An exploration of pre-performance routines, self-efficacy, anxiety and performance in semi-professional soccer.

Jonathan Hazell

University of Gloucestershire, Gloucester, United Kingdom

Stewart T Cotterill

University of Winchester, Winchester, United Kingdom

Denise M Hill

University of Gloucestershire, Gloucester, United Kingdom

Date of resubmission: 08/08/2013

Author note

Correspondence concerning this article should be addressed to Stewart Cotterill, Department of Sport Studies, University of Winchester, Winchester, SO22 4NR, United Kingdom. Tel: +44(0)1962-827296. E-mail: Stewart.Cotterill@Winchester.ac.uk.

Keywords: Self-regulation, mental skills, performance.

Abstract

Whilst much research has suggested a positive link between pre-performance routines and performance the specific mechanisms of the process have yet to be understood fully. It has been suggested that the PPR may influence performance through lowering the athlete's anxiety, and / or increasing their self-efficacy, but to date this has not specifically been explored in detail. As a result the aim of the current study was to explore the impact of specific individualized pre-performance routines on performance, anxiety and self-efficacy in semi-professional soccer players. Participants were 20 male semi-professional soccer players (M = 19.45, SD = 2.81) recruited from clubs in England. Adopting a repeated measure design, players were tested on performance, anxiety, and self-efficacy pre- and post a 7-day intervention period in which the participants learnt a new pre-performance routine. The data were analyzed using factorial mixed measures ANOVAs, with the results revealing a significant difference in somatic anxiety for the experimental group and a decrease in performance for the control group. The study provides further support for the suggestion that the PPR can enhance performance by reducing experiences of anxiety prior to performance.

An exploration of pre-performance routines, self-efficacy, anxiety and performance in semi-professional soccer.

Introduction

The effective execution of closed skills, whilst not forming the majority of team sport performance, can have a significant impact upon team performance outcomes. In soccer the execution of ‘dead ball’ skills such as free kicks, throw ins, corner kicks, and penalty kicks can go a long way to determining the overall result of a game. In soccer, approximately one-third of goals are scored either directly or indirectly from a dead ball set play irrespective of the level of competition (Yiannakos & Armatas, 2006), In sport more generally there is an increasing body of literature that advocates the use of pre-performance routines (PPRs) to enhance the performance of these closed skills (e.g., Cotterill, 2011; Lonsdale & Tam, 2008), particularly if those routines include both cognitive as well as behavioural components (e.g., Mesagno & Mullane-Grant, 2010). Indeed research suggests that elite performers can benefit from the development of PPRs that contain cognitive and behavioural strategies both prior to, and during competition (Jackson & Baker, 2001). This approach is also supportive of Moran’s (1996) definition of pre-performance routines that regarded effective routines as being “a sequence of task relevant thoughts and actions which an athlete engages in systematically prior to his or her performance of a specific sports skill” (p. 177).

The use of PPRs has been explored across a wide range of sports in the last fifteen years including basketball (Czech, Ploszay, & Burke, 2004; Harle & Vickers, 2001; Lonsdale & Tam, 2007; Mack, 2001); cricket (Cotterill, 2011); dance (Vergeer & Hanrahan, 1998); golf (Cotterill, 2008; Cotterill, Sanders & Collins, 2010; Kingston & Hardy, 2001; McCann, Lavallee, & Lavallee, 2001; Shaw, 2002); gymnastics (Schack, 1997); rugby union (Jackson, 2003; Jackson & Baker, 2001); volleyball (Lidor & Mayan, 2005); and water polo (Marlow, Bull, Heath, & Shambrook, 1998). One particular outcome that has been reported in the associated PPR literature is that routines are effective in improving performance (Mesagno, Marchant & Morris, 2008; Mesagno & Mullane-Grant, 2010). However, while this body of literature has suggested that PPRs improve performance, the mechanisms through which this is achieved have not yet fully been ascertained (Cotterill, 2011; Mesagno et al., 2008). Indeed many research designs have either just focused on the relationship between the presentation of a routine and performance, or utilized non-representative participants samples (see Cotterill, 2010 for a review). One particular criticism relates to the amount of time that participants have been given to 'learn' their new PPRs. For example, Mesagno and Mullane-Grant (2010) only allowing their participants twenty minutes to learn their PPR, whereas evidence exists to suggest that PPRs can take days, weeks or even months to embed (see Hill, Hanton, Matthews & Fleming, 2011). As a result, empirical evidence regarding the effectiveness of PPRs and the manner in which they influence the performer and performance, has not been universally acknowledged or understood (Cotterill, 2011; Jackson, 2003). More recent literature that has sought to report the successful development of PPRs in sport has suggested that more than one session or a couple of days are required to begin to embed the required habits that will underpin the execution of the PPR in a performance setting Cotterill (2011).

