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Don't Worry About It!: The Anxiety Reducing Effects of Pre-Performance Routines on Basketball Free Throws

A THESIS

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By

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APPROVED FOR THE DEPARTMENT OF PSYCHOLOGY

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For my wife, Jessica. It was you who showed me true love, compassion, and tolerance. This was not just my journey; it was ours.

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Abstract

Pre-performance routines have been found to enhance performance in many sports. These routines may have effects both cognitively and physiologically on those who perform them. Difference in physiological arousal, as measured by heart rate, was measured on participants during a basketball free throw under varying pressure situations. One treatment condition was given a pre-performance routine as means of controlling arousal. Those who received a pre-performance routine experienced less physiological arousal on Day 1 and Day 3 when compared to the no-routine control condition. Findings suggest that the implementation of a pre-performance routine prior to basketball free throws may help decrease physiological arousal.

Keywords: basketball, free throws, pre-performance routine, arousal

Don't Worry About It!: The Anxiety Reducing Effects of Pre-Performance Routines on Basketball Free Throws

We have all seen those sporting events in which the outcome is determined in the very last quarter, minute, or even second. The game that the very outcome lies in one player's hands. The types of games that make highlight reels are made and those plays that determine the outcome of the game; the plays that determine winners or losers. Although this situation arises in various sports, this is all too common in basketball. This type of situation plays out in one of two ways: a last minute desperation shot from half-court or the seemingly simple free throw. Statistically the chances of making a free throw are much greater, and given the chance, most would choose this option. The free throw line lies only 15 feet from the goal; whereas, the half court line lies much further away: 43 feet to be exact. Many contests are won or lost in the final seconds by slim margins and the outcomes of these games are often decided by how accurate the player on the line is at free throw shooting (Lobmeyer & Wasserman, 1986). However, this seemingly simple shot is much more difficult than one would think.

During their careers many players practice this shot thousands of times just for those last minute opportunities. Unfortunately, practice is not the only indicator of performance. There are many other factors to consider during such an event: fatigue, distractions (e.g., such as noise and fan movement), and the anxiety to perform well under these conditions. At some levels, this anxiety may be heightened due to the venue, whether or not the game is telecasted, and the importance of the game (i.e., championship vs. regular season game or rivalry games). Even though players understand these concepts and the importance of their performance, many do not perform as well as they

are able. The ability to perform under pressure successfully is a crucial aspect in sports performance (Mesagno & Mullane-Grant, 2010) and the pressure to perform successfully often causes people to perform below their actual abilities (DeCaro, Thomas, Albert, & Beilock, 2011). An athlete's ability to regulate his or her emotional arousal is often thought to influence performance (Gooding & Gardner, 2009). Getting psyched up and being psyched out are two points on a continuum, and many times athletes walk this fine line. Given the similarity of these feelings, it is no wonder why sports psychologists are interested in studying the effects of arousal on performance as well as the athletes' abilities to regulate their arousal (Gould & Udry, 1993). Curiosity about and interest in optimal performance has grown markedly among practitioners, performers, and public over the past 25 years and the field of sports psychology has been among the forefront of the study and application of peak performance principles (Harmison, 2011). There are two schools of thought pertaining to this decrement of performance, both based in research and evidence, but neither a clear explanation. Further understanding of why choking occurs is important for devising training regimens to alleviate it (DeCaro, et. al, 2011).

Attention was brought to these decrements in performance and was identified as "*choking under pressure"* (Baumeister , 1984, p. 610). This expression is used to label the inferior performance of individuals despite their striving to perform well to meet the situational demands. *Pressure* is defined as "any factor or combination of factors that increase the importance of performing well on a particular occasion" and *choking* as "performing decrements under pressure circumstances" (Baumeister, 1984, p. 610). Under pressure, one consciously realizes the importance of performing well and

executing a particular skill; however, it is ironic how this awareness can hinder the reliability and the chance of a successful outcome (Baumeister, 1984). This self-focus model suggests that these decrements in performance are due to the athlete consciously processing the learned skill in the presence of increasing anxiety and self-awareness (Mesagno & Mullane-Grant, 2010).

