effort to minimise external distractions, cognitive biases, and judgment effects. Assessment was conducted individually or in small groups of four or five participants. Each player read and signed an informed consent document regarding the study's objectives, and completed a brief demographic questionnaire prior to the administration of the inventories. Participants were informed that they would be free to discontinue participation in the study at any time without any repercussions on their selection for the team. Confidentiality of the responses on an individual level was also assured. Participants were then presented with the anti-social desirability instructions emphasising the need for honesty and then asked to complete the CTAI-2 and STAXI scales. The time needed to complete the questionnaires was approximately 15 min.

Data analysis

Data were preliminarily screened for accuracy of data entry and to check the assumptions of normality, linearity, multicollinearity and homogeneity of variance–covariance matrices through frequency and scatter plots, and Box's *M*-test. Internal reliability and correlation coefficients among the subscales of the CTAI-2 and the STAXI were also calculated.

Mean frequency and direction scores for each subscale of the STAXI were then computed in reference to the first purpose of the study. The hypothesis was that rugby players would perceive angry feelings under personal control and thus as more beneficial than detrimental. Mean intensity and direction scores for the subscales of the CTAI-2 were also derived.

With respect to the second aim of the study (i.e., the possibility of differentiating between high- and low-level athletes), the frequency and direction scores of each scale of the STAXI were analysed separately using multivariate analysis of variance (MANOVA). In the first analysis, the frequency and direction scores of the STAXI scales acted as the dependent variables, and the competitive level (i.e., high vs. low) as the independent variable. In the second analysis, the CTAI-2 intensity and direction scores were entered as the dependent variables, and again the competitive level as the independent variable.

With regard to the third purpose of the investigation (i.e., to examine whether the CTAI-2 direction scores would predict the STAXI direction scores more than the CTAI-2 intensity scores), a series of hierarchical multiple regressions was performed. Direction and intensity scores of cognitive anxiety, somatic anxiety, and self-confidence were entered in the analyses as independent variables for the two scales of trait anger (i.e., Angry temperament and Reaction to criticism), and the two scales of anger expression (i.e., Anger-in and Anger-out). According to the study's purpose and predictions, the order of entry of variables in the regression model was as follows: cognitive anxiety direction and somatic anxiety direction were entered in the first and second steps of the model respectively; cognitive anxiety intensity and somatic anxiety intensity were entered together in the third step; self-confidence direction and intensity were entered together in the fourth step. Concerning the Anger control scale, the order of entry of the

independent variables was: self-confidence direction in the first step; self-confidence intensity in the second step; all remaining variables in the third step.

Results

Preliminary data analysis

The screening procedure showed that data were accurately entered for the analysis, missing values were not recorded, and there were no univariate or multivariate within-cell outliers. The assumptions of normality, linearity and multicollinearity, and homogeneity of variance–covariance matrices were deemed satisfactory ($p > 0.05$).

Table 1 reports Cronbach's α coefficients calculated for the intensity scales of the CTAI-2 and the frequency scales of the STAXI. With α ranging from 0.69 to 0.84, the reliability of the scales was acceptable. Pearson correlation coefficients among measures are reported in Table 2. Correlations among the CTAI-2 intensity scales were low ranging from −0.19 to −0.39. Correlations among the STAXI frequency scales were low to moderate, ranging from 0.05 to 0.79. Higher correlations were found between the Angry temperament subscale and Trait anger as well as between the Reaction to criticism subscale and Trait anger ($r > 0.70$). This is unsurprising, in that the items of the two subscales are incorporated in the Trait anger scale. Correlations among the intensity scales of the CTAI-2 and the frequency scales of the STAXI were also low, ranging from −0.01 to 0.38. A relative independence of the scales thus emerged, providing support to the argument that the scales of the two inventories measure different constructs. Correlations among direction scales were larger compared to correlations among intensity or frequency scales, ranging from 0.34 to 0.59 on the CTAI-2 scales and from 0.23 to 0.84 on the STAXI scales. Moreover, most of the CTAI-2 direction scores correlated significantly with the STAXI direction scores, thus indicating similar functional impact of anxiety and anger.