A further limitation of previous literature exploring the use of PPRs has been the exploration of the impact the PPRs have on attentional processes. Indeed this focus has let to many authors suggesting that PPRs impact upon performance by enhancing attentional processes. Related suggestions have included influencing the performer's ability to deal with distractions (Gould & Udry, 1994), focusing attention (Boutcher, 1992; Cotterill, Sanders, & Collins, 2010; Harle & Vickers, 2001), and acting as an attentional trigger (Lonsdale & Tam, 2007; Moran, 1996), However, this specific focus has been at the expense of exploring other performance-related psychological variables such as anxiety, self-efficacy, and motivation amongst others.

One study that explored the impact of PPR's on psychological constructs more broadly is that of Cotterill et al. (2010) who reported that the routines utilized by the golfers in their study enabled participants to achieve enhanced self-efficacy state prior to skill execution. Other recent work by Hill, Hanton, Matthews and Fleming (2010) also reported that the use of a PPR enabled their participants to generate feelings of increased self-efficacy whilst playing golf under conditions of high pressure. This work supports that of Singer (2002) who had previously suggested that there might be a link between PPR use and self-efficacy because the routine might enable athletes to better control their anxiety levels prior to performance. However, there is no empirical evidence to support these hypothesized links between PPRs, reduced anxiety and increased levels of self-efficacy. The studies conducted by Cotterill et al. (2010) and Hill et al. (2010) only collected retrospective athlete reflections instead of testing pre/post performance. Having good levels of self-efficacy is of particular importance in soccer as it has been highlighted as one of the most significant factors influencing performance in the game (Cale & Forzoni, 2004). As a result, an exploration of whether PPRs can positively impact upon self-efficacy levels in Soccer could yield potentially important information. Much research exploring self-efficacy in sport has been underpinned by Bandura's self-efficacy theory (Bandura, 2006) that advocates the importance of specifically considering confidence in relation to the task (self-efficacy) that is going to be executed. As a result it makes sense to seek to understand self-efficacy prior to performance rather than reporting it post performance. This is due to the impact that knowledge of results and knowledge of performance can have on the reporting of the individuals' self-efficacy levels.

Hill et al. (2011) also suggested that effective PPRs might influence performance through reducing the levels of anxiety experienced by the athletes. In the Hill et al. study participants perceived that their PPR was able to effectively control and manage their anxiety symptoms. However while this study did offer good detailed longitudinal information about the use of a PPR the study only had two participants. Only one other study to date has explored this link between PPRs and anxiety levels. Mesagno and Mullane-Grant (2010) reported that the use of PPRs in their study had a positive impact upon participant anxiety levels. In this study the PPRs used by the participants were developed over a period of time that was less than 30 minutes, as such these preparatory techniques did not represent realistic PPRs for use in a performance / pressure setting.

