

Spring 2006

## Predicting Starting Status: Factors Contributing to the Success of Collegiate Football Players

Martin John Spieler

Follow this and additional works at: <https://digitalcommons.georgiasouthern.edu/etd>

---

### **Recommended Citation**

Spieler, Martin John, "Predicting Starting Status: Factors Contributing to the Success of Collegiate Football Players" (2006). *Electronic Theses and Dissertations*. 85.  
<https://digitalcommons.georgiasouthern.edu/etd/85>

This thesis (open access) is brought to you for free and open access by the Graduate Studies, Jack N. Averitt College of at Digital Commons@Georgia Southern. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of Digital Commons@Georgia Southern. For more information, please contact [digitalcommons@georgiasouthern.edu](mailto:digitalcommons@georgiasouthern.edu).

PREDICTING STARTING STATUS: FACTORS CONTRIBUTING TO THE  
SUCCESS OF COLLEGIATE FOOTBALL PLAYERS

by

MARTIN J. SPIELER

(Under the direction of Daniel R. Czech)

ABSTRACT

The recruiting process in collegiate football calls for coaches to identify prospective student-athletes who would be most successful at their institution. Humara (2005) argues that while coaches are experts in the identification of physical attributes needed for success, they may lack the ability to identify psychological skills. Niednagel (2004) would contend that in addition to psychological and physical factors, environmental factors also contribute to the ability to succeed. Participants were 108 male football players (35 linemen, 47 tight ends/linebackers, 18 skilled players, 8 special teams) from 6 teams in a NCAA Division I Southeastern conference. Using multivariate analysis of variance and discriminant analysis, the current research attempted to determine factors from demographic information, the Ten-Item Personality Inventory, and the Athletic Coping Skills Inventory-28, that most accurately predicts starting status in collegiate football players. Results showed that there was a significant difference between starters and non-starters for age, high school size, and coping with adversity, predicting starting status 79.6% of the time.

INDEX WORDS: Sport Psychology, Collegiate Football, Prediction, Psychological, Physical, Environmental, Brain Typing, Success, Recruiting, Discriminant Analysis.

PREDICTING STARTING STATUS: FACTORS CONTRIBUTING TO THE  
SUCCESS OF COLLEGIATE FOOTBALL PLAYERS

by

MARTIN J. SPIELER

B.S., Allegheny College, 2004

A Thesis presented to the Graduate Faculty of Georgia Southern University in Partial  
Fulfillment of the Requirements for the Degree

MASTER OF SCIENCE

STATESBORO, GEORGIA

2006

© 2006

Martin J. Spieler

All Rights Reserved

PREDICTING STARTING STATUS: FACTORS CONTRIBUTING TO SUCCESS OF  
COLLEGIATE FOOTBALL PLAYERS

by

MARTIN J. SPIELER

Major Professor: Daniel R. Czech

Committee: A. Barry Joyner  
Barry Munkasy

Electronic Version Approved:  
May 2006

## DEDICATION

The following thesis is dedicated to those who kept me sane and dedicated throughout the production of this work. This is dedicated first to Angela, my support, and second to my family, my encouragement

## ACKNOWLEDGEMENTS

A master can tell you what he expects of you. A teacher, though, awakens your own expectations. I would like to acknowledge all of the professors and administrators who have awakened my own expectations in my professional development at Georgia Southern University. Most importantly, I would like to acknowledge my committee, Dr. Daniel Czech, Dr. Barry Joyner, and Dr. Barry Munkasy whose critical eye and creative ideas strengthened the quality of this work. Also, I would like to acknowledge Dr. Charles Hardy and Dr. Virginia Richards who promoted my abilities as a leader in Graduate Studies and Georgia Southern University.

Educational success, just like athletic success, is also contingent on experience; how an individual was raised and their environment. Along with my family and my best friends, Angela, Lucas, and Sharon, there were many individuals who helped me adjust to Southern Living in Statesboro. These individuals included Michael Shivetts, and Nick and Marcie Cochran. Most importantly, I would like to acknowledge Joe, Patty, and Patrick Tresey for being my surrogate family and great friends who made the transition to Georgia a much easier one.

## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	6
LIST OF TABLES.....	8
INTRODUCTION.....	9
METHOD .....	13
Participants.....	13
Instrumentation.....	13
Procedures .....	14
Data Analysis.....	15
RESULTS .....	16
DISCUSSION.....	18
REFERENCES.....	27
APPENDICES .....	30
A    RESEARCH QUESTIONS, HYPOTHESIS, LIMITATIONS, DELIMITATIONS, ASSUMPTIONS, AND DEFINITIONS.....	30
B    REVIEW OF LITERATURE.....	34
C    DEMOGRAPHICS QUESTIONNAIRE.....	53
D    ATHLETIC COPING SKILLS INVENTORY-28.....	56
E    INFORMED CONSENT.....	59
F    PARTICIPATION E-MAIL .....	61
G    DEPARTMENTAL IRB FORMS.....	63



## LIST OF TABLES

	Page
Table 1: Means of predicting factors of starting status.....	24
Table 2: Structure Matrix that Predicts Starting Status in Collegiate Football.....	25
Table 3: Number of Athletes from Participating Schools .....	26

## INTRODUCTION

Every year, college football coaches embark on a monumental task of trying to select athletes that will be successful at the Division I level. Coaches may examine an athlete from many perspectives in order to determine if they will be successful in their program. A coach's initial priority may be an athlete's physical attributes, as that is what allows them to compete at the collegiate level. The field of sports psychology is based on the idea that psychological attributes and mental skills also contribute to the development of athlete success (Laguna & Ravizza, 2003; Smith, Smoll, Schultz, & Ptacek, 1995). How much of an athlete's success stems from physical attributes, and how much stems from psychological attributes? Coaches have often relied on informal judgments of psychological factors to determine potential to succeed (Humara, 2005). Can athletic success at the collegiate level be predicted using psychological traits in conjunction with their physical abilities?

During the recruiting process, contact between a college football coach and a prospective student-athlete is limited. National Collegiate Athletic Association (NCAA) regulations call for specific periods in which coaches can evaluate or make contact with an athlete or their family (NCAA, 2004). Due to the limited contact, coaches may rely on demographic questionnaires that highlights an athlete's physical attributes (height, weight), academic qualifications (QPA and SAT or ACT results) and physical ability (40 yard dash, bench press maximum, squat maximum) to develop an initial contact list (NCAA, 2004). School visits, along with game attendance, allow coaches to evaluate athletic play and speculate on an athlete's psychological characteristics of an athlete. During an evaluation period, off-campus contact is not permitted with the athlete or their

families. Therefore, coaches may rely on high school coaches, guidance counselors, and/or teachers to gain further perspective on the athlete's personality. While coaches are skilled in identifying the physical characteristics needed to succeed athletically, they may lack the skills to make a psychological assessment (Humara, 2005).

The lack of psychological assessment may result in two types of recruiting errors in collegiate football (similar to those made in statistical analysis). The first error may occur when a coach accepts an athlete into their program that does not have the ability to contribute at the Division I level. This error could result in a monetary loss for athlete support, expenditure of a scholarship spot, and exclusion of another prospective athlete. The second error may occur when an athlete is rejected because the recruiter does not think they have the ability, but in actuality does have the ability to play. To compound the result of this error, the athlete may play for another team, possibly a rival or conference competitor. Psychological skills assessment in conjunction with physical skills may have a significant impact on the identification of those athletes that may have future athletic success (Humara, 2005).

The earliest connection found between sport and psychology was made by Griffith (1928). He stated that athletes and coaches cited mental alertness, headiness, psychological moment, jinx, break in the game, and overconfidence as factors contributing to athletic proficiency. Humara (2005) defines vigor, aggression, leadership, ability to cope with stress, coachability, confidence, social support, and positive self-concept as the constructs most likely to affect the performance of all collegiate athletes. More specifically, Griffith used the terms 'fight,' 'super-human effort,' and 'mental resolve' as key qualities of successful football players.

Research on the effect of psychology on athletic success in sport has been consistent throughout the 20<sup>th</sup> century, specifically in the field of personality. Differences between athletes and non-athletes on various psychological skills have been shown using a variety of personality models and scales (Werner, 1960; Slusher, 1964; Schendel, 1970). Furthermore, research has been presented that shows significant differences between elite and less-successful athletes, as defined by success at National Championship competitions, and results of the Edwards Personal Preference Schedule (EPPS; Williams, Hoepner, Moody & Ogilvie, 1970) and the Eysenck Personality Inventory (EPI; Morgan, 1968). These studies provide justification for further research that examines the differences between successful and less-successful athletes at the collegiate level.

Niednagel (1992) developed “brain typing” as a tool for identifying which athletes are most likely to be elite. A measure of personality factors similar to Catell’s (1949) 16 PF, Niednagel utilized Meyers-Briggs 16 distinct brain types with each type predicting success with one sport more than others. Correlation between brain type and success, according to Niednagel, is due to inborn mental, physical, and spatial characteristics of each brain type. For example, the ESTP (Extraverted, Sensing, Thinking, Perceiving) brain types are historically the NFL’s best quarterback prospects, including Johnny Unitas, Dan Marino, Terry Bradshaw, and Peyton Manning. Niednagel also prescribes ideal brain types positionally including running back (ISFP; Introverted, Sensing, Feeling, Perceiving), offensive lineman (ISFP; Introverted, Sensing, Feeling, Perceiving), and those who are successful on defensive (ESTP; Extraverted, Sensing, Thinking, Perceiving).

Niednagel's most publicized brain typing successes were the assessment of Indianapolis Colt, Peyton Manning, and former San Diego Charger Ryan Leaf.

Niednagel consulted with the Indianapolis Colts, who consequently decided to pick Manning over Leaf as the first round draft pick. Manning has gone on to produce some of the top quarterback statistics in the NFL while Leaf retired after a brief career.