Table 1
Cronbach's αs and descriptive statistics of the intensity scales of the CTAI-2 and the frequency scales of the STAXI ($N = 197$)

Scales	α	*M*	SD
Cognitive anxiety	0.82	17.41	4.72
Somatic anxiety	0.76	18.14	4.42
Self-confidence	0.78	25.28	4.38
Trait anger	0.78	17.83	4.79
Angry temperament	0.83	6.70	2.53
Reaction to criticism	0.71	7.70	2.57
Anger-in	0.69	16.07	3.97
Anger-out	0.74	13.71	3.67
Anger control	0.84	23.93	4.68

Table 2
Pearson correlation coefficients among measures ($N = 197$)

	Acog (d)	Asom (i)	Asom (d)	Conf (i)	Conf (d)	A-trait (f)	A-trait (d)	A-temp (f)	A-temp (d)	React (f)	React (d)	A-in (f)	A-in (d)	A-out (f)	A-out (d)	A-con (f)	A-con (d)
Acog (i)	−0.29*	0.35*	−0.14	−0.39*	−0.32*	0.32*	−0.22*	0.20*	−0.23*	0.30*	−0.11	0.32*	−0.15	0.22*	−0.18	−0.23*	−0.16
Acog (d)	—	0.08	0.59*	0.28*	0.34*	0.01	0.37*	0.00	0.27*	0.01	0.34*	−0.05	0.47*	0.06	0.37*	0.12	0.18
Asom (i)		—	0.12	−0.19*	−0.07	0.38*	−0.24*	0.30*	−0.20*	0.31*	−0.12	0.15	−0.02	0.33*	−0.24*	−0.26*	−0.25*
Asom (d)			—	0.26*	0.41*	0.04	0.26*	0.04	0.24*	0.06	0.21*	0.06	0.38*	0.03	0.27*	0.07	0.21*
Conf (i)				—	0.63*	−0.04	0.08	−0.08	0.02	−0.01	0.10	−0.10	0.24*	−0.07	0.17	0.33*	0.24*
Conf (d)					—	−0.07	0.15	−0.09	0.10	0.01	0.13	−0.05	0.23*	−0.12	0.23*	0.26*	0.47*
A-trait (f)						—	−0.36*	0.79*	−0.30*	0.77*	−0.24*	0.10	−0.16	0.65*	−0.26*	−0.46*	−0.38*
A-trait (d)							—	−0.25*	0.84*	−0.27*	0.79*	−0.02	0.52*	−0.18	0.67*	0.30*	0.41*
A-temp (f)								—	−0.27*	0.29*	−0.12	−0.05	−0.08	0.64*	−0.23*	−0.55*	−0.39*
A-temp (d)									—	−0.16	0.40*	−0.04	0.31*	−0.17	0.58*	0.25*	0.36*
React (f)										—	−0.26*	0.23*	−0.17	0.37*	−0.17	−0.21*	−0.19*
React (d)											—	0.08	0.47*	−0.10	0.43*	0.20*	0.23*
A-in (f)												—	−0.23*	0.05	−0.13	0.16	0.00
A-in (d)													—	−0.03	0.50*	0.13	0.31*
A-out (f)														—	−0.21*	−0.46*	−0.43*
A-out (d)															—	0.27*	0.51*
A-con (f)																—	0.46*

Note: Acog = cognitive anxiety, Asom = somatic anxiety, Conf = self-confidence, A-trait = Trait anger, A-temp = Angry temperament, React = Reaction to criticism, A-in = Anger-in, A-out = Anger-out, A-con = Anger control, f = frequency, i = intensity, d = direction.

*$p < 0.01$.