The importance of the potential relationship between PPRs, self-efficacy and anxiety is further highlighted by the reports in the literature that levels of self-efficacy can impact on the athletes' interpretations of anxiety prior to performance (Hanton, Mellalieu, & Hardy, 2004). Thus, if a PPR has a positive impact upon self-efficacy, it is possible that there could also be an associated reduction in both anxious feelings (somatic anxiety) and anxious thoughts (cognitive anxiety), and those perceptions may become associated with more positive interpretations prior to performance.

In looking to develop effective PPRs for both expert and novice performers researchers have adopted a range of approaches. However, if we are looking to develop more habitual routines that are effectively executed prior to performance then the amount of time that participants are given to learn their routines and to engage in repetition as part of the research design is important. For example, as previously mentioned Mesagno and Mullane-Grant (2010) only allowed participants 30 minutes to learn their new PPRs. Foster, Weigand, and Baines (2006) got their participants to engage in two 15 minute sessions in a week to learn and develop their PPRs, while McCann et al. (2001) used two 15 minute sessions per week for three weeks. If we are applying the same criteria as for skill learning then it is the volume of effective practice that is important. In each of these highlighted studies the volume has been relatively low. As a result it can be questioned whether a real PPR (that is relatively automatic) has been developed by the participants in the studies. Based on this limitation research exploring the development of PPRs should look to significantly increase the volume of practice prior to retesting participants on the variables of interest.

The lack of research that has to date explored the relationship between PPRs, performance and psychological factors other than attention is a concern. As a result the aim of this study was to explore the potential links between PPR use, performance, anxiety and self-efficacy. In particular to explore the impact that a newly taught PPR had on pre and post intervention levels of self-efficacy, cognitive anxiety, somatic anxiety and performance.

Method

Participants

The participants in this study were 20 male English semi-professional soccer players between the ages of 17 and 28 (*M* = 19.45, *SD* = 2.81). All participants had at least five years playing experience and were recruited through personal contact from four different soccer clubs in England. Participants were randomly allocated to either a control or experimental group for the purposes of the study.

Procedure

The present study was a pre/post intervention study with two independent variables (pre/post; control/experimental) with six dependent variables (performance score; self-efficacy; cognitive anxiety intensity; cognitive anxiety direction; somatic anxiety intensity; somatic anxiety direction).

Participants were required to take 10 penalty kicks using a full-sized (UK Size five) soccer ball from the penalty spot was located 12 yards (10.97 meters) from the goal (7.32 x 2.44m)

(Luxbacher, 2005). The focus of the current study was on the execution of the skill (with performance scores reflecting the difficulty of the kick) rather than on the success or failure that would emerge from the competition between the goalkeeper and the participant. As a result, no goal keepers were used in an attempt to reduce the variability that would exist in the interaction between the goal keeper and the penalty taker. The participants in the study were not given any practice kicks prior to data collection and oversight by researchers. The experimental group were taught specific individualized PPRs for a seven-day period whilst the control group continued to engage in practicing the penalty kicks without any psychological routine. Players in both groups engaged in one hour of practice per day for a seven-day period (seven hours in total) to ensure equity in the volume of practice undertaken. Ethical approval for this study was provided by the Universities' Research Ethics Sub-Committee (RESC) at the institution of the lead author.

The Pre performance Routine

The PPRs were developed using the guidelines suggested by Cotterill (2011) following applied work developing routines with professional cricketers. Specifically the PPRs were built on six steps that included: i) understanding the task requirements; ii) videoing performance; iii) clarifying the meaning of existing behaviours; iv) developing a function and a focus for each behavioural component; v) constructing the new routine; and vi) practice using the routine prior to skill execution. The purpose of the first step was for both the lead researcher and players to understand how each participant viewed the task and what was required during their preparation to be successful in executing the skill. In order to achieve this the players were videoed during initial performance. Behaviour meaning and function was then clarified using video footage to develop an understanding of what the function of each of the behaviours was as viewed by the players. This 'think aloud' protocol was similar to approach adopted by Cotterill et al. (2010). Developing this understanding of existing behaviours facilitated the development of more appropriate cognitive components for the routines that built upon the perceived function for each existing behavioural component for each participant (e.g. relaxing, focusing, setting stance, engaging in imagery). Based on the information in the previous step the next step allowed the development of a focus and function to each of the behaviours that had an individualized associated cognitive behaviour (such as trigger word or self-talk). Once an outline for the routines was developed the composition of the individualized routines was then agreed with each of the participants. The final stage of the process involved the players practicing this PPR to integrate into practice.

