

Investigating the Predictors of Athletic Performance

by

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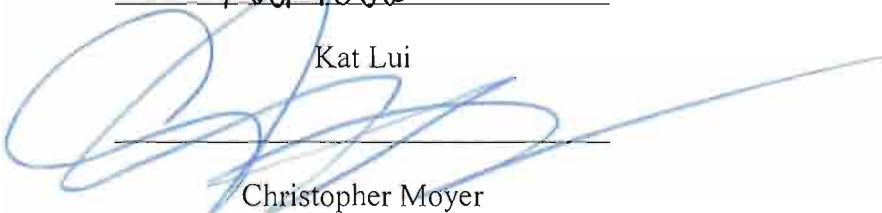
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Abstract

The purpose of this study was to examine the relationship between Cognitive and Non-Cognitive tests and how well they could predict performance. For this study, the author investigated the relationship between the cognitive ability, personality, and motivation and if these would predict player success (in this instance success was determined by how well they performed on a Playbook Measure). Results show that both cognitive ability and motivation correlate with player scores on the Playbook test. The researcher recommends that the NFL should consider broadening its evaluation process and include Non-Cognitive tests to the selection process of future players.

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## Chapter I Introduction

In today's workplace, employers are trying to find the best and most efficient way to predict how their employees will perform on the job. Companies and employers use many different personnel selection devices while interviewing job candidates, of which cognitive ability tests are among the more common (Gottfredson, 2002). Employers want to find the key differences in individuals to help select the best candidate for the specific job (Klimoski & Palmer, 1993; Peterson, 2009; Wonderlic, 2009). Recently employers have gone to using alternative scales to determine how a perspective employee will perform on the job. Of these Non-Cognitive tests, Personality and Motivation have been leading factors in determining job performance (Barrick & Mount, 1993; Zweig & Webster, 2004).

The idea of predicting how a future employee will perform on the job has also crossed over to the sports world. Currently, the National Football League uses the Draft combine as a device to scout, interview, and evaluate future prospects entering the NFL (NFL.com, 2010). During the combine, future prospects will be interviewed, participate in many physical ability drills, and will be tested on their cognitive abilities. The NFL currently uses the Wonderlic Personnel Test or WPT as their tool for testing college athlete's cognitive abilities.

### **Statement of the Problem**

Currently, there is little research pertaining to the use of cognitive scales and how they determine performance of a player entering the National Football League (NFL). Two studies were obtained that compared player's WPT scores to a player's performance in the NFL (Adams & Kuzmits, 2008; Lyons & Hoffman, 2006). Furthermore, compared to the literature on work performance in the general population, no literature was found on non-cognitive tests as a

predictor of future player's performance. The author was unable to obtain any information on Non-Cognitive tests and if they can predict college football players job performance.

### **Purpose of the Study**

Recent studies suggest that cognitive ability tests may have a higher predictive validity when paired with non-cognitive inventories (Outtz, 2002). Researchers believe that more contemporary human resource techniques could be applied to the hiring process of the NFL. The purpose of this study is to expand the literature on selection devices used to determine football player's future performance, more specifically within the NFL. Researchers must determine if there are other predictors of athletic performance (specifically personality, goal orientation, and specific task performance tests), that could determine a player's on field performance, than just cognitive abilities test.

### **Assumptions of the Study**

The researcher is making the assumption that results found for college level football players would translate to NFL level players. The researcher is further assuming that the convenience sample of participants in this study would generalize to all college level football players. Only limited data is gathered in this research allowing the assumptions to be tested.



## **Limitations of the Study**

There appear to be two main limitations that this author foresees. The author had to develop his own performance measure to gather 'criterion' data for the study. The author understands that currently there is no psychometric information for the performance measure being used in this study. Many researchers would like to know that the measure being used is reliable and valid. Another limitation of this study is the sample of participants. The current study used football players from Division II and Junior Colleges, whereas NFL players typically are drafted from Division I colleges. The author believes that a random sample of all NFL players would better represent the data being collected.

## **Methodology**

The following sections of this paper will be broken down as follows. The literature review will explain the development of the NFL combine, literature on cognitive and non-cognitive ability tests used in the job setting and finally how cognitive and non-cognitive tests are used within sports. Following the literature review, in chapter 3 the author will explain in depth the procedures, participants, and measures that were used to complete the study. Finally, the author will explain results of study (chapter 4) and discuss the implications of the results, limitation of the findings and suggestions for future research (chapter 5).

## Chapter II Literature Review

According to the NFL the combine was first started in 1982 and was originally called the National Invitation Camp (NIC). The combine was first designed as a tool to gather health information on college players entering into the NFL. However as player evaluations has evolved, so to has the format of the NFL Combine. Today players participate in a variety of psychological and physical tests, as well as, formal and informal interviews (NFL.com, 2010). The scouting combine is considered the ultimate four day job interview for the top college football players eligible for the upcoming NFL draft.

At the Combine players appear to be measured and tested in specific categories. First factor of tests are the Demographic measurements; these include: 1. Height, 2, Weight, 3. Age, and all other demographical information. The second factor looks to measure the players physical abilities, injury evaluation, and movement; these include: 1. 40-yard dash, 2. 225lb Bench Press, 3. Vertical Jump, 4. Broad Jump, 5. 20 yard shuttle, 6. 3 cone drill, 7. 60 yard shuttle run. Here players are also questioned on past injuries and perform a joint range of motion test. A third factor and the one investigated in this study will be the Psychological evaluations that are performed at the NFL combine.

Currently, the NFL has been using the Wonderlic Personnel Test (WPT) since the early 1970's. Many players must take the WPT as a pre-draft assessment before entering the NFL. Paul Zimmerman has noted the average scores for each position and they breakdown as follows: 1. OL – 26, 2. C – 25, 3. QB – 24 -21, 4. G – 23, 5. TE – 22, 6. S – 19, 7. LB -19, 8. CB – 18, 9. WR – 17, 10. FB – 17, 11. RB – 16 (1985).“The Wonderlic website states that higher scores mean higher intelligence and intelligence has an impact on playing style and leadership,

especially for quarterbacks” (McDonald, 2009). However, since that period of time, there has been no conclusive evidence that the WPT is the best predictor of NFL success (Adams & Kuzmits, 2008; Lyons, Michel & Hoffman, 2006). According to Adams and Kuzmits (2008), many NFL teams actually question the validity of the WPT and some teams even minimize the significance of the test unless a player shows an extreme score, either high or low.

### **Wonderlic Personnel Test (WPT) and NFL Success**

There has been little research on how well the WPT predicts on-field NFL performance. Earlier studies within the NFL have looked at how a player performs on a cognitive abilities test and compares that with a player’s stats from the previous year to determine job performance (Kuzmits & Adams 2008; Lyons et al., 2006). For the Kuzmits & Adams study, they had a sample size of 306 drafted players from a six-year period. The participants play three different offensive positions and their WPT scores were compared to a set performance criteria. The performance criteria for the study consisted of 10 factors: 1. 40-yard dash, 2. Bench press, 3. Vertical jump, 4. Broad jump, 5. Three-cone drill, 6. 20-yard shuttle, 7. 60-yard shuttle. 8. Draft Order, 9. Salary, 10. Games Played (2008). The researchers then correlated these factors with the WPT and found that for years played, position, and performance criteria, the WPT were unrelated to success. All three scores showed a value less than  $r = .20$  (Kuzmits & Adams, 2008). According to the researchers, “the WPT seems to lack validity in this athletic oriented setting-this despite its advocates and some perhaps self-serving statements from Wonderlic Inc” (Kuzmits & Adams, 2008, p. 1726)

Lyons et al. (2006) performed a similar study as the one mentioned above, but they changed a few aspects of their study. First, they studied a total of 521 professional football

players drafted from two different years and they looked at all positions. The authors then hypothesized that the “WPT will be positively related to performance in the NFL.” For their study, the authors’ criteria consisted of games started and stats obtained throughout the season. The authors of the study used bivariate correlations, partial correlations, an independent-samples t-test, and a one way analysis of variance (ANOVA) to analyze their data. Nearly all correlations in the study were around zero ( $r = .01$ ) when WPT scores were compared to performance criteria of salary and games played (Lyons et al. 2006).

Given these disappointing results for the WPT as a predictor of NFL success, attention was turned to other constructs found predictive of employee success in the general population, to see if these would also predict NFL player success. Research on two of these constructs, personality and motivation/goal orientation are presented next.

