

EFFECT OF A GROUP MULTIMODAL ANXIETY MANAGEMENT PROGRAMME ON COMPETITIVE STATE ANXIETY AND SELF-CONFIDENCE OF AMATEUR GOLFERS

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ABSTRACT

Competitive state anxiety can be detrimental to golf performance. The effect of a group multimodal anxiety management programme on the intensity and direction of anxiety and self-confidence among amateur golfers was investigated. The directionally modified Competitive State Anxiety Inventory-2 was completed 10 minutes before two competitive rounds of golf six weeks apart. Sixteen male participants (age: 20.37±1.08 years) were randomly divided into equal-sized experimental and control groups. The experimental group attended five 60-minute group sessions; three psycho-educational sessions on breathing control, muscle relaxation, imagery, positive self-talk and affirmations, stopping and reappraising negative thoughts were integrated into pre-competition and pre-shot routines during two sessions on the driving range and practice green. Repeated measures two-way ANOVA revealed a time X group interaction effect for cognitive anxiety direction ($F_{1,12}=5.740$, $p=0.034$), with significant improvements among the experimental group ($p=0.046$, $d=0.63$). The control group perceived their self-confidence to be less facilitative towards their performance than before ($p=0.050$, $d=0.85$), whereas the perceptions of the experimental group did not change. The programme enhanced cognitive anxiety direction and prevented debilitating changes in self-confidence direction, thereby demonstrating its efficacy. These findings add to the existing literature on the positive effect of multimodal interventions on restructuring competitive anxiety.

Keywords: Cognitive anxiety; Somatic anxiety; Self-confidence; Performance; Psycho-education.

INTRODUCTION

Elite golfers need to find ways of improving their performance to gain and keep a competitive edge over their opponents (Hellström, 2009), as performance is the result of a synergistic relationship between a golfer's physical and technical ability, various psychological factors and the equipment they use (Smith, 2010). The contribution of each of these factors will determine the attainment of an effective golf swing and the ability to shoot low scores in competitive situations.

Psychological factors are one of the many factors on which successful and less successful golfers can be distinguished, as performance is mediated by complex cognitive structures and psychological skills that are acquired over time through deliberate practice (Thomas & Fogarty,

1997). If these skills are not acquired or maintained, competitive anxiety could develop in response to internal stressors (thoughts, appraisals and perceptions), external stressors (stress arising from one's immediate environment) and the interaction between these stressors, which could be detrimental to performance (Suinn, 2005). Thomas *et al.* (2008:126) define competitive anxiety as "a specific negative emotional response to competitive stressors". This definition has relevance in this study.

The multidimensional anxiety theory describes the relationship between cognitive state anxiety (negative thoughts, uncontrolled cognitions, disruptions of attention, worry, helpless orientated thoughts and poor self-efficacy statements), somatic state anxiety (neuromuscular tightness, motor coordination increments, random activity and constricted movements) and performance (Martens *et al.*, 1990). Further distinctions can be made between intensity, namely the degree to which anxiety is experienced and direction that is self-perceptions about the potential effects of anxiety on performance on a debilitating-facilitative continuum (Jones & Swain, 1992; Wadey & Hanton, 2008). Another factor within this context is self-confidence; beliefs about one's own ability which may act as a protective barrier against the possible debilitating effects of competitive state anxiety (Hardy, 1996). Ntoumanis and Jones (1998) found that skilled athletes perceive their anxiety levels more favourably than less-skilled athletes, and that perceived control over the environment and their own emotional state could facilitate performance. Athletes with more facilitative interpretations of their anxiety symptoms have higher self-confidence levels than those with more debilitating interpretations (Lundqvist *et al.*, 2011; Thomas *et al.*, 2004). Subsequently, self-confidence may protect the athlete against the debilitating effects of competitive anxiety (Mellalieu *et al.*, 2006b).