STAXI and CTAI-2 mean scores

On the whole, rugby players showed a general tendency to experience a moderate frequency of angry feelings. This was revealed by mean scores of the STAXI items close to two points, which corresponded to the "sometime" label on the 4-point frequency scale (Trait anger $M = 1.78$, $SD = 0.48$; Angry temperament $M = 1.67$, $SD = 0.63$; Reaction to criticism $M = 1.93$, $SD = 0.64$; Anger-in $M = 2.01$, $SD = 0.50$; Anger-out $M = 1.71$, $SD = 0.46$). Notably, mean scores of the Anger control scale roughly corresponded to the "often" label (three points) on the 4-point scale ($M = 2.99$, $SD = 0.59$). On the CTAI-2, cognitive anxiety and somatic anxiety scores were around two points on the 4-point intensity scale ($M = 1.93$, $SD = 0.52$, and $M = 2.02$, $SD = 0.49$), and self-confidence scores were around three points ($M = 2.81$, $SD = 0.49$).

Mean total scores for each subscale of the STAXI and the CTAI-2 are reported in Table 3. The table also contains the mean direction scores calculated on the total score of each subscale divided by the number of items, so as to obtain a straightforward indication of facilitative/debilitative

Table 3
CTAI-2 and STAXI scale scores of high and low competitive standard (CS) athletes ($N = 197$)

CTAI-2 and STAXI scales		Scores		Direction scores		% of athletes who reported direction score >0	
		High CS	Low CS	High CS	Low CS	High CS	Low CS
Cognitive anxiety	*M*	16.56	18.28	0.41	0.16	60.61	50.00
	SD	4.18	5.08	1.16	0.89		
Somatic anxiety	*M*	18.49	17.78	0.75	0.44	80.81	75.51
	SD	4.41	4.43	0.92	0.61		
Self-confidence	*M*	25.77	24.79	1.66	1.29	95.96	94.90
	SD	4.38	4.36	0.81	0.76		
Trait anger	*M*	17.92	17.74	0.25	0.23	61.62	57.14
	SD	4.59	5.00	1.00	0.87		
Angry temperament	*M*	6.63	6.77	0.44	0.37	60.61	64.29
	SD	2.51	2.56	1.34	1.16		
Reaction to criticism	*M*	7.92	7.48	0.14	0.12	51.52	45.92
	SD	2.56	2.58	1.03	1.11		
Anger-in	*M*	16.29	15.85	0.19	0.10	45.45	51.02
	SD	3.87	4.08	0.89	0.81		
Anger-out	*M*	13.68	13.73	0.56	0.45	69.70	71.43
	SD	3.78	3.58	1.00	0.85		
Anger control	*M*	24.15	23.70	1.25	1.14	89.90	89.80
	SD	4.36	5.01	0.88	0.88		

Note: Mean direction scores are calculated on the total score of each subscale divided by the number of items.

interpretations of anger and anxiety manifestations. According to our hypothesis, mean direction scores of all STAXI subscales were positive for both high- and low-level performers, indicating a facilitative perception of anger symptoms irrespective of the players' competitive standard. The percentage of participants who reported positive (>0) direction scores is also contained in Table 3, and confirms the athletes' tendency to perceive angry feelings as facilitative of performance. Indeed, athletes reported more facilitative than debilitative effects of their angry symptoms. It is worth noting that mean direction scores of cognitive and somatic anxiety symptoms also were positive for both groups of high- and low-level performers. Moreover, more participants experienced facilitative than debilitative effects of anxiety symptoms.