### **Personality as a Selection Tool in the Workplace**

In today’s business world personality tests are making a comeback as a predictor of performance (Salgado, Viswesvaran, & Ones, 2001). Salgado et. al (2001) believes there are two main reasons for this comeback. First, personality tests can describe certain personalities of employees working in a certain setting. Second, personality tests are believed to predict individual differences in employee’s work behaviors (Salgado et al., 2001). This means that personality tests could predict if an individual will abuse drugs or alcohol on the job or predict if an employee fits into a certain occupational category (Salgado et al. 2001; Schmidt & Ryan 1993). Within the NFL, determining the personality of athletes who perform at a higher level would prove useful. Specifically, it could help determine if a player has an addictive personality, which could be a major issue in the NFL due to use of performing enhancing and street drugs by

players (Reilly, 2001), it could also help predict who would work well within a highly interdependent work team.

### **Five Factor Model**

In Industrial and Organizational psychology, there is an emphasis on using the Five Factor Model (FFM) taxonomy. According to the FFM, personality, consists of (1), Extraversion, (2), Agreeableness, (3), Conscientiousness, (4), Emotional Stability, (5), and openness to experience (Barrick & Mount, 1991; Hough & Oswald, 2000; Salgado et. al. 2001; Schmit & Ryan, 1993; Smith, Hanges, & Dickson, 2001). Barrick and Mount (1991) argued that conscientiousness, which includes achievement and dependability constructs, predicted a variety of criteria pertaining to jobs. Some research has also shown that conscientiousness may be important in predicting who will follow rules and abide by company policies (Hough, 1992). Tett and Burnett (2003) looked at conscientiousness and how it was defined according to tasks employees use on the job. An individual who scored high on conscientiousness usually was inclined to perform task with more detail, precision and at a higher quality (Guion, 1998; Hogan & Holland, 2003; Tett & Burnett, 2003). Conscientiousness has also been shown to receive extra attention from most businesses and organizations (Guion, 1998). Guion (1998) noted that conscientiousness can determine if an individual can be counted on to perform the proper task and do the right thing on the job.

A second FFM factor to help predict job performance was extraversion. However, this factor was less predictive than conscientiousness and could only be used in certain job settings (Barrick, Mount, & Judge, 2001; Hogan & Holland, 2003; Salgado et. al. 2001; Tett & Burnett, 2003).

Agreeableness and Openness to Experience may also predict job performance, but for different reasons than Conscientiousness and Extraversion. Mount and Barrick (1993), noted that individuals who scored high on agreeableness (softhearted, courteous, forgiving, trusting) may perform better for high levels of structure and low levels of ambiguity. In the realm of workplace, Neuman, Wagner, and Christiansen (1999), found that agreeableness and openness to experience were positively correlated to how a retail team performed on the job. The results of the study showed that agreeableness correlated with team job performance at ( $r = .50, p < .01$ ) while openness to experience correlated at ( $r = .20, p < .05$ ) (Neuman et al., 1999). The researchers thus suggest that a team's performance may increase because athletes scoring high in agreeableness would exhibit more effective social functioning within the group and should be more effective in interacting with other team members. Thus, most of the Big Five Personality factors may play an important role in determining how athletes perform on the field.

### **FFM and Prediction of Athletes' Performance**

No research was found directly assessing the FFM of personality and how it correlates to a NFL player's performance. Further, no research was found for the FFM in predicting athletic performance of any type or level.

### **Goal Orientation and the Workplace**

Brett and VandeWalle (1999) defined goal orientation as "a mental framework for how individuals interpret and respond to achievement situations" (p. 864). Bell and Kozlowski (2002) showed that goal orientation has been positively associated with cognitive abilities and has an important role in the training and hiring of employees. Other research suggest that goal orientation is a useful tool in understanding how people develop on the job, attain or demonstrate

competence in learning, and how they approach a task while performing their job (Zweig & Webster, 2004).

Researchers still argue on how many factors actually comprise the goal orientation model. Some suggest that goal orientation can be simply comprised of two factors (learning and performance) while other authors add a third variable of performance avoidance (Brett & VandeWalle, 1999, p 864). More recently, Elliot and McGregor (2001) take things a step further and explain that there are four factors formed along two dimensions of mastery/performance goal and approach/avoidance factors.

Carol Dweck and Ellen Leggett (1988) theorized that students could be divided into two types, based on the student's own theory about their ability. She called her first group of students Fixed IQ theorists. "These students believe their ability was given to them at birth and there is little if anything they can do improve on this ability" (Dweck, 1999 p.2; Dweck & Leggett, 1988). She suggests that these individuals believe they can do a skill with little effort, but if they cannot perform the skill then they will never be able to learn it. She classified her second group of students as Untapped Potential theorists or Growth theorists. These students believe their ability and success are due to learning, and learning requires time and effort. In the case of difficulty, these students believed one must try harder, try another approach, or seek help to learn the new skill. Research finds that Fixed-mindset individuals dread failure because it is a negative account on their basic abilities, while growth mindset individuals accept failure because they realize their performance can be improved (Dweck, 2006; Dweck & Leggett, 1988; Heckhausen, & Dweck, 1998).

### **Goal Orientation and the Prediction of Athletes' Performance**

Within the realm of sports and physical activity literature, goal orientation is classified into two different areas, this time called Task and Ego orientation (Duda, 1992; Nicholls, 1989). In sports activities, we find that individuals with a task orientation use self-referenced criteria to judge their own competence and typically focus on learning, improving their abilities, and mastering the tasks which they perform. From the literature above we can see that this perspective is closely related to Growth Theorists. On the other hand, individuals with an ego orientation tend to orient themselves to achieve a positive evaluation of their current abilities and performance from their coach or other teammates. Ego-oriented individuals' perceptions of accomplishment are the consequences of beating or surpassing others in a competitive contest (Duda, 1989; Nicholls, 1984). According to Dweck & Elliott (1983) these individuals can be considered to fit into the category of a Fixed Theorists. In sport-based research it has been found that a task oriented individual displays a higher rate of sport involvement (Duda, 1988), will display more effort (Duda & Chi, 1989; Hall, 1989), and wants to improve performance more than ego oriented individuals (Hall, 1989).

### **Sport Goal Orientation and NFL Performance Prediction**

No research on Sport Goal orientation and NFL player's performance was found.

### **Conclusion**

Cognitive and Non-Cognitive ability tests have been shown to predict performance when it comes to general job populations. Research has shown that cognitive ability is a valid predictor of job performance (Robertson & Smith, 2001; Schmidt & Hunter, 1998). One researcher went as far as to say "it is not logically possible for industrial-organizational (I/O) psychologists to have a serious debate over whether general cognitive ability is important for



determine job performance” (Schmidt, 2002 p. 187). Other research is showing that Non-cognitive scales are becoming a useful tool in determining future employee’s job performance (Barrick & Mount, 1993; Zwiieg & Webster, 2004).

Within the NFL teams are continually improving evaluation standards of future prospects. The NFL currently uses the WPT to test all rookies at its annual combine. During testing for the combine participants are given the WPT and tested on many skill sets. The researcher could only find two studies that look at the significance of the WPT and its significance in predicting performance.

Given the limited information on predicting job performance of NFL players, the researcher would like to add to the literature through the following study. First, it is a goal to expand the research on cognitive ability testing, specifically the WPT, in football players to determine if they can accurately predict performance. A second goal is to see if it is possible to improve the prediction of performance in football players through the addition of the non-cognitive factors, specifically the FFM of Personality, and goal orientation. Currently, the NFL only uses the Wonderlic Personnel test at the NFL combine. The author hypothesizes that adding non – cognitive tests will increase the predictability of NFL athletes’ performance.

## Chapter III Methodology

The main purpose of this study is to investigate the relative predictability of football player success by the three predictors of cognitive ability, personality, and work motivation. Specific hypotheses to be answered are listed below, followed by a detailed methodology.

### Hypotheses

For this study, the researcher has developed five hypotheses and they are stated as follows:

Ho1: WPT scores will not relate to Playbook scores.

H1: WPT scores will positively correlate to Playbook scores.

Ho2: Of the FFM conscientiousness, will be the only factor to not relate to player's scores.

H2: Conscientiousness will relate to Playbook scores.

Ho3: Overall Sport Goal Orientation composite scores will not relate to Playbook scores.

H3: Overall Sport Goal Orientation composite scores will relate to Playbook scores.

Ho4: Conscientiousness will not predict additional variance in playbook scores over and above WPT scores.

H4: Conscientiousness will predict additional variance in playbook scores over and above WPT scores.

Ho5: Sport Goal Orientation will not predict additional variance in playbook scores over and above WPT scores.

H5: Sport Goal Orientation will predict additional variance in playbook scores over and above WPT scores.

