

The Effects of a Somatic Intervention Strategy on Competitive State Anxiety and Performance in Semiprofessional Soccer Players

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The primary aim of this study was to evaluate the effect of a somatic intervention technique. Subjects ($N = 17$) completed a modified version of the Competitive State Anxiety Inventory 2 (CSAI-2), which assessed both intensity and direction (debilitative-facilitative) of state anxiety within one hour of a soccer league match. During the match, player performances were evaluated using intraindividual criteria. Subjects were then allocated to control ($n = 8$) and experimental ($n = 9$) groups on the basis of their somatic anxiety intensity and direction scores. Following an 8-week intervention, subjects were again assessed during a second soccer match. A series of two-way analyses of variance with one repeated measure revealed significant interactions for cognitive anxiety intensity, somatic anxiety intensity, and somatic anxiety direction. This study provided further support for the "matching hypotheses" in that a compatible treatment proved most effective in reducing the targeted anxiety.

For many years the consensus among both practitioners and researchers has been that anxiety impairs performance in sport, yet as Jones (1991) suggests, precise identification of the relationship between anxiety and performance has proved elusive in sport psychology. The ambiguities in previous anxiety research in sport may be partially due to the oversimplified, unidimensional view of anxiety upon which this research was based. However, following the work of Borkovec (1976) and Davidson and Schwartz (1976), recent researchers have come to view

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anxiety as a complex multidimensional construct that differentiates anxiety into cognitive and somatic components. Specifically, "cognitive anxiety is the mental component of anxiety caused by negative expectations about success or negative self-evaluation, whereas somatic anxiety is the physiological or affective component of anxiety that is directly related to autonomic arousal" (Burton, 1988, p. 46).

On the basis of the conceptualization of state anxiety into at least two components, Martens, Burton, Vealey, Bump, and Smith (1990) developed a sports-specific multidimensional state anxiety inventory known as the Competitive State Anxiety Inventory-2 (CSAI-2). The CSAI-2 differentiates between the cognitive and somatic components of state anxiety, as well as assessing state self-confidence.

However, it is important to recognize that anxiety as measured by the CSAI-2 represents only the "intensity" of particular anxiety symptoms or cognitive intrusions. Consequently, investigators (Burton, 1990; Jones, 1991; Parfitt, Jones, & Hardy, 1990) have argued that the CSAI-2 is based on a somewhat limited dimension of the anxiety response. More specifically, the inventory does not measure what might be referred to as the "directional" perceptions of the symptoms. The concept of anxiety has largely been viewed as negative and detrimental to performance, yet previous findings (Jones & Cale, 1989; Mahoney & Avenier, 1977; Parfitt & Hardy, 1987) have shown that competitive anxiety does not necessarily have negative implications. That is, some individuals may interpret increases in physical arousal as fear that they cannot perform the skill successfully, whereas others may interpret this state as being psyched up and ready for performance (Feltz, 1988). This suggests that anxiety may be perceived and labeled as either debilitating or facilitative to performance. Surprisingly, very little structured empirical research has pursued this issue within sport psychology.

Recently, however, Jones and Swain (1992) incorporated a direction scale into the context of the CSAI-2 to assess how sports performers perceive their anxiety symptoms in terms of their likely effects upon performance. Thus Jones and Swain (1992) examined differences in "intensity" and "direction" of symptoms of competitive state anxiety in high- and low-competitive subjects. While no differences could be found between groups on the intensity of CSAI-2 subscale scores, members of the highly competitive group perceived their cognitive anxiety as more facilitating and less debilitating than did members of the low-competitive group. Subsequently, these findings support the proposal that sports performers' directional perceptions of their "anxiety" symptoms may provide further understanding of the competitive state anxiety response.