Differentiation between high- and low-level athletes

Scores on the STAXI. The STAXI frequency and direction scores of each scale were analysed to explore differences between high- and low-level athletes. MANOVA 2×2 or 2×3 (competitive standard $\times$ trait anger scales or competitive standard $\times$ anger expression scales) did not yield significant results either on the frequency or direction score of the trait scales [frequency: Wilks' $\lambda = 0.99$, $F(2, 194) = 1.01$, $p = 0.37$, $\eta^2 = 0.01$; direction: Wilks' $\lambda = 1.00$, $F(2, 194) = 0.06$, $p = 0.94$, $\eta^2 = 0.00$] and anger expression scales [frequency: Wilks' $\lambda = 1.00$, $F(3, 193) = 0.31$, $p = 0.82$, $\eta^2 = 0.01$; direction: Wilks' $\lambda = 0.99$, $F(3, 193) = 0.34$, $p = 0.80$, $\eta^2 = 0.01$]. Therefore, high- and low-level competitors did not differ in their frequency and interpretation of anger symptoms (Table 3).

Scores on the CTAI-2. The CTAI-2 intensity and direction scores of each scale were analysed to examine differences between high- and low-level players. MANOVA 2×3 (competitive standard $\times$ scales) on intensity scores yielded significant results, Wilks' $\lambda = 0.94$, $F(3, 193) = 4.15$, $p<0.01$, $\eta^2 = 0.06$. Significant differences emerged on the cognitive anxiety scale at the univariate analysis of variance follow-up, $F(1, 195) = 6.74$, $p = 0.01$, $\omega^2 = 0.03$, with high-level athletes reporting lower scores than their low-level counterparts (Table 3). Analysis of direction scores also revealed significant results, Wilks' $\lambda = 0.93$, $F(3, 193) = 4.57$, $p<0.005$, $\omega^2 = 0.07$. High-level players experienced symptoms of somatic anxiety, $F(1, 195) = 7.70$, $p<0.007$, $\omega^2 = 0.03$, and self-confidence, $F(1, 195) = 11.18$, $p<0.001$, $\omega^2 = 0.05$, as more facilitative than low-level players (Table 3).

CTAI-2 scores as predictors of anger direction

The results of the hierarchical regression model of multidimensional anxiety as a predictor of anger direction are presented in Table 4. Cognitive anxiety direction was a significant predictor of Anger-in (22.4% of variance accounted for), Anger-out (13.5%), Reaction to criticism (11.3%), and Angry temperament (7.3%). Somatic anxiety direction did not contribute significantly to the regression model. The composite effects of cognitive and somatic anxiety intensity increased significantly the proportion of variance accounted for by Angry temperament and Anger-out, but the relationships among anxiety intensity and anger direction were negative (see Table 2). Finally, self-confidence direction was a significant predictor of Anger control with 22.0% of variance accounted for. Self-confidence intensity did not contribute significantly to the model, whereas the

Table 4
Summary of hierarchical regression analysis of multidimensional anxiety as predictor of anger direction ($N = 197$)

Criterion variables	Steps	Predictor variables in order of entry	R^2	R^2 change	F change (p value)	β	SP^2
Angry temperament (d)	1	Cognitive anxiety (d)	0.07	0.07	0.00	0.19	0.15
	2	Somatic anxiety (d)	0.08	0.01	0.16	0.17	0.13
	3	Cognitive anxiety (i)	0.14	0.06	0.00	−0.15	−0.12
		Somatic anxiety (i)				−0.22	−0.20
	4	Self-confidence (d)	0.17	0.03	0.05	−0.20	−0.15
		Self-confidence (i)				0.02	0.02
Reaction to criticism (d)	1	Cognitive anxiety (d)	0.11	0.11	0.00	0.35	0.27
	2	Somatic anxiety (d)	0.11	0.00	0.87	0.03	0.02
	3	Cognitive anxiety (i)	0.14	0.03	0.06	0.05	0.04
		Somatic anxiety (i)				−0.18	−0.16
	4	Self-confidence (d)	0.14	0.00	0.91	−0.04	−0.03
		Self-confidence (i)				0.03	0.02
Anger-in (d)	1	Cognitive anxiety (d)	0.22	0.22	0.00	0.39	0.30
	2	Somatic anxiety (d)	0.24	0.01	0.06	0.14	0.11
	3	Cognitive anxiety (i)	0.24	0.01	0.51	0.05	0.04
		Somatic anxiety (i)				−0.07	−0.06
	4	Self-confidence (d)	0.25	0.01	0.37	0.10	0.08
		Self-confidence (i)				−0.01	−0.01
Anger-out (d)	1	Cognitive anxiety (d)	0.14	0.14	0.00	0.34	0.26
	2	Somatic anxiety (d)	0.14	0.00	0.36	0.08	0.06
	3	Cognitive anxiety (i)	0.22	0.08	0.00	0.06	0.05
		Somatic anxiety (i)				−0.30	−0.27
	4	Self-confidence (d)	0.22	0.01	0.47	−0.04	−0.03
		Self-confidence (i)				0.11	0.08
Anger control (d)	1	Self-confidence (d)	0.22	0.22	0.00	0.53	0.39
	2	Self-confidence (i)	0.23	0.00	0.28	−0.14	−0.11
	3	Cognitive anxiety (d)	0.29	0.07	0.00	0.07	0.05
		Cognitive anxiety (i)				0.03	0.02
		Somatic anxiety (d)				0.07	0.06
		Somatic anxiety (i)				−0.28	−0.25