Data Collection

Performance scores on the task were determined by the accuracy of the penalty kick. In the absence of the goalkeeper a scoring system was devised that rewarded the successful execution of more precise and representative performance, with greater scores awarded the close the ball was to the corners of the goal (reflecting increased task difficulty and precision execution requirements. This scoring system was based on that adopted by Wilson, Wood, and Vine (2009) awarding higher scores to kicks placed further away from the goal keepers starting position (center of the goal), where they would have greater chances of scoring (Van der Kamp, 2006). The specific scoring system adopted is presented in Figure 1 with the highest scores (8) being awarded for the more difficult kicks. Total performance scores ranged from 0-80 per participant, based on the execution of a total of 10 penalty kicks per participant.

To measure self-efficacy relating to the execution of the penalty kick, the following question was asked prior to performance ‘At the present moment in time, to what degree do you believe that your physical, technical, tactical and mental skills will combine to help you execute the penalty successfully’? This was similar to the approach adopted by Harwood (2002) and advocated by Bandura (2006), who suggested that in terms of assessing self-efficacy, the required ‘micro analytic approach’ needs a focused assessment of the level and strength of self-efficacy beliefs. Participants rated how confident they were as a percentage (ranging from 0-100%) on particular penalty kicks. Points were then awarded accordingly for particular penalties multiplied by percentage of certainty (i.e. how confident they were on scoring) that was in line with the recommendations made by Bandura (2006).

Anxiety scores were collected prior to performance both pre and post-test using the Competitive State Anxiety Inventory 2 (CSAI-2: Martens, Burton, Vealey, Bump, & Smith, 1990). The CSAI-2 has a total of 27- self-report statements that measure the intensity and direction components of somatic anxiety (nine items), cognitive anxiety (nine items), and self-confidence (nine items; Martens et al., 1990). For each subscale, intensity level responses were scored on a 4-point Likert scale, ranging from 1 (not at all) to 4 (very much so). Total scores on each subscale could range from 9 to 36, with higher scores indicating higher anxiety levels. For each subscale, direction responses were scored on a 7-point Likert scale, ranging from -3 (very negative) to 3 (very positive). Total scores on each subscale could range from -27 to 27, with higher scores indicating facilitative interpretations of anxiety. Participants in the current study were exposed to a degree of pressure in the form of performing in front of a video camera and evaluation by their teammates/peers. For the present study only the somatic and cognitive anxiety subscales of the CSAI-2 were analyzed.

Data Analysis

To explore differences in performance mixed measures ANOVAs were used with the same two independent variables being used for each of the six dependent variables (performance, self-efficacy, somatic anxiety score, somatic anxiety direction, cognitive anxiety score, cognitive anxiety direction) with one within factor independent variables (pre-post intervention) and one between independent variable (group). If significant differences were identified in any of the previously highlighted tests follow-up univariate tests were to be conducted. A bonferroni adjustment was undertaken to reduce the risk of making a type I error. The original alpha level (0.05) was divided by the number of tests to produce a revised alpha level of 0.025.

