

**Superstitious Ritual in Sport and the
Competitive Anxiety Response in
Elite and Non-Elite Athletes**

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Abstract

The current research addresses the prevalence of pre-competition superstitious rituals among elite (n=63) and non-elite (n=96) athletes. The nature of these rituals and their presence or lack thereof on subsequent athletic behaviour was examined with a specific focus on the competitive anxiety response experienced by sportspersons. This research used a cross-sectional survey design with The Superstitious Ritual Questionnaire (Bleak & Frederick, 1998) and The Competitive State Inventory-2 (Cox, Martens & Russell, 2003), athletes from a variety of team and individual sports. Findings revealed that the use of superstitious rituals did not significantly reduce competitive anxiety levels or vary in frequency between genders. However, it was demonstrated that the standard and structure of the sport in question influenced the prevalence of superstitious ritual use. Overall, the aim of this study was to expand upon the current literature in the area of superstition in sport and make preliminary attempts to identify underlying functions of superstitious ritual use.

Introduction

The use of superstitious thought and behaviour is a common and persistent occurrence. Regularly, people 'keep their fingers crossed' (Vyse, 1997), avoid walking under ladders (Blum & Blum, 1974) or knock on wood (Goodall, 2012). Oftentimes, the use of superstitious ritual is associated with particular categories of people, such as sailors or the religious. One such category is that of the athlete. Superstitious acts, or 'rituals' as they are better known, are part of a 'widely accepted' practice used by athletes across many different cultures (Womack, 1992, as cited by Bleak & Frederick, 1998). The repetitive nature of these actions leads to use of the term 'Superstitious Ritual'. Although the use of these behaviours is prevalent, little research has been done to specifically examine superstition in sport, the psychological implications of superstitious ritual on the athlete and particularly on their subsequent performance.

Many opportunities exist where it is necessary to perform at an optimal level. Whether it is exams, job interview or sports competitions, performance in these situations can determine many important outcomes. In particular, sport where there is now the added pressure of increased media interest, sponsors to represent, major tournaments to qualify for and often wages to be earned. In light of this, most athletes approach these opportunities as well prepared as possible, however there are still many factors that are outside the control of any athlete. Weather conditions, opposition, variable location and referees are examples of external uncontrollable factors that can leave even the most prepared of athletes lacking confidence in their performance abilities. It appears that often, somewhere in this gap between internal factors (such as preparation), and external factors, the use of superstitious ritual develops (Jahoda, 1969; Womack, 1992 as cited by Bleak and Frederick, 1998).

Superstitious Behaviour: Broad Explanations

Examples of superstition in sport are regularly seen. Team mascots, lucky numbers and the use of lucky charms are often used by sportspersons. Similarly, there are many professional examples of this behaviour. Basketball player Michael Jordan wore the same pair of college basketball shorts underneath his team uniform for every game through out his career. Famously, Golfer Tiger Woods always wears a red shirt on the last day of any tournament he plays in, and Red Sox shortstop Nomar Garciaparra gets dressed in the same order every game day and makes sure to step into each dugout with both feet touching the ground at the same time.

Superstitious behaviour in sport can be defined as actions, which are 'repetitive, formal, sequential and distinct from technical performance, which the athlete believes to be powerful in controlling luck and other external factors' (Bleak & Frederick, 1998. p.02). Similarly, Schippers & Van Lange (2006) operationally define superstitious ritual as 'unusual, repetitive and rigid behaviour' that is perceived to have a 'positive effect' by the acting individual (p. 2533). Despite the individual athletes perceived effectiveness of their superstitious rituals, in reality, there is no link between superstitious behaviour and the outcome of the event that follows (Womack, 1992). Typically, these seemingly arbitrary rituals are engaged in prior to performance as a means of increasing good and preventing bad luck. Due to the perceived effectiveness of these rituals by athletes, superstitious behaviours are often used in all aspects of competition; pregame and in the actual game itself (Womack, 1992). These behaviours are widespread across cultures (Ofori *et al.*, 2012; Womack 1992), across gender (Burhmann, 1982), across various religions (Burhmann, 1983) between sports (Bleak & Frederick, 1998), and within, as traditionally the likes of goalies are often more superstitious than outfield players (Bleak & Frederick, 1998).

With many superstitious rituals it is easily discernable that the behaviour has no functional use as part of a pre-performance routine, however, the distinction between superstitious ritual and functional routine is not always obvious. Routines are learned behavioural and cognitive strategies, which are used intentionally by sportsmen to facilitate performance (Cohn, 1990, as cited by Bleak & Frederick, 1998). The primary objective of routine is to assist the athlete in focusing on any impending performance, though unlike superstitious behaviour, they are not compulsive or rigid and are driven towards improving focus (Thatcher *et al.*, 2011). Pre-performance routines are often developed by sports psychologists (Bleak & Frederick, 1998) or coaching staff for individuals or teams. The subjective nature of superstition means the athlete establishes all rituals independently.

The Functions of Superstitious Ritual use

As mentioned by Schippers & Van Lange (2006), the function of rituals as a whole is to mentally prepare the athlete for competition. In this sense, superstitious rituals may serve a rational and useful purpose for the individual if engaging in such behaviour can assist the athlete in centring focus and eliminating unnecessary distractions. However, if superstitious rituals develop into compulsive behaviours, it is possible that there could be a shift in focus from athletic performance to carrying out the ritual itself.

Goodall (2010) differentiated superstitious rituals or acts into several categories. *Fated superstitions* are described as the most passive form of superstitious behaviour. These rituals or beliefs are constructed from pieces of knowledge, for example, information can be put together in a way with memories of past conditions and consequences to construct as usable pattern. Essentially, these superstitions give

an indication to the believer of what the future holds. A common example of this category is weather superstitions, e.g. a red sky at night is a Shepherd's delight. The essence of *fated superstition* is that there is nothing the believer can do to influence the outcome of the process.

Fated but fixable superstitions are similar to the previous category in that they foretell what will happen in the future, however, a counter of remedies that can combat any negative consequence associated with the superstitious belief accompany them. Thus, the believer can avoid the future outcome if they behave in a particular way. This includes 'fixes' for bad luck (p.313). For example, it is believed by the superstitious that one magpie represents bad luck, but finding a second magpie or tapping ones head 3 times counteracts the bad luck. In this case, there is a dual action from the individual, interpreting that a bad thing will happen then behaving in a manner that will negate the effects of the bad omen.

Goodall described the third category as *rituals of avoidance*. This category is where actions must be avoided due to the undesirable outcome that may follow the particular action. Avoiding walking under ladders or stepping on cracks in the pavement are both examples of rituals of avoidance. In sport, players often avoid actions or circumstances in an attempt to escape bad luck, for example, many believe that sitting in a different place to that of where they normally sit in a changing room will bring about bad luck.