Note: d = direction, i = intensity, β = standardized beta coefficient (incremental), SP^2 = squared semi-partial correlation coefficient.

composite effects of the remaining variables (cognitive and somatic anxiety intensity and direction) slightly improved the proportion of variance accounted for by Anger control (6.5%).

Discussion

A purpose of the present study was to assess the athletes' perception of facilitative or debilitative effects of anger upon performance by extending the notion of directional perceptions

beyond anxiety to anger. On the whole, rugby players reported a moderate frequency of angry symptoms as well as a high frequency of anger control interpreted as facilitative. As expected, the general tendency of players was to feel their own angry feelings were under personal control and, consequently, to experience angry feelings as facilitative rather than debilitative. Similarly, players tended to feel a moderate level of anxiety and a higher level of self-confidence, and to perceive cognitive and somatic symptoms of anxiety and self-confidence as facilitative. Findings could be interpreted in the light of Carver and Scheier's (1988) control-process model on anxiety adapted to sport by Jones (1995). Extending the principles of the model from anxiety to anger, it could be hypothesised that rugby players felt a moderate frequency of anger as advantageous for performance because they believed themselves able to exert control over their feelings and to channel properly the energising effects of emotional arousal on the task.

Traditionally, anxiety and anger have been viewed as negatively toned emotions that are detrimental to performance in many situations and contexts, such as in social, business, academic, and sport venues (see Isberg, 2000 for a review on anger and aggressive behaviour). However, research has demonstrated that negative emotions can be perceived as exerting both beneficial and detrimental effects. This point has been repeatedly emphasised by several authors holding different theoretical positions. In his cognitive-motivational-relational theory of emotion, Lazarus (1991) included anger and anxiety in a category of negative emotions resulting from harms, losses, and threats, and argued that anger "…under the conditions of ordinary life, its core relational theme is a demeaning offence against me and mine." (Lazarus, 2000, p. 242). Anger entails a biologically derived tendency to counterattack to gain revenge for an affront or for wounded self-esteem. Yet, Lazarus (2000) admitted that there could be instances in which the mobilised energy resulting from "constructive anger" can enhance performance or social behaviour. For example, the anger provoked by a denigrating coach or parent can motivate the athlete or the child to try harder, so as to demonstrate that the coach or the parent is wrong. Like anger, anxiety can mobilise energy towards the attainment of a task. Therefore, the assumption that anger and anxiety are always detrimental is not tenable.

Hanin (2000, 2004) provided additional elaboration on the concept of the energising effects of emotions. A cornerstone in Hanin's IZOF model is the contention that an emotion can be individually perceived as having either facilitative or debilitative influences on performance. Optimal or dysfunctional states for performance can include both pleasant and unpleasant emotions reflecting the success or failure of athletes to recruit and use their resources. Optimal emotions (pleasant and unpleasant) are hypothesised to result in energising and organising effects on performance, whereas dysfunctional emotions (pleasant and unpleasant) would cause de-energising and disorganising effects. Hence, anger and anxiety when properly harnessed can be used to generate energy, sustain effort, postpone fatigue, maintain alertness, and keep the right focus.