Results

Performance

Statistical analysis via the two-way mixed measures ANOVAs revealed no interaction between stage of testing (pre/post) and group in overall performance scores, F (1, 20) = 2.91, $p>0.05$, $\eta^2=0.139$; and no effect for performance scores pre/post intervention, F (1, 20) =2.47, $p>0.05$, $\eta^2=0.121$. However, the experimental group (*M*=43.80, *SD*=8.19) did have a significantly higher performance score than the control group (*M*=55.20, *SD*=11.12). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the control group pre-test performance score (*M*=53.60 *SD*=9.47) was significantly higher than post-test (*M*=43.80 *SD*=8.19). The means and standard deviations for the performance scores are reported in Table 1**.**

Self-efficacy

No significant interaction was found between the within factor independent variable (pre-post intervention) and the between factors independent variable (group) in self-efficacy score, F (1, 20) = 2.33, $p>0.05$, $\eta^2=0.114$; Results also revealed no significant effect for testing in self-efficacy score, F (1, 20) = 0.814, $p>0.05$, $\eta^2=0.43$. There were also no significant differences between groups in self-efficacy score, F (1, 20) =0.538, $p>0.05$, $\eta^2=0.29$. The means and standard deviations for self-efficacy are presented in Table 2.

Anxiety

There was no interaction effect between pre-post intervention and group in cognitive anxiety intensity score, F (1, 20) =3.68, $p>0.05$, $\eta^2=0.170$. Results also revealed no main effect for testing in cognitive anxiety intensity score, F (1, 20=0.545, $p>0.05$, $\eta^2=0.029$. There was no significant differences between the two groups in cognitive anxiety intensity score, F (1, 20) = 0.354, $p>0.05$, $\eta^2=0.019$. The results also showed no significant interaction effect between pre-post intervention and group on somatic anxiety intensity scores, F (1, 20) = 4.27, $p>0.05$, $\eta^2=0.192$. However, there was a statistically significant main effect in somatic anxiety intensity score, F (1, 20) = 5.75, $p<0.05$, but the effect size was small (partial eta squared =0.242). Post hoc comparisons using the Tukey HSD test indicated that for the experimental group that the pre-test somatic anxiety intensity score (*M*=14.50 *SD*=2.32) was significantly higher than post-test somatic anxiety intensity score (*M*=11.80 *SD*=3.19). Results revealed no significant difference between groups in somatic anxiety intensity score, F (1, 20) = 0.186, $p>0.05$, $\eta^2= 0.094$).

There was no interaction between pre-post intervention and group in cognitive anxiety direction score, F (1, 20) = 2.22, $p>0.05$, $\eta^2= 0.110$, and no significant effect identified for testing in cognitive anxiety direction score, F (1, 20) = 1.88, $p>0.05$, $\eta^2= 0.095$. Results also revealed no significant differences between groups in cognitive anxiety direction score, F (1, 20) = 0.057, $p>0.05$, $\eta^2= 0.003$. There was also no interaction between pre-post intervention and group in somatic anxiety direction score, F (1, 20) = 18.23, $p>0.05$, $\eta^2= 0.043$; for testing in somatic anxiety direction score, F (1, 20) = 1.21, $p>0.05$, $\eta^2=0.063$; or between groups in somatic anxiety direction score, F (1, 20) = 0.83, $p>0.05$, $\eta^2= 0.005$. The means and standard deviation data for the anxiety-related variables are presented in Table 3.

Discussion

The aim of this research was to explore the impact that a developed PPR would have on performance, self-efficacy and anxiety levels. In most of the measures taken there were no significant differences between the experimental and control groups. There was however a significant difference found for the experimental group between pre and post intervention levels of somatic anxiety and in performance scores pre/post intervention for the control group. This suggests that the PPRs developed as part of this study helped to reduce the experiences of somatic anxiety by the experimental group. This supports previous research that has suggested a reduction in anxiety levels with the implementation of an effective PPR. Both Hill et al. (2011) and Mesagno and Mullane-Grant (2010) suggested this use of PPRs, with Hill et al. reporting that PPRs might effectively control and manage their anxiety symptoms. While Mesagno and Mullane-Grant (2010) reported that the use of PPRs had a positive impact upon participant anxiety levels.