Goodall describes the last category as *positive superstitions*, actions that are taken to bring about good luck. For instance, many American's believed that that 2013 Super bowl would be negatively effected by the presence of snow in the lead up to the date, so league employees took to thumping their chest on days when the temperature reached above freezing and the sky remained rain free, to try increase the

chances of maintaining that good weather (Florio, 2013). This is also the category under which most superstitions in sport fall and the most relevant for the present study. It is important to differentiate between the four categories defined by Goodall when examining superstition in sport. The nature of positive superstition indicates that an athlete who uses superstitious ritual is required to purposefully make an effort to carry out additional actions to that of their sporting behaviours.

The question arises why, in a field increasingly under the influence of science, where superstitious behaviour is considered 'extravagant' (Delacroix & Guillard, 2008), do we see the prevalence of such behaviour increasing. Before any assessment of the specific behaviours that occur as a part of superstitious ritual, we must first examine what causal factors have been identified as significant in the existing literature and which athletic characteristics, if any, are most likely to contribute to superstitious behaviour.

Determinants of Superstitious Ritual

As part of conditioning experiments with pigeons, Skinner (1948) witnessed patterns of superstitious behaviour occurring in the birds, as they attempted to increase their chances of receiving food. He believed that superstition in this case, was the result of a 'misleading' interpretation of 'accidental contingencies' (p.273). In the experiment, hungry pigeons were fed at 15-minute intervals where it was observed that the birds began to develop superstitious behaviours when it was nearly time for food to be reissued again. The pigeons would begin to act as they previously had during the last time the food was received; for example, one of the pigeons who had been standing on one leg for the previous food distribution began to repeatedly stand on one leg. Another that had been turning its head during the previous distribution

began to do so once more. Even though these actions had no association with the presentation of food, it seemed that the pigeons thought acting in this way would bring about the arrival of food. Skinner deduced that the pigeons must have believed that there was a 'causal link' between their actions and the receiving of food (p.168). This concept of misinterpreted factors becoming accidentally linked to a consequence is supported by Delacroix & Guillard (2008) who use the example of black crows announcing a misfortune. It is believed that this superstition developed due to a misinterpretation of the presence of crows near dead bodies. This occurrence could be rationally explained though by the crow's keen sense of smell, which attracted them to death, however, this occurrence was often interpreted as a subnormal phenomenon. In Skinner's studies, the pigeon itself reinforced this behaviour in the hope of receiving more food. This research also indicates, interestingly, the potential mechanism of how superstitions can develop in humans. A random behaviour preceding an 'event' as such can be unintentionally reinforced for the individual by haphazardly occurring before a desirable event, even though no causal link exists between the two. This perhaps explains why such a variety of superstitions are evident among athletes, any possible pregame behaviour that is reinforced by a win or a good performance can subsequently develop into a superstitious ritual. In essence, it is likely that many superstitious rituals used by athletes develop by chance.

It is possible to speculate from Delacroix and Guillard's research also, that rituals can develop through learning. Several of the previously mentioned general superstitions are passed down through generations, with some originating from as far back as the Middle Ages. It can thus be suggested that perhaps the development of superstitious rituals can be viewed from a social learning perspective. Bandura (1977) stated as part of his social learning theory that a basic form of learning is the

acquisition of new forms of behaviour through the observation of others. This concept implies it is a possibility that athletes learn certain superstitious behaviours from others, such as peers or teammates. Support for this concept that superstitions can be learned could also be affirmed in relation to Cohn's (1990) research which identified pre-performance rituals as routines learned from others in order to facilitate physical performance. The similarities between pre-performance and superstitious rituals suggest that perhaps superstitious behaviour can be learned too. Whilst social learning and modelling is a little researched area in sports psychology, the use of learning in the development of superstitious behaviour is even less so.

It is evident from Skinner's (1948) research that pigeons engaged in these behaviours in an attempt to enhance their chances of attaining their desired outcome, i.e. food, when they were uncertain of the length of time it would take before they would receive the food reward again. The nature of the athletic environment, where one minute you can be on top of the game and the next potentially suffering a career ending injury, results in a high levels of uncertainty. Bleak and Frederick (1992) supported this evidence, suggesting that the occurrence of these rituals is primarily seen when 'conditions of uncertainty' or chance are present. In addition, similar research has suggested that an athlete's perceived sense of uncertainty influences the extent to which they engage in superstitious behaviour. Similarly, the extent to which the athlete feels in control of their surroundings can alter superstitious behaviour (Schippers & Van Lange, 2006). Individuals with an internal sense of control are more likely to see events as consequences of their actions, whereas those with an external locus of control are inclined to see similar events as unrelated to their behaviour and an unpredictable consequence of luck, chance or fate (Schippers & Van Lange, 2006). This theory suggests that those with an internal locus of control will

have lower levels of learned helplessness, while those with an external locus of control will be more prone to engage in superstitious behaviour. However the findings in this area are not explicit and several studies have suggested that in fact the opposite may be true (Vyse, 1997).

Ample research indicates that the majority of those who utilise superstitious rituals recognise them as ineffective actions (Bleak & Frederick, 1998). Thus, it is said that the thought processes of many superstitious athletes involve what are known as *half beliefs*. These *half beliefs* are assumptions held by people even though they are aware the thoughts are irrational (Risen & Gilovich, 2007). Delacroix & Gillard (2008) even go so far as to describe that most intellectually reject their personal half beliefs, but still continue to allow them to influence their thoughts and behaviours. This concept raises the intriguing question of why individuals engage in behaviours that they only partially believe in. It could be argued that the reason an athlete would use such behaviour is on the small off chance that it will help their performance (Jahoda, 2007). However, it is more plausible that superstitious beliefs also exist to serve another function.

It has been noted in the literature that one such function of superstitious ritual may be that of reducing competitive anxiety, thus enhancing performance outcomes (Bleak & Frederick, 1998; Schippers & Van Lange, 2006; Ofori *et al.*, 2012). Prior to competitive events most athletes will experience psychological tension (Schippers & Van Lange, 2006), which can result in negative thoughts, feelings or physiological responses. It is clear that these factors are highly undesirable by sportspersons whom seek to achieve an optimal performance. Performance failure studies, have found that engaging in a dual task reduces the likelihood of self-focusing and improves performance under pressure. Tasks such as random alphabet letter generation every 6

seconds (Jackson *et al.*, 2006, as cited by Thatcher *et al.*, 2011), and counting backwards in multiples of 2 (Lewis & Linder, 1997, as cited by Thatcher *et al.*, 2011), have been shown to distract the athlete from self-focusing and thus reducing the likelihood of high anxiety. Given the results of these studies it could be proposed that superstitious rituals exist as part of a dual task, which distracts the sportsperson from any performance anxieties they may have experienced otherwise. Womack (1992) suggested that as a means of regulating emotional stability, athletes use ritualistic behaviours to decrease anxiety and increase their perceived chance of success. Further advancing the argument that superstitious rituals occur as an anxiety reduction mechanism, Ofori *et al.*, (2012) inferred that superstitions may occur as a means to cope with the stresses athletes experience around competition. This concept was further developed where it was suggested that superstitious behaviours, if associated with the management of anxiety, might simultaneously enable the athlete to build confidence and thus produce a desired performance.