To test the following hypotheses, the following methodology was developed.

### **Procedure**

Four Division III, Two Division II, and One Junior College institutions' athletic directors were originally contacted and asked for permission to visit their Schools. Of the seven schools that were contacted, only two schools agreed to participate in the current study. Once the athletic director gave permission to talk with the Head football coach the author contacted all coaches at the two institutions by email. Coaches who replied to the email were then contacted via phone and follow emails and asked if the researcher would be able to visit their team's practices, workouts or team meetings. For the agreeing coaches, specific site visits were arranged according to the availability of the team and the researcher.

Once on a given campus, the researcher met with the student football players and briefly explained the nature of the study to them and asked them to sign a consent form (Appendix A). After the agreeing players signed the consent form, they were given a packet containing the following: a demographic information sheet (Appendix E), the WPT (Appendix H), a motivational questionnaire (Appendix C), a personality questionnaire (Appendix D), and finally a playbook and playbook measure (Appendix G). Each packet had a random number and this number was reflected on the individual surveys. The researcher then made a point to emphasize that the participants should not put any identifying marks (e.g. names, social security numbers, student id numbers) on their surveys.

Participants were then asked to complete the demographic questionnaire. The researcher collected the demographic questionnaire and allowed the players to study the playbook for 30 minutes. Once the 30-minute study period was completed, the researcher asked participants to complete the WPT. After the allotted minutes for the test expired, the researcher collected the WPT. The participants then completed the Personality Inventory, Motivational Inventory, and Playbook Measure. At the conclusion of data gathering the researcher then debriefed and explained the nature of the study to the participants and answered any questions they had about the study.

### **Participants**

From the Division II University and Junior College that took part in the study there were a total of 100 undergraduate male college football players. There was 100 percent response rate; all players agreed to take part in the study. Two athletes later dropped out of the data gathering session, lowering the completion rate to 98 percent of participants.

Of those completing the study, 30 of the participants were Caucasian, 30 were African American, 16 were of Hispanic, 6 were Asian, and the remaining 18 were of 'other' descent. The average age of the participants was 20 (s.d. = 2.07). Player position breaks down as follows: 1. QB's - 7, 2. RB - 10, 3. WR - 7, 4. OL - 16, 5. TE - 4, 6. DL - 19, 7. LB - 13, 8. DB - 21, 9. K - 2; one participant did not select a position.

## Measures

### Demographics Questionnaire

For this particular study the author developed his own demographic questionnaire. It assessed: age, race, year Started and expected Completion of College, 4. Major, 5. G.P.A. and SAT Scores, 6. Position Played and 7. Player statistics in bench press, vertical jump and 40yd dash time. A copy of the Demographic Questionnaire is included in Appendix A.

### Cognitive Ability Measure

The author used the WPT to determine the cognitive ability of the college football players. The test was used because it is the same test (albeit a different form) given to NFL draftees entering the combine. The test consists of 50-multiple choice items that measure a candidate's ability to: 1). Learn a specific job, 2). Solve problems, 3). Understand instructions, 4). Apply knowledge to new situations, 5). Benefit from specific job training, and 6). Be satisfied with a particular job. The participants only have 12 minutes to complete the entire test and questions progress in difficulty.

As the test has been in use for approximately 50 years, a large quantity of validity and reliability data has been gathered on it. In regards to validity (that is whether or not the test measures what it says it measures), the data appears to be mixed. Predictive validity coefficients are in the range of .22 to .76, with the variability coming from the type of job function that is being measured. The Wonderlic Personnel Test does correlate highly with other intelligence tests, with correlations ranging from .70 to .92.

The WPT also shows a high degree of test-retest reliability ranging from .82 to .95. One could infer that the test results would remain similar if the same participant were to retake the test.

### **Personality Measure**

To measure the athlete's personality the author used the Ten-Item Personality Inventory (TIPI) designed by Gosling, Rentfrow and Swann Jr. (2003). The TIPI consists of two descriptors that describe one of the Big-Five Personality factors, separated by a comma, using the common stem, "I see myself as:" Each of the items are rated on a 7-point Likert scale ranging from 1 (disagree strongly) to 7 (agree strongly). A copy of the measure is included in Appendix A. Scores of opposites 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 of the TIPIs is  $r = .72$  and external correlations ( $r > .90$ ) have been established (Gosling et al., 2003). The TIPI exhibited identical convergent and discriminate validity as the Full Big Five Inventory ( $r = .77$ ) (Gosling et al., 2003).

### **Motivation Measure**

The author used the Sport Goal Orientation Scale developed by Duda and Nicholls (1992). Duda and Nicholls (1992) developed 21 parallel items specific to the realm of sports. Subjects are requested to think of the sport they compete in and to indicate when they feel really successful in this activity. The questions are formatted as, "I feel really successful when..." The items for this scale are arranged on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Three separate scores are calculated from this measure: 1. Task Orientation, 2. Ego Orientation and 3. Overall Goal Orientation, a composite score of task and ego orientation

subscales. Studies show that internal validity values reported by Duda and Nicholls (1992) ranged from .62 to .89.

### **Playbook**

For this study, the researcher developed a small playbook for participants to learn and study in a short time period. Eight offensive and eight defensive plays were randomly chosen from a Junior College playbook of about 100 plays. Of the eight offensive plays, four of them were running plays and the other four were passing plays. For defensive plays, half of the plays consisted of blitz formations and the other half consisted of pass coverage formations. The players were asked to identify names of plays and also asked to remember certain tasks for each position.

### **Playbook Measure**

The playbook measurement was developed as the criterion for player performance. The playbook consisted of 32 questions. Sixteen questions were designed as matching questions. All 16 plays were set up on paper and the players had a “Word Bank or Play Name” above to choose from. The other 16 questions were multiple choice questions. Questions varied from name of the play to what a player had to do during a certain play. The test is not timed; players were given an unlimited amount of time to take the test.

### **Data Analysis**

Descriptive data on cognitive ability will be analyzed to compare the participant sample to the NFL player population. For this study, to test the first three hypotheses, bivariate correlations will be run between the criterion (e.g. Playbook measure score) and predictor

variables (e.g. WPT score, FFM factor scores, overall Motivation score and Ego and Task Subscale scores). To assess the relative importance of the predictors (Hypothesis Four & Five), a Hierarchical Regression will be conducted. The general purpose of the multiple regression analysis was to learn more about the relationship between several independent variables and a criterion variable (in this instance comparing Independent variables (WPT, Personality, and Motivation) with Criterion (Playbook Measure)). Two regression analyses will be conducted to test hypotheses 4 and Hypotheses 5. To test Hypothesis 4, WPT scores will be entered at step one and conscientiousness scores will be entered in step two. To test Hypothesis 5, WPT scores will again be entered first in the regression equation, with the combined sport goal orientation entered in step two. All analyses will use a significance of  $p < .05$ .



## Chapter IV Results

### Descriptive Statistics

#### Demographics

Table 1 of this study indicates players' ethnicity; Table 2 their positions. The average age of the participants was 20 years of age (SD = 2.07). The average G.P.A. was 2.81 (SD = .509).

**Table 1**

#### *Ethnicity of Participants*

	Number of Participants	Percent of Study
White, not of Hispanic origin	30	29.7
African-American, not of Hispanic origin	30	29.7
Hispanic or Latino	16	15.84
Asian or Pacific Islander	6	5.94
Other/Multiracial	18	18.81

**Table 2**

#### *Position of Participants*

	Number of Participants	Percent of Study
Quarterbacks (QB)	7	0.07
Running Backs (RB)	10	0.1
Wide Receivers (WR)	7	0.07
Offensive Linemen (OL)	16	0.16
Tight End (TE)	4	0.04
Defensive Linemen (DL)	19	0.19
Linebacker (LB)	13	0.13
Defensive Back (DB)	21	0.21
Kicker (K)	2	0.02

#### Predictive Variables

Table 3 of this study indicates the mean, SD, range and distribution of all predictor variables.