Research using the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971; see Beedie et al., 2000) provided further evidence that anger and tension can benefit performance in certain sports such as karate (McGowan & Miller, 1989; Terry & Slade, 1995) and cross-country running (Cockerill, Nevill, & Lyons, 1991). Lane and Terry (2000) attempted to explain the relationship between anger and performance drawing on Spielberger's (1991) proposals on the nature of the anger construct. Spielberger argued that anger can be suppressed inwardly or directed externally towards individuals or objects. Anger that is directed inwardly would be

associated with other debilitative moods including confusion, fatigue, and depression. In contrast, anger that is expressed outwardly would increase the probability of a cathartic effect or would develop into the determination to succeed. Findings of the present study provided some support for this position in as much as direction scores of Anger-in were lower than scores of Anger-out. Also, there was about the same number of athletes who reported either facilitative or debilitative effects of Anger-in (i.e., direction scores >0), whereas more participants perceived Anger-out as facilitative rather than debilitative.

Concerning the second objective of the study, high-level and low-level competitors did not differ in their frequency and interpretation of anger symptoms. Contrary to expectations, neither frequency scores nor direction scores of the STAXI scales enabled differentiation of athletes by competitive standard. Specifically, differentiation of performers was predicted on direction scores, because high-level players were believed to report a more facilitative interpretation of anger as a consequence of their purported higher ability to control competitive anger. Findings, however, revealed that mean direction scores of all STAXI subscales were positive for both high- and low-level rugby players. These results and the large percentage of players who reported facilitative effects of anger symptoms uncovered a widespread interpretation across performers of anger as useful for rugby competition. It is also important to note that expressing anger outward (Anger-out) was perceived by athletes to be more facilitative than repressing anger (Anger-in). Yet, controlling anger (Anger control) was reported as more facilitative than expressing anger. Taken together, these findings reinforce the view that rugby players use their anger not only to energise behaviour in the struggle to overcome their opponents, but also to channel their physical and mental resources properly for skill execution.

Though the STAXI scores did not differentiate performers, the CTAI-2 scores yielded significant results. High-level athletes experienced lower levels of cognitive anxiety than their low-level counterparts, and more facilitative symptoms of somatic anxiety and self-confidence. These findings replicate in part those of previous studies in which directional interpretation of anxiety and self-confidence symptoms was sensitive enough to distinguish between individuals of different competitive standards (Jones et al., 1994; Jones & Swain, 1995; Robazza & Bortoli, 2003). Similar to what was noted for the STAXI scales, mean direction scores of the CTAI-2 subscales were positive for both groups of high- and low-level competitors, suggesting that players also use cognitive and somatic anxiety symptoms and self-confidence to energise and organise behaviour.

Regarding the third aim of the study, cognitive anxiety direction was a significant predictor of direction scores of trait anger (Angry temperament and Reaction to criticism) and anger expression (Anger-in and Anger-out). Self-confidence appeared closely associated with the control of anger. Indeed, self-confidence direction was a significant predictor of Anger control direction. Collectively, results are in accordance with those of Mellalieu et al.'s (2003) investigation showing that some athletes who reported facilitating interpretations of pre-competitive anxiety labelled aggressive feelings and anger as helpful in preparation and competition. Similarly, rugby players in the present study experienced, at a group level, a moderate frequency of anger symptoms as helpful. In addition, self-confidence appeared to moderate the debilitating effects of anger and to exert a protective effect in the control of symptoms. This is in line with qualitative research conducted by Hanton and colleagues who showed that cognitive and somatic symptoms individually perceived within personal control (and thus interpreted to be facilitative) were believed to increase confidence and performance (Hanton & Connaughton, 2002; Hanton,

Mellalieu, & Hall, 2004). In turn, self-confidence emerged as an essential characteristic for athletes to protect them against dysfunctional thoughts and feelings.