Other work (e.g., Masters, 1992; Beilock & Carr, 2001) supports quite strongly the idea of allowing movements to happen automatically without overtly trying to control the movement (Singer, 2002). Masters (1992) expanded the role of *pressure* on performance by explaining that competitive anxiety results in an attentional shift to monitoring explicit learned motor movements rather than focusing on the task-at-hand. For instance, the pressure of being watched by others is referred to as *monitoring pressure.* This notion is supported by research in social psychology showing the presence of audience, video camera, or a mirror increases self-awareness (DeCaro, Thomas, Albert, & Beilock, 2011). This type of pressure may lead to the performer's increase of self-awareness and could result in the performer being more mindful about the process and procedure which could increase decrements of performance.

Alternatively, supporters of the role of distraction propose that the shift in focus, a result of increased arousal, places emphasis on task-irrelevant thoughts such as worry, spectators, the score, or extraneous sounds such as shouting or air horns irrelevant to the player's execution of the task. This pressure is essentially creating a dual task environment that quickly uses attention resources for such things as situation-related worry, rather than using attention to execute the particular task (DeCaro, et. al., 2011). This shift in attention changes what was a single-focus task into a dual-focus task where

worrying and task execution are competing for attentional resources (Beilock & Carr, 2001). Pressure induced by offering an incentive if a certain outcome is achieved may shift the performer's attention to the situation and its consequences. This is also known as *outcome performance* (DeCaro, et. al., 2011, p. 391). The anxiety-performance relationship has relied heavily on the idea that these attention resources are being used up by worrying about these irrelevant rather than task-relevant factors. Thus, distraction and self-focus theories of choking under pressure believe decrements occur under high-pressure situations, but disagree about the mechanism at which the decrement occurs. One theory poses that the shift in attention *away* from task relevant executions, whereas the other implies the attentional shift is *toward* the execution removing all fluidity or automaticity from the execution (DeCaro, et. al., 2011). These proposed theories draws player's attention either toward or away from the execution that can cause suboptimal performance in high-pressure situations. Knowing this information has led applied sports psychologists and researchers to develop and test various interventions-- both cognitive and behavioral interventions based on theories that explain the relationship between arousal and performance.

Many arousal theories have been proposed to explain this relationship. The Yerkes-Dodson Inverted-U Hypothesis, or Yerkes-Dodson Law (1908), explains this relationship on a continuum. This theory proposes that there is an optimal level of performance that is dependent on arousal. For instance, if a student is not anxious about a test, he or she may be less likely to study, therefore resulting in a less than optimal grade. The same may be stated conversely: if a student is too worried about an exam, he or she may sacrifice other variables, such as sleep and good diet, to study too much,

therefore resulting in a less than optimal performance. For the past two decades, sport's psychologists have accepted the Inverted-U Hypothesis which states that low arousal may result in poor performance. As arousal increases, performance increases until optimal or moderate arousal is achieved. If arousal is to increase past that optimal point, performance may start to decline (Gould & Udry, 1993). Two new theories have been proposed as replacements for Yerkes-Dodson's (1908) Inverted-U Hypothesis: catastrophe theory and optimal zones of functioning (IZOF) (Hanin, 1980). Catastrophe theory explains decrements in performance much like the inverted-U hypothesis; however, it postulates that the decrements in performance are not curvilinear (Harmison, 2011). It proposes that this decrement is a rapid deterioration, or catastrophe occurs, rather than a slow decline. Individual zones of optimal functioning (IZOF) states that each individual athlete experiences a unique range of positive and negative psychobiological states that either facilitate or diminish performance (Harmison, 2011). Each theory plays on the interaction of arousal and performance, suggesting each athlete's optimal level of performance that relies on the athlete's ability to appropriately regulate arousal in pressure situations. One route of possible intervention, and topic of much research, is pre-performance routines.