**Table 3***Descriptive Statistics for Predictor Variables*

	N	Mean	Std. Deviation
WPT	100	17.5	8.24
SGO	99	3.62	.524
Extraversion	99	5.08	1.33
Agreeableness	99	4.51	1.15
Conscientiousness	99	5.96	1.01
Emotional Stability	99	4.98	1.28
Openness to Experience	99	5.6	1.13
Valid N	98		

WPT-Wonderlic Personnel Test, SGO- Sport Goal Orientation Test

**Table 4***WPT Scores by Position*

Play Position	N	Mean	Std. Deviation
QB	7	22	5.745
RB	10	19	6.786
WR	7	16	8.772
OL	16	20	8.633
TE	4	14	6.028
DL	19	19	8.959
LB	13	16	8.335
DB	21	14	7.799
K	2	19	2.828
Total	100	17	8.204

QB- Quarterback, RB-Running Back, WR- Wide Receiver, OL- Offensive Lineman, TE-Tight End, DL-Defensive Lineman, LB-Linebacker, DB-Defensive Back, K-Kicker

### Criterion Variable

Table 5 looks at the mean, SD, range, and distribution of Playbook measure. Results show that the average Total score for the playbook measure was 19 correct out of 32 questions with an SD (6.41). The results of the Playbook measure were also broken down by position to see if scores were similar to WPT Scores.

**Table 5**

#### *Playbook Measure Results*

Play Pos	N	Mean	Std. Deviation
QB	7	20	5.22
RB	10	20	4.94
WR	7	22	5.75
OL	16	19	6.34
TE	4	19	7.04
DL	19	19	7.02
LB	13	18	6.15
DB	21	16	6.89
K	2	19	5.65
Total	100	19	6.41

QB- Quarterback, RB-Running Back, WR- Wide Receiver, OL- Offensive Lineman, TE-Tight End, DL-Defensive Lineman, LB-Linebacker, DB-Defensive Back, K-Kicker

### Hypothesis 1

The author hypothesized that the WPT will positively correlate with player success. As can be seen in table 6, the results support this hypothesis ( $r = .407, p < .01$ ).

### Hypothesis 2

To test Hypotheses 2, conscientiousness will be related to a playbook scores. A correlation analysis was a conducted. Results indicate that hypothesis two is not supported ( $r=.03, p > .05$ ).

### Hypothesis 3

The third Hypothesis, Sport Goal Orientation will relate to playbook test scores was also examined using the bivariate correlation. Results indicate support for hypothesis 3 ( $r = .211$   $p < .01$ ).

**Table 6**

#### *Correlations of Predictor and Criterion Variables*

	WPT	PB	E	C	ES	OE	A	M
WPT								
PB	.407**							
E	-0.077	-0.072						
C	-0.212	0.03	0.115					
ES	-0.1	0.022	0.018	0.196				
OE	-0.056	0.038	.259**	0.256	0.75			
A	0.164	0.012	-0.16	-0.047	.210*	0.118		
Mot	0.067	.211*	0.054	0.039	0.079	0.107	0.164	

WPT-Wonderlic Personnel Test, PB-Playbook, E-Extroversion, C-Conscientiousness, ES-Emotional Stability, OE-Openness to experience, A-Agreeableness, Mot-Sport Goal Orientation Composite

### Hypothesis 4 & 5

Tables 7 and 8 shows data testing hypothesis four & five: H4- Conscientiousness will predict additional variance in playbook scores over and above WPT scores. H5- Sport Goal Orientation will Predict additional variance in playbook scores over and above WPT scores. To test these hypotheses, two hierarchical regression analyses were performed. To test hypothesis four, WPT scores were entered in the first step and conscientiousness scores were entered in the second step. Results indicate that conscientiousness does not explain additional variance over WPT scores ( $\Delta R^2 = .014$ ,  $p > .05$ ) Thus hypothesis four was not supported. To test hypothesis

five, hierarchical regression was again conducted. In step one, WPT scores were entered and sport goal orientation scores were entered in the second step. Table 8 results indicate that sport goal orientation scores explain additional variance over and above that explained by WPT scores ( $\Delta R^2 = .034, p < .05$ ).

**Table 7.**

*Hierarchical Regression Analysis Testing Hypothesis Four.*

	$R^2$	$\Delta R^2$	$F$
<u>Step 1</u>			
Wonderlic Personnel Test	.159	--	18.329** (1.97)
<u>Step 2</u>			
Conscientiousness	.173	.014	1.585

\* $P < .05$ , \*\*  $P < .01$

**Table 8.***Hierarchical Regression Analysis Testing Hypothesis Five.*

	$R^2$	$\Delta R^2$	$F$
<u>Step 1</u>			
Wonderlic Personnel Test	.159	--	18.329** (1,97)
<u>Step 2</u>			
Sport Goal Orientation	.193	.034*	4.05*
* $p < .05$ , ** $p < .01$			

## Chapter V Discussion

The main purpose of this study was to investigate the relative predictability of football player success by using the three predictors: cognitive ability, personality, and motivation. Specifically, the author wanted to add to the current literature on what factors might determine an NFL football player's success. To do so, a convenience sample of Division II and Junior College student football players were administered a cognitive ability test (WPT), and two non-cognitive scales (TIPI, Sport Goal Orientation). The criterion used was their score on a playbook test. Five separate hypotheses were tested. A discussion on the results for each follows.

### **Hypothesis 1: WPT scores will positively correlate to Playbook scores.**

The first hypothesis that cognitive ability will positively correlate to player success was supported. As measured by their performance on a playbook test was supported. This finding is similar to other studies within the general job setting, as they too find cognitive ability tests positively correlated to predicting job performance (Gottfredson, 2002; Schmidt & Hunter, 1998; Tenopyr, 2002). However, this study's finding for football players differs from Adams and Kuzmits (2008), who found that the WPT did not significantly predict performance of college football players entering the NFL.

The researcher believes this may have occurred because the performance criterion was different from previous studies. Earlier research used players on field statistics as performance criteria; while in this study, the criterion used was performance on a playbook measure. Again, literature suggests that GCA is significantly correlated with an individual's ability to learn (Schmidt, 2002). Thus, the playbook measure could be a better criterion used for this study showing that players are learning. In addition, the criteria used by others (Adams & Kuzmits,

2008; Lyons et al. 2006) may not have been appropriate as these criteria also take into account physical abilities (e.g., running speed, dynamic strength).

**Hypothesis 2: Conscientiousness will relate to Playbook scores.**

The second hypothesis was not supported in this study. Unfortunately, no results within the football world were found exploring the relationship of personality tests and the ability to predict player's performance. However, in the general job setting conscientiousness has been shown to accurately predict performance. Barrick & Mount (1991) showed that conscientiousness predicts performance across jobs.

The researcher believes that certain factors could have played a part in showing no relationship between personality and job performance. Mark Anshell (1990), states that personality inventories have not been shown to be consistent from sport to non sport situations. Successful athletes may have different personality traits than the general job population. Further research needs to look at personality, and specifically conscientiousness and performance within NFL players. Results are inconsistent with other studies that show conscientiousness predicts job performance. A possible explanation lies in the type of criterion used in the current study. Previous studies and meta-analyses used supervisor ratings of job performance as criteria while the current study used a playbook test, something that taps cognitive ability. It may be that if coaches' ratings of players' performance were included as criterion in the current study, results will mirror previous published studies. Finally, Barrett, Miguel, Hurd, Lueke, and Tan (2003) showed that results may be affected by the type of personality inventory used in the study. This is because, unlike cognitive ability tests, personality inventories have lower convergent validities, cognitive ability tests typically correlate about .90 with each other; however, Ones,



Schmidt, and Viswesvaran (1994) found that conscientiousness scales only correlate .47 with each other, which means conscientiousness scales only share 22% variance.

**Hypothesis 3: Overall Sport Goal Orientation composite scores will relate to Playbook scores.**

The hypothesis H3: Sport Goal Orientation will relate to player's success was partially supported in this study. The Sport Goal Orientation was positively correlated to the Playbook measure. Again, the author was unable to obtain research on motivation in football players and if it could predict performance. Bell and Kozlowki (2002) proved that in the 'general job setting' motivation had a direct relationship to learning and job performance. There was no earlier research on whether or not motivation (more specifically Sport Goal Orientation) could determine a player's performance entering the NFL. It was interesting to note the positive correlation between Sport Goal Orientation and Performance (in this instance a player's performance was determined by how well they scored on their Playbook measure. From this study, one could suggest that motivated players will perform better on the field. The author recommends that further studies could look to see if there are any differences between task and ego oriented individuals and how they perform.

**Hypothesis 4: Conscientiousness will predict additional variance in playbook scores over and above WPT scores.**

Hypothesis 4 was not supported in this study. Again, there was no prior research on the current subject in football players. However, it is interesting because within the general job population conscientiousness factors have been shown to be equally important in predicting performance on the job. Barrick & Mount (1993) show that "managers who scored high on conscientiousness performed better and displayed a higher job performance" (1993). Previous

research has shown that personality does predict additional variance over that predicted by cognitive ability (Day & Silverman, 1989; Schmidt & Hunter, 1998). As is the case with hypothesis two, the criterion used in the current study is cognitively-loaded, while the criterion used in previous research have been supervisor ratings. It may be that if coach ratings were included as a criterion, player conscientiousness scores will predict additional variance over cognitive ability.