Research into the effect of multidimensional competitive state anxiety on golf performance is challenging due to the nature of the game, where the physical arousal levels and mental state needed to successfully execute powerful tee shots, delicate pitch shots and must-make puts differ considerably. Likewise, the extent to which competitive anxiety may adversely affect performance in each of these tasks, may differ. Consequently, researchers often focus on a specific aspect of the game in isolation. For example, an experiment revealed that the putting performance of experienced golfers was best described by a negative linear relationship with cognitive state anxiety intensity ($p < 0.01$; variance=22.4%), a U-shaped curvilinear relationship with somatic state anxiety intensity ($p < 0.05$; variance=23.5%), and a positive linear relationship with self-confidence intensity ($p < 0.05$; variance=16.8%). Cognitive state anxiety direction ($p < 0.01$, variance=18.9%) and self-confidence direction ($p < 0.01$, variance=30%) were best represented by positive linear relationships with performance, whereas the relationship with somatic state anxiety direction was non-significant. Overall, direction predicted performance, better than intensity, accounting for 42.4% of the variance compared to 22.9% of the variance (Chamberlain & Hale, 2007). Hayslip *et al.* (2010) reported that higher self-reported worry about competition outcomes (indicative of cognitive anxiety) was associated with poor performance during the World Amateur Golf Championships. Whilst moderate levels of competitive anxiety is normal in competitive settings, increased anxiety levels beyond a critical point affects golf performance negatively (Gucciardi *et al.*, 2010; Schaefer *et al.*, 2016).

Smith (1980) developed the cognitive-affective stress management programme that aims to develop an integrated coping response to control emotional arousal in stressful conditions, by

combining cognitive and somatic anxiety reduction techniques. Since then, different multimodal anxiety management programmes that aim to alleviate the negative effects of competitive anxiety have been developed simultaneously and tested empirically. Multimodal programmes are especially useful when the presenting problem cannot be isolated as either cognitive or somatic in nature and have been shown to be as effective as unimodal interventions that aim to manage either cognitive or somatic state anxiety (Maynard *et al.*, 1998).

Rumbold *et al.* (2011) conducted a systematic review of 64 experimental studies published between 1982 and 2010 on the effect of stress management interventions on sport performers. Forty-four of these studies used multimodal interventions, thereby highlighting the popularity of these methods. Table 1 summarises the effects of these 44 intervention studies.

Table 1. SUMMARY OF INTERVENTION EFFECTS OF MULTIMODAL STRESS MANAGEMENT

Multimodal stress variables	No. of studies	Positive effect	No effect	Negative effect
Cognitive anxiety (CA)*	14	9 (64.3%)	4 (28.6%)	1 (7.1%)
Cognitive anxiety intensity (CAI)	6	4 (66.7%)	2 (33.3%)	0
Combined CA & CAI	20	13 (65.0%)	6 (30.0%)	1 (5.0%)
Somatic anxiety (SA)*	16	9 (56.3%)	5 (31.3%)	2 (12.4%)
Somatic anxiety intensity (SAI)	6	4 (66.7%)	2 (33.3%)	0
Combined SA and SAI	22	13 (59.1%)	7 (31.8%)	2 (9.1%)
Cognitive anxiety direction	6	5 (83.3%)	1 (16.7%)	0
Somatic anxiety direction	6	5 (83.3%)	1 (16.7%)	0

* Cognitive and somatic anxiety not specified by Rumbold *et al.* (2011:181), therefore, assumed to be intensity

The results presented in Table 1 indicate that there were more positive intervention effects for anxiety direction than anxiety intensity. Further analysis of the 44 relevant studies show that apart from one study published in 2008, all the studies from 1998 onwards measured anxiety direction in addition to intensity. The findings provided support for the observation of Hanton *et al.* (2008) that there has been a growing interest in the notion of direction in competitive anxiety research. This implies that the results from earlier studies may be limited, underlining the need for experimental studies to determine the effect of multimodal anxiety management interventions on both anxiety intensity and direction.

With regard to intervention programmes, Thomas *et al.* (2009) pointed out a practical implication of the rising interest in directionality, namely there is a shift away from the traditional anxiety reduction approach (aiming to lower anxiety intensity) towards the anxiety restructuring approach (changing the cognitive appraisal regarding the perceived effect of competitive anxiety on performance). The reduction approach hinges on the idea that anxiety affects performance negatively and, therefore, should be reduced. However, we have known

for the past four decades that not all forms of anxiety is debilitating and that anxiety may even facilitate performance (Mahoney & Avenier, 1977). Based on the control model of Jones (1995), athletes who appraise themselves as being in control of a stressful situation, may interpret their own anxiety symptoms as more facilitative to performance. Subsequently, intervention programmes should attempt to reduce debilitating anxiety symptoms, as well as to enhance perceptions of control over the situation that cause the anxiety.