Pre-performance routines in sport have been of special interest to athletes, coaches, and researchers (Cotterill, 2010). Pre-performance routines (PPR) occur in a variety of sports, and more specifically in tasks that are self-paced (e.g. putting in golf, serving in volleyball, free throw shooting in basketball, penalty kicks in soccer, archery, etc.). Pre-performance routines are individual tasks that prepare an athlete for correct execution of a skill (Bell, Finch, & Whitaker, 2010). Research suggests these routines

help optimize internal states to maximize potential (Singer, 2002); however, it is still not clear how pre-performance routines exactly work (Hardy, Jones, & Gould, 1996). It appears that anxiety-management and mental-preparation may be implemented to help adjust arousal levels and increase motor performance (Wrisberg, 1994). These routines have been shown to be consistent over many hours of play as well as interject a sense of normalcy in an otherwise unsteady environment (as cited in Gooding & Gardner, 2009). Moran (1996) defines PPRs as a set, or "sequence of task-relevant thoughts and actions an athlete systematically engages in prior to a self-paced sport's skill" (p. 176). These types of "routines" can be beneficial for athletes and prepare them to perform. The most popular approach to testing the effects of routines is to match the performance of a control group against that of a group that has been taught such a routine (Cotterill, 2010).

One study conducted examined the differences between the top 8 finisher and bottom 8 finishers during a state diving competition (Bell, Finch, & Whitaker, 2010). Two observers recorded the average time for each diver to complete their dive. They found that those who finished in the top 8 of the 16 divers performed a significantly longer pre-performance routine than those who finished in the bottom 8. They also correlated the difficulty of dive for each participant with longer performance times, suggesting that as difficulty in execution increases so does performance time.

Of interest to the current study is how these pre-performance routines affect physiological reactance to anxiety provoking situations. One study conducted by considered the relationship between heart rate and attentional focus prior to performance (Boutcher and Zinsser, 1990). This research study examined elite (University of Virginia golf team) and novice golfers (attendees of a golf activity class) putting under various

difficulties (e.g. 4-foot putts and 12-foot putts). They found that both golfing groups displayed similar heart deceleration prior to performance in the 4-foot putting condition; however, there were differences in the 12-foot putting condition. Additionally, they found behavioral differences between the elite and novice golfers. They found that the elite golfing group took longer total time: longer after putting grounding, more practice swings, and more glances than the novice group (Boutcher & Zinsser, 1990). These behavioral observations may lend evidence for the effects of pre-performance routines on physiological reactance, although this was not the aim of that particular study. They also found that elite golfers used less analytical thinking when performing a shot than novice players, relying more on their repetitive pre-shot routines.

The aim of the current research is to examine effects of pre-performance routines on a self-paced task in basketball: the free throw. The free throw is a self-paced task in basketball with minimal interference, much like that of putting in golf, service in volleyball, or shooting in archery. It is hypothesized that players assigned to the experimental group will experience less physiological reactance, as measured by heart rate, than those assigned to the control group.

Method

Participants

Participants were solicited from two, week-long intersession classes held between the 2012 spring and summer semesters at the University of Central Oklahoma. Participants volunteered during their respective meeting times and each class was randomly assigned to either control or experimental groups via coin toss. There were no exclusion criteria and those that volunteered were given extra credit points toward their

class grades.

Participants ranged from 20 to 33 years of age (M = 24.25 years) and were mostly female (female = 10; male = 3). Of the 13 total participants from the two classes, data was collected on 12 (control = 5; experimental = 7). One participant's data was unusable because of failure to complete testing on the third day.

Measures and Apparatus

Participants were asked to complete demographic questions (*Appendix A*) and two other measures via Survey Share (*Appendix B; Appendix C*). Survey Share is an online survey sharing website where participants complete the materials electronically. Survey Share was used due to its convenience and additional features such as exporting data to Microsoft Excel.

Sports Competition Anxiety Test (SCAT). The Sport Competition Anxiety Test (SCAT; Martens, Vealey, & Burton, 1990) is a 15-item self-report questionnaire that measures the tendency of players to perceive competitive situations as threatening. The instrument utilizes a 3-point Likert type scale with the measurements between *hardly ever, sometimes,* and *often*. "Before I compete – I feel uneasy," "I get nervous wanting to start a game," and "Just before competing, I notice my heart beats faster than usual," are some examples of questions measuring trait anxiety on the SCAT.