**Hypothesis 5: Sport Goal Orientation will provide additional predictive ability of WTP scores above that provided by the WPT.**

Hypothesis 5 was supported in this study. Zweig & Webster (2004) noted that goal orientation, or the way in which people approach a task, represents a key motivational variable related to selection and evaluation. Results indicate that motivation predicts additional variance over cognitive ability in our sample. This could be due to the fact that participants were motivated to do well either because they are intrinsically motivated or did not want to be seen as incompetent, as goal orientation theory predicts. I posit that participants in the study were motivated to do well because of multiple factors. First, their coach requested that they participate in the study. Second, there could have been a competitive nature in the way they would view their scores in that participants would not want to be the low scorers and therefore be teased by their teammates.

Based on the results to this study, it has been concluded that WPT may indeed contribute to how a player will perform (when the player's performance is based on a Playbook test). This differs from other studies where there was no correlation between cognitive abilities and performance (Kuzmits & Adams, 2008). As we noted above, the Kuzmits and Adams (2008) and Lyons et al. (2006) used criteria that may have better predictors other than cognitive ability. For

example, Kuzmits and Adams (2008) used average yards/reception as a criteria. We would argue that cognitive ability has little, if any, relation to this. A better predictor would be to use how many times they performed the correct procedure during a play. From the study above using the Playbook Measure one could postulate that the WPT is measuring a player's ability to learn.

The regression analysis showed that Personality does not add predictive power, but Sport Goal Orientation scales do add to the predictive power of the WPT. The author found the results of this section surprising and believes that other studies should be performed for a more reliable result.

### **Limitations**

The performance criterion "playbook" might need to be moderated by looking at memorization factors. The author also agrees with Lyons, Hoffman & Michel (2006) when they say, "the ultimate criterion that represents job performance in the NFL may entail multiple years of performance that encompasses objective (e.g., statistical) and contextual performance behaviors" (2006, p.14). The author believes that memorizing could be a specific job quality for football players. Therefore, this researcher believes that further literature needs to be reviewed to determine the difference between general or specific job knowledge.

### **Future Study Recommendations**

The author feels that 'performance' needs to be thoroughly defined in future studies. For this study, performance was based on how well the subject scored on the Playbook measure. Researchers may want to look at player's statistics over a two year period to determine 'performance' and then compare that with WPT scores. Future studies could also compare Non-Cognitive test results with a player's statistics.

As noted by Adams and Kuzmits (2008), “beyond the WPT, the NFL may improve the overall validity of the combine process by including a test battery comprised of additional psychological constructs, for example, those that have been shown to correlate with peak athletic performance”(2008). The author believes that more research needs to be done within the sports realm to determine which factors determine performance.

The researcher was able to find evidence that match other literature pertaining to player WPT scores. More specifically, the researcher was able to breakdown the WPT scores by position and noticed, for the most part, that cognitive ability scores per position were a little lower than Paul Zimmerman’s findings (Zimmerman, 1985).

## **Conclusion**

Overall, the data from this study is important and contributes to the NFL prediction literature. Specifically, it demonstrates that cognitive ability does predict to a player’s ability to learn job related information in a short period of time. Resources note that some teams may have a playbook of up to 700 pages to give players to memorize and learn in the matter of a preseason camp (Merrill, 2007). The season playbook gets even trickier when coaches are adding new plays and removing old plays. Merrill (2007) suggested, “No laymen or super-fan could get through the first section without being completely confused. But therein lies the trick, to sort through the clutter, learn fast and play fast.” As one coach suggested, a playbook acts more like an ongoing textbook, a detailed explanation of a player’s job complete with graphics, X’s and O’s and simplified text that they add to each week. Results from this research maybe generalized to the NFL, since players are continually adapting to a new playbook each week.

Finally, in the sports world conscientiousness and motivation may play more of a factor than in a controlled setting. Coaches are continually evaluating players on performance and

understanding of playbook information throughout the season (Merrill, 2007). Thus, coaches maybe more likely to choose player's with higher conscientiousness scores (responsible, dependable, persistent, and achievement oriented), than players with high WPT scores. On the playing field heart and character may play just as an important role in predicting a player's success as intelligence.

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## Appendix A: Letter to Coach/Athletic Director



Department of Psychology

University of Wisconsin-Stout  
P.O. Box 790  
Menomonie, WI 54751-0790

April 12, 2005

Doug Adkins

Head Football Coach

Humboldt State University

1 Harpst Street

Arcata, California 95521

Dear Coach Adkins:

Hello, my name is Zachary Weber and I am currently enrolled in the Masters of Applied Psychology program at the University of Wisconsin-Stout. As part of my degree program, I am required to finish a thesis. For my thesis project, I am working on a study looking at predicting the athletic performance of football players.

I have designed a study to investigate how cognitive, personality, and motivational factors influence how an athlete will perform on the playing field. I became interested in this topic because I keep hearing about how the NFL uses a cognitive ability test (the Wonderlic) as part of the selection of new players. However, there is insufficient published scientific studies regarding how well the Wonderlic predicts actual performance. Furthermore, I am interested in investigating how cognitive ability interacts with both personality and motivation to predict athletic performance.

For this study, your athletes will be taking the *actual* Wonderlic Personnel Test as well as the Wonderlic Personnel-Revised Test. The Wonderlic Corporation has requested that I include the Revised Test to determine if it can also accurately predict performance. This is because the Wonderlic Corporation is continually updating and revising the Wonderlic Personnel Test. I will also be administering a short personality and motivation questionnaire as part of my research. Research in other domains have shown that both personality and motivation affect performance; however this has not been studied in the sport domain.

This study would be beneficial to you and your program because if my hypotheses are supported, this could improve the selection system used for athletes entering your team and professional sports. By expanding the number of predictors used to select athletes, teams will be able to improve their ability to predict superior athletic performance.

The results could also help lower the attrition rate of high school athletes and underclassmen that get cut from your sports teams as you would be able to more accurately predict who would most likely succeed. This information could also help with recruiting purposes to determine if a player is best suited for a certain team.

The study should last approximately 40 minutes and there are minimal risks to your athletes. I know Division-II programs have just started spring practice and you are all very busy. While players have the option not to participate in my study, I would like to have all of them participate in the study. As part of the study, each player will be asked to sign a consent form indicating that they have understood the benefits and risks of participating in the study. Furthermore, information collected as part of this study will be kept confidential and destroyed when the study is completed.

If you are interested and willing to participate in the study please contact me or my advisor Dr. James Tan as soon as possible. Your participation would be greatly appreciated. Thank you very much for your time and consideration.

Thank You,

Zachary A. Weber

Investigator

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## Appendix B: Consent Form

### Consent to Participate in UW-Stout Approved Research

**Title:** Investigating the Predictors of Athletic Performance in Football Players

The following study that you will be entering will try to determine if Cognitive Ability tests (Intelligence tests) only predict athletic performance or if Non-Cognitive tests (motivational & personality tests) could also be a good predictor for athletic performance. In this study you will be asked to provide the following information:

1. Academic GPA; 2. Physical Test Scores (40-yard time, Vertical Jump, Bench Press); 3. Demographic Background. Following this informational interview you will be asked to complete the following tests. First, the Wonderlic Personnel Test which consists of 50 questions taken in a 12-minute period. Once the Wonderlic Test has been completed you will be given two surveys and then you will be free to leave.

With this study you will be given survey packets with randomly assigned numbers. This will help ensure that the participant's identity stays anonymous. Although the researcher foresees no risks to the participants, some participants may become anxious because of the testing situation. If participants become anxious or uncomfortable during the data collection, they may withdraw and the researcher will direct them to the University Counseling Center where they may seek help for their anxiety problem. By completing this research project you will be helping professionals improve the selection criteria for athletes entering the professional sports world. Results from this research may help teams select athletes on other premises than mental and physical ability.

Your participation in this study is entirely voluntary. You may choose not to participate without any adverse consequences to you. Should you choose to participate and later wish to withdraw from the study, you may discontinue and your information will be removed from the study.

This study has been reviewed and approved by the University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this

study please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your right as a research subject, please contact the IRB Administrator.

*By signing this consent form you agree to participate in the project entitled, **Investigating the Predictors of Athletic Performance.***

---

Signature

Date

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Menomonie, WI 54751

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715-232-2477

## Appendix C: Sport Goal Orientation

**Sport Goal Orientation**

Please answer the following questions using the 5-point Likert-type scale on the right side of the survey with 1= Strongly Disagree to 5= Strongly Agree.