The development of the CSAI-2 has significant implications for sports psychologists because it enables examination of the "matching hypothesis" in a sporting context (Martens et al., 1990). The matching hypothesis suggests that relaxation treatments might be more effective if they were directed at the type of symptoms experienced by the subject: A cognitive relaxation procedure would have its primary effect on reducing unwanted cognitive anxiety, and a somatic procedure would have its primary effect on somatic symptoms. Hence, sports psychologists have tended to select interventions on the basis of the most dominant state anxiety in the stress response (Gould, Petlichkoff, & Weinberg, 1984; Maynard & Cotton, 1993), which, without knowledge of the subjects' perceptions of that anxiety, may actually hinder future performance. Hence, the development of the modified CSAI-2 that assesses both intensity and direction of the state

anxiety response will enable researchers to be selective in the type of intervention prescribed for a particular subject. The final choice will then be based on the subject's own perceptions of cognitive or somatic anxiety as either a help or a hinderance in performance situations. Furthermore, the modified CSAI-2 may allow researchers to limit the intervention to one of the component parts of the anxiety response. Currently, researchers tend to present a multimodal treatment package where a major component of the package may be redundant.

The primary purpose of this investigation, therefore, was to assess the efficacy of allocating subjects to intervention groups based upon the principles of the matching hypothesis and the subjects' own perceptions of their stress response. More specifically, the aim was to evaluate the effect of a somatic intervention on somatic and cognitive state anxiety and self-confidence. It was hypothesized that a compatible treatment would be more effective at reducing the type of state anxiety it was targeted toward; hence, subjects in the treatment group would experience significantly less somatic anxiety intensity at postintervention than at preintervention. Secondly, it was hypothesized that subjects in the treatment group would rate somatic anxiety as significantly more facilitative at postintervention compared to preintervention.

The introduction of a multidimensional approach to anxiety has been an important step forward in the empirical investigation of the anxiety-performance relationship. It has led to a number of studies that have attempted to examine the relationship between sports performance and the specific components of a competitive state anxiety response (Burton, 1988; Gould et al., 1984; Krane & Williams, 1987). Burton (1988) in his study with swimmers found cognitive anxiety to be related to performance in the form of a negative linear trend, with performance deteriorating as cognitive anxiety increased. Further polynomial trend analysis indicated an inverted-U relationship between somatic anxiety and performance and a positive linear relationship between self-confidence and performance. Other studies have generally failed to find strong relationships between the CSAI-2 subcomponents and performance (Caruso, Dziewaltowski, Gill, & McElroy, 1990; Krane & Williams, 1987; Maynard & Howe, 1987), although this may be at least partially explained by the fact that these studies have not used an intraindividual performance measure. Burton (1988) suggests that intraindividual assessments control for differences in skill level by comparing current performance to average or best previous performance and hence offer a more sensitive measure.

Previous investigators (Maynard & Cotton, 1993; Parfitt et al., 1990) have further suggested that more reliable and objective performance measures should be used to supplement expert ratings. Parfitt et al. (1990) suggest that "match" analysis techniques that provide coaches with objective data about different aspects of a player's performance during competition may produce a more sensitive measure. To this end we felt that in-depth structured performance criteria may be just such an objective tool that the expert raters could utilize in making their performance evaluations. A second aim involved a further examination of the relationship between performance and the components of state anxiety and self-confidence in a sport setting, using intraindividual measures of performance supplemented by more objective performance criteria. The third hypothesis was that the use of more sensitive measures of performance by expert raters would enable state anxiety and self-confidence intensity and direction measures to account for more of the performance variance within the anxiety-performance relationship.

Method

Subjects

The sample of 22 male soccer players (mean age = 24.3 years, $SD = 2.32$ years) had semiprofessional ability and played at first- or second-team level for the Chichester Football Club. All the subjects volunteered to participate in this investigation, and all were informed of the general purpose of the study. Unfortunately, 5 subjects were lost to the study because of injury; hence, only 17 players completed the intervention and were included in all aspects of data collection.

Instrumentation: Modified Competitive State Anxiety Inventory-2 (CSAI-2)

Precompetition intensity levels of state anxiety and self-confidence were measured via the CSAI-2 (Martens et al., 1990). The CSAI-2 is a sport-specific, self-report inventory that had been demonstrated to be a reliable and valid measure of cognitive and somatic anxiety and self-confidence in competitive situations (Martens et al., 1990). The scale comprises 27 items, with 9 items in each of the three subscales. Responses to each item are on a Likert format, ranging from 1 (*not at all*) to 4 (*very much so*). Thus, possible scores on the three subscales range from 9 to 36.