With these differences found only for the experimental group, these data also provide a degree of support for the approach to developing PPRs adopted in this study. The process outlined by Cotterill (2011) and Cotterill et al. (2010), and utlised in this study, highlights the importance of developing individually referenced, and specifically developed PPRs that build upon the existing behaviours, preferred mindset, and specific requirements of the individual. In particular the present study suggests that developing consistent PPRs would be of benefit to soccer players in dead ball situations. Specifically suggesting that one of the ways that the routines might aid performance is through the reduction of somatic anxiety prior to skill execution. This is particularly important as anxiety has been reported to be the major contributor to suboptimal performance in penalty kicks (Jordet, 2009; Jordet, Hartman, Visscher, & Lemmink, 2007).

In the present study there were no significant differences reported for performance scores, self-efficacy scores, or cognitive anxiety scores. There are a number of factors that could have contributed to this outcome. The absence of the goalkeeper and relatively small differences in scoring on the performance task could have served to cause players to adopt a consistent strategy both pre and post intervention. A future study could look to develop a more sophisticated scoring system that includes a goalkeeper and accounts for the interactions between the player, their decisions, the goalkeeper, and the execution of the required skills. Also, while the experimental group participants in this study had a significant period of time to develop their PPR this could still have been too short a period of time to really start to see the benefits. While each of the participants in this study were given seven hours of penalty / PPR practice this could still have been insufficient. In relation to previous studies such as

Mesagno and Mullane-Grant (2010) allowing participants 30 minutes ; Foster et al. (2006) allowing 30 minutes; and McCann et al. (2001) allowing 90 minutes; the approach adopted in the current study represented a significant increase in practice time. However, this is still significantly less that the six weeks used by Cotterill (2011) in developing effective PPRs for professional cricketers. Future research should therefore seek to adopt more longitudinal designs where participants are given a significantly longer period between pre and post intervention testing (weeks or even months) for the new PPRs to become habitual. This might lead to a more realistic understanding of the impact that the routines can have upon performance outcomes, performance consistency and a number of relevant psychological variables. It is interesting to note that the performance scores for the control group actually decreased from pre to post intervention. This could have been as a result of the added pressure of knowing their own results and through engaging in comparisons with their peers. However, this potential increase in pressure was not reflected in the control group's anxiety scores.

The absence of significant differences in self-efficacy could be a reflection on the skill level of the participants and the design of the task. With self-efficacy representing the participants' confidence in their ability to execute there skills the absence of the goalkeeper could well have artificially inflated the self-efficacy levels of the participants. While scoring highly would have been challenging the act of scoring a goal (putting the ball in the back of the net) was not. Also, as expert soccer players the task in this context would have been seen as less challenging than in a real game environment. To this end future research might explore avenues to significantly increase the pressure experienced by the participants and the challenging nature of the task.

In Conclusion, the current study suggests that the use of an individualized PPR can have a positive impact upon psychological functioning by reducing the experience of somatic anxiety prior to taking a soccer penalty kick. As a result, it is recommended that soccer players consider developing a consistent approach to the execution of the skill as well as practicing the skill. Future research exploring the effectiveness and function of PPRs in sport should look to adopt a more longitudinal approach where participants are able to spend a greater period of time ‘habitualizing’ the PPRs that they develop. This in turn will give us a better and more realistic understanding of the impact the PPRs can have on expert performers and ultimately the execution of their skills.

References

Bandura, A. (2006). Guide for creating self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307-337). Greenwich, CT: Information Age Publishing.

Boutcher, S. H. (1992). Attentional and Athletic Performance: An integrated approach. In T. S. Horn (Ed.), *Advances in Sport Psychology* (pp. 251-266). Champaign, IL: Human Kinetics.

Cale, A., & Forzoni, R. (2004). *Psychology for Football*. London. Hodder Education.

Cohn, P. (1990). Pre-performance routines in sport: Theoretical and practical implications. *The Sport Psychologist*, *4*, 301-312.