*Remember to base your answers on the following statement: **I feel really successful when.....***

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I can keep practicing hard.	1	2	3	4	5
2.	I work really hard.	1	2	3	4	5
3.	I learn a new skill by trying hard.	1	2	3	4	5
4.	Something I learn makes me want to practice more.	1	2	3	4	5
5.	I get the knack of doing a new skill.	1	2	3	4	5
6.	A skill I learn really feels right.	1	2	3	4	5
7.	I do something I couldn't do before.	1	2	3	4	5
8.	I do my very best.	1	2	3	4	5
9.	Others can't do as well as me.	1	2	3	4	5
10.	I do better than my friends.	1	2	3	4	5
11.	I beat the others.	1	2	3	4	5
12.	I'm more skilled than other people.	1	2	3	4	5



13.	Others mess up and I don't.	1	2	3	4	5
14.	I'm the only one who can do the skill.	1	2	3	4	5
15.	I'm the best.	1	2	3	4	5
16.	I have the highest score.	1	2	3	4	5
17.	My friends and I help each other improve.	1	2	3	4	5
18	My friends and I help each other do our best.	1	2	3	4	5
19.	I can goof off.	1	2	3	4	5
20.	I don't have anything tough to do.	1	2	3	4	5
21.	I don't have to try.	1	2	3	4	5

## Appendix D: Ten-Item Personality Inventory

## Ten-Item Personality Inventory-(TIPI)

Here are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

Disagree Strongly	Disagree Moderately	Disagree a Little	Neither Agree nor Disagree	Agree a Little	Agree Moderately	Agree Strongly
1	2	3	4	5	6	7

I see myself as:

1. \_\_\_\_ Extraverted, enthusiastic.
2. \_\_\_\_ Critical, quarrelsome.
3. \_\_\_\_ Dependable, self-disciplined.
4. \_\_\_\_ Anxious, easily upset.
5. \_\_\_\_ Open to new experiences, complex.
6. \_\_\_\_ Reserved, quiet.
7. \_\_\_\_ Sympathetic, warm.
8. \_\_\_\_ Disorganized, careless.
9. \_\_\_\_ Calm, emotionally stable.
10. \_\_\_\_ Conventional, uncreative.

---

TUPI scale scoring (“R” denotes reverse-scored items):

Extraversion: 1, 6R; Agreeableness: 2R, 7; Conscientiousness: 3, 8R; Emotional Stability: 4R, 9;

Openness to Experiences: 5, 10R.

## Appendix E: Demographic Questionnaire

## Demographic Questionnaire

1. Age: \_\_\_\_\_
  
2. Your race is:
  - a. White, not of Hispanic origin
  - b. African-American, not of Hispanic origin
  - c. Hispanic or Latino
  - d. Asian or Pacific Islander
  - e. Other/Multiracial
  
3. Semester & Year started at UW-Stout:  
  
Fall    Spring                  Summer  
  
19\_\_\_\_                  or                  200\_\_\_\_
  
4. Are you a transfer student? Yes                  No
  
5. If you are a transfer student, how many semesters did you complete before transferring to UW-Stout?  
  
\_\_\_\_\_ semesters.

6. What semester and year do you anticipate graduating from UW-Stout?

Fall

Spring

Summer

200 \_\_\_\_\_

7. ACT/SAT Score: \_\_\_\_\_

8. GPA: \_\_\_\_\_

9. Major: \_\_\_\_\_

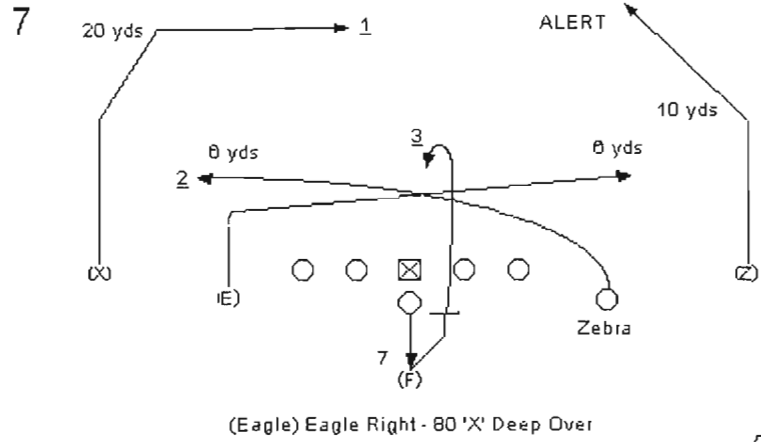
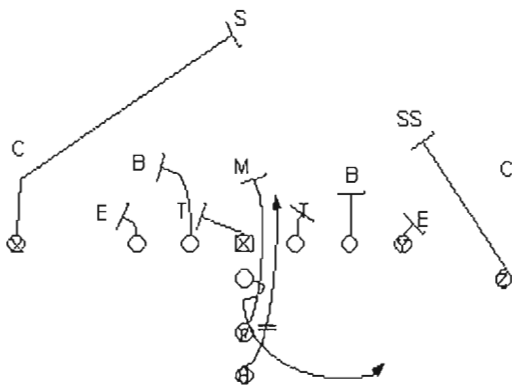
10. Number of hours worked per week: \_\_\_\_\_

Appendix F: Playbook

Offensive/Defensive Playbook for  
Blue Springs Wildcats

Offensive Plays

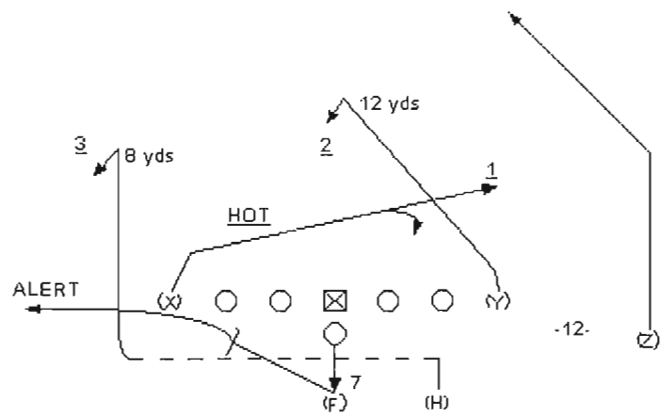
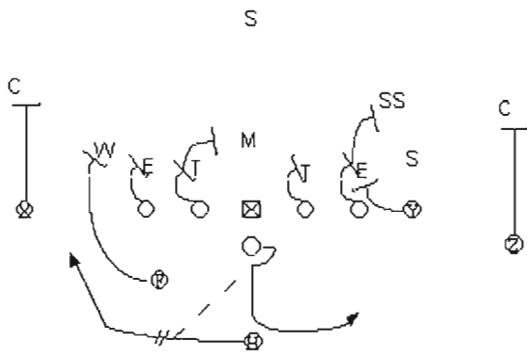
I Right - Iso



(Eagle) Eagle Right - 80 'X' Deep Over

53

Weak I Right - Toss Left

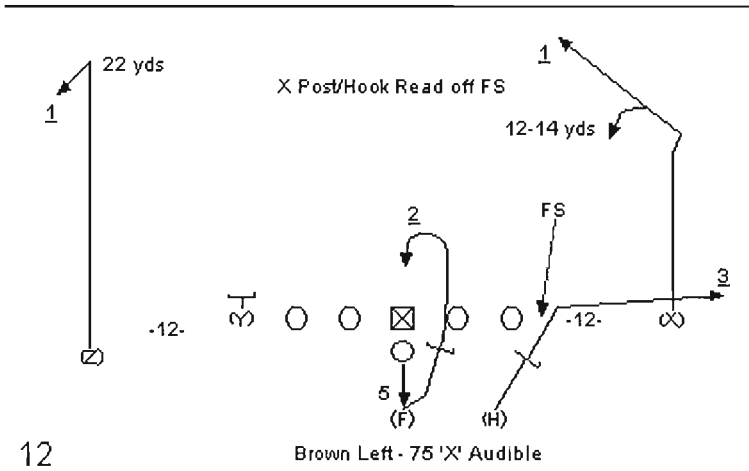
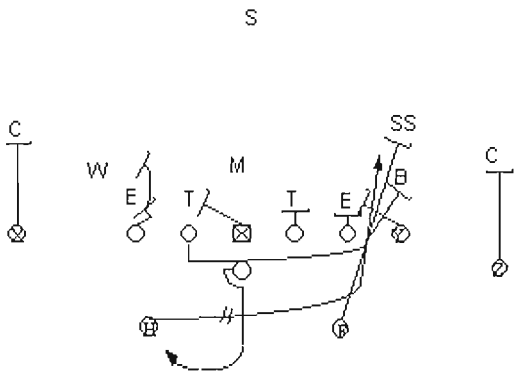