This study's findings are also consistent with research in which anger and anxiety were found to be highly inter-correlated (Diener & Emmons, 1985; Watson & Tellegen, 1985; Watson et al., 1988), and associated with facilitated or debilitated performance (Beedie et al., 2000). Drawing on Jones' (1995) model of competitive anxiety, it could be suggested that the perceived ability to exert control on anger and achieve goals would lead a self-confident athlete to perceive anger feelings as beneficial to performance. Similar to what is proposed for anxiety (Hardy, 1996), self-confidence could promote a reinterpretation of the impact of anger on performance or provide a buffer against its detrimental effects.

Conclusion and future directions

The present investigation extended the notion of directional perceptions from anxiety to anger. Findings provided support for the value of distinguishing between the frequency and direction of symptoms related to competitive anger, as already demonstrated in previous studies on intensity and direction of competitive anxiety (for a review, see Mellalieu et al., 2006). However, the assessment of intensity and the directional interpretation of intensity in the case of anxiety, and the assessment of frequency and directional perception of frequency in the case of anger was a limitation in the present investigation. This inconsistency in the measure of emotional dimensions derived from the format of the questionnaires. In fact, the CTAI-2 items are worded to capture the intensity dimension, whereas the STAXI items are worded to gauge the frequency dimension. The difference between the two questionnaires might confound the interpretation of research results, even though investigators have demonstrated that intensity and frequency of emotions can be related. For instance, Spielberger, Gorsuch, and Lushene (1970) showed that high trait-anxiety persons tend to experience higher anxiety state intensity more frequently than low trait-anxiety individuals. Similarly, persons who experience a high frequency of trait anger tend to report a high intensity of state anger (Spielberger, 1991). However, intensity and frequency, although related, have been observed to be separate dimensions of the emotional response (Diener et al., 1985; Kardum, 1999). While individuals can vary in their experience of the intensity of anxiety or anger, they can also vary in the frequency of symptoms. In the sporting context, performers are likely to display a different temporal pattern of intensity and frequency of anxiety during the periods preceding the competition (Hanton, Thomas et al., 2004; Swain & Jones, 1993). There is, therefore, value in assessing both intensity and frequency of affective phenomena. Future research should establish the feasibility of applying an intensity scale together with frequency and direction scales to the items of the STAXI. Anger investigators, indeed, should take account of the different dimensions of emotional responses and their temporal pattern, in line with the recommendations of several authors and recent developments within the anxiety domain (Cerin et al., 2000; Hanin, 2000; Hanton, Thomas et al., 2004; Mellalieu et al., 2003; Raglin & Hanin, 2000; Thomas, Maynard, & Hanton, 2004).

Future research should also focus on the perceived and actual impact of a range of negatively-toned and positively-toned emotions. According to Hanin (in press), a main issue in emotion research is to understand the individual's interpretation (meta-experience) of the emotional impact, as well as the underlying mechanisms by which different intensities of optimal/

dysfunctional, pleasant/unpleasant emotions are helpful or harmful for athletic performance. Hanin and Syrjä (1995) collected qualitative data describing how highly-skilled ice-hockey players interpreted the functional effects of performance-related emotions. The athletes attributed to their emotional states beneficial or detrimental effects for effort and skill. For instance, some players experienced feeling aggressive or dissatisfied as a facilitative and pleasant condition because helped them to keep the fighting spirit, try harder, skate well, and overcome mistakes (see Ruiz, 2004, for a detailed description of perceived functional effects of emotions). Of course, there is a need to establish to what extent the individual's experience of facilitative and debilitative effects of emotions is predictive of actual performance outcomes. To this purpose, assessment should incorporate actual performance data.