Personal Development Competitive Attitude Scale (PDCAS). The Personal Development Competitive Attitude Scale (PDCAS; Ryckman, Hammer, Kaczor, & Gold, 1996) is a 15-item measure designed to assess competitive attitude based on personal goals. Participants respond along a 5-point Likert continuum ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The PDCAS has high test-retest validity (r = .70) and

was high construct validity with similar measurements (r = .54 - .93) (Ryckman, et. al., 1996).

Physiological Measures. Heart rate was measured using the Suunto T6D Professional Wristop Training Computer- Black Fusion (Ref SS015843000) and Suunto Dual Comfort Belt (Ref SS014543000). The Suunto sport watch works with the Suunto Dual Comfort Belt to read and display the participant's heart rate (HR) in real time while the belt is being worn around the circumference of a person's chest below the pectoral muscles and above the abdomen. This allows the experimenters to see the participant's heart rate before and after experimentation.

Procedure

The researcher visited both classes at the beginning of the intersession class. The intersession class was recruited using a script (*Appendix D*). All participants were asked to meet at the University of Central Oklahoma's Wellness Center during their break from class. The Wellness Center houses two-basketball courts separated by a wall that descends from the ceiling. The participants shot on the same goal each of the three days while wearing the Suunto Dual Comfort Belt. The experimenter, to properly log data collected from each participant during the course of the experiment, wore the watch. A research assistant stood behind each participant and logged the number of shots made each day by each participant and well as pre and post heart rates. The researcher rebounded each shot to control for fluctuations in the participant's heart rate.

During the first day, all participants were asked to attempt 10 free throws with only the experimenter and the assistant watching; all other participants stood behind the divider on the other court. This was done to minimize the amount of monitoring pressure

experienced by each participant and serve as an initial baseline. All participants were shown how to properly wear the Suunto Dual Comfort Belt prior to participation. A 10 second baseline was introduced to ensure that the chest belt was reading properly. After completing the 10 attempts, the participants were asked to remove the Suunto Dual Comfort Belt. The belt was then cleaned with disinfecting wipes and dried with a terry cloth towel. This procedure was repeated for all participants. All of those who volunteered followed this procedure for each of the three days; however, those in the experimental condition were given extra instructions concerning a pre-performance routine. They were shown a simple routine that consisted of two dribbles and a deep breath before their attempts. Each day they were reminded of this routine prior to their attempts.

Days two and three followed the same procedure as the first. However, during day two and three, the participants were exposed to anxiety provoking situations. On day two, all participants were viewed by each other. This was done to add *monitoring pressure* to each of the participants. Viewing participants were seated on benches to the right of the basketball goal, whereas on the first day they were out of sight. The third day's procedure was identical to the first two, with the addition of *outcome pressure*. On this day, the participants were viewed by the other volunteers and were told they could earn additional credit if they performed well. They were told that every two (2) successful free throw attempts they would receive one (1) extra credit point up to 5-points. After all participants competed the third day of experimentation, they were debriefed and awarded extra credit regardless of their outcome. They were informed why this deceit was made and asked if they had any questions or concerns.

Results

Means and standard deviations for both groups are reported below in Table 1.

Table 1

Mean and Standard Deviation of Heart Rates for Each Group

	Control		Experimental	
	n	M(*SD*)	*n*	M(*SD*)
Day 1	1152	12.52(19.488)	1154	4.18(17.286)
Day 2	1152	14.01(20.1)	1154	13.76(19.428)
Day 3	1152	21.89(14.576)	1154	8.12(13.734)