Blue Right Tight 'C' Left - 78 'X' Shallow Cross

22

8

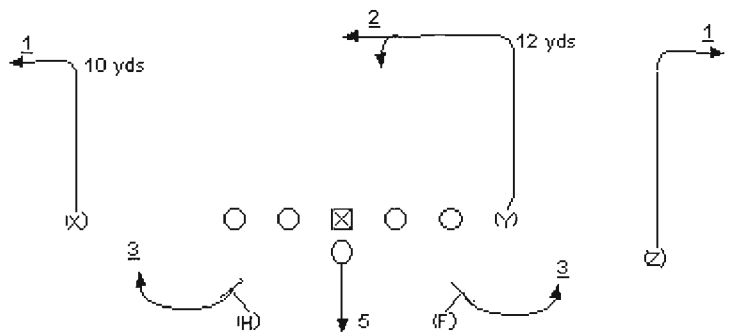
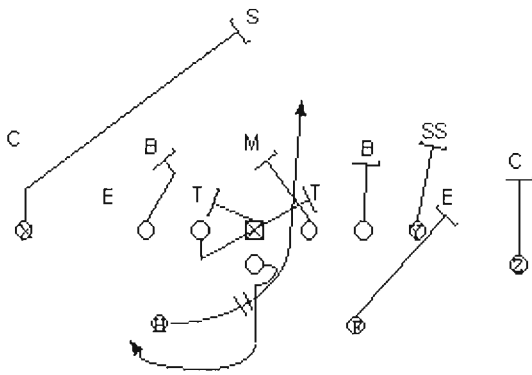
Split Right - HB Power



12

Brown Left - 75'X' Audible

Split Right - Slice Trap

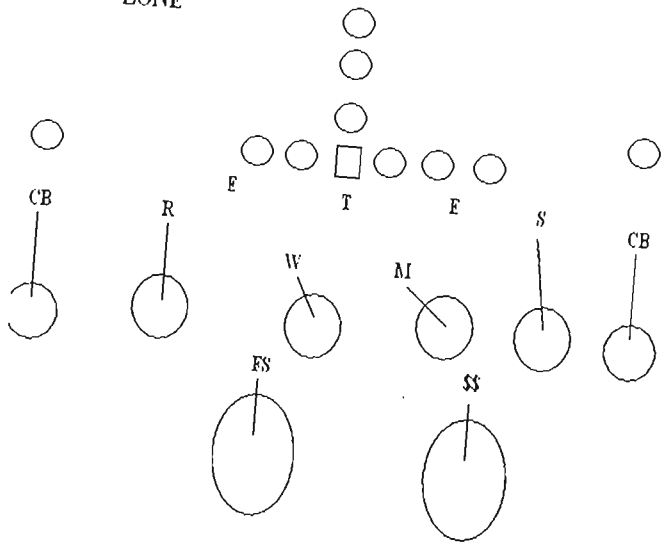


Red Right - 24 Double Square Out (OKIE)