Griffith (1928) cautions that psychological factors alone cannot make an athlete great, but rather the combination of physical attributes, psychological factors, and environment lead to an athlete meeting their full athletic potential. While there is anecdotal evidence of brain typing, Manning's environmental may have played a significant role in his development. Niednagel acknowledges that while 60% of athletic ability stems from brain typing, 40% results from environmental factors including how they are reared and coached (Niednagel, 2004). In other words, Manning may have reached his full potential and his successful personality through the modeling he had as father in NFL Quarterback, Archie Manning. Therefore, the past, the person, or situation alone cannot predict the behavior of a person, all facets need to be considered.

Although research has suggested that psychological factors may play an important role in athletic development (Morgan, 1980; Werner, 1960 & 1966; Slusher, 1964; Schendel, 1970), psychology alone does not determine the collegiate success of a football player (Humara, 2005; Niednagel, 2004). Therefore, the purpose of this study was to determine what factors predict starting status of a collegiate football player. Through predictive discriminant analysis, the purpose of the research was to provide a physical, psychological, and environmental framework that is effective in predicting the starting status of a collegiate football player.

## METHOD

### *Participants*

Participants consisted of 108 collegiate varsity football players from five teams in a NCAA Division I-AA conference in the Southeastern United States. All athletes had participated in intercollegiate football during the prior football season. Contact was made with each institution and they were informed of the purpose and procedures of the current study. Each athlete was informed that their participation was completely voluntary and completed an informed consent form prior to participation.

### *Instrumentation*

The first portion of the questionnaire consisted of several demographic questions including age, athletic class, position, height, weight, athletic test results (i.e. bench press maximum, back squat maximum, 40 yard dash), high school academic information (i.e. QPA, standardized test results, high school size - large high school participation was represented by a one, and small high school participation was represented by a zero, state of competition), and parental information (i.e. parental education level, with whom the participant resided), and personal athletic accomplishments of the previous season (e.g. starting status and post-season accolades).

Athletic Coping Skills Inventory-28 - The ACSI-28 is a sport-specific scale consisting of 28 items. It measures the psychological processes of athletes on seven subscales; coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, confidence and achievement motivation, and coachability. The internal consistency for the total ACSI-28 score was high for both males (.84) and females (.88) (Smith et. al, 1995). Test-retest reliability coefficients were

high for the total score and all of the subscales (.55-.77). Interscale scale correlations and correlations with other scales exhibited acceptable validity for each subscale, although they may be sport specific.

Ten-Item Personality Inventory (TIPI). The TIPI is a 10-item brief scale consisting of two descriptors designed to measure each pole of the Big Five Personality model; neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Gosling, Rentfrow, & Swann, 2003). Each item is preceded by the statement, "I see myself as..." Statements are scored on a 7-point Likert Scale ranging from "Strongly disagree" to "Strongly Agree." Scores of opposite poles (e.g. extroversion and reverse scored introversion) were combined to represent a cumulative score for each component of the Big Five Model. Test-retest reliability ( $r = .72$ ) and external correlations ( $r > .90$ ) have been established (Gosling et al., 2003). The TIPI exhibited identical convergent and discriminant validity as the full Big Five Inventory ( $r = .77$ ).

### *Procedures*

All eight collegiate football teams in the conference were contacted by telephone. At that time, the purpose of the study and the extent of the athlete's participation were explained. Of the contacted teams, five agreed to participation in the study.

The surveys were administered through an online site. An E-mail was sent to a contact at the participating school in which the purpose of the study was explained along with the extent of participation. In the E-mail, each participant was informed that their participation was completely voluntary and that participation in the study could be discontinued at any time without penalty. Participants were given the primary investigator's e-mail address and the opportunity to ask any questions and then read and

electronically accepted the terms of the informed consent form. The participants were told that the total administration of the surveys would take approximately 10 - 15 minutes. Responses were submitted online and compiled in a Microsoft Excel document. All data was saved to a disk that was placed in a secured area. E-mail participation reminders were sent out the following two weeks, for a total of three E-mails.

### *Data Analysis*

Factors from the demographic questionnaire, and subscales from the ACSI-28 were compiled for each athlete utilizing SPSS. Each analysis series was completed on linemen, linebackers/tight ends and backs and receivers for each of the independent variable of success, measured by starting and All-Conference status. A multivariate analysis of variance (MANOVA) was utilized to determine if success groups (non-starters, starters, or All-Conference) differed on the provided dependent variables. Following a significant difference between groups, predictive discriminate analysis was used to determine the predictability of success. A leave-one out classification was utilized to determine the most important variable to the analysis model. The structure matrix was also used to describe the underlying structure differentiating the groups. The linear discriminant function showed the combination of variables that were most predictive in determining the success group of an athlete. Additionally, descriptive discriminant analysis illustrated which variables were most important in determining group separation.



## RESULTS

The sample included 44 freshman, 26 sophomores, 19 juniors, and 19 seniors with a mean age of 20.13 years. There were 23 starters and 11 who reported earning All-Conference honors the previous season. There were 35 linemen, 47 backs and receivers, 18 tight ends and linebackers, and 8 special teams. Due to the limited number of participants, several factors were not included in the analysis including, All-Conference status and TIPI scores. Additionally, the small number of participants did not allow for an analysis to be performed for each position group. A One-way MANOVA was conducted on the physical, environmental, and psychological responses. The results of the MANOVA showed significant main effect for Starting Status,  $F(1,103) = 2.177, p = .008$ .

These significant results were followed by a discriminant analysis utilizing a stepwise method, with an alpha level set at .05. An overall discriminant analysis for starting status revealed that starters differed from non-starters on a number of variables. The variable most important to the description of starters, as determined by their  $F$  to Remove value, was age,  $F(1, 101) = 10.524, p = .002$ . Starters ( $M = 21.00, SD = .816$ ) were significantly older than non-starters ( $M = 19.93, SD = 1.490$ ). Age was followed by high school size,  $F(1,101) = 8.500, p = .004$ , then coping with adversity,  $F(1, 101) = 6.690, p = .011$ , as the most important descriptors of starting status. Table 1 shows the mean differences between starters and non-starters on the significant variables. Starters played in larger high schools ( $M = .86, SD = .351$ ) than non-starters ( $M = .53, SD = .502$ ). Starters also had higher coping with adversity scores ( $M = 8.64, SD = 1.620$ ) than non-starters ( $M = 7.40, SD = 2.084$ ). The underlying structure of age, high school size,

and coping with adversity, as shown by Table 2, is significant,  $F(3, 99) = 9.808$ ,  $p < .001$ . It was able to predict starting status based on these variables 79.6% of the time, a very strong predictive ability.

## DISCUSSION

How much of an athlete's success is contingent on physical, psychological, and environmental factors? The results supported the hypothesis that psychological and environmental factors contribute to the starting status of collegiate football players. While physical factors are able to discriminate between position groups, an underlying structure characterized by age, high school size, and coping with adversity is able to determine starting status. The emergence of age and high school level of competition as predictors of starting status in Division I collegiate football may be explained by the concept of experience.

Researchers have contended that the level of mastery of an athletic movement is directly related to the number of practice hours (Baker, Cote, & Abernathy, 2003; Helsen et. al, 2000). On average, athletes do not reach full mastery until they have logged 10,000 hours of practice (Erikson, A. Helsen et. al, 2000). Simon and Chase (2003) use the "10-year rule" as the minimum amount of practice time associated with expertise in team sports. While Pop Warner football is offered beginning at age six, optimal motor performance of boys is related to skeletal and cognitive maturity, which occurs between the ages of 10 - 12 (Clarke, 1971). Consequently, boys may be most likely to reach task mastery in a team sport between the ages of 20 - 22.

Simon and Chase (2003) also state that the "10-year rule" is in effect when only learning one skill. This is pertinent when considering the implementation of high school size in recruiting. High school size was considered large if they participated in a classification of 4A or above where high classification indicated a large male student body. Small schools were classifications below 3A. While smaller schools are playing

both sides of the ball, or “Ironman Football,” larger school athletes may be able to hone their abilities at one position. Furthermore, large high school programs may have the advantage of implementing a more collegiate style of football with a more elaborate playbook due to the number of players on their roster.

Budgetary restrictions at small schools may not allow for the number of qualified coaches than a larger school staff. As a result, a large school athlete may learn a more in-depth football philosophy as well as more position specific techniques. This concept may decrease the number of years needed to obtain skill mastery as it increases the number of practice hours an individual obtains in a given season. This is consistent with Niednagel’s analysis of the 40% contribution of coaching and parenting styles to his assessment in determining athletic success.

Coping with adversity as a predictor of success in elite athletes is also a substrate of experience and is consistent with previous research (Humara, 2005; Griffith 1928). Coping with adversity is the ability to remain emotionally stable and positive during competition no matter the situation (Weinberg & Gould, 2003). An athlete who has experienced adversity in previous endeavors may be more likely to be able to adequately cope with the adversity associated with being a collegiate student-athlete. While Humara explicitly states that ability to cope with stress contributes to performance, Griffith uses the terms ‘fight’ and ‘mental resolve’ as physical and psychological constructs of coping with adversity.

Mahoney, Gabriel, & Perkins (1987), in their development of the Psychological Skills Inventory Survey (PSIS R-5), argue that athletic coping is the overarching concept that includes other psychological skills that are contained in the ACSI-28 utilized in the

current research. Consequently, the ability to cope with adversity allows for athletes to continue the utilization of other psychological skills. Researchers have stated that athletes utilize a wide array of coping strategies including mental imagery, task focus, thought control, and positive focus and orientation (Hardy, Jones, & Gould, 1996; Dale, 2000; Gould, Eklund & Jackson, 1992). These coping strategies correlate with the ACSI-28 subscales of goal setting/mental preparation, concentration, freedom from worry, and confidence and achievement motivation. Consequently, although coping with adversity may be the overarching concept that predicts starting status in collegiate football players, it may be masking the other psychological skills implemented in coping.