Data was analyzed using PASW Statistics 18. A 3W x 2B ANOVA was used to analyze the initial data set. Analysis yielded non-significant results for reduction of heart rate, $F(2,6) = 1.311$, $p = .301$, however a large effect size was observed, partial $\eta^2 = .158$. To increase power, a Monte Carlo Simulation was conducted to increase sample size. A one-way multivariate analysis of covariance (MANCOVA) was conducted to determine if a pre-performance routine had any significant effect on heart rate between the two conditions on three days of experimentation (i.e. initial, moderate pressure, and high pressure). Upon initial examination of the data, it was found that Box's Test of Equality was severely violated, $p < .000$, so a nonparametric statistical process was implemented; specifically percentage ranks. The multivariate tests indicate significant differences observed among the different groups, Wilk's $\Lambda = .772$, $F(3, 2298) = 225.74$, $p = .000$. The multivariate measure of effect size, partial η^2, was strong, .228. Two interaction effects were also observed. There was a condition x day interaction for Day 1, $F(1,$

2302) = 95.386, p = .000, partial η^2 = .040, and also for Day 3, $F(1, 2302) = 505.082$, p = .000, partial η^2 = .203.

Pairwise comparisons were conducted post hoc to determine the differences in groups during days of interaction. Day 1's observed differences between groups was significant, $F(1,2300) = 95.386$, p = .000, and indicate that the experimental group experienced less increase in heart rate than those in the control condition. On Day 3, the same observation was made in that the groups were significantly different, $F(1,2300)$ = 95.386, p = .000. Again, the experimental group experienced less increase in heart rate than those in the control condition.

Possible covariates were also considered in determining difference of response to anxiety between the two conditions. The Personal Development Competitive Attitude Scale (PDCAS) was non-significant in influencing a personal increase/decrease in heart rate to each day of experimentation, Wilk's $\Lambda = 1.000$, $F(3, 2298) = .162$, $p = .922$. The Sport's Competition Anxiety Test (SCAT) was also not significant in influencing reactance over the three days of experimentation, Wilk's $\Lambda = .999$, $F(3, 2298) = .463$, p = .708.

Discussion

Many times in sports, it is important for the athlete to be able to perform under pressure. These pressure type situations occur in every sport, and the importance of performance is heightened to a state where decrements of performance may occur. This phenomenon was first identified as *"choking under pressure"* (Baumeister, 1984). Much work in sports psychology suggests that it is imperative for athletes to monitor and alleviate this pressure so that it optimizes performance, conversely minimizing failures.

Other theories have been proposed on the optimal zone of performance for athletes (Hanin, 1990; Hardy & Parfitt, 1991), but all show that there is a level of anxiety that can optimize performance and a level that can be detrimental to it.

The current research project aimed to identify whether pre-performance routines in basketball, mainly those for free throw attempts, would facilitate physiological reactance to anxiety provoking situations. The results of this study indicate that pre-performance routines may be a point of intervention for the regulation of physiological arousal. An important note to mention is that this routine was very simple and easily implemented. However, it must be noted that improvement in performance was not found; therefore, these findings cannot corroborate previous literature stating that pre-performance routines can facilitate free throw performance.

The possible covariates considered in this study are also worth some discussion. Neither competitiveness nor trait anxiety were of much consequence to the participants in either condition during any of the days of experimentation. A couple of plausible explanations exist for these findings. First, both experimental and control conditions were pooled from summer intersession classes. These classes, many times, consist of a wide range of students who are in these classes for many reasons. One such reason is to complete enough hours to remain a full time student. For instance, a student that dropped a class due to poor grades may take an intersession class to accrue credit for student loans or scholarships; conversely, some may take this class to complete credit hours sooner, thus graduating early. There may be some common factors among these groups that allowed for them to enroll in intersession classes that influenced their performance. Second, those participants in the study had played sports before; however, only two

participants played basketball previously. If a player understands he/she should not perform well due to lack of experience, reactance to anxiety provoking situations may be less exaggerated.

Another interesting conclusion of this experiment was the differences in reactance throughout the experiment. As indicated by the results of the control condition, it appears that the anxiety inducing situations elevated heart rate each day. However, when analyzing the results of the experimental condition, it appears the pre-performance routine was less effective during the *monitoring pressure* day than the *outcome pressure* day. It was observed that the routine did little to alleviate physiological reactance during day 2 of experimentation. It could be argued that alleviating outcome pressure may be the most beneficial during situations where importance of outcome is elevated.