Cotterill, S. T. (2008). Developing effective pre-performance routines in golf. *Sport & Exercise Psychology Review*, 4(2), 10-15.

Cotterill, S. T. (2010). Pre-performance routines in sport: Current understanding and future directions. *International Review of Sport & Exercise Psychology*, 3(2), 132-154.

Cotterill, S. T. (2011). Experiences of developing pre-performance routines with elite cricket players. *Journal of Sport Psychology in Action*, 2(2), 81-91.

Cotterill, S. T., Sanders, R., & Collins, D. (2010). Developing effective pre-performance routines in golf: Why don't we ask the golfer? *Journal of Applied Sport Psychology*, 22(1), 51-64.

Cox, R. H., Martens, M. P., & Russell, W. D. (2003). Measuring anxiety in athletics: The revised Competitive State Anxiety Inventory-2. *Journal of Sport & Exercise Psychology*, 25(4), 519-535.

Czech, D. R., Ploszay, A., & Burke, K. L. (2004). An examination of the maintenance of preshot routines in basketball free throw shooting. *Journal of Sport Behaviour*, 27, 323-329.

Foster, D. J., Weigand, D. A., & Baines, D. (2006). The effect of removing superstitious behavior and introducing a per-performance routine on basketball free throw performance. *Journal of Applied Sport Psychology*, 18, 167-171.

Gould D., & Udry, E. (1994). Psychological skills for enhancing performance: arousal regulation strategies. *Medicine and Science in Sport and Exercise*, *26*, 478-485.

Hanton, S., Mellalieu, S. D., & Hall, R. (2004). Self-confidence and anxiety interpretation: A qualitative investigation. *Psychology of Sport and Exercise*, 5, 379-521.

Harle, S. K., & Vickers, J. N. (2001). Training quiet eye improves accuracy in basketball free throw. *The Sport Psychologist*, *15*, 289-305.

Harwood, C. G. (2002). Assessing achievement goals in sport: caveats for consultants and a case for contextualisation. *Journal of Applied Sport Psychology*, 14, 380-393.

Hill, D. M., Hanton, S., Matthews, N., & Fleming, S. (2010). A qualitative exploration of choking in elite golf. *Journal of Clinical Sport Psychology*, *4*, 221-240.

Hill, D. M., Matthews, N., Fleming, S., & Hanton, S. (2011). Alleviation of choking under pressure in elite golf: An action research study. *The Sport Psychologist*, 25(4), 465-488.

Jackson, R. C. (2003). New directions in the development of concentration skills: a behavioural perspective. In I. Greenlees & A. P. Moran (Eds.), *Concentration Skills Training in Sport* (pp. 33-42). Leicester: British Psychological Society.

Jackson, R. C., & Baker, J. S. (2001). Routines, rituals and rugby: case study of a world-class goal kicker. *The Sport Psychologist*, *15*, 48-65.

Jordet, G. (2009). When superstars flop: Public status and choking under pressure in international soccer penalty shootouts. *Journal of Applied Sport Psychology*, *21*, 125-130.

Jordet, G., Hartman, E., Visscher, C., & Lemmink, K. A. P. M. (2007). Kicks from the penalty mark in soccer: The roles of stress, skill, and fatigue on kick outcomes. *Journal of Sport Sciences*, *25*, 121-129.

Kingston, K. M., & Hardy, L. (2001). Pre-performance routine training using holistic process goals. In P. R. Thomas (Ed.), *Optimizing performance in golf* (pp.264-278). Brisbane: Australian Academy Press.

Lidor, R., & Mayan, Z. (2005). Can beginning learners benefit From preperformance routines when serving in volleyball? *The Sport Psychologist*, 19, 343-363.

Lonsdale, C., & Tam, J. T. M. (2008). On the temporal and behavioural consistency of pre-performance routines: An intra-individual analysis of elite basketball player's free throw shooting accuracy. *Journal of Sports Sciences*, *26*, 259-266.