The implications of these findings for coaches, recruiters, and sport psychologists are positive. Unlike Niednagel who contends that a majority of an athlete's ability is contingent on predetermined factors, this research shows that success is determinant on adaptable factors. However, a recruiter, faced with a decision of choosing two similar athletes, may want to consider the athlete's level of competition as the determining factor as this experience is constant. Conversely, a coach or sport psychologist can teach an athlete how to effectively cope with adversity. Weinberg & Gould (2003) state that implementing pressure situations in a practice context as a coping strategy is often utilized by elite athletes. They state that as you become more acclimated to deal with the adversity in practice, you may be less likely to be affected by it in performance situations. This strategy is most effective when the practice situation accurately resembles the performance stressors. However, athletes who have actually experienced these situations may be best prepared to cope with the adversity.

The use of pressure situations in practice can be supplemented by the teaching of other coping strategies in sport psychology consulting sessions. Some strategies that have been shown to be effective are negative thought stopping and implementation of positive focus and positive orientation, concentration exercises, mentally imagery of an athlete performing well in adverse situations, and task focus (Hardy, Jones, & Gould, 1996; Dale, 2000; Gould, Eklund & Jackson, 1992). Consequently their ability to concentrate and maintain positive self-efficacy allows for them to perform in adverse game situations.

The analysis, however, did not indicate that physical factors contributed to starting status, due to the inclusion of all position groups in the analysis. There is a large amount of variance of physical factors by physical factors. For example, a non-starter that is a back or receiver may have the same 40-yard dash time as a starter at linebacker or tight end, and faster than a starting lineman. Therefore, the analysis was not able to distinguish what physical factors were needed to start in collegiate football. Future research that includes a larger population and individual analysis on position groups may reveal more physical factors that contribute to starting status.

Additionally, the participant pool limits that generalization of this research. The majority of the participants (81%) were members of one institution, as shown by Table 3. The coaching and playing style of this team may bias the results of the current research. Further research needs to be conducted in which a more varied participant pool allows for application across Division I football.

In addition to population needs for future research, the results lend itself to a variety of directions for future investigation on success in collegiate football. Lazarus and Folkman (1984) defined coping as a process of constantly changing cognitive and

behavioral efforts to manage internal or external demands that are considering as exceeding one's own abilities. Modifications in coping strategies may be susceptible during the early collegiate career. Therefore, further research on the construct of coping with adversity may include investigations of changes in coping strategies over time, specifically as a collegiate athlete progresses from their freshman to sophomore year. Furthermore, a longitudinal study that examines changes in psychological skills from high school through their college career and how they correlate with starting status and success may allow for a more thorough understanding of the phenomena.

Athletic coping strategies can be developed through adverse athletic situations or adverse life situations. A qualitative analysis of the implications of adverse situations on an athlete's ability to cope with adversity could help describe the phenomenon more fully. Furthering this research, there is a need for an examination of the types of coping strategies, task-focused versus emotion-focused, that correlate most with success. Lazarus and Folkman (1984) suggest that problem-focused coping is more effective in situations that are susceptible to change while emotion-focused coping is utilized in unchangeable situations. As a situation specific paradigm, a qualitative examination of the use of problem-focused and emotion-focused coping during athletics would allow for further extrapolation of their correlation with success.

Future research should also include variables that were not included in the current research that may also contribute to success in collegiate football such as scholarship status, transfer status, number of high school sports participated, total years of participation (number of practice hours), parental relationships, parental personal athletic participation, parental level of athletic involvement, socioeconomic status, number of

siblings, birth order, sibling's athletic participation, sibling's athletic success, competitiveness, win-orientation, and goal-orientation.

In conclusion, this research showed that age, high school size, and coping with adversity may be predictors of starting status in collegiate football. Experiential factors may be due to the amount and intensity of practice, as illustrated by the "10-year rule." The concept of coping with adversity as an overarching psychological skill is also plausible, as shown by coping research. However, further research needs to be conducted to determine the extent of this relationship and to examine other possible contributors to starting status in collegiate football.



Table 1

Means of predicting factors of starting status

Group	<u>Age</u>		<u>High School Size</u>		<u>Coping with Adversity</u>	
	Mean	SD	Mean	SD	Mean	SD
Starters	21.00	.816	0.86	0.351	8.64	1.620
Non-Starters	19.93	1.490	0.53	0.502	7.40	2.084

Table 2

## Structure Matrix that Predicts Starting Status in Collegiate Football

---

<u>Variable</u>	<u>Function</u>
Age	.592
HS Size	.532
Coping with Adversity	.472
Peaking under pressure	.227
Concentration	.204
Confidence	.175
Lived with both parents	.154
Height in Inches	-.130
Mother's Ed. Level	.118
Coachability	-.092
Weight in lbs.	-.080
High school GPA	-.078
Squat	.069
Father's Ed. Level	.068
Goal Setting/Preparation	.065
HS State of Competition	-.058
SAT Total	.020
Freedom from Worry	-.020
Bench	-.005
Forty	-.004

---

Table 3

## Number of Athletes from Participating Schools

---

<u>School</u>	<u>Number of Participants</u>
Georgia Southern University	88
Furman University	8
Wofford College	7
Elon University	3
Appalachian State University	2

---

## REFERENCES

- Bandura, A. (1986). *Social foundations of thought and action: A Social cognitive theory*. London: Prentice Hall.
- Boersee, C.G. (n.d.). Personality Theories. Retrieved September, 29, 2005 from <http://www.ship.edu/%7Ecgboree/perscontents.html>
- Clark, H.H. (1971). Characteristics of the young athlete: A longitudinal look. *Kinesiology Review*, 3, 33-42.
- Dale, G. (2000). Distractions and coping strategies of elite decathletes during their most memorable performances. *Sport Psychologist*, 14, 17-41.
- Gosling, S.D., Rentfrow, P.J., Swann Jr., W.B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37, 504-528.
- Gould, D., Eklund, R.C., & Jackson, S. (1992). Coping strategies used by more versus less successful Olympic wrestlers. *Research Quarterly for Exercise and Sport*, 64, 83-93.
- Griffith, C.R. (1928). *Psychology and athletics*. New York: Scribners.
- Hardy, L., Jones, G., & Gould, D. (1996). *Understanding psychological preparation for sport: Theory and practice for elite performers*. Chichester, England: Wiley.
- Helsen, W. F., Hodges, N. J., Van Winckel, J., & Starkes, J. L. (2000). The roles of talent, physical precocity and practice in the development of soccer expertise. *Journal of Sports Sciences*, 18, 727-736.

- Humara, M. (2005). Personnel selection in athletic programs. *Athletic insight*, 2(2).  
Retrieved September 29, 2005, from  
[www.athleticinsight.com/Vol2Iss2/Personnel.htm](http://www.athleticinsight.com/Vol2Iss2/Personnel.htm)
- Laguna, P.L. & Ravizza, K. (2003). Collegiate athletes' mental skill use and perceptions of success: An exploration of the practice and competition settings. *Journal of Applied Sports Psychology*, 15, 115-128.
- Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer-Verlag.
- McCrae, R.R. & Allik, J. (2002) *The Five-factor model of personality across cultures*. New York, NY: Kluwer Academic.
- McCrae, R.R., & Costa, P.T. Jr. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52, 81-90.
- Morgan W.P. (1968). Personality characteristics of wrestlers participating in the world championships. *Journal of Sports Medicine and Physical Fitness*, 8, 212-216.
- Morgan W.P. (1984). Mind over matter. In W.F. Straub & J.M. Williams (Eds.), *Cognitive Sport Psychology* (p.311-316). Lansing, NY: Sport Science Associates.
- Morgan, W.P., & Pollock, M.L. (1977). Psychological characterization of the elite distance runner. *Annals of the New York Academy of Sciences*, 301, 382-403.
- National Collegiate Athletic Association (2004). 2004-2005 Division I manual. Indianapolis, IN: Author.
- Niednagel, J. (1992). *Your key to sport success*. Laguna Press: Laguna Niguel, CA.

- Niednagel, J. (2004). *Jon Niednagel appears again on ESPN TV, this time questioned on his perspective of the top quarterbacks in the 2005 NFL Draft. Jon highlights Utah's Alex Smith and Aaron Rogers of Cal Berkeley.*  
<http://www.braintypes.com/espnews.WMV>.
- Schendel, J. (1965). Psychological differences between athletes and nonparticipants at three educational levels. *Research Quarterly*, 36, 52-67.
- Simon, H. A., & Chase, W. G. (1973). *Skill in chess*. *American Scientist*, 61, 394-403.
- Slusher, H.S. (1964). Personality and intelligence characteristics of selected high school athletes and non-athletes. *Research Quarterly*, 38, 539-545.
- Smith, R.E., Schultz, R.W., Smoll, F.L., & Ptacek, J.T. (1995). Development and Validation of a multidimensional measure of sport-specific psychological skills: The Athletic Coping Skills Inventory-28. *Journal of Sport & Exercise Psychology*, 17, 379-398.
- Werner, A.C. & Goetheil, E. (1966). Personality development and participation in college athletics. *Research Quarterly*, 37, 126-131.
- Williams, J.M., Hoepner, B.J., Moody, D.L. & Ogilvie, B.C. (1970). Personality traits of champion level female fencers. *Research Quarterly*, 41, 446-453.

## **APPENDIX A**

RESEARCH QUESTIONS, HYPOTHESIS, LIMITATIONS,

DELIMITATIONS,

ASSUMPTIONS, AND DEFINITIONS

*Research Questions*

1. How accurately can you predict success in Division I collegiate football using physical, psychological, and environmental factors?
2. What factors are most important in predicting success among Division I collegiate football players?

*Hypotheses*

1. There will be a significant difference between starters and non-starters athletes on physical, psychological, and environmental factors.



*Limitations*

1. The researcher can not control the interest level of the participants
2. The researcher can not control the participation in the online questionnaire.
3. Self report questionnaires are vulnerable, specifically to socially desirable responses.
4. Participants may not fully understand statements or questions.