A separate scale as modified by Jones and Swain (1991) that related to "direction" was included alongside each of the 27 items. Each subject rated the extent to which the intensity of each symptom, experienced right now, would be either facilitative or debilitating to subsequent performance. At the time of administration the subjects were reminded that *debilitative* meant "a hindrance" and that *facilitative* meant "helpful," to ensure the terminology within the questionnaire was fully understood. The direction scale was measured on a 7-point Likert format ranging from 1 (*debilitative*) to 7 (*facilitative*). Direction scores for cognitive anxiety, somatic anxiety and self-confidence were calculated by summing the responses and ranged, therefore, from a low of 9 (very debilitating) to a high of 63 (very facilitative).

Performance

Four experts associated with the Chichester Football Club were asked to subjectively evaluate the performance of subjects within the study. Two experts were assigned to watch the first 11 players, and two were assigned to watch the second 11 players. All four experts were formally qualified and experienced soccer coaches. The experts were given a scale consisting of performance criteria characteristics on a scale of 1 (*poor*) to 5 (*good*), which had been developed by an independent Football Association Coach (see McMorris, 1986; Figure 1). The criteria integrated evaluation of skilful performance and decision-making shown by each player. A score of 1 was said to equate to a poor performance by that player in comparison to the criteria and to that player's typical performance, 3 was equal to the criteria and a typical performance, and 5 was equal to good performance as compared to the criteria and his typical performances. This system of evaluation was designed to indicate intraindividual fluctuations in performance. The experts were given the performance criteria the evening before the match for familiarization.

RATING	DESCRIPTION
5	Knew how, when and where to improvise; Knew how, when and where to move forward; Knew how, when and where to run in order to create space for others; Knew how, when and where to shoot at goal; Anticipated the oppositions play when defending; Gave verbal information to other players; Knew how to delay two attackers; Passed accurately throughout the game over all distances; Dribbled effectively; Tackled effectively; Headed accurately and/or powerfully in attack and/or defence; (Plus all characteristics given in 3 & 4).
4	Knew when to pass the ball behind the defence; Knew when and where to cover a defender who was pressurising an attacker; Knew when he was not needed to support behind the ball; Knew when and how to move wide; Knew how to "check off" an opponent; Passed accurately throughout the majority of the game; Was proficient at two or more of the following: heading, dribbling, shooting and tackling. (Plus all characteristics given in 3).
3	Knew when, where and how to pass; Knew when to control the ball and when to play it first time; Knew when to pass the ball forward, square, backwards, to feet or to space; Knew how to balance the defence and how to make a recovery run; Knew how to mark opponents; Knew when and where to dribble and shoot; Controlled first touch; Passed accurately over short distances at the correct pace; Was able to delay opponents effectively; Cleared the ball effectively with his feet. Was proficient at one or more of the following: heading, dribbling and tackling.
2	Made wrong choice of when and/or how and/or where to pass; Controlled the ball in situations which demanded first time play; Made wrong choice of when and/or where to support; Did not balance defence; Dribbled in incorrect areas; Failed to perceive shooting opportunities; Did not control the ball first touch; Did not pass accurately and/or at the correct pace; Did not delay opponents effectively; Regularly lost possession of ball.
1	Made wrong choice of when, how and where to pass; Made wrong choice of when and where to support team-mates; Did not provide width; Did not mark opponents; Took more than two touches to control the ball; Did not pass accurately and/or at the correct pace; Consistently lost possession of ball; Was inefficient in two or more of the following: tackling, heading, dribbling and shooting.

Figure 1 — Criteria for the performance assessment of soccer players.

Performance evaluation scores were obtained independently from each expert, for each player, in each of the matches the experts assessed. Performance scores represented the mean of the two experts' gradings. Unfortunately, only moderate interrater reliability coefficients ($r = .47$ and $.53, p < .05$) were revealed within the present study, which indicated that expert ratings as a measure of performance was not sufficiently reliable. Hence, data manipulations designed to evaluate the anxiety-performance relationship were not included.