Luxbacher, J. A. (2005). *Soccer steps to success 3rd edition*. Leeds, U.K: Human Kinetics.

Mack. M. G. (2001). Effects of time and movements of the preshot routine on free throw shooting. *Perceptual and Motor Skills*, 93, 567-573.

Marlow, C., Bull, S.J., Heath, B., & Shambrook, C.J. (1998). The use of a single case design to investigate the effect of a pre-performance routine on the water polo penalty shot. *Journal of Science and Medicine in Sport*, *1*, 143-155.

Martens, R., Burton, D., Vealey, R.S., Bump, L.A., & Smith, D.E. (1990). Development and validation of the CSAI-2. In R. Martens, R.S. Vealey, & D. Burton (Eds.), *Competitive anxiety in sport* (pp. 117-190). Champaign, IL: Human Kinetics.

McCann, P., Lavallee, D., & Lavallee, R. M. (2001). The effect of pre-shot routines on golf wedge shot performance. *European Journal of Sport Science*, 1, 231-240.

Mesagno, C., Marchant, D., & Morris, T. (2008). Using a pre-performance routine to alleviate choking under pressure in "choking-susceptible" athletes. *The Sport Psychologist*, *22*, 439-457.

Mesagno, C., & Mullane-Grant, T. (2010). A comparison of different pre-performance routines as possible choking interventions. *Journal of Applied Sport Psychology*, *22*, 343-360.

Moran, A. P. (1996). *The psychology of concentration in sport performers: A cognitive analysis.* London: Taylor and Francis.

Schack, T. (1997). Ängstliche schűler im sport – interventionsverfahren zur entwicklung der handlungskontrolle. *Schorndorf.* Germany: Hofmann.

Shaw, D. (2002). Confidence and the pre-shot routine in golf: A case study. In I. Cockerill (Ed.), *Solutions in Sport Psychology* (pp.108-119). London: Thomson.

Singer, R. N. (2002). Pre-performance states, routines and automacity: What does it take to realize expertise in self-paced events? *Journal of Sport and Exercise Psychology*, *24*, 359-375.

Van Der Kamp, J. (2006). A field simulation study of the effectiveness of penalty kick strategies in soccer: Late alteration of kick direction increase errors and reduce accuracy. *Journal of Sport Sciences*, 24, 467-477.

Vergeer, I., & Hanrahan, C. (1998). What modern dancers do to prepare: content and onjectives of preperformance routines. *AVANTE*, 4, 49-71.

Wilson, M.R., Wood, G., & Vine, S.J. (2009). Anxiety, attentional control, and performance impairment in penalty kicks. *Journal of Sport and Exercise Psychology*, 31, 761-775.

Yiannakos, A., & Armatas, V. (2006). Evaluation of the goal scoring patterns in European Championship in Portugal 2004. *International Journal of Performance Analysis in Sport*, *6*, 178-188.

List of table / Figure captions

Table 1.

	Performance	
	M	SD
Control Pre	85.73	10.40
Control Post	89.28	13.32
Experimental Pre	91.47	10.07
Experimental Post	90.56	10.68

Table 2.

	Self Efficacy	
	M	SD
Control Pre	53.60	9.47
Control Post	43.80	8.19
Experimental Pre	54.80	5.35
Experimental Post	55.20	11.12

Table 3.

	Cognitive anxiety				Somatic anxiety			
	Intensity		Direction		Intensity		Direction	
	M	SD	M	SD	M	SD	M	SD
Control Pre	17.70	5.60	13.20	11.50	15.80	5.92	14.90	10.58
Control Post	18.50	4.93	13.00	8.43	15.60	5.17	15.20	7.73
Experimental Pre	20.20	3.68	9.50	11.47	14.50	2.32	12.20	10.64
Experimental Post	18.40	4.62	14.30	15.11	11.80	3.319	15.20	14.17

Figure 1.

8	2	8
4	0	4
8	2	8