PURPOSE OF RESEARCH

The aim of this study was to determine the effect of a group multimodal anxiety management programme on the intensity and direction of cognitive and somatic state anxiety, as well as the state self-confidence of competitive amateur golfers. The results will contribute to the growing body of literature regarding the effect of anxiety management interventions on both anxiety intensity and direction. If this group-based intervention yields positive effects, the value for applied practitioners would lie in the time and cost benefits associated with group sessions compared to individual consultations. Furthermore, it could indicate whether intervention programmes should focus on anxiety reduction and/or anxiety restructuring.

METHODOLOGY

Research design

A two-group pre-test post-test quasi-experimental research design was applied.

Participants

The nature of the study was explained to 18 competitive male amateur golfers who were enrolled in a Professional Golfers Association (PGA) accredited academy programme for aspiring professional players. They were deemed a suitable population to determine the efficacy of psycho-educational programmes given the importance of mental factors in making the step-up to the professional level. Voluntary participation was requested and 16 participants (age: 20.37 ± 1.08 years) signed informed consent forms and participated. Their handicaps ranged from +2 to 4. Ten of the 16 participants conferred with sport psychology consultants previously on an individual basis (range: 1 to 25 sessions). However, the number of individual consultations for the total sample (3.31 ± 6.15 sessions) show a general lack of exposure to psychological skills training. Whilst the current sample size was small, yielding insufficient power, 33% of the 64 studies in Rumbold *et al.*'s (2011) systematic review included two to 20 participants.

Instrument

The 27-item Competitive State Anxiety Inventory (CSAI-2) of Martens *et al.* (1990) is one of the most widely used instruments to measure competitive anxiety (Uphill, 2016). It measures the intensity with which individuals experience cognitive state anxiety, somatic state anxiety and state self-confidence and was administered 10 minutes before the start of a competitive round of golf. Items were scored on a 4-point scale, where 1="Not at all" and 4="Very much so". Nine items contributed to each subscale with scores ranging from 9 to 36. The directional scale of Jones and Swain (1992) was added to measure subjectively the interpretation of intensity as facilitative or debilitating. The directional scales uses the same 27 items and is

scored on a 7-point scale, where: -3="Very debilitating"; 0="Neutral"; and +3="Very facilitative". Mean scores were reported for each of the three directional subscales (range: -3 to +3). The internal reliability indices were: Cognitive anxiety intensity (0.76), cognitive anxiety direction (0.82), somatic anxiety intensity (0.58), somatic anxiety direction (0.81), self-confidence intensity (0.63), and self-confidence direction (0.74). It must be noted that somatic anxiety intensity and self-confidence intensity results should be interpreted with caution.

The addition of the directional scale to the CSAI-2 is widely regarded as an improvement to the original scale, firstly because symptom intensity and direction can be distinguished, and secondly, because perceptions about the effect of anxiety symptoms on performance tend to be more sensitive to individual differences than the intensity levels at which these symptoms are experienced (Mellalieu *et al.*, 2006a). The growing tendency to measure both anxiety intensity and direction was addressed in the introduction.

Procedures

Demographic information was collected during an information session four days prior to pre-testing. During this session, the participants were familiarised with the instrument by receiving specific instructions on how to score the inventory and by completing it in a neutral setting. Pre-test data was collected 10 minutes before teeing off in a competitive round of golf. After completion of this round, the participants were randomly allocated to equal-sized experimental (EG) and control group (CG) (n=8 per group). The groups differed slightly in age (EG 19.91±0.71 years vs. CG 20.83±1.23 years; p=0.080, d=0.92), but had similar handicaps (EG 0.50±1.85 vs. CG 0.38±1.92; p=0.869, d=0.06). The EG took part in the intervention, with post-testing taking place six weeks later under the same conditions at the same golf course. One participant from each group did not take part in post-testing. The EG member who did not take part in post-testing also did not attend any of the sessions. The seven remaining participants had an attendance rate of 88.57% (31/35 sessions). The reasons for missing sessions included participation in tournaments and illness.

Multimodal anxiety management programme

The programme consisted of five 60-minute group sessions presented by two of the authors over a 5-week period. The first three psycho-educational sessions were presented in the boardroom of the De Zalze golf club in Stellenbosch. Session One started with an icebreaker activity to build rapport between the presenters and participants. Thereafter, the effect of activation (and the somatic symptoms associated with changes in activation levels) and cognitive anxiety on performance were discussed within the context of the multidimensional anxiety theory.