Also worth mention are some methodological challenges. Most important of these is the lack of a true baseline. The pre-performance routine was implemented on the first day of experimentation. This does not allow us to see if there was a main difference in the groups prior to the implementation of the pre-performance routine. Ideally, multiple baselines would have been observed to determine the equality of the groups.

Second, participant assignment to groups was not ideal. The participant's assignment, although randomly assigned via coin flip, could have been better. The groups were treated this way due to their class meeting times, and breaks that were built in for the purpose of study participation. This design was similar to a quasi-experimental design in the facet that groups were assigned to conditions instead of assigning individuals. This was not done due to lack of thought or consideration on the experimenter. This methodology was chosen to collect data on these classes. Due to

class time restraints, breaks were built in to each class so participants could attend all together instead of interrupting class multiple times. For this reason, classes were assigned to each condition rather than each individual participant.

This research adds to the already abundant literature concerning pre-performance routines and performance. More research is still needed to examine all aspects of this phenomenon. For instance, future research should continue to build upon physiological reactance to anxiety, but also continue to examine cognitive aspects, such as focus and attention. Research in focus may add to this literature by examining focus or adding instructions for focus during pre-performance routines. Another addition to the current research is to see if complexity of routine has any additional affects to the decrease in heart rate. Such research could examine at what point a routing becomes unhelpful to alleviate physiological reactance, and if the routine length varies from athlete to athlete.

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Appendix A

Demographics Questionnaire

1. Age:_____
2. Gender (*please circle one*): Male or Female
3. Have you ever played any sports before? (For example: High school sports, city leagues, church leagues, or any other recreational leagues.)

   (*please circle one*): Yes or No
4. If yes to #3; what types of sports have you played competitively, or in a league and for how long? If no, please return to the researcher.

   Please indicate below how many seasons and how long, in months, each season was.

   (*Please list in order of most played. Also, indicate the total number of months played. 1 year = 12 months.*)

_____ How many seasons? _____

How long was each season? _____

_____ How many seasons? _____

How long was each season? _____

_____ How many seasons? _____

How long was each season? _____

_____ How many seasons? _____

How long was each season? _____

5. What was the highest level of competition that you reached?

   (*please circle one*)

   Grade School
   Junior High School
   High School
   2-Year College
   4-year University
   Semi-Professional

Appendix B

Sports Competition Anxiety Test (SCAT)

Read each statement below, decide if you "Rarely", "Sometimes" or "Often" feel this way when competing in your sport, tick the appropriate box to indicate your response.

	Rarely	**Sometimes**	**Often**
1. Competing against other People/Teams is socially enjoyable			
2. Before I compete - I feel uneasy			
3. Before I compete - I worry about not performing well			
4. I am a good sportsman when I compete			
5. When I compete – I worry about making mistakes			
6. Before I compete – I am calm			
7. Setting a goal is important when competing			
8. Before I compete – I get a queasy feeling in my stomach			
9. Just before competing – I notice my heart beats faster than usual			
10. I like to compete in games that demands a lot of physical energy			
11. Before I compete – I feel relaxed			
12. Before I compete – I am nervous			
13. Team sports are more exciting than individual sports			
14. I get nervous wanting to start the game			
15. Before I compete – I usually get uptight			

The score for the response to each question is detailed below. Enter the score for each question in the "Athlete's Score" column and then total the column up to provide a SCAT score.

Question No	Rarely	Sometimes	Often	Athlete's Score
1	0	0	0	0
2	1	2	3	
3	1	2	3	
4	0	0	0	0
5	1	2	3	
6	3	2	1	
7	0	0	0	0
8	1	2	3	
9	1	2	3	
10	0	0	0	0
11	3	2	1	
12	1	2	3	
13	0	0	0	0
14	1	2	3	
15	1	2	3	

Note questions 1, 4, 7, 10 and 13 score zero regardless of the response. SCAT Score Analysis: Less than 17 you have a low level of anxiety; 17 to 24 You have an average level of anxiety; More than 24 You have a high level of anxiety.