*Delimitations*

1. The sample includes only football players from a southeastern conference.
2. The sample includes only Division I football players.
3. All athletes did not participate in the testing.
4. Large amount of athletes from one institution.
5. Limited amount of All-Conference athletes.

*Assumptions*

1. Participants will give honest responses to all portions of the survey packet.
2. Participants will understand the verbal and written instructions presented prior to testing.
3. Participants will understand each item of the questionnaire.
4. Participants will complete all portions of the questionnaire.

*Definitions*

1. Agreeableness- Amiability, altruism, modesty. (Weinberg & Gould, 2003)
2. Athletic classification- the classification of an athlete as determined by the number of years remaining in their NCAA eligibility. For example, an individual with two years of eligibility remaining, including the season that is currently being examined would be a junior or a red-shirted junior.
3. Coachability- Openness to constructive criticism given by a coach and/or manager.
4. Concentration- The ability to focus on relevant cues in the sport environment.
5. Confidence and achievement motivation- A high self-efficacy and a striving to reach that potential.
6. Conscientiousness- Constraint, achievement striving, self-discipline.  
(Weinberg & Gould, 2003)
7. Coping with adversity- The ability to remain emotionally stable and positive during competition no matter the situation.
8. Extraversion- Enthusiasm, sociability, assertiveness, high activity level versus introversion (Weinberg & Gould, 2003)
9. Freedom from worry- The absence of a fear or failure during and/or prior to a performance.
10. Goal setting/mental preparation- The use of goal setting and mental preparation on a consistent basis to prepare for competition and/or practice.
11. Large high schools- High schools classified athletically as 4A or above whereas large classification indicates a large male student body.

12. Neuroticism- Nervousness, anxiety, anger, depression versus emotional stability (Weinberg & Gould, 2003)
13. Openness to Experience- Originality, need for variety, curiosity. (Weinberg & Gould, 2003)
14. Peaking under pressure- The ability to maintain performance in high pressure situations.
15. Small high schools- High schools classified athletically as 3A or below whereas small classification indicates a small male student body.
16. Starter- An athlete who was listed as the starter at his position for at least 50% of their games during the last year.
17. Success- An athlete who received All-Conference accolades at the end of the last competitive season as determined by the Conference Coaches.

## **APPENDIX B**

### REVIEW OF LITERATURE

## Psychology in Sport

The first found investigation of psychology as it pertains to athletics is credited to Griffith (1928). Citing the common clichés of his time utilized by athletes and coaches, including “mental alertness, headiness, psychological moment, jinx, break in the game, overconfidence...” Griffith felt that the connection between sport and psychology was unmistakable.

The psychology of football is also examined by Griffith in his pioneering works. He uses the terms ‘fight,’ ‘super-human effort’ and ‘mental resolve’ to describe the necessary qualities to be successful in football at the time. However, he says that the most pressing issue in football psychology is the control of emotions, or arousal regulation. Coaches and athletes must deal with how to approach anxiety or over-confidence prior to a game as well as during the game. “The thing is psychology from start to finish. The man who has left his thinking apparatus in the locker along with his civilian clothes is wholly out of it (p. 10).”

Griffith, however, cautions early readers about some myths revolving around psychology and its use in athletics. First, some believe that psychology alone can not make an athlete great. There is no denying that an athlete must have the physical capabilities for them to be able to compete. However, the combination of physical attributes along with the psychological skills necessary to compete will create a complete athlete (Griffith, 1928). Griffith also calls to perception the myth that psychology is only for a ‘special few’ and cannot be utilized by the lay person. Debunking these myths will allow for coaches and athletes to take a closer look at the psychology of their sport.

A review of literature on trait 'personology' in sport by Morgan (1980) reveals extensive support of the concept of personality differences between athletes and non-athletes utilizing a variety of inventories. Werner (1960 & 1966) found that incoming cadets at the United States Military Academy who had earned high school varsity letters differed on 8 and 7 respectively of Catell's 16 Personality Factors (PF) subscales from those who did not earn letters on two separate occasions. Using the Minnesota Multiphasic Personality Inventory (MMPI), Slusher (1964) found differences between high school graduates who did and did not earn varsity letters on all but two of the variables. Differences were also found via the California Personality Inventory (CPI) between athletes and non-athletes in ninth, twelfth, and college-aged participants (Schendel, 1970). These studies support trait psychology as an accurate measure of participation in athletes.

Morgan's review also highlights research comparing successful, or elite, athletes with other levels. These results are somewhat contradictory. A comparison of successful and non-successful fencers at the 1968 National Championships, using the 16PF and the Edwards Personal Preference Schedule (EPPS), found no differences (Williams, Hoepner, Moody, & Ogilvie, 1970). However, it could be argued that all athletes competing at the National Championship are elite in comparison to those who did not qualify for the National Championships. Therefore, no difference in competitors could indicate a similarity between elite fencers. This idea is consistent with Morgan (1968) who found that success at the 1966 World Wrestling Tournament was correlated with extroversion, as measure by the Eysenck Personality Inventory (EPI). These studies provide justification for further studies comparing differing levels of athletic success.

## Recruiting for Personality

Recruiting is defined by the NCAA (2004) as any solicitation of a prospect or a prospect's relatives by an institutional staff member or representative for the purpose of securing the prospect's enrollment and participation in the institution's intercollegiate athletic program. There are specific phases involved in the recruiting of high school football players defined by NCAA as "contact", "evaluation," "quiet," and "dead" periods.

In the spring prior to the player's senior year, collegiate coaches will visit each high school in a specified area to inquire about upcoming prospects. At this time, the recruiter will receive a game tape for an initial evaluation of the student-athletes playing ability. Questionnaires may be provided to a prospective student-athlete as early as September 1 of their junior year. This questionnaire may include information on their physical attributes (height, weight), academic information (QPA and SAT or ACT results) and physical testing results (i.e. 40 yard dash, bench press maximum, squat maximum). From this information, an initial recruiting list will be formulated for contact with the athlete in the fall of their senior year as no contact can be made with the athlete until after July 1<sup>st</sup> following completion of their junior year.

During the high school athlete's senior season, interaction with the recruiter allows for examination of the personality characteristics that may contribute to athletic success. This period is defined as the "evaluation period." At this time, institutional representatives are permitted to assess the academic and playing qualifications of a prospect. School visits along with attending a game, allow coaches to speculate on the work-ethic, coach ability, and/or values of an athlete. Only one evaluation (i.e. observing

a practice or competition) can be made in the fall and two evaluations in the spring for each prospect. During this period, no in-person, off campus contact is allowed to be made by any institutional representative. Interviews with coaches at a participating institution reveal that due to the dead period, most coaches rely on coaches, guidance counselors, and/or teachers in order to gain further perspective on these traits. This is done through intuition and may result in an overestimation of the athlete. For example, a recruiter may ask the guidance counselor how he acts in the classroom or the coach about his weight room attendance.

In football, each institution is permitted six off-campus recruiting contacts per prospect at any site prior to the athlete signing the National Letter of Intent during the contact period (NCAA, 2004). The combined total evaluation days in D-1A and D-1AA may not exceed 42 days for an entire college football staff. These visits, along with video tape evaluation of their games, account for the majority of physical assessment, as the NCAA prohibits a tryout that is conducted by the institution.

A former collegiate coach said his visits allowed him to see the athlete's personality. Is he a natural leader, does he have the field presence and awareness to compete at the next level? In other words, does he have the personality characteristics and mental processes needed in order to reach his full potential, as projected by his physical attributes? He said he is trying to cast the future; project him two to three years from now. As a recruiter, the most difficult task is estimating the athletic, as well as academic success of a high school athlete based on limited visits and conversations.



## Personality

In order to evaluate the importance of personality in the recruitment of a collegiate athlete, we must first examine the structure of human personality. Personality can be partitioned into three components that differ based on a continuum of availability (i.e. external vs. internal) and consistency (Weinberg & Gould, 2003). On the surface of personality is role-related behavior. Role-related behavior is the most external level of personality and differs according to the specific situation. This component of personality is state-personality. The next level of personality, typical responses, is the habitual role-related behaviors of an individual. A response of learned experiences, individuals will adjust their role-related behaviors in order to receive the desired consequence. As trait personality, your typical responses are a good indication of your psychological core, the third level of personality. Your psychological core is the deepest, most constant level of your personality. These represent your values, motives, and beliefs about yourself.

The many components of personality have been followed by many different approaches to their study; the psychodynamic, trait, situation, and interactional approaches will be discussed. The psychodynamic approach was popularized by Sigmund Freud, along with other Freudian psychologists (Boeree, 2005). The psychodynamic approach focuses on two separate facets in order to determine personality. First, it examines the internal interaction between the *id* or instinctual drive and the conscious. The psychodynamic approach resembles the cartoon “angel (id)” and “devil (ego)” on your shoulder in constant conflict with each other. The psychodynamic approach, while it had a major impact on the field of psychology, does not examine the social determinant of behavior and their effect on personality.

The trait approach focuses on the deepest levels of the personality model, the psychological core. Trait psychologists believe that the causes of behavior are internal and consistent across time, regardless of situation. This does not indicate that an individual will persistently react to a situation the same way, but rather that a person's behavior will most likely stay consistent across situations. Once again, the trait approach does not adequately account for the situational factors that may be indicative of an athlete's behavior.

Due to the failure of the previous approach to account for environmental stimuli, the situational approach was developed. The situational approach theorizes that it is not the individual, but rather the environmental stimuli and reinforcement that decide the behavioral response of an individual. This approach represents an extremist behaviorist approach. Behaviorism, popularized by B.F. Skinner and his box, is based on learning through reinforcement and punishment. A behavior that is followed by a reinforcing stimulus will increase the probability of that behavior occurring in consequent trials. Conversely, behaviors followed by punishing stimuli will decrease the likelihood of that behavior's occurrence (Boersee, 2005).