Treatment: Applied Relaxation (Somatic Intervention)

There are two main purposes to the technique of applied relaxation (AR). The subject must be able, first, to recognize the early signals of anxiety and, second, to learn how to cope with the anxiety so that it does not have a detrimental effect upon performance. Therefore, the aim of AR is to learn the skill of relaxation, which can be applied very rapidly and in practically any situation (Ost, Jerremalm, & Johansson, 1988).

All members of the experimental group attended a briefing session in which a general description of the theory behind the technique was given both orally and on paper. At this stage subjects were encouraged to self-observe early signals of anxiety and record them in a training diary. AR gradually progresses through six stages (see Figure 2). At each stage the time needed to relax should reduce; likewise, the skill becomes more portable and sport specific.

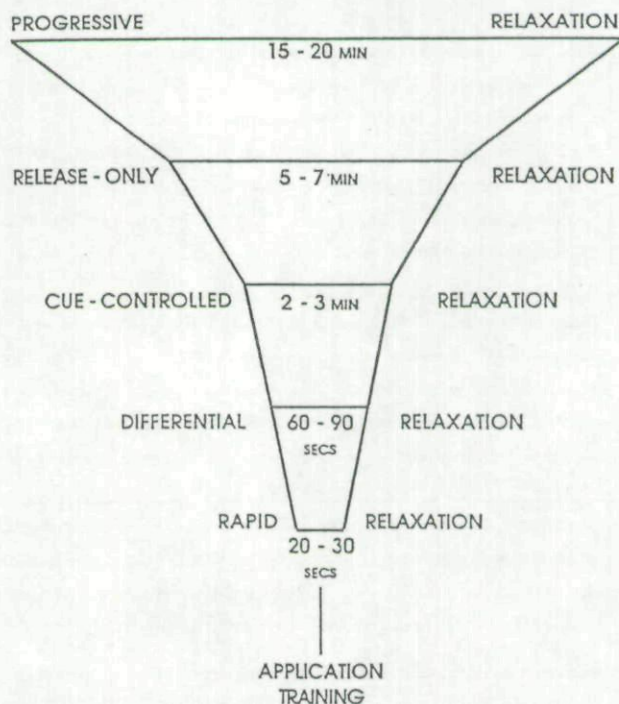


Figure 2 — The different components of applied relaxation with approximate time taken to get relaxed at various stages.

The aim at Stage 1 of the process is to teach each subject what it feels like to relax, using progressive muscle relaxation (PMR; Jacobson, 1938). PMR works by contrasting tension of specific muscle groups with relaxation of those particular muscle groups. Thus, subjects become aware of when muscles are tense and, hence, when to relax them. The experimenter initially demonstrated the technique in the group situation. Subsequently, each player was given a prerecorded audiocassette of instructions with which to practice. Subjects were asked to complete the exercise twice a day and to record their reaction to each session in their training diary. The diary allowed the experimenter to monitor the degree of relaxation, as well as the adherence of each subject. After one week, subjects were asked to complete sessions without the tape, as the instructions became committed to memory.

At Stage 2, rather than tense and relax particular muscle groups, the subjects are asked to remove the tension instructions from the procedure. Starting at the head, the subject works down through the various muscle groups to the tips of the toes. Should the athlete experience tension in any muscle group, he is instructed to first tense that group then briefly relax it. Again, this was demonstrated in a group session, after which the subjects were instructed to practice on their own at least twice a day.

At Stage 3 the word *relax* is conditioned to being in a relaxed state. The focus or cue at this stage is the breathing. In the group situation, the athletes were instructed to scan their body and use the "release only" technique should tension be found. Focusing on the players' breathing pattern the word *relax* is conditioned to the exhalation. Subjects were also instructed in passive concentration. They were taught not to strive for relaxation but to just let it happen at its own pace. Subjects were asked to practice at least twice a day and to record the depth of their relaxation and the time taken to complete each session.