Session Two introduced the concept of somatic state anxiety with a discussion about the fight/flight/freeze response of humans to stressful situations. The participants had to recall the somatic anxiety symptoms they experienced during a recent regional tournament, and had to appraise their own degree of control during this competition. Next, they had to provide details of their feelings (affect), behaviour (performance) and thoughts (cognition) during previous best and worst performances, and identify competitive situations in which they are prone to experience state anxiety. They were taught two somatic anxiety management techniques; breath

control and progressive muscle relaxation, and were instructed to apply their preferred technique during the ensuing week's practice sessions.

Session Three included the following cognitive anxiety restructuring techniques: imagery/visualisation, positive self-talk/affirmations, stopping and reappraising negative thoughts. During the session, the participants explored various environmental, physical, emotional and mental hazards that they tend to experience, and learning from each other on how to deal with such situations. Each participant had to address his own hazards by applying the newly acquired skills aimed at appraising these situations more favourably, namely to foster a sense of control over these situations so that they would interpret their anxiety symptoms as more facilitative towards performance.

The final two sessions took place on the driving range and putting green respectively. Session Four integrated the content from the previous three sessions in developing pre-shot routines, consisting of three phases: (1) preparation; (2) focus/refocus; and (3) execution. Different routines were developed for each of the following scenarios: Tee-shots (drivers/woods), iron-play/hybrids, chip shots and bunker shots. The final session focused on developing routines on the putting green, as well as competition routines at various time intervals: one week prior to the competition, the night before the competition, waking up and the day of the competition, arrival at the competition venue, warm-up to 1st tee and concluded with post-competition debriefing routines.

Ethical considerations

Permission was obtained from the SwingFit Performance Academy and the study was approved by the Stellenbosch University Research Ethics Committee: Human Research (Humanities), with registration number DESC/Grobbelaar/May2015/10. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the South African Department of Health's Guidelines for Ethical Research: Principles, Structures and Processes.

Statistical analysis

Repeated measures two-way analysis of variance (ANOVA's) with fixed effects and restricted maximum likelihood was used to determine the effects of the intervention, with statistical significance set at $p \leq 0.05$. Due to the small sample size, practical significance was calculated using the pooled standard deviation method. Cohen's *d*-value can be interpreted as follows: an effect size of more or less 0.20 is small, 0.50 is medium, and 0.80 is large.

RESULTS

Figures 1 to 6 depict the pre-test and post-test comparisons on the six CSAI-2 subscales for the control and experimental groups.

Cognitive anxiety intensity

There was no 'time X group interaction' ($F_{1,12}=0.035$, $p=0.854$); neither the EG ($p=0.531$, $d=0.25$) nor the CG ($p=0.711$, $d=0.18$) scores changed (Figure 1).

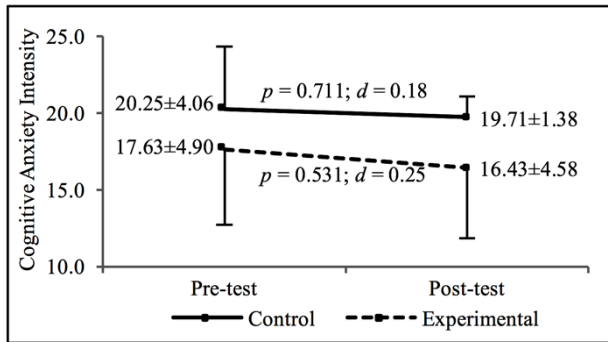
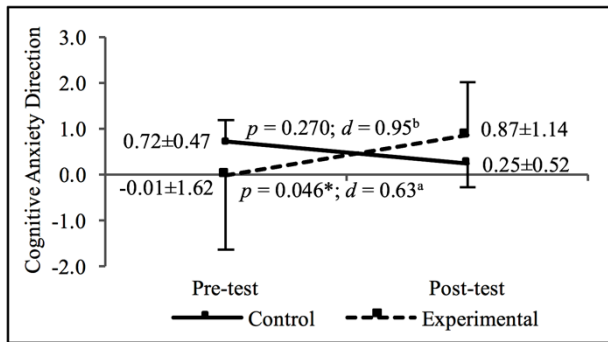


Figure 1. COGNITIVE ANXIETY INTENSITY (M±SD): PRE- AND POST-TEST COMPARISONS



* p<0.05 ^a Medium effect size (d ≈ 0.50) ^b Large effect size (d ≈ 0.80)