Social-learning theory represents a situational approach to personality (Gerrig & Zimbardo, 2005). Upon the first interaction with a stimulus, an individual will respond and receive consequences, either reinforcement or punishment. Upon successive contact with the same stimulus, an individual will most likely respond to environmental cues, or stimuli, that allow for affective reinforcement. However, reinforcement is specific to the individual. What is reinforcing to one person may be punishment for another.

Consequently, social-learning theory proposes that differences in personality result from differences in environment cues and the responses to them.

Recent social-learning theory calls for a more extensive look at the cognitive processes of an individual in order to determine behavior and personality, producing an interactional approach to personality. An interactional approach considers both the individual and the situation as co-determinants of behavior (Weinberg & Gould, 2003). The most accepted theory is Bandura's Cognitive Social-Learning Theory. Bandura (1986) suggests that personality is a multimodal process that is a complex interaction of inner drive, the environment, and behavior. Moreover, the interactions between these three aspects are reciprocal, in that all components can affect each other (Boersee, 2005). Consequently, neither situations nor individual characteristics alone are enough to predict the behavior of an individual: Both need to be considered.

The need for a thorough examination of personality was first presented by Sir Francis Galton (1882) in *Inquires into human faculty and its development*. Although no scientific evidence is presented by Galton, his conclusions made through observation became the basis of modern personality theory. The most noticeable personality differences to Galton were between males and females. He proposes that females were more capricious and coy, and much less straight-forward than their male counterparts (Galton, 1882). Additionally, he proposes that these traits are learned early in development, thus siding on the nurture side of his cousin Darwin's argument. His attempts to classify the many descriptors of individuals and their behaviors are credited as the beginnings of personality models. However, in line with future social psychology

theory, Galton proposes that these studies be done in children because adults are more likely to restrain from socially unacceptable behavior.

Ironically, Galton (1882) introduced the statistical method that will be utilized in this study. Up until Galton's work, statisticians were having difficulty classifying into sub-groups of that contained only like individuals. Originally termed *the method of statistics by intercomparison* (Galton, 1882), Galton devised an 'ogive,' or curve, that would allow for the best probabilities of correct classification. Thus, Galton is credited for the introduction of Predictive Discriminative Analysis.

#### Personality Assessment Scales

Cattell (1977) developed one of the first, and most referred to, personality assessment scales. Using factor analysis of self-report questionnaires and self-observation, Cattell's 16 Personality Factors (16PF) were 16 factors that he considered to be the source of all human personality that is measurable through empirical study. Cattell's 186-item questionnaire produced objective scores on a continuum of a personality trait. Of these factors, seven proved to be descriptors of the elite athlete. Elite athletes tend to score as emotionally stable, conscientious, tough-minded, placid or self-assured, self-sufficient, controlled, and relaxed and unfrustrated.

Cattell's original nomenclature did not coincide with any specific personality traits but rather implied a general trait (i.e. thrextia implied susceptibility to threat). Cattell's model came under constant scrutiny, specifically concerning the failure to replicate. As a result, many models utilize Cattell's 16PF as the theoretical basis of their instrument.

Morgan (1968) provides one of the more systematic examinations of personality in athletes. Utilizing the mental health model and its six subscales, Morgan measured runners, rowers, and wrestlers. Plotting them, Morgan developed the 'iceberg profile' on the Profile of Mood States (POMS), in which athletes score above the waterline (the population norm) on the positive mental health characteristic of vigor and below the waterline on negative mental health characteristics. This 'iceberg profile' is able to demonstrate that athletes exhibited more positive mental health characteristics than the general population.

A recent meta-analysis of Morgan's research, along with other POMS studies, questions the validity of the iceberg profile and its ability to predict differences between successful and non-successful athletes (Rowley, Landers, Kylo, & Etnier, 1995). While they concede that mental health and success in any endeavor should be inversely related, the researchers maintain that both athletic success and personality are on a continuum that clouds the probabilities of distinguishing between successful and less-successful athletes. Results of their analysis show that successful athletes exhibit a profile 0.15 SD healthier than less-successful athletes, a very small effect. Consequently, the POMS may not be applicable when comparing successful collegiate football players with other collegiate football players.

The most accepted personality model is the "Big Five." The Big Five model is based on a hierarchical concept that narrow traits are placed into five broad subscales - neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A), and conscientiousness (C), with each subscale measuring a component of personality on a continuum (See Appendix A). In cognitive social-learning theory, the Big Five would

represent the human component of the model. Proponents of the Big Five model of personality contend that it is a comprehensive model encompassing all components of personality (McCrae & Allik, 2002).

McCrae and Costa, Jr. (1987) studies the validity of the Big Five Personality scale and the questionnaires used to measure its subscales. Self-report and peer ratings were given on 274 participants. Both the participant and three or four of their peers filled out the NEO Personality Inventory and NEO Personality Inventory (Form R) respectively, along with adjective-rating scales on agreeableness and consciences. The results showed very high convergent and discriminant cross-observer and cross-instrument validation for all five scales. Therefore, the Big Five Personality model, and its instruments, is an effective means of predicting an accurate representation of personality.

Costa and McCrae's 240-item NEO Personality Inventory, Revised (NEO-PI-R), which extensively measures the Big-Five factors and its subcomponents, takes approximately 45-minutes to complete. In order to alleviate the frustration of participants responding to multiple questions referring to the same concept, Gosling, Rentfrow, & Swann (2003) developed a five and ten-item Big Five Instruments. Focusing on content validity, they selected descriptors from previous questionnaires to develop an extensive description of the personality facet.

Their Ten-Item Personality Inventory (TIPI) will be utilized for this study. The TIPI, which takes approximately one-minute to complete, consists of ten items on a 7-point Likert Scale. Each item contains two descriptors, separated by a comma, and preceded by the phrase, "I see myself as..." Each item represents one pole of the five factor model (i.e. introversion and extroversion).

Gosling et al. administered the TIPI to a sample of participants consisting of 1813 college undergraduates, of which 180 participants returned for a retest. In order to measure the validity and reliability of the new scale, participants were also administered as previously established scale, the 44-item Big Five Inventory (BFI; John & Srivastava, 1999). The results showed identical convergent and discriminant validity between the TIPI and the BFI. The TIPI also showed strong test-retest reliability ( $r = .72$ ) and external correlations ( $r > .90$ ). Although longer scales may exhibit better psychometric properties, the TIPI is psychometrically sound and more appropriate to use in time constraints.

#### Personality Scales in Sport

Due to the higher predictive ability, as compared to global personality scales, many new sport-specific personality scales have been developed. Inventories including the Sport Competition Anxiety Test (SCAT; Marten, 1977), the Competitive Sport Anxiety Test-2(CSAI-2; Martens, Vealey, & Burton, 1990) and the Sport-Orientation Questionnaire (SOQ; Gill & Deeter, 1988), all measure distinctive characteristics like self-confidence, state and trait anxiety, and competitiveness. The most extensive sport-specific scales are the Psychological Skills Inventory for Sport, Form 5 (PSIS R-5), the Athletic Coping Skills Inventory-28 (ACSI) and the Sports Performance Inventory (SPI).

The PSIS R-5 was designed to measure multiple psychological skills that pertain to sport in order to predict athletic success (Mahoney, Gabriel, & Perkins, 1987). The cognitive attributes represent athletic coping ability and were considered enduring, or trait, characteristics. The revised version of the PSIS R-5 contains 45 Likert-Scale items on six subscales: anxiety control, concentration, confidence, mental preparation, motivation, and team focus.

Chartrand, Jowdy, & Danish (1992) measured 340 intercollegiate athletes on the PSIS R-5 to determine the reliability and validity of the survey. They found that the internal consistency of the subscales were low for all variable excluding confidence. Additionally, the confirmatory factor analysis showed inconsistencies. Consequently, further revision of the PSIS R-5 is needed to effectively predict athletic performance.

The ACSI was originally developed in order to determine an athlete's ability to cope with athletic injury (Smith, Schultz, Smoll, & Placek, 1995). The ACSI consisted of an 87-item survey entitled "Survey of Athletic Experience" with a four point Likert Scale. Using loading criteria set at .50, the original scale was reduced to 42-items on 8 subscales. This scale had a total score internal consistency of .90 and acceptable validity for each subscale.

Upon further investigation, goodness of fit statistics revealed that the instrument could be trimmed to 28-items and seven subscales to have the best fit. The seven subscales were labeled coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, confidence and achievement motivation, and coachability. The internal consistency for the total ACSI-28 score was high for both males (.84) and females (.88) (Smith et. al, p.386). Test-retest reliability coefficients were high for the total score and all of the subscales, excluding coachability.

Jones, Neuman, Altmann, & Dreschler (2001) felt that the ACSI-28 did not contain all of the constructs that may predict athletic success, specifically mental toughness. The researchers developed and administered the Sports Performance Inventory (SPI) to 274 athletes and non-athletes from a Division I University. The original SPI was a 258-item Likert-Scale survey. The survey was separated into two



sections; Part one consisting of 195 sport-related attitude questions and part two consisting of 63 behavior describing adjectives. Using a minimum factor loading score of .40, the survey was revised to an 83-item questionnaire with six subscales: competitiveness, team orientation, mental toughness, emotional control, positive attitude, and safety consciousness. Cronbach alpha coefficients showed reliability in all six subscales ( $p = .79$  or higher). Results showed that college athletes had a significantly higher overall SPI composite score as well as higher scores in competitiveness and positive attitude. This is indirect evidence that the SPI can predict the athletic success of collegiate athletes. However, the lack of validation causes the use of this scale for the current research to be unadvisable.

An application of mental toughness is presented by Morgan (1984). The 1983 marathon was won by an inexperienced marathoner by a mere nine seconds. Post-run interviews showed two completely opposite mental approaches to the end of the race. Dixon, the winner, with a mile to go was thinking, 'A miler's kick does the trick' and 'I've got to go, I've got to go.' The runner-up, Smith, said in an interview, "My legs had gone. I was just running from memory. I thought I was going to stumble and collapse." This illustrates that while cognition can boost athletic performance, it may also lead to weakness.