During Stage 4, the skill becomes portable and, hence, can be used in a more realistic situation. The athlete learns not to tense the muscles that are not involved in a particular activity and to relax those muscles that are tense at an appropriate time. Initially in a group situation subjects were taught to scan their body and relax particular muscle groups during a series of movements. Athletes were encouraged to scan for tension in any other muscles that were not being utilized and release it. After practicing these movements for a few days, the exercises were made specific to situations in soccer. While shadowing specific movements, the players were instructed to scan for tension and to immediately release it.

Rapid relaxation (Stage 5), teaches the subject to relax in naturally occurring nonstressful situations. The procedure requires the subjects to take two or three breaths, exhaling slowly after each, and once again associate relaxation with exhalation. The athletes were instructed to use the technique 15–20 times per day.

The final stage of AR is called application training. The rapid relaxation technique was used initially in training sessions and then later in a friendly match. The technique is made specific to the sport by asking the subjects to use it as often as possible in the game situation to become relaxed. For example, whenever the ball went out of play, or when the referee blew the whistle for an infringement, the subjects scanned their bodies for tension and released it using rapid relaxation.

Control Group

As with the AR experimental group, the control group met the experimenter in group sessions every week during the 8-week period of the intervention. Tasks

not thought to be relevant to anxiety reduction were conducted. Goal setting, as well as skill and fitness exercises specific to soccer, were carried out.

Procedure

Subjects were recruited for this study at the beginning of the 1992–1993 soccer season (September). State anxiety data were collected 3 weeks later, when players were asked to respond to the modified version of the CSAI-2 as close as possible to the kick-off (but in all cases within 1 hour) of the start of an important league game. Performance evaluation scores, on a rating of 1 to 5, were obtained independently from four experts. Two experts assessed the first team players, and the remaining two experts assessed the second team players. The modified CSAI-2 intensity and direction scores along with the performance evaluations represented the preintervention data.

The experimental group ($n = 9$) had similar somatic anxiety intensity scores to cognitive anxiety intensity scores but indicated their somatic anxiety intensity to be slightly more debilitating. The remaining players who formed the control group ($n = 8$) saw their somatic anxiety intensity as facilitative. The experimental group was given an 8-week somatic intervention, whereas those subjects who formed the control group were given placebo tasks to avoid experimenter bias. The interventions began in the week following the collection of the preintervention data and finished 8 weeks later in December 1993.

One week later, in a second important league match, players were again administered the modified CSAI-2 as close to the start of the game as possible and were again assessed for performance by the same four experts. These scores represented the postintervention data.

Results

The means and standard deviations for each of the modified CSAI-2 subscales in each intervention group for each match are presented in Table 1. Pearson product-moment correlations for the dependent variables are shown in Table 2. The direction and magnitude of the correlations were consistent across the two matches, and correlations between the intensity subscales of the CSAI-2 were similar to those reported by Martens et al. (1990).

A series of two-way analyses of variance (ANOVAs), with one repeated measure, were computed to investigate the differences between the experimental and control groups on levels of state anxiety and state self-confidence over the period of the intervention. A summary of the series of two-way ANOVAs, with one repeated measure, is presented in Table 3.

To protect against the increased error rate when conducting a series of analyses, the Bonferroni correction was used. Hence, for a result to be considered significant within this study, it had to be equal to or less than .0083 (.05 divided by 6).

A significant Group $\times$ Time interaction was obtained for cognitive anxiety intensity, $F(1, 15) = 20.17$, $p < .0083$. Cognitive anxiety intensity was reduced by 15.88% in the experimental group over the course of the intervention, but increased by 5.4% in the control group (see Figure 3). Follow-up Tukey tests revealed a significant difference between the preintervention score and the postintervention score for the experimental group. Significant interactions or main effects were not revealed for cognitive anxiety direction, although cognitive anxiety direction did increase by 24.42% in the experimental group over the course of the intervention.