While these superstitious actions are distinguished from pre-performance routines, which are specifically aimed at facilitating physical performance (Cohn, 1990), it is possible that superstitious rituals that act as psychological placebos can, indirectly affect individual performance outcomes by awarding the athlete perceived self-control, (Bleak & Frederick 1998). Womack (1992) examined the prevalence of superstition across several athletics teams and discovered a ‘variety’ of rituals used to respond to the many different situations athletes can find themselves in. It was assumed that professional athletes used superstitions as a ‘means of maintaining emotional stability’ in order to perform optimally and the same could be said of all athletes. Similarly, Womack found that the rituals in this case served as a buffer to deal with conditions of ‘stress, anxiety and danger’. Following this vein, Jean Piaget

whose research primarily focused on the development of cognitive processes, even went so far as to describe superstitions as ‘defence mechanisms’. Another potential function of these behaviours is to serve as a deflection mechanism for self-blame when the desired outcome is not achieved in competition. This tendency to attribute positive outcomes to internal traits, but negative outcomes to external factors is known as the self-serving bias (Baron *et al.*, 2009). When the athlete has not performed well, they can in this case blame external factors such as luck, instead of internalising the blame. This may also be a contributing factor to why athletes develop superstitious behaviour from the onset.

There has there been little such research on these behaviours by sports psychologists and researchers alike, even though these rituals appear to be fundamental to many athletes’ competitive routines. A possible reason for this is that there are many other issues within the athletic domain that are considered to require more pressing attention. Superstitious behaviour isn’t necessarily a problem with need for a solution. Researchers perhaps prefer to investigate topics where interventions can be established and readily implemented in an applied setting. Generally, superstition is a hard topic in particular to examine. Many of these behaviours are engaged in privately, often unbeknownst to even the athlete’s team-mates, inferring individuals may in fact be embarrassed by their actions, sometimes rendering any research of their existence a difficult operation. It would also be difficult for researchers to develop a survey methodology that can quantitatively and accurately measure these highly personalised behaviours and beliefs that vary so significantly between individuals.

Despite this, the concept of superstitious ritual is an interesting one, which is important to research. Expanding the breadth of knowledge regarding superstitious

behaviour in athletes will further assist in the understanding of athletic behaviour and highlight characteristic strengths and weaknesses that may require increased focus from researchers and sports psychologists. Many research questions can be asked from how and why these behaviours develop and are nurtured by athletes, to how they come to play an important role in the competitive routines of many athletes.

Oftentimes, it can be said that irrational behaviours are more likely to occur in those who are psychologically unadjusted, whereas it is fundamental for top athletes to be particularly well adjusted and psychologically stable to enable coping with the pressures associated with the professional sporting environment. Another question that arises is that of how superstition occurs at all among professional athletes when they spend months in training and preparation for competition, thus leaving as few factors as possible to luck. Similarly, professionals often have access to professional advice from sports psychologists and coaching staff on the various cognitive strategies that can be used to combat negative psychological processes that occur in stressful situations.

The current research intends to examine four primary hypotheses in relation to superstitious ritual in sport and the impact these rituals have on athletic anxiety levels. As mentioned, several studies have promoted the function of superstitious ritual as an anxiety-reduction mechanism in sportspersons (Bleak & Frederick, 1998; Schippers & Van Lange; 2006; Ofori *et al.*, 2012). It is hypothesised that athletes who make use of superstitious ritual will have lower anxiety levels than those who don't, thus participants who score highly on the modified Superstitious Ritual Questionnaire (Bleak & Frederick, 1998), will obtain a low score on the Competitive State Anxiety Inventory-2 (Cox *et al.*, 2003). It has been found in previous studies that generally females are more likely to engage in superstitious behaviour than males (Wiseman &

Watt, 2004). Research has indicated that female athletes in particular are more superstitious than their male counterparts. Burhmann & Zaugg (1981) identified female basketball players as having higher overall superstition levels than males. In a study conducted during the 1979 Olympic games it was found that 72% of athletes who possessed a mascot were female (Burn, 1975). Thus this study seeks to examine if there is a significant gender difference present in the use of superstitious ritual in sport.

Schippers and Van Lange (2006) proposed that superstitious activity is intensified when the 'importance of the outcome' is higher rather than lower, seemingly in an effort to increase the chance of success. The current study seeks to affirm this theory by hypothesising that professional and elite athletes will engage in superstitious ritual significantly more often than amateur or non-elite athletes due to the perceived importance of their performance outcomes. Bleak & Frederick (1998) found significant differences in superstitious ritual use between different formats of sport. For instance, in their research it was identified that gymnasts engaged in superstitious ritual more often than football players. It was believed that the differences in superstition levels between these groups was due to the variability of locus of control, anxiety and structure associated with the different sports. In an attempt to examine this concept further, it is hypothesised in the present study that athletes who participate in individual sports or sports that involve individual responsibility (e.g. gymnastics, golf) will be more superstitious than those who play a team sport (e.g. football, hockey). Therefore, the individual athletes will obtain significantly higher scores on the superstitious ritual scale than team sport athletes. These hypotheses will be explored in greater detail over the coming pages.

Method

Participants

The participants (n-159) in this study were made up of a random convenience sample of elite (n-63, 39.6%) and non-elite (n-96, 60.4 %) athletes over the age of 18-years old. Both females (n-64) and males (n-95) were assessed from a variety of individual and team sports. The age of the athletes varied between 18 and 55+ years.

Several nationalities were measured, such as Dutch, Pakistani and Australian, though the participants were predominantly representative of Ireland and the United Kingdom, thus the majority of sports assessed were the primary sports played in Western Europe. A wide range of competitive standards were represented with World Cups, World Championships, Professional Golf Tours and numerous International and National competitions mentioned. Participants were divided into subgroups according to what sport they play, whether it was an individual or team sport and to what standard they compete.

Design

A quantitative, cross-sectional, survey design with a scenario methodology was used in the current study. For the first hypothesis the predictor variable was superstitious ritual and the criterion variable was competitive anxiety. This was changed for the remaining hypotheses where participation in a team or individual sport, the standard of sport played, and gender became the predictor variables, whilst superstitious ritual was the criterion.

Apparatus

Superstition was measured in several ways for the current study. Building on research from Becker (1975), Womack (1992) and an earlier scale established by Buhrmann *et al.*, (1982), The Superstitious Ritual Questionnaire (SRQ) was developed by Bleak & Frederick (1998) to assess the levels of effectiveness and measure the prevalence of particular superstitious behaviour in sport. The 42-item questionnaire used was divided into seven sections: clothing and appearance, fetish, preparation, game/competition, team ritual, prayer and coach. For the present study, the Bleak and Frederick scale was modified slightly to accommodate the nature of the hypotheses being researched. The wording of several questions was adapted to suit the European demographic being assessed; '*Cheerleading*' was changed to '*Particular cheer or chant*', and '*Stacking hands*' was changed to '*High-Fiving/Stacking hands*'. As the questionnaire was primarily directed at those who play a field sport, the use of '*game/meet day*' was changed to '*game/competition/event*', to cover a variety of sports and formats intended to be assessed in the present study. Several questions were deemed irrelevant for the current demographic, such as '*Face painting*', '*Get tattoo before season*', '*Carve number in flesh*', and were removed from the scale resulting in a 37-item scale.