Appendix C

Personal Development Competitive Attitude Scale (PDCAS)

Instructions:

Please rate all 15 questions on a scale of 1 (*strongly disagree*), 2 (*slightly disagree*), 3 (*neither disagree or agree*), 4 (*slightly agree*), or 5 (*strongly agree*). Circle the number that identifies you most.

1. I enjoy competition because it gives me a chance to discover my abilities.

   1----------2----------3----------4----------5

2. Competition does not increase my awareness and understanding of myself and others.

   1----------2----------3----------4----------5

3. Competition can lead to the formation of friendship with others.

   1----------2----------3----------4----------5

4. Competition is not a means of motivating me to bring out the best in myself

   1----------2----------3----------4----------5

5. I enjoy competition because it tends to bring out the best in me rather than as a means of feeling better than others.

   1----------2----------3----------4----------5

6. I do not find competition to be a very valuable means of learning about myself and others.

   1----------2----------3----------4----------5

7. I like competition because it teaches me a lot about myself.

   1----------2----------3----------4----------5

8. I value competition because it helps me to be the best that I can be.

   1----------2----------3----------4----------5

9. I find competition enjoyable because it lets me express my own potentials and abilities during competition.

1----------2----------3----------4----------5

10. Competition does not help me develop my abilities more.

1----------2----------3----------4----------5

11. Without the challenge of competition I might never discover that I had certain potentials or abilities.

1----------2----------3----------4----------5

12. I enjoy competition because it brings me and my competitors closer together as human beings

1----------2----------3----------4----------5

13. I enjoy competition because it helps me to develop my own potentials more fully than if I engage in activities alone.

1----------2----------3----------4----------5

14. I enjoy competition because it brings me to a higher level of motivation to bring the best out of myself rather than as a means of doing better than others.

1----------2----------3----------4----------5

15. Through competition I fell that I am contributing to the well-being of others.

1----------2----------3----------4----------5

Appendix D

Recruitment Script

My name is Chad McCoy, a graduate student in the Department of Psychology at the University of Central Oklahoma. I would like for you to participate in my research study to examine the effects of routine in sports. Any one in this class is available to participate in this study, as there are no exclusion criteria.

As a participant in this study, you will be asked to complete an online questionnaire once and also sport's related activities across multiple days. You should expect to spend approximately a total of two hours total participation time when volunteering for this study. You will be compensated for your time in the form of extra credit points for this class. Those that do not wish to participate will have other opportunities to gain the exact amount of extra credit as those who volunteer. There are no costs to you to participate other than your time, or if you have to travel to the UCO Campus.

If you would like to participate in this research study, please contact me after class.

Do you have any questions now?

If you have questions later, please contact me at cmccoy10@uco.edu

Thank you for your time!

Appendix E

Debriefing Script

Thank you for participating in our research! During the process of measurement, we were unable to tell you the true nature of our study so we would like to do so now. The current research investigated whether or not physiological stress and anxiety during sports related tasks could be decreased through the implementation of a pre-performance routine. Although you were told that performance on the last task would determine additional extra credit points, all that participated received all 5 extra credit points. This deception was necessary for the purpose of our study to increase pressure.

If you are experiencing any negative consequences as a result of this study, please inform us and contact the UCO Student Counseling Center at 405.974.2215 or stop by their office at NUC Suite 402.

If you have any further questions pertaining to this study, please contact us via email at: cmccoy10@uco.edu.

Does anyone have any further questions or concerns we can address at this time?

Appendix F

Record Sheet

eMail Address:_____ Condition:_____

Day 1

Pre-performance:_____

1 2 3 4 5 6 7 8 9 10

Post-Performance:_____ EPOC:_____

Day 2

Pre-performance:_____

1 2 3 4 5 6 7 8 9 10

Post-Performance:_____ EPOC:_____

Day 3

Pre-performance:_____

1 2 3 4 5 6 7 8 9 10

Post-Performance:_____ EPOC:_____