Table 1 Means and Standard Deviations for the Modified CSAI-2 Subscales for Each Intervention Group in Each Match

CSAI-2 subscale	Match 1 (preintervention)		Match 2 (postintervention)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Experimental group (applied relaxation) (<i>n</i> = 9)				
Cognitive anxiety intensity	21.88	2.91	18.22	3.45
Cognitive anxiety direction	24.11	6.64	30.00	5.65
Somatic anxiety intensity	21.66	3.01	15.11	2.84
Somatic anxiety direction	22.55	3.57	35.22	4.73
Self-confidence intensity	21.55	4.97	25.88	5.23
Self-confidence direction	37.88	8.31	44.66	6.61
Performance	2.75		2.97	
Control group (<i>n</i> = 8)				
Cognitive anxiety intensity	18.50	6.00	19.50	6.54
Cognitive anxiety duration	30.62	10.54	29.87	8.88
Somatic anxiety intensity	17.12	4.42	16.25	3.01
Somatic anxiety direction	41.87	3.94	37.75	5.92
Self-confidence intensity	21.62	4.86	22.25	5.06
Self-confidence direction	40.50	9.41	42.75	7.75
Performance	2.81		2.81	

Table 2 The Pearson Product-Moment Correlations for the Subscales of the Modified CSAI-2 in Match 1 and Match 2

Modified CSAI-2 subscales	Match	Cognitive anxiety intensity	Cognitive anxiety direction	Somatic anxiety intensity	Somatic anxiety direction	Self-confidence intensity
Cognitive anxiety direction	1	-.75				
	2	-.70				
Somatic anxiety intensity	1	.63	-.43			
	2	.63	-.45			
Somatic anxiety direction	1	-.20	.47	-.49		
	2	-.28	.23	-.17		
Self-confidence intensity	1	-.72	.41	-.43	.05	
	2	-.68	.58	-.44	.01	
Self-confidence direction	1	-.69	.65	-.51	.24	.71
	2	-.75	.75	-.39	.33	.74

Table 3 A Summary of the Series of Two-Way Analyses of Variance With One Repeated Measure

CSAI-2 Subscale	<i>F</i>	<i>p</i>
Cognitive anxiety intensity		
Group	0.17	.690
Time	6.10	.026
Group $\times$ Time	20.17	.000
Cognitive anxiety direction		
Group	0.72	.409
Time	5.82	.029
Group $\times$ Time	9.17	.015
Somatic anxiety intensity		
Group	1.54	.234
Time	27.68	.000
Group $\times$ Time	16.47	.001
Somatic anxiety direction		
Group	38.61	.000
Time	.952	.008
Group $\times$ Time	36.79	.000
Self-confidence intensity		
Group	0.59	.455
Time	10.71	.018
Group $\times$ Time	5.99	.027
Self-confidence direction		
Group	0.01	.926
Time	10.99	.013
Group $\times$ Time	2.76	.127

A further significant Group $\times$ Time interaction was obtained for somatic anxiety intensity, $F(1, 15) = 16.47$, $p < .0083$. The experimental group decreased by 30.94% over the course of the intervention, whereas the control group only decreased by 5.08% (see Figure 4). Tukey tests indicated a significant difference between the experimental and the control group at the preintervention stage and a significant difference within the experimental group from preintervention to postintervention.

A significant Group $\times$ Time interaction was also revealed for somatic anxiety direction, $F(1, 15) = 36.79$, $p < .0083$. The experimental group reported their decrease in somatic anxiety intensity to be facilitative, with a 56.18% increase in the somatic anxiety direction subscale. Interestingly, the control group saw their slight decrease in somatic anxiety intensity as debilitating, with a 9.80% decrease on the somatic anxiety direction subscale. Post hoc Tukey tests revealed a significant difference between the experimental and the control group at the preintervention stage, and a significant difference within the experimental group from preintervention to postintervention (see Figure 5). No significant differences emerged for self-confidence intensity or self-confidence direction.