Figure 2. COGNITIVE ANXIETY DIRECTION (M±SD): PRE AND POST-TEST COMPARISONS

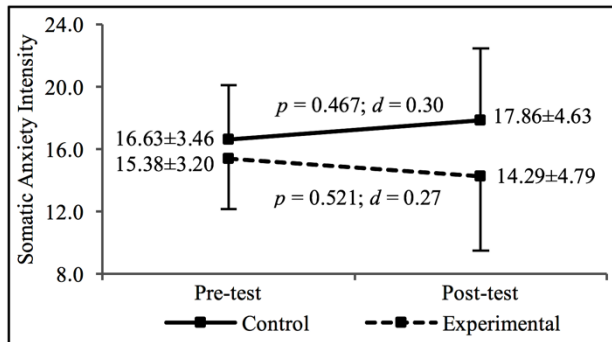
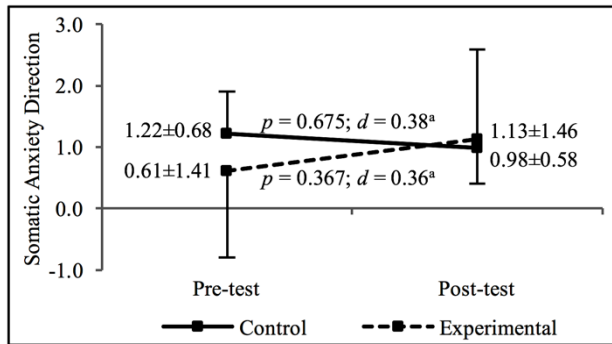
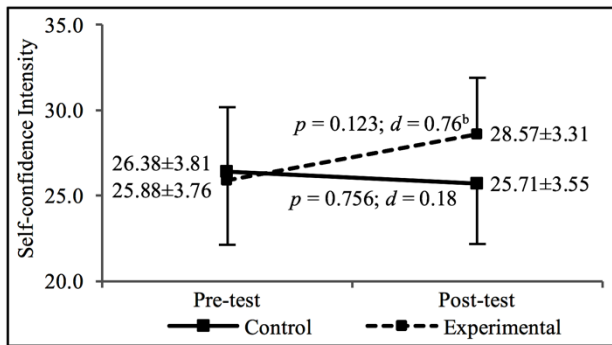


Figure 3. SOMATIC ANXIETY INTENSITY (M±SD): PRE- AND POST-TEST COMPARISONS



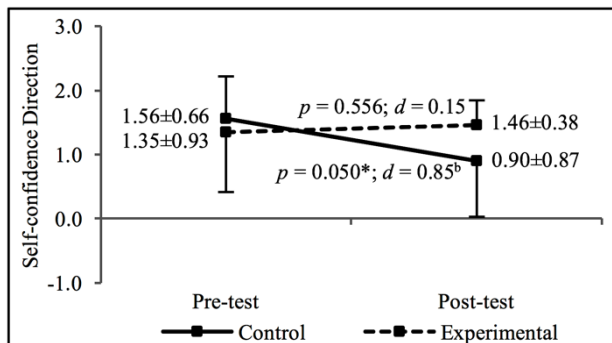
^a Medium effect size ($d \approx 0.50$)

Figure 4. SOMATIC ANXIETY DIRECTION (M±SD): PRE- AND POST-TEST COMPARISONS



^b Large effect size ($d \approx 0.80$)

Figure 5. SELF-CONFIDENCE INTENSITY (M±SD): PRE- AND POST-TEST COMPARISONS



* $p < 0.05$ ^b Large effect size ($d \approx 0.80$)

Figure 6. SELF-CONFIDENCE DIRECTION (M±SD): PRE- AND POST-TEST COMPARISONS

Cognitive anxiety direction

The 'time X group interaction' was significant ($F_{1,12}=5.740$, $p=0.034$). The perception of the EG about the effect of their cognitive anxiety on their performance improved significantly ($p=0.046$, $d=0.63$), whereas the large effect size of the CG indicated a practical significant deterioration, that is the perceived effect of their cognitive anxiety on performance became more negative ($p=0.270$, $d=0.95$) (Figure 2).

Somatic anxiety intensity

There was no 'time X group interaction' ($F_{1,12}=0.996$, $p=0.338$) where the scores of neither the EG ($p=0.521$, $d=0.27$) nor the CG ($p=0.467$, $d=0.30$) changed (Figure 3).

Somatic anxiety direction

There was no 'time X group interaction' ($F_{1,12}=0.936$, $p=0.352$) regarding the perceived effect of somatic anxiety intensity on performance (EG: $p=0.367$, $d=0.36$; CG: $p=0.675$, $d=0.38$). However, the facilitative perceptions of the EG were enhanced, whereas the CG were less facilitative than before. The magnitude of these practical significant changes was moderate (Figure 4).