The original Bleak and Frederick questionnaire used two 5-point likert scales to measure the extent and perceived effectiveness of the rituals mentioned in the questionnaire. Participants were requested to indicate whether or not he/she uses each superstitious ritual outlined with scores ranging from 1 (*never*) through to 5 (*all the time*). Then, using another 5-point scale, the participants indicated how effective they believe that ritual to be. For the purposes of this research, the frequency scale was utilised, however, the perceived effectiveness scale was removed. A definition of

superstitious ritual was provided at the start of the questionnaire, along with a definition of preparatory routine, so there would be no confusion between the two among participants.

Further to this, and to buffer against several limitations of the SRQ, a pilot questionnaire was developed specifically for this study to further measure superstitious ritual among the participants. Using a random focus group of 5 elite and 5 non-elite, male and female athletes, an 11-item scale consisting of the content discussed by the group was identified and added to the SRQ. An open question was also provided at the end of the questionnaire “*Please indicate below any other superstitious rituals you may perform that are not mentioned above*”. This question was designed to account for any superstitious rituals used that were not listed in the previous questionnaires.

Responses to both of the SRQ and the pilot superstitious ritual questionnaires were highly correlated ($r = .80, p < .001$), thus the two items were collapsed to form a two-item scale of self-rated superstitious ritual use. For the open question, any superstitious behaviour listed was issued a score of 5. No response or a listed behaviour deemed not superstitious was issued a score of 0. By combining the scores, a total superstitious behaviour score was established by summing the number of rituals used by each participant. Furthermore, a single likert-type question was included at the end of the superstitious ritual questionnaires to assess the extent to which participants perceived their superstitious rituals to be effective. These items were rated on a scale ranging from 1 (*not at all effective*) to 5 (*highly effective*).

When the superstitious ritual questionnaires were completed, participants were requested to complete the 24-item Competitive State Anxiety Inventory-2 questionnaire. Developed by Martens *et al.* (2003). Anxiety was divided into three

components: cognitive anxiety, somatic anxiety and related component self-confidence, totalling the scores for the three subscales resulted in a total competitive anxiety score. The measure that was established by Cox *et al.*, using a 4-point frequency scale to assess trait and state anxiety levels, was adapted to a likert style scale for the purposes of this study. Scores ranged from 1 (*never*) through to 5 (*always*). The questionnaire used was originally developed to be administered before the participant competed in a game, event or competition. As this was not feasible as part of the current design, participants were asked to recall or imagine competition scenarios and indicate "*how you currently feel in the run up to a competition/game/event*" or "*how you usually feel pre-competition/game/event*". Similarly, the Competitive State Anxiety Inventory-2 is usually administered on two occasions, to further establish the reliability of the scores, however, as this was not possible for the present research, the questionnaire was only administered on one occasion.

Reliability and validity measures

Bleak and Frederick's Superstitious Ritual questionnaire had a test-retest reliability that was reported to be .77 after 18 days. Similarly, cronbachs' alphas for the combined superstitious ritual measures were reported at .92. Factor analysis on the Competitive-State Anxiety Inventory-2 (Lane et., al. 1998) reported that the internal consistency of the 3 subscales was: Cognitive Anxiety, alpha= .80; Somatic Anxiety, alpha=.85; and Self-confidence, alpha=.88, with a combined alpha coefficient of .70.

Procedure

Surveys were circulated online using Google Documents software through Facebook, Twitter or by direct email. In addition, the questionnaires were circulated by a Cricket Ireland team administrator to a mailing list of 60 international cricketers over the age of 18-years old. Three forums were used to further circulate the questionnaires:

- www.runnersforum.co.uk
- www.forums.golf-monthly.co.uk
- www.runnersworld.co.uk/forum/triathlon

An informative cover sheet accompanied the questionnaire, containing a brief explanation of the research purpose and the voluntary nature of the study. This information was followed by demographic questions regarding age, gender, nationality, primary sport, training hours per week and the standard of sport competed at. Issues regarding confidentiality and data protection were also outlined on the cover sheet. Another question was also included on the cover sheet, requesting information about the last major competition competed in by the participant. This was to assist in the later categorisation of whether the participant was an elite or non-elite athlete, in addition to that question. Participants were informed each questionnaire was completely anonymous and all data would be stored on a secure password locked computer. Contact details of the researchers were provided, if further information was required.. Each questionnaire took approximately 10-15 minutes to complete. The DBS ethics committee approved the procedures used for this study prior to its initiation.

Results

The questionnaire was completed by 159 participants with a mean superstitious ritual score of 111.4 and a mean competitive anxiety score of 68.13. 33% of participants mentioned one or more superstitious ritual they perform before a game in the open question. The type of rituals mentioned varied from the use of eye exercises to wearing lucky pants. Participants mentioned some particularly interesting rituals, such as touching every item in their pockets, rubbing their shaved head before each event, packing kit bags in a particularly unusual order and for one participant

“I try to add subtract divide whatever it is before a game to make things add to the number on my back, and when I get it I feel the day will go well if I can't find one I feel uneasy”.

It was evident from the superstitious ritual open question that the participants often had difficulty distinguishing superstitious ritual from pre-match preparation, many functional routines such as non-specific eating patterns and warm-up routines were listed.

An overview of the highest scoring rituals, mentioned in the combined superstitious ritual questionnaire, are presented in Table 1.

Table 1. *Recurring Superstitious Rituals indicated by Participants*

| Ritual (N=161) | Number of times mentioned | | |
|--|---------------------------|-------|--------------|
| | Sometimes | Often | All the time |
| Perform particular cheer/chant | 15 | 16 | 25 |
| Pep talk | 35 | 30 | 44 |
| Dress well to enhance performance | 38 | 43 | 34 |
| Pre-event/game/competition team cheer | 23 | 38 | 34 |
| Staking hands/High-fiving team mate who scores | 45 | 37 | 22 |
| Listening to specific music before warm-up | 27 | 26 | 38 |
| Staking hands/High-fiving before game | 19 | 18 | 47 |
| Not allow other team member to use personal kit/clothing | 36 | 38 | 23 |

Elite and non-elite differences in superstitious ritual use.

Elite athletes (mean 119.43, SD=25.60) were found to have higher prevalence rates of superstitious ritual use than non-elite athletes (mean=105.78, SD=35.63). The 95% confidence limits showed that the population mean difference of the variables lies somewhere between 2.95 and 24.35. An independent samples t-test found that there was a statistically significant difference in superstitious ritual scores between the

elite and non-elite athletes ($t(126) = 2.52, p = .013$). Therefore the null can be rejected.