Idiosyncratic assessment procedures can be used as an alternative to normative measures of emotion. In a sample of skilled athletes (Hanin, 2000, p. 169), about half of the most often identified unpleasant optimal emotions were anger descriptors (e.g., irritated, provoked, angry, furious) and the other half were anxiety descriptors (e.g., tense, nervous, concerned, distressed). Ruiz and Hanin (2004a) developed a stimulus list of 25 anger descriptors from an initial pool of 32 items to examine the content and intensity of anger. Athletes were required to choose from the list or generate meaningful items best describing their states prior to, during, and after best and worst recalled performances. Results showed intra- and inter-individual variability in the content and intensity of anger descriptors across competitive situations. In a second study, Ruiz and Hanin (2004b) involved karate competitors in a metaphoric self-description procedure. Findings confirmed that anger and aggression as its behavioural component could be helpful or harmful for athletic performance, and supported the value of adopting idiosyncratic methods in the assessment of anger.

Research on anger should also examine the individual and situational variables that have been shown to moderate interpretation of symptoms associated with anxiety, such as competitiveness, skill level, experience level, gender and the type of sport (i.e., individual vs. team, contact vs. non-contact, and fine motor-skill vs. explosive gross motor-skill). From an applied perspective, understanding the athlete's interpretation of symptoms is fundamental in designing psychological interventions and in helping achieve optimal states. Traditional treatments intended to regulate or protect against symptoms of anxiety or anger that are thought to hamper performance of all athletes are not tenable. Practitioners need to be aware that anxiety, anger and other conventionally classified negative emotions may not necessarily be debilitative of performance. On the contrary, there are many instances in which negative emotions are beneficial in that they can generate energy to sustain effort and draw physical and mental resources for the execution of a task (Hanin, 2000). In such circumstances, suppressing symptoms of negative emotions can result in more harm than benefit.

Several authors raised ethical concerns regarding the manifestation of anger as aggressive or violent sport behaviour, as frequently observed in individual and team contact sports, such as judo, karate, wrestling, rugby, American football, and ice hockey (for a debate on this issue, see Brunelle, Janelle, & Tennant, 1999; Kerr, 2002; Tenenbaum, Stewart, Singer, & Duda, 1996). Brunelle et al., while disapproving manifestations of anger, contended that anger appears to be an intrinsic product of the athletic environment, accepted as an inherent part of sport and often encouraged to improve athletic performance. Struggling to beat the rival or being frustrated by mistakes, poor performance, actual or perceived unfairness from opponents, and bad calls from

referees can inflate intentions to harm and actually lead to uncontrolled aggression. Conversely, empirical research (Beedie et al., 2000; Hanin & Syrjä, 1995; Lane & Terry, 2000; Ruiz, 2004) and the findings of this study suggest that the energising effects of anger can benefit performance, provided that the athlete is able to channel energies for skill execution and attainment of a task within the rules of a given sport.

Applied sport psychologists, especially those who are working with competitors of combat sports, should help performers become aware of the facilitative or debilitative effects of cognitive and somatic symptoms related to anger. Athletes debilitated by anger could then be trained to reinterpret the harmful effects of emotional symptoms, in line with the view of directional proponents. For example, Hanton and Jones (1999) used cognitive restructuring to change performers' interpretation of the debilitative effects of anxiety towards more facilitative perceptions. Alternatively, a treatment could be devised to change the intensity of emotional symptoms together with (or rather than) their reinterpretation. For instance, Annesi (1998) taught athletes to raise or lower their levels of anxiety and self-confidence through an IZOF-based cognitive and somatic intervention. The treatment enabled athletes to achieve an optimal level of anxiety and self-confidence. In a similar vein, Robazza, Pellizzari, and Hanin (2004) trained performers to enter their optimal zones of functioning by enhancing or lowering the intensity level of their idiosyncratic emotions. Thus, cognitive restructuring or self-regulation of emotional levels might be proposed separately or in combination to help athletes attain control over their anger.

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