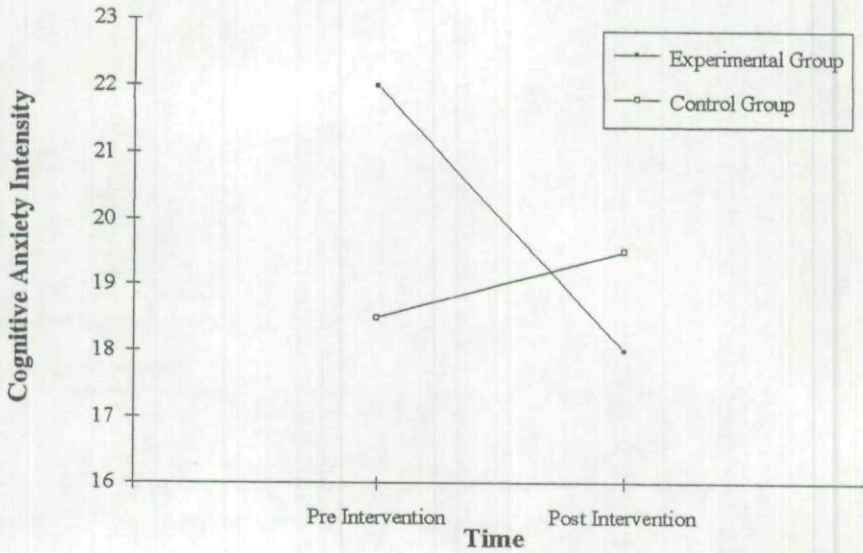


Figure 3 — Treatment Group $\times$ Time patterning of cognitive anxiety intensity.

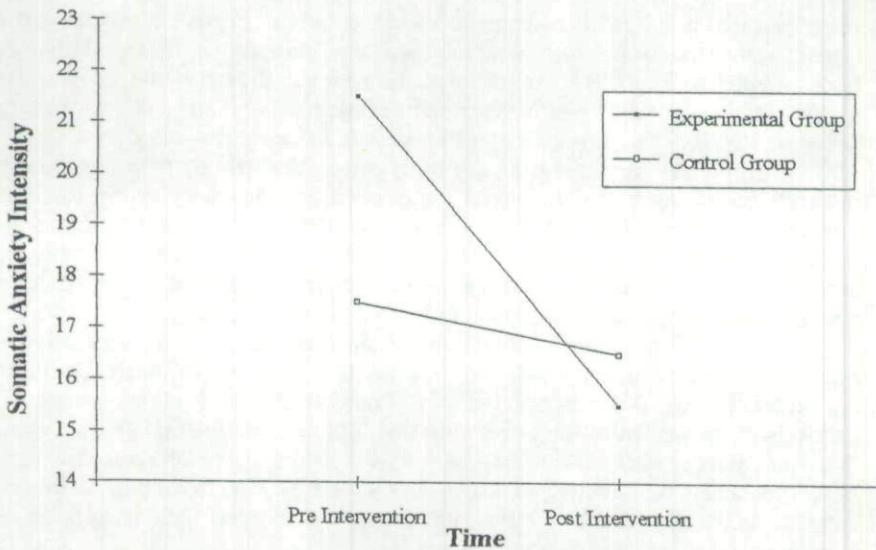


Figure 4 — Treatment Group $\times$ Time patterning of somatic anxiety intensity.

Conclusion and Discussion

The primary aim of this study was to investigate the efficacy of allocating subjects to intervention groups based upon the principles of the matching hypothesis and subjects' own perceptions of their stress responses. The first hypothesis, which

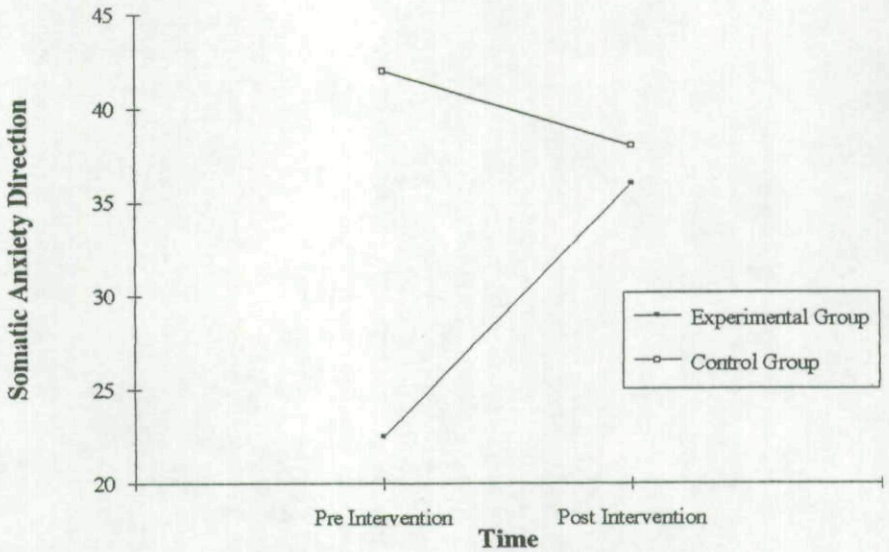


Figure 5 — Treatment Group $\times$ Time patterning of somatic anxiety direction.