In consequent research, Morgan began to put this idea to test. Using a form of dissociation and relaxation techniques, he compared test and retest results on a treadmill. Morgan tested both the dissociation group and the control group on a treadmill at 80 percent of their maximum output. Upon retest, Morgan increased the treadmill to 90 percent and had the dissociation group stare at an object during the test and repeat the

word “down” with each leg movement. This was adopted from Tibetan monks as a mantra, often used in meditation. Morgan found that the performance of the dissociation group increased by 19 percent as compared to the control, even though the retest was made more difficult. Therefore, mental toughness, or rather the ability to dissociate from feelings of fatigue, can improve the athletic output of an individual.

Lewis (2003) has developed the Moneyball Theory in the recruiting of professional baseball players. Lewis describes two theories that drive the selection process in baseball. The old scouting process bases selection on five attributes: speed, quickness, arm strength, hitting ability, and mental toughness (Lewis, 2003). The ability of a prospect in each of these categories is analyzed and in turn, the scout determines the potential of the prospect. The second theory relies on only two factors: Can a player get on base? and Can he hit? These factors, when combined, form a new statistic utilized by the General Manager of the Athletic A's, Billy Beane, on-base plus slugging (OPS). Beane believed that the previous scouting tools could be taught, so he focused on patience at the plate and the ability to get on base, which could not be taught. Additionally, he believed in recruiting college as opposed to high school players because they possessed the maturity and experience needed to perform at the elite level. A consequent study by Wasserman, Czech, Wilson, and Joyner (2005) revealed a significant difference between high school and college players in minor league slugging percentage, but not in on-base percentage and OPS.

Application of cognitive social-learning theory would rationalize that physical, psychological and environmental factors play a key role in athletic success. Therefore, similar to Lewis' Moneyball Theory, what factors should a football recruiter focus on in

order to determine the potential of a player at the collegiate level? Through predictive discriminant analysis, factors from the ACSI-28, Big Five personality model through the TIPI, and demographic information, will provide a framework of factors, physical, psychological, and environmental, that are effective in predicting the success of a collegiate football player.

## ADDITIONAL REVIEW OF LITERATURE REFERENCES

- Cattell, R.B. & Dreger, R.M. (1977) *Handbook of Modern Personality Theory*.  
*Washington D.C.: Hemisphere.*
- Cox, R.H. & Yoo, H.S. (1995). Playing position and psychological skill in American football. *Journal of Sport Behavior*, 18(3), 183-195.
- Eysenck, H.J. (1972). Primaries or second-order factors: A Critical consideration of Cattell's 16PF battery. *British Journal of Social Clinical Psychology*, 11, 265-269.
- Eysenck, H.J. (1991). Dimensions of Personality: 16, 5, or 3? – Criteria for a taxonomic paradigm. *Personality and Individual Differences*, 12, 773-790.
- Fisher, A.C., Ryan, E.D., & Martens, R. (1976). Current Status and future directions of personality research related to motor behavior and sport: Three panelists' views. In A.C. Fisher (Ed.), *Psychology of sport* (pp.400-431). Palo Alto, CA: Mayfield.
- Galton, F. (1883). *Inquires into human faculty and its development*. London: Dent.
- Gerrig, R.J. & Zimbardo, P.G. (2005). *Psychology and life*. (17<sup>th</sup> ed.) Boston, MA: Pearson.
- Gill, D.L. (2000). *Psychological dynamics of sport and exercise*. Champaign, IL: Human Kinetics.
- Gill, D. & Deeter, T.E. (1988). Development of the Sport Orientation Questionnaire. *Research Quarterly for Exercise & Sport*, 59, 191-202.
- John, O.P. & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L.A. Pervin & O.P. John (Eds.) *Handbook of personality: Theory and research* (pp.102-138). New York: Guilford Press.

- Jones, J.W., Neuman, G., Altmann, R., & Dreschler, B. (2001). Development of the Sports Performance Inventory: A Psychological measure of athletic potential. *Journal of Business and Psychology, 15*(3), 491-503.
- Lewis, M. (2003). *Moneyball: The Art of Winning the Unfair Game*. New York: W.W. Norton and Company.
- Mahoney, M.J., Gabriel, T.J., & Perkins, T.S. (1987). Psychological skills and exceptional athletic performance. *The Sport Psychologist, 1*, 181-199.
- McNair, D.M., Lorr, M., & Droppleman, L.F. (1971). *Manual for the profile of mood states*. In Gill, D. (2000) *Psychological dynamics of sport and exercise*. Champaign, IL: Human Kinetics. p. 47-49.
- Morgan, W.P. (1978). Sport personology: The credulous-skeptical argument in perspective. In W.F. Straub (Ed.), *Sport Psychology: An analysis of athlete behavior* (pp.330-339). Ithaca, NY: Movement.
- Morgan, W.P. (1980). The trait psychology controversy. *Research Quarterly for Exercise and Sport, 51*, 50-76.
- Ogilvie, B.C. (1968). Psychological consistencies within the personality of high-level competitors. *Journal of the American Medical Association, 205*, 156-162.
- Rowley, A.J., Landers, D., Kyllö, L.B., & Etnier, J.L. (1995). Does the Iceberg Profile discriminant between successful and less successful athletes? A meta analysis. *Journal of Sport & Exercise Psychology, 17*(2), 185-199.
- Wasserman, E., Czech, D.R., Wilson, M.J., and Joyner, A.B. (2005) An examination of the moneyball theory: A baseball statistical analysis. *The Sport Journal, 8*, [http://www.thesportjournal.org/2005Journal/Vol8-No1/daniel\\_czech.asp](http://www.thesportjournal.org/2005Journal/Vol8-No1/daniel_czech.asp).

Weinberg & Gould (2003). *Foundations of Sport & Exercise Psychology*. (3<sup>rd</sup> ed.).  
Champaign, IL: Human Kinetics.

## **APPENDIX C**

### **DEMOGRAPHICS QUESTIONNAIRE**

Please fill out the following information as completely and honestly as possible. If the question does not apply to you, simply leave it blank and proceed to the next question.

**Current Information:**

Age: \_\_\_\_\_

Position: \_\_\_\_\_

Athletic Classification: (Red-shirted freshman are considered freshman)

Freshman

Sophomore

Junior

Senior

Height: \_\_\_\_\_ Weight: \_\_\_\_\_

40-yard dash: \_\_\_\_\_

One Repetition Maximums: Bench Press \_\_\_\_\_ Back Squat: \_\_\_\_\_

During the last football season, did you start at least 50% of your competitions?

YES

NO

Did you receive any post-season accolades? (Ex. All-Conference, All-American)

YES

NO

If yes, please list: \_\_\_\_\_

**High School Information:**

High School GPA: \_\_\_\_\_

SAT: Total: \_\_\_\_\_ Verbal: \_\_\_\_\_ Math: \_\_\_\_\_

ACT: \_\_\_\_\_

High school football classification:

A

AA

3A

4A

5A

6A

High school state of competition: \_\_\_\_\_



The following questions are about your parents. Please include birth parents and adoptive parents, but not step parents.

1. Did you live with both parents from birth until age 14?  
YES (GO TO QUESTION 4)      NO
  
2. Which parent was not living with you all the time between birth and age 14?  
MOTHER                  FATHER                  BOTH
  
3. For those who did not live with you before age 14, select reason(s) why you didn't live with them the entire time? Select all that apply.
  - A. ONE OR BOTH PARENTS DIED
  - B. PARENTS WERE SEPARATED OR DIVORCED
  - C. YOU WERE LEFT HOME
  - D. YOU WERE ADOPTED
  - E. PARENTS WERE NEVER MARRIED OR NEVER LIVED TOGETHER
  - F. PARENT IN JAIL OR PRISON
  - G. PARENTS HAD MARITAL OR PERSONAL PROBLEMS
  - H. RAISED BY GRANDMOTHER, AUNT OR ANOTHER FAMILY MEMBER
  - I. OTHER, SPECIFY \_\_\_\_\_
  
4. How much school did your mother complete?
  - A. NONE
  - B. HIGH SCHOOL GRADUATE OR COMPLETED GED
  - C. SOME VOCATIONAL SCHOOL
  - D. COMPLETED VOCATIONAL SCHOOL
  - E. SOME COLLEGE
  - F. ASSOCIATES' DEGREE (AA)
  - G. BACHELORS' DEGREE (BA, BS)
  - H. SOME GRADUATE OR PROFESSIONAL SCHOOL
  - I. COMPLETED GRADUATE/PROFESSIONAL DEGREE
  
5. How much school did your father complete?
  - A. NONE
  - B. HIGH SCHOOL GRADUATE OR COMPLETED GED
  - C. SOME VOCATIONAL SCHOOL
  - D. COMPLETED VOCATIONAL SCHOOL
  - E. SOME COLLEGE
  - F. ASSOCIATES' DEGREE (AA)
  - G. BACHELORS' DEGREE (BA, BS)
  - H. SOME GRADUATE OR PROFESSIONAL SCHOOL
  - I. COMPLETED GRADUATE/PROFESSIONAL DEGREE

**APPENDIX D**

**ATHLETIC COPING SKILLS INVENTORY - 28**

### Survey of Athletic Experiences

Directions: A number of statements that athletes have used to describe their experiences are given below. Please read each statement carefully and then recall as accurately as possible how often you experience the same thing. There are no right or wrong answers. Do not spend too much time on any one statement.