Table 2. *Standard Differences in Superstitious Ritual use*

| Standard | SRQ Mean | SRQ Standard Deviation |
|----------------------|----------|------------------------|
| Elite ($N=63$) | 119.43 | 25.60 |
| Non-elite ($N=96$) | 105.78 | 35.63 |

*SRQ – Superstitious Ritual Questionnaire

Team/Individual sport differences in superstitious ritual use.

In contrast to what was hypothesised, as shown in Table 3, participants who compete in a team sport (mean 121.43, $SD=27.12$) were found to have significantly higher superstitious ritual rates than the participants who compete in an individual sport (mean 93.24, $SD=33.86$). The 95% confidence limits showed that the population mean difference of the variables lies somewhere between 17.28 and 39.06. An independent samples t-test found that there was a statistically significant difference in superstitious ritual scores between the team sport and individual sport participants ($t(125) = 5.11, p = .00$).

Table 3. *Individual & Team Sport Differences in Superstitious Ritual use*

| | SRQ Mean | SRQ Standard Deviation |
|-----------------------------|----------|------------------------|
| Team Sport ($N=95$) | 121.43 | 27.12 |
| Individual Sport ($N=64$) | 93.24 | 33.86 |

*SRQ – Superstitious Ritual Questionnaires

Gender differences in superstitious ritual use.

Female athletes (mean 109.13, $SD=34.25$) were found to have slightly lower prevalence rates of superstitious ritual use than the male participants (mean=115.27,

SD=29.18). The 95% confidence limits showed that the populations mean difference of the variables lies somewhere between -17.76 and 5.54. An independent samples t-test found that there was no statistically significant gender difference between scores on the superstitious ritual questionnaires ($t(126) = -1.05, p = .28$). Therefore, the null cannot be rejected.

Superstitious Ritual and Competitive Anxiety levels.

The total mean score for superstitious ritual was 111.4 (SD=32.39) and 68.13 (SD= 14.77) for competitive anxiety. A Pearson correlation coefficient found that there was a positive, significant relationship between superstitious ritual and competitive anxiety ($r(117) = 0.19, p < .01$). Therefore, the null hypothesis cannot be rejected.

Additional Analysis

Descriptive statistics indicated that 40% (n=63) of participants reported that they found their superstitious rituals, if any, highly ineffective, with only 6% (n=10) reporting they believe their rituals to be effective. The mean score for the participants' perceived effectiveness of their superstitious rituals was found to be 2.34 (SD=1.31), as mentioned the use of superstitious ritual had a mean score of 11.4 (SD=32.39). A Pearson correlation coefficient found that there was a positive, significant relationship between the use of superstitious ritual and the perceived effectiveness of superstitious ritual ($r(127) = 0.44, p < .01$).

Discussion

The aim of the present study was to identify if there is a relationship between the use of superstitious ritual and competitive anxiety in elite and non-elite athletes. The results provided evidence in support of two of the original hypotheses. In contrast to the first hypothesis, it was found that the use of superstitious ritual had a significant positive, but weak effect on competitive anxiety levels. Importantly, this contradicts previous research (Schippers & Van Lange, 2006), which indicates superstitious ritual acts primarily as a tension reduction mechanism in sports players. Several studies have addressed this theory, however the overall literature is small. The provision of empirical support for a contradicting argument is an important contribution of the current research to be further investigated in the future.

What literature there is has suggested that if superstitious ritual is to play an anxiety reduction role, the primary purpose for an athlete to engage in such behaviour is as an unintentional means of regulating their physiological state. This theory could also offer an explanation as to why athletes show high ritual commitment, even when their desired performance has repeatedly not been obtained. Yet, the concept that superstitious ritual is an anxiety reduction mechanism for competition appears to be rejected by the current data, this calls into question the functionality of superstitious ritual if it does not act as a buffer against anxiety and stress.

Consistent with the hypotheses, it was found that elite athletes have higher levels of superstitious ritual use than non-elite athletes. This finding is in line with the literature that suggests superstitious behaviour is more likely to be engaged in when there is high importance associated with the performance outcome (Schippers & Van Lange, 2006). This concept is supported by Bleak & Frederick (1998), who suggest that these rituals occur primarily under conditions of perceived importance,

uncertainty or where there is an element of chance. All of the mentioned factors are fundamental components of sport, however it could be argued that the conditions of perceived importance would be seen primarily among top sportspersons, adding support for the current hypotheses. There appeared to be no significant gender difference in superstitious ritual use among the participants in contrast to previous research, which was in line with this notion (Bleak & Frederick, 1998; Burhmann & Zagg, 1981).

It was found that participants who play a team sport exhibited significantly higher levels of superstitious ritual use than those who play an individual sport. This was in contradiction of Bleak & Frederick's research, which found that athletes who compete in an individual sport, such as gymnasts, would have higher levels of active superstition than those who play a team sport, due to the importance placed on each individual performance. This proposes many questions associated with locus of control beliefs and highlights the need for contextual research on the different formats of sport, targeting which contain higher elements of perceived control. In the case of Bleak & Frederick (1998), it was believed that the gymnasts had higher superstitious ritual commitment due to the fact that the responsibility for performance was held entirely by the individual themselves. However, it is possible that individuals competing in team sports believe performance to be outside of their control and shared by between the entire team. This could result in increased superstitious ritual use, as would be supported by the findings in this study. Further research on the differences in locus of control beliefs between team and individual sport players is needed in this area. Similarly, it would be interesting to examine objective and subjective sports and how the effects on the athletes perceived control alter the prevalence of superstitious ritual. Finally, it was found that only 6% of participants

reported their superstitious rituals as highly effective. This could have provided support for the concept of *half beliefs*, where it has been thought that the majority of those who engage in superstitious behaviour recognise it as ineffective (Risen & Gilovich, 2007). However, analysis indicated that perceived effectiveness correlates with superstitious ritual use, which suggests that it is those with who engage in such behaviours recognise them as being effective and vice versa.