suggested that a compatible treatment would be more effective at reducing the type of state anxiety it was targeted toward, was partially supported. Although both somatic and cognitive anxiety intensity were significantly reduced over the period of the intervention within the experimental group, somatic anxiety intensity decreased by 30.94%, whereas cognitive anxiety intensity decreased by 15.88%. This result would obviously require verification through more robust future research, but because somatic anxiety intensity was reduced by nearly twice as much as cognitive anxiety intensity, the increased efficacy of a compatible treatment was indicated. It should also be noted that anxiety-reduction techniques directed at one system did facilitate relaxation through the other system to a lesser degree, suggesting the systems to interact.

The second hypothesis, which suggested that reductions in state anxiety intensity would be evaluated by subjects as being more facilitative to future performance, was also supported. Somatic anxiety direction increased significantly over the period of the intervention within the experimental group. Again this result must be viewed with some caution, but it does warrant further investigation. The inclusion of the direction subscales within the modified CSAI-2 allowed subjects to be allocated to intervention groups based upon their perception of somatic anxiety as debilitating.

These findings have important implications for future research within applied sport psychology. The results within this study would suggest that practitioners may gain a clearer understanding of an athlete's competitive state-anxiety response from the modified CSAI-2. This may allow a more sensitive allocation of subjects to interventions based upon athletes' own perceptions of whether the reduction of state anxiety would be debilitating or facilitative. Secondly, it may also indicate if individuals require a multimodal treatment package, or if a single component intervention would suffice. In both cases researchers

should have more confidence in the fact that the intervention would not actually be perceived by the subjects as a hindrance to future performance.

The small subject sample and the lack of previous research related to the matching hypothesis in the sport situation limit the generalization of the results. It is felt however, that the findings within this study support the proposal of Jones and Swain (1992) that sports performers' directional perceptions of their anxiety symptoms may provide further understanding of the competitive state anxiety response and that further research utilizing the modified CSAI-2 would seem warranted.

The findings within the present study failed to support the third hypothesis, which stated that the use of a more sensitive performance measure would lead to greater predictability within the anxiety-performance relationship. It was felt that the content and use of the performance assessment criteria employed within this study may have been the major confounding factor in producing only low to moderate interrater reliability coefficients. The 5-point Likert scale did not provide the raters with sufficient scope to indicate changes within player performance. In recommending that the assessment criteria be extended to a 10-point scale for future investigations, we also feel more robust interval data may be inferred. It is further suggested that expert raters experience more in-depth familiarization and training in the use of the performance assessment criteria, in order to obtain a high interrater reliability coefficient.

Parfitt et al. (1990) suggest that match analysis techniques that provide coaches with objective data about different aspects of a player's performance during competition may provide a more reliable and objective performance measure. They further suggest that match analysis systems based upon cognitive and motor demands of performance may give an important insight into the differential effects of the components of anxiety upon the subcomponents of performance. Hence, future criteria used in soccer may separately focus on the decision-making or cognitive aspects of the sport, such as knowing when and where to perform a technique or skill, as well as an evaluation of how well the technique or skill was actually executed. Of course, match analysis based upon the cognitive and motor demands of performance may also have further implications for the application of the matching hypothesis, because it may further indicate facilitative or debilitative effects due to the different subcomponents of state anxiety. Although not found to be a significant difference in this study, it should also be noted that, over the course of the intervention, as somatic and cognitive anxiety decreased within the experimental group, performance increased. Within the control group, state anxiety and performance levels remained virtually constant. This result provides further evidence of the importance that a greater understanding of the anxiety-performance relationship may hold for psychologists and performers alike.

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