	Almost Never	Sometimes	Often	Almost Always
1. On a daily or weekly basis, I set very specific goals for myself that guide what I do.	0	1	2	3
2. I get the most out of my talents and skills.	0	1	2	3
3. When a coach or manager tells me how to correct a mistake I've made, I tend to take it personally and feel upset.	0	1	2	3
4. When I'm playing sports, I can focus my attention and block out distractions.	0	1	2	3
5. I remain positive and enthusiastic during competitions, no matter how badly things are going.	0	1	2	3
6. I tend to play better under pressure because I think more clearly.	0	1	2	3
7. I worry quite a bit about what others think of my performance.	0	1	2	3
8. I tend to do lots of planning about how to reach my goals.	0	1	2	3
9. I feel confident that I will play well.	0	1	2	3
10. When a coach or manager criticizes me, I become upset rather than helped.	0	1	2	3
11. It is easy for me to keep distracting thoughts from interfering with something I am watching or listening to.	0	1	2	3
12. I put a lot of pressure on myself by worrying about how I will perform.	0	1	2	3
13. I set my own performance goals for each practice.	0	1	2	3

14. I don't have to be pushed to practice or play hard; I give 100%.	0	1	2	3
15. If a coach criticizes or yells at me, I correct the mistake without getting upset about it.	0	1	2	3
16. I handle unexpected situations in my sport very well.	0	1	2	3
17. When things are going badly, I tell myself to keep calm, and this works for me.	0	1	2	3
18. The more pressure there is during a game, the more I enjoy it.	0	1	2	3
19. While competing, I worry about making mistakes or failing to come through.	0	1	2	3
20. I have my own game plan worked out in my head long before the game begins.	0	1	2	3
21. When I feel myself getting too tense, I can quickly relax my body and calm myself.	0	1	2	3
22. To me, pressure situations are challenges that I welcome.	0	1	2	3
23. I think about and imagine what will happen if I fail or screw up.	0	1	2	3
24. I maintain emotional control regardless of how things are going for me.	0	1	2	3
25. It is easy for me to direct my attention and focus on a single object or person.	0	1	2	3
26. When I fail to reach my goals, it makes me try even harder.	0	1	2	3
27. I improve my skills by listening carefully to advice and instruction from coaches and managers.	0	1	2	3
28. I make fewer mistakes when the pressure is on because I concentrate better.	0	1	2	3

**APPENDIX E**

INFORMED CONSENT

## INFORMED CONSENT

The purpose of this study is to determine physical, psychological, and environmental factors contributing to success of collegiate football players.

The survey consists of demographic information, the Ten-Item Personality Inventory, and the Sports Performance Inventory. The survey will take approximately 30 minutes to complete.

This research has no reasonably foreseeable risks. You may benefit from this research by gaining a better understanding of yourself and how psychological research is conducted. Additionally, your program may benefit by gaining a better understanding of the characteristics needed to succeed.

Data collected in this experiment will be kept completely confidential. Information regarding your identity will not be collected; nor will any individual responses be revealed. If the data is published, no information that would identify you will be written.

If you would like to know the results of this investigation, you can do so by contacting the interviewer.

You can ask questions about this research. The primary researcher can answer your questions. Contact Martin Spieler at (912)681-5457 with questions. If you have questions about your rights as a research participant, contact the Office of Research Services and Sponsored Programs at (912)681-7758, or 0843.

Participation in this research is completely voluntary. You can end your participation at any time by telling the person in charge. You do not have to answer any questions you do not want to answer. There is no penalty for deciding not to participate in this study.

You must be 18 years of age or older to consent to participate in this research study. If you consent to participate in this research study and to the terms above, please sign your name and indicate the date below.

You will be given a copy of this consent form to keep for your records.

Title of Project: Predicting Athletic Success: Factors contributing to the success of collegiate football players

Principal Investigator: Martin Spieler, P.O. Box 3069 Statesboro, GA 30459, (912)681-5457, Mspieler@georgiasouthern.edu

Faculty Advisor: Dr. Dan Czech, P.O. Box 8076, Statesboro, GA 30460, (912)681-0200 drczech@georgiasouthern.edu

\_\_\_\_\_  
Participant Signature

\_\_\_\_\_  
Date

The informed consent procedure has been followed.

\_\_\_\_\_  
Investigator Signature

\_\_\_\_\_  
Date

**APPENDIX F**

PARTICIPATION E-MAIL

Thank you for your agreed participation in the current research. My name is Marty Spieler and I am a Sport Psychology Masters student at Georgia Southern University. As a graduation requirement, I am examining the physical and psychological factors associated with success in collegiate football.

A brief survey is located on the following website. ([Go to the Survey](#)) It contains approximately 50 items and should take 15-20 minutes to complete.

As you take this survey, please know that there are no right or wrong answers. Please answer the questions as honestly as possible. It is important to know that ALL information that you share will be kept completely confidential.

Participation in this study may benefit both you and your program as results will be given to your coaches.

Questions regarding this research can be directed to me at [mspiele1@georgiasouthern.edu](mailto:mspiele1@georgiasouthern.edu).

Again, I appreciate your participation. Thank you for your time.

[Go to the Survey](#)

Marty Spieler



**APPENDIX G**

DEPARTMENTAL IRB FORMS

**Cover Page**  
**Georgia Southern University**  
**Institutional Review Board**  
*Application for Research Approval*

Name of Principal Investigator: Martin Spieler	Email: Mspiele1@georgiasouthern.edu	<b>For Office Use Only:</b>  IRB ID _____ Date Received _____  <b>BY</b> _____
Phone: 912-871-7531	Address: PO Box 3069 Statesboro, GA 30459	
Department: CHHS Jiann-Ping Hsu School of Public Health	Project Start Date: 9/04 Project End Date: 4/05	
*Date of IRB education completion: _____ (attach copy of completion certificate)		
Check one: <input checked="" type="checkbox"/> Student <input type="checkbox"/> Faculty/Staff <b>If student project please complete advisor's information below:</b>		
Advisor's Name: Dr. Daniel Czech	Advisor's email: <a href="mailto:drczech@georgiasouthern.edu">drczech@georgiasouthern.edu</a>	
Advisor's phone: x5267	P.O. Box: 8076	
Department: Jiann-Ping Hsu School of Public Health	<b>All applicants please complete all fields below:</b>	
<b>Project Information:</b>		
Title: Predicting Athletic Success: Factors contributing to the success of collegiate football players		
Project Duration (in months): 9	Number of Participants: 800	
Brief (less than 50 words) Project Summary: While collegiate coaches are experts at analyzing the physical attributes of players, they lack the ability to successfully determine the psychological skills necessary to succeed in collegiate football. Using predictive discriminate analysis, I will attempt to determine the physical, psychological, and environment factors contributing to the success of collegiate football players.		
<i>Please fill in if applicable:</i>		
Name of Georgia Southern or External Funding Source: Graduate Student Professional Development Fund		
Personnel and/or Institutions Outside of Georgia Southern University:		

<b>Compliance Information:</b>	
<p><i>Please indicate if the following are included in the study:</i></p> <p><input checked="" type="checkbox"/> Informed Consent Document</p> <p><input type="checkbox"/> Greater than minimal risk</p> <p><input type="checkbox"/> Research Involving Minors</p> <p><input type="checkbox"/> Deception</p> <p><input checked="" type="checkbox"/> Generalizable knowledge (results are intended to be published)</p> <p><input checked="" type="checkbox"/> Survey Research</p> <p><input type="checkbox"/> At Risk Populations (prisoners, children, pregnant women, etc)</p> <p><input type="checkbox"/> Video or Audio Tapes</p> <p><input type="checkbox"/> Medical Procedures, including exercise, administering drugs/dietary supplements, and other procedures</p>	<p><b><u>IRB Use Only</u></b></p> <p>Type of Review</p> <p>( ) Full Board</p> <p>( ) Expedited</p> <p>( ) Exempt</p> <p>1<sup>st</sup> Reviewer: X: _____ Date: _____</p> <p>2<sup>nd</sup> Reviewer: X: _____ Date: _____</p>
<p><b>NOTE:</b> <i>All</i> thesis and dissertation work by definition is to create generalizable knowledge.</p>	<p><b><u>IRB Use Only</u></b></p> <p><b>Comments:</b></p>
<p><b>Signature of Applicant</b></p> <p>X:</p>	<p>Date:</p>
<p><b>Signature of Advisor(if student) / Dept. Chair(if faculty)</b></p> <p>X:</p>	<p>Date:</p>

Please submit this protocol electronically to the Georgia Southern University Institutional Review Board, c/o The Office of Research Services & Sponsored Programs, P.O. Box 8005. The application should contain a summary of the project, informed consent form(s), instruments, questionnaires, etc. Questions or Comments can be directed to 486-7758 or [oversight@georgiasouthern.edu](mailto:oversight@georgiasouthern.edu)

## Georgia Southern University Institutional Review Board

### Proposal Narrative

**Personnel.** Outside of the Primary investigator and the advisor, Dr. Barry Joyner and Dr. Barry Munkasy will be participating in the research. Their level of involvement is minimal. They will not have access to individual survey responses. They will have access, however, to data analysis and results of the research.

**Purpose.** The purpose of this study is to determine the psychological, physical, and environmental factors contributing to athletic success in collegiate football. I will attempt to determine how accurately one can determine the success of an athlete and which factors are most important in determining that success. It is my belief that a combination of physical and psychological factors contribute to the success of a student-athlete. With this research, athletes and coaches can gain a better understanding of the psychological facets in combination with the physical prowess that affect the success of an athlete. This will add on to the previous literature that has showed significant differences between elite athletes and less-successful athletes in both physical and psychological components (Werner, 1960; Slusher, 1964; Schendel, 1970), as well as literature that states that while coaches are experts in analyzing physical ability, they lack the ability to adequately interpret psychological skills associated with athletic success (Humara, 2005).

**Describe your subjects.** The subject of this research will be approximately 800 male collegiate football players from a NCAA Division I conference in the Southeastern United States. The large sample will ensure generalizability to the entire collegiate

football population and assure good power of results. While there are no specific gender requirements as being male, the lack of females in the collegiate football population is a delimitation. Their ages will range between 18-26. In order to recruit the participants, the head football coach of each team will be contacted. At this time, the purpose of the study as well as the extent of the athletes' participation will be explained. If agreed, arrangements will be made to receive complete team e-mail lists. There will be no identifying information collected on the e-mail lists or surveys, keeping individual answers completely confidential.