Whilst there is a small body of literature surrounding the concept of the positive functionality of superstitious ritual in sport, there is less so concerning the potential negative aspects of such behaviour. It is possible that several rituals can develop into obsessive behaviour or an athlete may have too many rituals that they feel must be carried out. Schippers & Van Lange (2006) describe instances where a player so obsessively carried out numerous rituals that he lost 12 pounds in 10 days, similarly, a karate practitioner with a ritual of touching his pants during tournaments was letting his guard down and in turn, allowing his opponent scoring opportunities. In these cases, regardless of the psychological function of the rituals, their use has a detrimental effect on performance. As previously mentioned, it appears that the functionality of superstitious ritual use may take the form of the *Inverted U hypothesis*. Likewise, it would seem that superstitious ritual use may share a similar model to that of *Catastrophe Theory* (Hardy & Fazey, 1987, as cited by, Thatcher *et al.*, 2011). This theory proposes that athletes who are anxious may experience increased arousal to a point that will lead to a dramatic decline in performance levels. Whilst a relative increase in anxiety can assist performance (Thatcher *et al.*, 2011), a continued increase of anxiety will cause the athlete to reach the 'cusp' of the catastrophe model, which will result in a dramatic decline in performance. To relate this model to the use of superstitious ritual, it could be said that these behaviours

when carried out in a focused manner, could increase arousal to a point that could render an improved performance. However, if these behaviours become excessive, as in the case of the karate practitioner, a performance decline could be produced. Coaches, sports psychologists and support staff should, where possible, pay attention to the development and prevalence of superstitious ritual in athletes, and should recognise the beneficial or harmful effects of its use.

Limitations

There were numerous strengths to the current study, such as the variety of sports measured and the participation of many top athletes. The research was further strengthened by the inclusion of both male and female athletes however, there were a number of limitations that should be taken into account when assessing the present findings. The study employed a quantitative approach in an attempt to measure superstitious ritual, whereas this understanding would be much strengthened by the use of qualitative research. Similarly, the survey nature of the study meant all data collected was self-reported. The disclosure of superstitious rituals by the participants should not have followed any tendency towards self-presentation. However, it is possible that positive tendencies may have occurred when completing the Competitive State Anxiety Inventory-2. A qualitative design would allow for the use of physiological measures, such as heart rate variability, which would yield an enhanced insight into the anxiety or stress responses associated with superstitious ritual and competition.

There are few pre-existing quantifiable measures of superstitious ritual, thus it was only possible in this case to make use of Bleak & Frederick's Superstitious Ritual Questionnaire. Several adjustments had to be made to the questionnaire for the purposes of this study to accommodate the current demographic of athletes, which

was not ideal. It would be desirable for the purposes of future quantitative research in this area, that a more suitable questionnaire be established to suit European athletes and the sports in which they participate. Whilst the SRQ provided a superstitious ritual score for which we could compare against competitive anxiety scores, it is possible, due to the structure of the questionnaire, that a highly superstitious individual could have obtained an average score. An athlete with several moderate superstitions could have received a particular score from the measure, whereas a participant with a single but strong superstitious ritual, to which they are highly committed, could have received a lower score than the former on the SRQ, although technically more superstitious. This questionnaire did not take into account the extent to which the individual is committed to each particular ritual, which highlights further the need for qualitative investigations in this area. Another limitation of the SRQ identified in the current study is the measure's direction towards those who play both a team sport and a field sport, making many of the questions difficult for the participants to accurately answer.

The present research used a scenario methodology for the Competitive State Anxiety Inventory-2, which calls into question the ecological validity of the measure, in this case. It is possible to question the degree to which participants can place themselves in the hypothetical pre-competition situation, and if any tendencies toward positive self-presentation could have occurred to influence present findings. The elite athletes should have had little difficulty placing themselves in hypothetical situations, however, it would be favourable for future research of this nature to be conducted concurrent with real-life game scenarios. Although a single question of effectiveness was included in the superstitious ritual measure, the perceived effectiveness associated with superstitious ritual was not addressed to any greater extent. Similarly,

the athletes perceived importance of superstitious ritual was not assessed, which could have produced interesting results. It would be desirable for future research to look at this qualitatively, by examining the effects on the athlete's psychological state and subsequent performance outcome when the superstitious rituals are altered or inhibited.

Conclusions

This study made a preliminary attempt to determine the functionality of superstitious ritual and why such behaviour occurs in an athletic environment. Much of the previous research has indicated that the alleviation of anxiety (Schipper & Van Lange 2006; Ofori *et al.*, 2012) is the primary function of superstitious ritual. However, the current study found little support for a meaningful relationship between competitive anxiety and superstitious ritual.

It could be argued that the use of superstitious ritual can enhance an individual's chances of achieving an optimal performance state or being in "*the zone*" (Young & Pain, 1999). Young & Pain characterise "*the zone*" as a state where the athlete can perform to the best of his or her ability, exceptionally, consistently and automatically. The current research does not go so far as to support this theory, but contradicts the anxiety-reduction argument often used when examining the functionality of superstitious behaviour. Further research in this area could provide an increased body of applied literature, which could yield improved acknowledgement of the potential benefits of superstitious ritual and enhanced understanding for teammates/coaching staff of athletic behaviour.

It can be speculated that athletes coincidentally happen to find a link between enacting superstitious rituals and a desired performance outcome. However, it does appear there is only an indirect link between superstitious ritual and performance

outcomes, which suggests that superstitious ritual and the athlete's commitment to ritual, must serve another function. It is also possible that superstitious ritual serves a more personalised function and therefore, the purpose of each ritual differs between each athlete. If this were true, it could be argued that athletes may develop superstitions that correspond with their personalities (Bleak & Frederick, 1998). It would, in this case, be less important to look at the quantifiable measurement of ritual, but the specific rituals the athlete engages in. Similarly, it would be interesting to assess how an individual's sporting superstitions develop in relation to that of their teammates.

Overall, the present research expands upon the existing literature concerning the prevalence and use of superstitious ritual in sport. The current research offers a unique contribution to the existing literature in the field of applied sports psychology. Superstitious rituals were assessed quantitatively among a large group of both highly competitive and recreational sportspersons, in relation to competitive anxiety. The use of superstitious ritual was also examined in relation to the nature of the sport participated in by the athlete. Results of the study indicated that superstitious ritual usage did not reduce anxiety in the athletes assessed. It was also found that team players exhibited higher superstitious ritual levels than those who play an individual sport. In addition, it was found that while elite athletes showed significantly higher levels of superstitious ritual use in comparison to non-elite athletes, no support for gender differences in superstitious ritual use was found in the current research.

To complement existing literature around this topic further, research should be conducted to directly relate the use of superstitious ritual to actual performance outcome and consider variables such as ritual commitment, perceived ritual importance and dispositional factors such as personality and self-confidence. The use

of superstitious ritual is an intriguing area for future study, where any research associated with its functionality will lead to an enhanced understanding of the behaviours and cognitive processes used by individuals to navigate the athletic environment.

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Appendices

Appendix A

Combined adapted Superstitious Ritual Questionnaire and Competitive State Anxiety Inventory-2.

Superstitious Ritual and Competitive Anxiety Questionnaire

Athletes of all standards over the age of 18 years old are invited to take part in the current research on superstition and anxiety in sport.

The purpose of this study, as part of my undergraduate psychology thesis, is to identify whether there are significant correlations between the use of superstitious ritual and competitive anxiety levels in athletes.

You will be asked to provide some short demographic information, and then, to answer two questionnaires. You may choose not to answer any question(s) that makes you uncomfortable. You may also choose to withdraw from the study at any time, however once your questionnaires are finished and returned it will not be possible to withdraw your answers.