Self-confidence intensity

The 'time X group interaction' was not significant ($F_{1,12}=1.950$, $p=0.188$). Whilst the score of the CG remained unchanged ($p=0.756$, $d=0.18$), a large effect size indicated a practical significant improvement among the EG ($p=0.123$, $d=0.76$) (Figure 5).

Self-confidence direction

The 'time X group interaction' effect approached statistical significance ($F_{1,12}=3.870$, $p=0.073$). The perceptions of the CG about the effect of their self-confidence on their performance were significantly more debilitating than before ($p=0.050$, $d=0.85$), whereas the perceptions of the EG remained the same ($p=0.556$, $d=0.15$) (Figure 6).

DISCUSSION

The aim of the study was to determine the effect of a group multimodal anxiety management programme on the intensity and direction of cognitive and somatic state anxiety, as well as the state self-confidence of competitive amateur golfers. The group intervention elicited more facilitative directional anxiety scores (for both cognitive and somatic anxiety) among the experimental group, whereas the anxiety intensity scores did not change.

Firstly, it should be noted that increases in anxiety direction indicate programme efficacy, irrespective of whether or not anxiety intensity changed (Uphill & Jones, 2007). Sport psychological skills interventions, consisting of goal setting, imagery and positive self-talk, assisted elite performers to foster facilitative interpretations about their competitive anxiety symptoms (anxiety restructuring), without lowering their anxiety levels (Thomas *et al.*, 2007; Wadey & Hanton, 2008). Integrating these three skills into pre-competition and pre-shot routines were previously shown to enhance the competitive anxiety direction of tennis players (Mamassis & Doganis, 2004). The current results strengthen the growing body of literature that anxiety management interventions tend to have more positive effects on anxiety direction than

on anxiety intensity (Rumbold *et al.*, 2011). It also supports conclusion of Thomas *et al.* (2009:124) that “directional interpretations has advanced (our) understanding of the competitive anxiety response”. Against this backdrop the current results regarding the restructuring of anxiety are promising. It is plausible that more sessions and time is needed to implement the learnt skills before changes in anxiety intensity become evident.

The practical meaningful increase in self-confidence intensity among the experimental group substantiates earlier findings that facilitative interpretations of state anxiety are associated with higher self-confidence levels (Lundqvist *et al.*, 2011). Two techniques that formed part of the intervention, thought stopping and motivational mastery self-talk have previously been shown to enhance performance by increasing self-confidence (Finn, 2008; Hatzigeorgiadis *et al.*, 2009). It is not clear why the self-confidence intensity increases among the experimental group did not result in self-confidence direction changes as well. However, this increase seems to have buffered the onset of more debilitating perceptions about the effect of self-confidence on performance observed among the control group.

CONCLUSION AND RECOMMENDATIONS

Collectively, these results demonstrate promising effects of a group multimodal anxiety management programme among competitive amateur golfers. The programme yielded positive effects regarding the participant’s cognitive and somatic anxiety direction in particular. Applied practitioners are recommended to restructure debilitating interpretations of competitive anxiety instead of merely attempting to reduce anxiety intensity. Efforts could still be made to reduce the symptoms associated with overly high levels of competitive anxiety, however, the main focus should be on promoting control over the competitive environment and these negative symptoms.

At the developmental levels of sport, the delivery of psycho-educational intervention programmes in group format may be a viable alternative to costly individual consultations. This may also be the case with athletes competing at higher levels when financial, time or other constraints dictate. It should be noted that competitive state anxiety is dynamic and prone to change due to the variety of situations encountered during competitions. Therefore, the degree to which the positive intervention effects are maintained during a round of golf and a multi-day competition could also be investigated. Lastly, the effectiveness of this programme in terms of improving performance should also be assessed, by assessing change in various performance indicators over time.

LIMITATIONS

The small sample size and low power reduced the chance of observing statistically significant interaction effects. Subsequent studies should be conducted with larger samples, whereas post-intervention follow-up testing may reveal cumulative gains over time and provide information about the retention of improvements. Ceiling effects could have limited the results, since the sample included high-level participants, most of who have previously conferred with sport psychology consultants. Future studies could focus on participants, who have not previously

consulted a sport psychologist and experience high competitive anxiety levels or who perceive their anxiety levels as debilitating towards their performance.

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