**Methodology (Procedures).** A website will be established in order to collect the needed data. It will begin with the participants reading and agreeing to participation through informed consent. Each survey will follow starting with demographic information and followed by the Athletic Coping Skills Inventory-28 and the Ten-Item Personality Inventory. Attached is a copy of the surveys. Each survey quantifies psychological factors on a continuum. Using descriptive discriminant analysis and predictive discriminant analysis in SPSS, the psychological factors will be combined with physical and environmental factors to describe differences between success groups as well as predict group membership based on the same variables.

Procedures used in this research are non-invasive. Participation in the data collection will be strictly voluntary, and the co-participants will be advised that they may terminate taking the inventories at any time.

The data and informed consent agreements will be printed and kept in a locked file drawer in Hollis Room 2104 by the researcher for the purpose of this study and will be

retained at Georgia Southern University for three years after the completion of the study, after which they will be destroyed.

The co-participants will be specifically advised: (a) that they may refuse to answer and question at any time, (b) that they may inquire about the procedures at any time (c) that no royalties are due to the co-participant for any subsequent publication, and (d) results will be held confidential and that they may view their results at the end of the program.

**Deception.** There will be no deception in this research.

**Medical procedures.** This research includes no medical procedures.

**Risk.** Some of the psychological questions are private in nature and may cause discomfort in disclosing. It is important to note that the participants may stop taking the psychological inventories at any time during the data collection process.

## GEORGIA SOUTHERN UNIVERSITY IRB

### EXEMPT STATUS QUESTIONNAIRE

P.O. Box 8005912-681-5465      Statesboro, GA 30460  
<http://academics.georgiasouthern.edu/research/>

**Please attach an IRB Cover Sheet to the top of this form and submit to the IRB Office. Also be sure to write brief summary of the research protocol in one page or less in the space below.**

I will be   X   collecting,        receiving these samples OR,        sending these samples or data outside of GSU. (Check all that apply)

Title of Study:   Predicting athletic success: Factors contributing to the success of collegiate football players.  

#### Does the study meet the following criteria?

	NO	Does the research involve the collection or study of <i>existing data</i> , documents, records, pathological specimens, or diagnostic specimens? <i>Existing Data: means that all the data, documents, records, or specimens are in existence prior to IRB Review. Specimens obtained prospectively from future discarded clinical samples do not qualify for exempt review.(1)</i>
YES		Data sources are publicly available; if not, the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects (i.e. social security #'s, account #'s, history #'s, pathology accession #'s, initials, date of birth). <i>(2) If both 1&amp;2 checked: 45CFR46.101(b)(4)</i>
YES		Does the research involve the use of educational tests, survey procedures, interview procedures or observation of public behavior <u>and</u> is the data/information recorded in a manner so that human subjects cannot be identified, directly or through identifiers linked to the subjects such that any disclosure of the human subjects' responses outside the research could not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability or reputation <i>45CFR46.101(b)(2)</i>
	NO	Is the research intended to assess the effectiveness of mandated educational or instructional procedures or otherwise used for program evaluation.
YES		Are the samples or data being collected for the sole purposes of this study?
	NO	Are the samples or data collected by a third party and stored in a facility that will not break the code, even upon the request of a family member/ or medical emergency?

#### Please answer the following two questions to the best of your ability.

	NO	Is the <u>probability</u> of the harm or discomfort anticipated in the proposed research greater than that encountered ordinarily in daily life or during the performance of
--	----	--

		routine physical or psychological examinations or tests?
	NO	Is the <u>magnitude</u> of the harm or discomfort greater than that encountered ordinarily in daily life, or during the performance of routine physical or psychological examinations or tests?

**Does this study involve any of the following?**

	NO	Non-hereditary genetic research in which samples are linked/coded or identifiable
	NO	Hereditary genetic research
	NO	Prisoners, Fetuses, Pregnant Women, Cognitively/Mentally Impaired, Students/Employees/ Under 18 years of age (Circle all that apply)
	NO	Human in-vitro fertilization (any fertilization of human ova which occurs outside the body of a female)
	NO	Surveys or interviews given to minors
	NO	Any procedures that may cause a subject either physical or psychological discomfort or is perceived as harassment above and beyond what the person would experience in daily life
	NO	Deception
	NO	Observation of minors if the investigator participates in the activities being observed unless there is a federal statute covering the activity
	NO	The study of a rare trait/disorder such that there is some risk of exposing the identity of sample donors or the research poses risk of community or cultural harm

**1. How do you plan to access the targeted subject population?**

The target population will be accessed through contact with their collegiate football coaches. At this point, the purpose of the study and the extent of the athletes' participation will be explained. Once permission is granted, I will drive to each participating school and distribute the survey personally.

**2. Please provide a brief summary of the study and a description of the research protocol (chronologically progressed).**

The purpose of this study is to determine the physical, psychological, and environmental factors determining success in collegiate Division I football. While coaches are experts in determining the physical characteristics associated with success, they lack the ability to determine the psychological characteristics. Following confirmation from the collegiate head coach on participation, an online questionnaire will be utilized including a demographic questionnaire, the Ten-Item Personality Inventory, and the Athletic Coping Skills Inventory. Total participation time is estimated at approximately 30 minutes. Participants will be informed that their participation in the study is completely voluntary and that all information will be kept confidential. Additionally, no identifying information will be on the questionnaires.



**3. What kind of human samples (e.g. tissue, blood) or data will be obtained?**

None

**4. Informed Consent****Attached.**

*Exempt research is not subject to federal regulations contained in 45 CFR 46, which include requirements for informed consent. Therefore, if the research is eligible for exemption, then “technically” informed consent is not required. It is up to the investigator to decide whether or not consent should be obtained and documented. Often the investigator will provide a letter of explanation or even a consent form. Again, this is not required, but may be the appropriate thing to do to ensure the rights and welfare of the subjects.*

**If you plan to provide a Consent Form or letter, please submit it along with this form.**

**If a questionnaire or interview will be done, please attach a copy of the questions.**

\_\_\_\_\_  
**Principal Investigator (printed)**  
**Date**

\_\_\_\_\_  
**Principal Investigator (Signature)**

**For Use by IRB Office Only**

**Exempt Status Approved**      **Yes**    **No**    **IRB Chair/Vice**  
**Chair** \_\_\_\_\_ **Date** \_\_\_\_\_

## CERTIFICATION OF INVESTIGATOR RESPONSIBILITIES

**By signing below I agree/certify that:**

1. I have reviewed this protocol submission in its entirety and I state that I am fully cognizant of, and in agreement with, all submitted statements and that all statements are truthful.
2. This application, if funded by an extramural source, accurately reflects all procedures involving human participants described in the proposal to the funding agency previously noted.
3. I will conduct this research study in strict accordance with all submitted statements except where a change may be necessary to eliminate an apparent immediate hazard to a given research subject.
  - a. I will notify the IRB promptly of any change in the research procedures necessitated in the interest of the safety of a given research subject.
  - b. I will request and obtain IRB approval of any proposed modification to the research protocol or informed consent document(s) prior to implementing such modifications.
4. I will ensure that all co-investigators, and other personnel assisting in the conduct of this research study have been provided a copy of the entire current version of the research protocol and are fully informed of the current (a) study procedures (including procedure modifications); (b) informed consent requirements and process; (c) anonymity and/or confidentiality assurances promised when securing informed consent (d) potential risks associated with the study participation and the steps to be taken to prevent or minimize these potential risks; (e) adverse event reporting requirements; (f) data and record-keeping requirements; and (g) the current IRB approval status of the research study.
5. I will not enroll any individual into this research study: (a) until such time that the conduct of the study has been approved in writing by the IRB; (b) during any period wherein IRB renewal approval of this research study has lapsed; (c) during any period wherein IRB approval of the research study or research study enrollment has been suspended, or wherein the sponsor has suspended research study enrollment; or (d) following termination of IRB approval of the research study or following sponsor/principal investigator termination of research study enrollment.
6. I will respond promptly to all requests for information or materials solicited by the IRB or IRB Office.
7. I will submit the research study in a timely manner for IRB renewal approval.

8. I will not enroll any individual into this research study until such time that I obtain his/her written informed consent, or, if applicable, the written informed consent of his/her authorized representative (i.e., unless the IRB has granted a waiver of the requirement to obtain written informed consent ).
9. I will employ and oversee an informed consent process that ensures that potential research subjects understand fully the purpose of the research study, the nature of the research procedures they are being asked to undergo, the potential risks of these research procedures, and their rights as a research study volunteer.
10. I will ensure that research subjects are kept fully informed of any new information that may affect their willingness to continue to participate in the research study.
11. I will maintain adequate, current, and accurate records of research data, outcomes, and adverse events to permit an ongoing assessment of the risks/benefit ratio of research study participation.
12. I am cognizant of, and will comply with, current federal regulations and IRB requirements governing human subject research including adverse event reporting requirements.
13. I will notify the IRB within 24 hours regarding any unexpected study results or adverse events that injure or cause harm to human participants.
14. I will make a reasonable effort to ensure that subjects who have suffered an adverse event associated with research participation receive adequate care to correct or alleviate the consequences of the adverse event to the extent possible.
15. I will notify the IRB prior to any change made to this protocol or consent form (if applicable).
16. I will notify the IRB office within 30 days of a change in the PI or the closure of the study.

\_\_\_\_\_ **Martin J. Spieler** \_\_\_\_\_  
**Principal Investigator Name (typed)     Principal Investigator Signature     Date**

\_\_\_\_\_ **Dr. Daniel Czech** \_\_\_\_\_  
**Faculty Advisor Name (typed)     Faculty Advisor Signature\*     Date**

**\*Faculty signature indicates that he/she has reviewed the application and attests to its completeness and accuracy.**