Each questionnaire is completely anonymous. Participation in the study will not exceed 15 minutes.

The findings will be reported within my thesis. If you wish to receive further information or a copy of my results, please feel free to contact me at [REDACTED].

* Required

Gender *

Female
Male

Age *

18-25
26-35
36-45
46-55
55+

Nationality**Primary Sport (e.g. Football, Rugby, Hockey etc.) *****Hour per week spent training (If you play a seasonal sport, please select the hours you spend training per week during your season)**

*

0-2 hours

2-4 hours

4-6 hours

6-8 hours

8 hours +

Standard competed at *

Elite/ Professional: Please select this category if you play your primary sport to a highly competitive standard, receive payment/ are a professional, or if you participate in your sport at a representative/ provincial/ national/ international level

Non-elite: Please select this category if you play your sport as a hobby or a pastime

Please list 2 recent competitions/ events you have competed in (If you selected the elite category above, please list two major competitions/ events you have competed in)

Superstitious Ritual

Superstition in sport has been defined as the use of actions which are repetitive, formal, sequential, distinct from technical performance, and which the athlete believes to be powerful in controlling luck or other external factors e.g. wearing the same pair of socks for each game, competition or event you participate in. (Be careful not to confuse superstitious ritual with routine. Routines are consistent, compulsive and geared towards improving focus e.g. arriving at your game, competition or event venue 2 hours prior to the scheduled start to warm-up.)

Listed below are a variety of rituals athletes may use before or during games (competitions etc.)

For each ritual you use, please select below how often you make use of it to help you perform at your sport. Some of the questions may not be relevant to you or your particular sport, if so, simply answer the questions to the best of your ability.

A. Clothing and Appearance

1. How often do you check your appearance in the mirror before each game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

2. How often do you put good luck markings on your shoes before your games/ competitions/ events

Never
Rarely
Sometimes
Often
All the time

3. How often do you dress well to feel better prepared for your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

4. How often do you wear your warm-up top or bottom the same way before each game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

5. How often do you dress sloppily- to help you feel better prepared for your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

6. How often do you wear your socks inside out for luck with your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

7. How often do you get your hair cut on the day of your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

8. How often do you not shave on the day of your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

9. How often do you take an ice bath on the morning of your game/ competition/ event day

Never
Rarely
Sometimes
Often
All the time

10. How often do you paint your face (e.g. black under eyes or apply sun cream) before your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

11. How often do you eat the same pre-game/ competition/ event meal on the day

Never
Rarely
Sometimes
Often
All the time

12. How often do you wear special socks under your runners on game/ competition/ event days

Never
Rarely
Sometimes
Often
All the time

B. Fetish

1.How often do you wear a lucky item of clothing

Never
Rarely
Sometimes
Often
All the time

2. How often does a team mascot help your cause

Never
Rarely
Sometimes
Often
All the time

3. How often do you wear a lucky charm on game/ competition/ event days

Never
Rarely
Sometimes
Often
All the time

4.How often do you wear a lucky charm so it can be seen on game/ competition/ event days

Never
Rarely
Sometimes
Often
All the time

5. How often do you wear a lucky charm so it cannot be seen on game/ competition/ event days

Never
Rarely
Sometimes
Often
All the time

6. How often do you kiss/touch a lucky charm before your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

C. Preparation

1. How often do you tape your body - even if not injured, before your game/ competition/ event day

Never
Rarely
Sometimes
Often
All the time

2. How often do you listen to music during/ before your warm-up

Never
Rarely
Sometimes
Often
All the time

3. How often do you snack before the start of your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

4. How often do you need silence/ seclusion before your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

5. How often do you have the same person do any taping job(s) on game/ competition/ event days

Never
Rarely
Sometimes
Often
All the time

6. How often do you warm-up for your on game/ competition/ event using the same routine

Never
Rarely
Sometimes
Often
All the time

D. Game/ Competition

1. How often do you perform a particular cheer or chant before your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

2. How often do you attempt to score the first point (goal, run etc.), in an effort to improve your luck for the rest of your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

3. How often do you high-five/ slap the hand of a fellow team member who scores during the game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

4. How often do you chew gum before/ during the game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

E. Team Ritual

1. How often do you stack hands/ high-five with your teammates before/during the game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

2. How often does team cheering during the game/ competition/ event help you to preform

Never
Rarely
Sometimes
Often
All the time

3. How often does a pep talk before the game/ competition/ event help you feel prepared

Never
Rarely
Sometimes
Often
All the time

4. How often does NO pep talk before the game/ competition/ event help you feel prepared

Never
Rarely
Sometimes
Often
All the time

F. Prayer

1. How often do you pray for success before each game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

2. How often are you afraid your luck will run out if you do not pray before each game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

3. How often do you pray with your team in the lead up to/ before your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

G. Coach

1. How often does your coach make use of superstitious rituals before games/ competitions/ events

Never
Rarely
Sometimes
Often
All the time

2. How often does your coach bring a lucky charm to your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

3. How often does your coach encourage prayer/ meditation before your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

Superstitious Ritual (Part 2)

1. How often do you listen to a particular song before your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

2. How often do you wear your shoelaces in a particular way for your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

3. How often do you tie your hair in a particular way for your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

4. How often do you put on your kit/ Gear/ Clothing in a particular order

Never
Rarely
Sometimes
Often
All the time

5. How often do you wear the same clothing/ kit to try continue a winning streak

Never
Rarely
Sometimes
Often
All the time

6. How often do you wear a specific coloured item of clothing to help you perform in your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

7. How often do you use a lucky number in relation to your sport

Never
Rarely
Sometimes
Often
All the time

8. How often do you touch the ground (as part of a specific ritual) before or during your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

9. How often do you sit in a particular place in the changing room before your game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

10. How often do you abstain from sexual activity in the lead up to, or the night before a game/ competition/ event

Never
Rarely
Sometimes
Often
All the time

11. How often do you NOT allow another player to use your kit/ clothing/ runners etc. to preserve your luck

Never
Rarely
Sometimes
Often
All the time

Please indicate below any other superstitious rituals you may perform that are not mentioned above:

Please indicate below how effective you believe your superstitious ritual(s) to be in influencing your performance in game/ competition/ event situations

Not at all effective
Rarely effective
Sometimes effective
Often effective
Highly effective

Competitive State Anxiety Inventory-2

The following are several statements that athletes use to describe their feelings before competitions, games or events.

Read each statement and select the appropriate box to indicate how you currently feel in the run up to a competition/ game/ event. If you are not currently in this situation, please indicate how you would usually feel pre-competition/ game/ event.

There are no right or wrong answers. Do not spend too much time on any one statement.

1. I am concerned about this competition

Never
Rarely
Sometimes
Often
Always

2. I feel nervous

Never
Rarely
Sometimes
Often
Always

3. I feel at ease

Never
Rarely
Sometimes
Often
Always

4. I have self-doubts

Never
Rarely
Sometimes
Often
Always

5. I feel jittery

Never
Rarely
Sometimes
Often
Always

6. I feel comfortable

Never
Rarely
Sometimes
Often
Always

7. I am concerned about losing

Never
Rarely
Sometimes
Often
Always

8. My body feels tense

Never
Rarely
Sometimes
Often
Always

9. I feel self-confident

Never
Rarely
Sometimes
Often
Always

10. I feel tense in my stomach

Never
Rarely
Sometimes
Often
Always

11. I feel secure

Never
Rarely
Sometimes
Often
Always

12. My body feels relaxed

Never
Rarely
Sometimes
Often
Always

13. I'm confident I can meet the challenge

Never
Rarely
Sometimes
Often
Always

14. I'm concerned about performing poorly

Never
Rarely
Sometimes
Often
Always

15. My heart is racing

Never
Rarely
Sometimes
Often
Always

16. I'm confident about performing well

Never
Rarely
Sometimes
Often
Always

17. I'm worried about reaching my goal

Never
Rarely
Sometimes
Often
Always

18. I feel my stomach sinking

Never
Rarely
Sometimes
Often
Always

19. I feel mentally relaxed

Never
Rarely
Sometimes
Often
Always

20. I'm concerned that others will be disappointed with my performance

Never
Rarely
Sometimes
Often
Always

21. My hands are clammy

Never
Rarely
Sometimes
Often
Always

22. I'm confident because I mentally picture myself reaching my goal

Never
Rarely
Sometimes
Often
Always

23. I'm concerned I won't be able to concentrate

Never
Rarely
Sometimes
Often
Always

24. My body feels tight

Never
Rarely
Sometimes
Often
Always

25. I'm confident of coming through under pressure

Never
Rarely
Sometimes
Often
Always

Thank you for your participation

Appendix B

Original Bleak & Frederick (1998) Superstitious Ritual Questionnaire.

The Superstitious Ritual Questionnaire

Listed below are a variety of rituals athletes may use before or during games (competitions), for each ritual you use, place an "x" in the space given. If you do use that ritual, also indicate how effective it is for you. Place a check below if you engage in this ritual

If you use this ritual indicate how effective you believe it is for you in helping your sport
Performance

Legend for Chart:

- A - Rituals
- B - 1: not at all effective
- C - 2
- D - 3
- E - 4
- F - 5: very effective

A B C D E F

A. Clothing and Appearance

1. Check appearance in mirror
-- 1 2 3 4 5
2. Good luck markings on shoes
-- 1 2 3 4 5
3. Dressing well to feel better prepared
-- 1 2 3 4 5
4. Wear warm-up top or bottom the same way
-- 1 2 3 4 5
5. Dressing sloppily - feel better prepared
-- 1 2 3 4 5
6. Wear socks inside out for luck
-- 1 2 3 4 5
7. When sub-in take jacket to player
-- 1 2 3 4 5
8. Haircut on game/meet day

- 1 2 3 4 5
9. No shaving on game/meet day
-- 1 2 3 4 5
10. Take ice bath morning of game
-- 1 2 3 4 5
11. Face painting (e.g. black under eyes)
-- 1 2 3 4 5
12. Get tattoo before season
-- 1 2 3 4 5
13. Carve number in flesh
-- 1 2 3 4 5
14. Eat same pre-game/meet meal on game day
-- 1 2 3 4 5
15. Tape shoes identically before game/meet
-- 1 2 3 4 5
16. Wear same clothing under pads
-- 1 2 3 4 5
17. No socks under running spikes
-- 1 2 3 4 5

B. Fetish

1. Have lucky item of clothing
-- 1 2 3 4 5
2. Team mascot helps cause
-- 1 2 3 4 5
3. Wearing lucky charm on game/meet days
-- 1 2 3 4 5
4. Wearing lucky charm so that it can be seen
-- 1 2 3 4 5
5. Wearing lucky charm so it can't be seen
-- 1 2 3 4 5
6. Discarding lucky charms
-- 1 2 3 4 5
7. Kiss/Touch lucky charm before game/race

-- 1 2 3 4 5

C. Pre-game/Meet

1. Taping body - even if not injured

-- 1 2 3 4 5

2. Music during warm-up

-- 1 2 3 4 5

3. Snacks - energizers before contest

-- 1 2 3 4 5

4. Need silence/seclusion before game

-- 1 2 3 4 5

5. Same trainer does taping job

-- 1 2 3 4 5

6. Warm-up using same routine

-- 1 2 3 4 5

D. Game/Meet

1. Cheerleading

-- 1 2 3 4 5

2. Scoring first point(s)

-- 1 2 3 4 5

3. Slap hand of scorer

-- 1 2 3 4 5

4. Gum Chewing

-- 1 2 3 4 5

E. Team Rituals

1. Stacking hands

-- 1 2 3 4 5

2. Team cheer

-- 1 2 3 4 5

3. Unprepared if no pep talk

-- 1 2 3 4 5

4. Pep talk important for good performance

-- 1 2 3 4 5

F. Prayer

1. Pray for success before each game
-- 1 2 3 4 5
2. Afraid luck will run out if no prayer
-- 1 2 3 4 5
3. Team has team prayer
-- 1 2 3 4 5
4. Important for team to pray together
-- 1 2 3 4 5

G. Coach

1. Coach is superstitious
-- 1 2 3 4 5
2. Coach takes lucky charm to game
-- 1 2 3 4 5
3. Coach encourages prayer/meditation
-- 1 2 3 4 5

Appendix C

Original Competitive State Anxiety Inventory-2.

Competitive State Anxiety Inventory-2

Instructions: Complete the following scale on two separate occasions: during a quiet time before practice when you are fairly relaxed, and during a competitive situation that you feel is highly stressful. If you are not currently active in competition, recall such situations as clearly as possible and record your responses.

The following are several statements that athletes use to describe their feelings before competition. Read each statement and circle the appropriate number to indicate how you feel right now, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement.

• 1 – Never • 2 – Rarely • 3 – Sometimes • 4 – Often • 5 – Always

1. I am concerned about this competition.
2. I feel nervous.
3. I feel at ease.
4. I have self-doubts.
5. I feel jittery.
6. I feel comfortable.
7. I am concerned I may not do as well in this competition as I could.
8. My body feels tense.
9. I feel self-confident.
10. I am concerned about losing.
11. I feel tense in my stomach.
12. I feel secure.
13. I am concerned about losing.
14. My body feels relaxed.
15. I'm confident I can meet the challenge.
16. I'm concerned about performing poorly.

17. My heart is racing.
18. I'm confident about performing well.
19. I'm worried about reaching my goal.
20. I feel my stomach sinking.
21. I feel mentally relaxed.
22. I'm concerned that others will be disappointed with my performance.
23. My hands are clammy.
24. I'm confident because I mentally picture myself reaching my goal.
25. I'm concerned I won't be able to concentrate.
26. My body feels tight.
27. I'm confident of coming through under pressure.