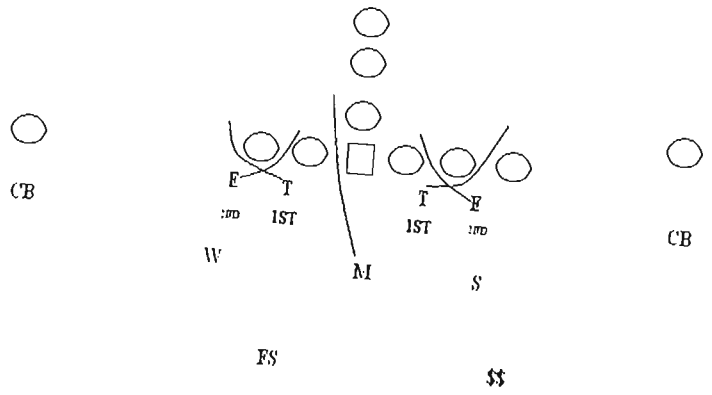
5

Defensive Plays

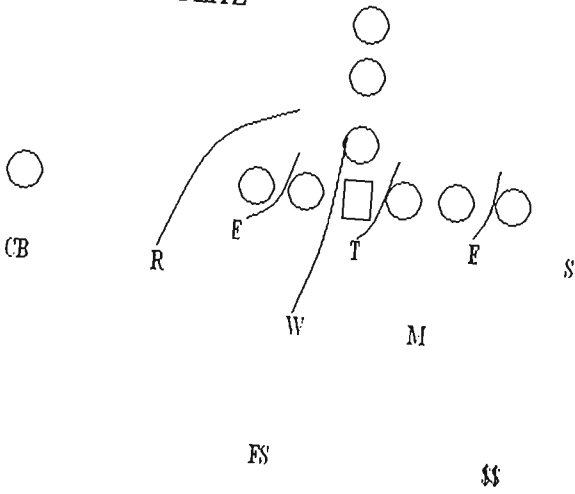
3-4 KEY ZONE



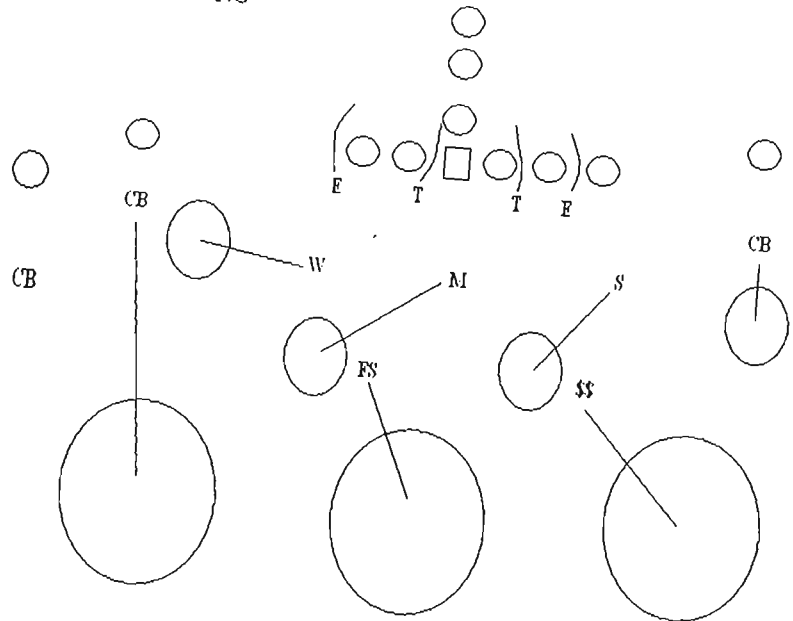
4-3 22 TEXAS



3-4 WK SNAKE BLITZ

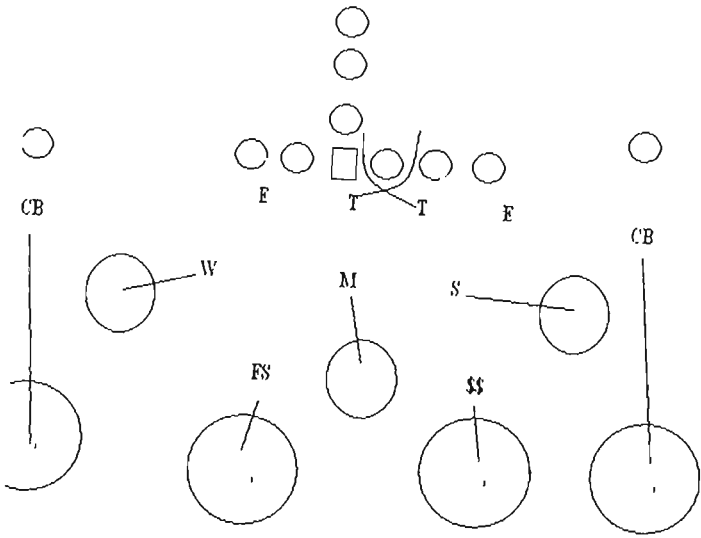


4-3 OVER STRONG

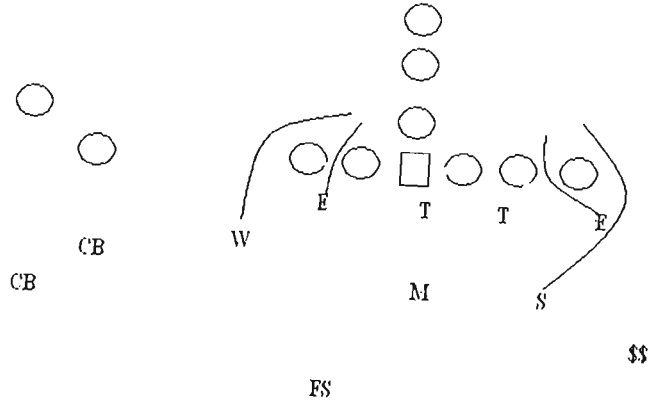




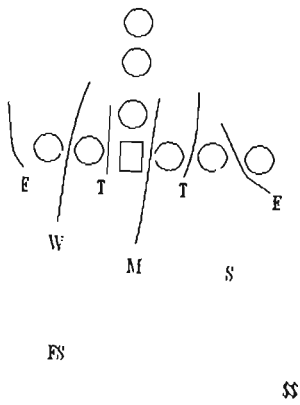
3 TENNESSEE  
ONE



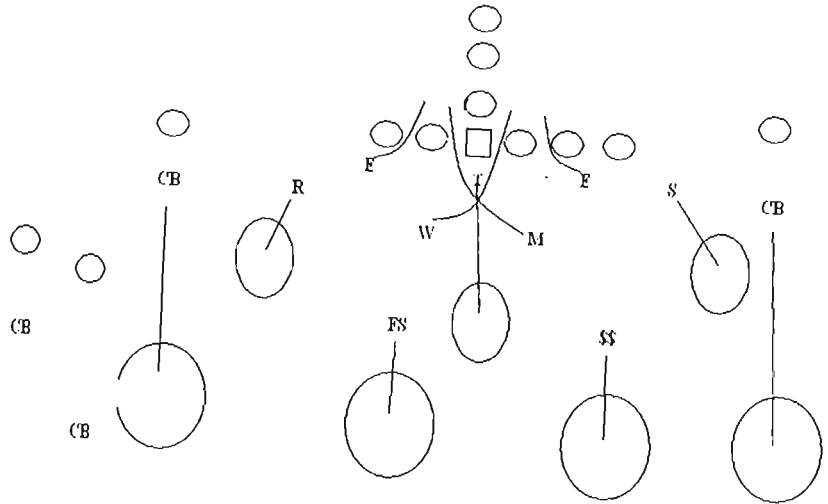
4-3 RED DOG



BEAR BLITZ



3-4  
31 GUTS BLITZ



## Appendix G: Playbook Measure

**Offensive/Defensive Playbook Test**

IN THIS SECTION OF THE TEST PICK THE BEST ANSWER FOR THE QUESTION:

1. In the play *I-Right Iso* the “Z” receiver blocks:
  - a. The Cornerback in front of him
  - b. The Strong Safety
  - c. Crack blocks the nearest Linebacker
  
2. In the play *Blue Right Tight “C” Left – 76 “X” Shallow Cross*, the “Z” receiver runs a:
  - a. 5yd-Out
  - b. 10yd-Post
  - c. 10yd-Curl
  
3. In the play *4-3 Bear Blitz* which of the linebackers blitz:
  - a. The Sam and Mike linebacker
  - b. The Will and Mike linebacker
  - c. The Same and Will linebacker
  
4. In the defensive play *3-4 Guts Blitz* the main coverage is:
  - a. Cover 1
  - b. Cover 4
  - c. Cover 3
  
5. In the play *Red Right – 24 Double Square Out (OKIE)* the “Y” receiver runs:
  - a. 12yd - Out
  - b. 12yd - Post
  - c. 12yd - In
  
6. In the defensive play *4-3 Tennessee Zone* the:
  - a. Defensive Linemen slant to the weak gap
  - b. Defensive Linemen perform a stunt between Tackles and Ends
  - c. Defensive Linemen perform a stunt between the Tackles

7. In the play *Brown Left – 75 “X” Audible* the “Z” receiver runs:
  - a. An option route of curl or post
  - b. A 22yd curl out
  - c. A 22yd in pattern
  
8. In the play *3-4 Key Zone*:
  - a. Both CB’s drop to deep halves
  - b. Both CB’s drop short
  - c. Both CB’s blitz
  
9. In the play *Weak I Right – Toss Left* the Fullback blocks:
  - a. He blocks the Weakside Linebacker
  - b. He blocks the Right End
  - c. He blocks the Cornerback
  
10. In the play *4-3 22 Texas* which linebacker blitzes:
  - a. The Middle Linebacker
  - b. The Will Linebacker
  - c. The Sam Linebacker
  
11. In the defensive play *4-3 Red Dog* which way do the Defensive Ends Slant:
  - a. They Slant towards the outside gap
  - b. They do not Slant
  - c. They Slant towards the inside gap
  
12. In the play *(Eagle) Eagle Right – 80 “X” Deep Over* the:
  - a. Zebra and “E” receiver run crossing routes
  - b. Zebra and “X” receiver run crossing routes
  - c. Zebra and “Y” receiver run crossing routes
  
13. In the play *3-4 WK Snake Blitz* which linebackers blitz:
  - a. Rover and Mike linebacker
  - b. Rover and Will linebacker
  - c. Mike and Sam linebacker
  
14. In the play *4-3 Over Strong* what coverage are the DB’s in:
  - a. Cover 0

- b. Cover 3
- c. Cover 2

15. In the play *Split Right – HB Power* the Tight End or “Y” receiver:

- a. Blocks the Strong Linebacker
- b. Blocks the Strong Safety
- c. Blocks down on the Defensive End

16. In the play *Split Right – Slice Trap* the “X” receiver blocks:

- a. The Cornerback on him
- b. The Safety
- c. The nearest Linebacker

IN THIS SECTION OF THE TEST MATCH THE LETTER OF THE PLAY WITH THE CORRECT PLAY:

A. I-Right Iso

J. 4-3 Tennessee Zone

B.3-4 Key Zone

K. Blue Right Tight “C” Left – 76 “X” Shallow Cross

C. Weak I Right – Toss Left L. 4-3 Red Dog

D. 4-3 22 Texas

M. Brown Left – 75 “X” Audible

E. Split Right – HB Power

N. 4-3 Bear Blitz

F. 3-4 WK Snake Blitz

O. Red Right – 24 Double Square Out

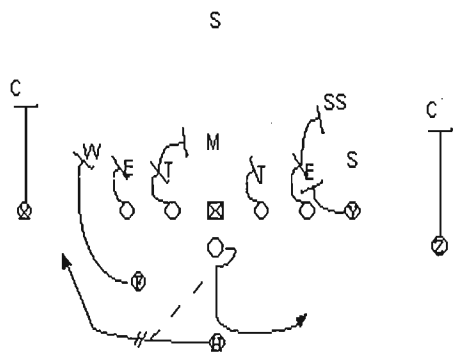
G. Split Right – Slice Trap

P. 3-4 31 Guts Blitz

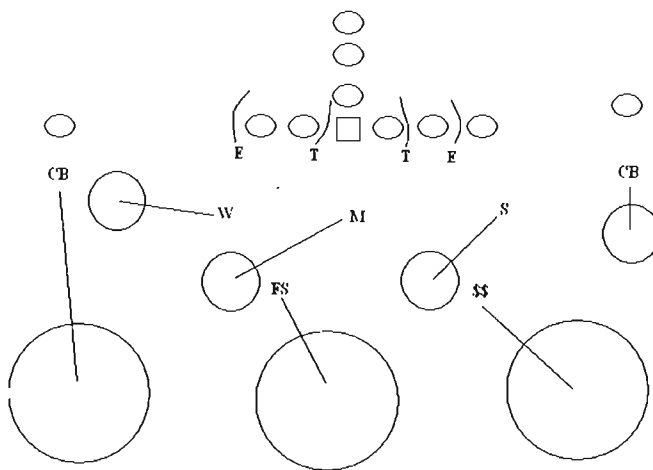
H. 4-3 Over Strong;

I. Eagle Right – 80 “X” Deep Over

1. \_\_\_\_\_

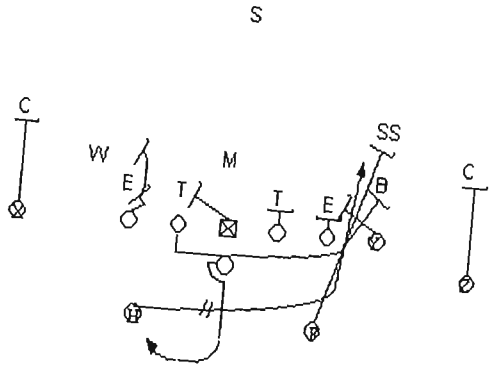
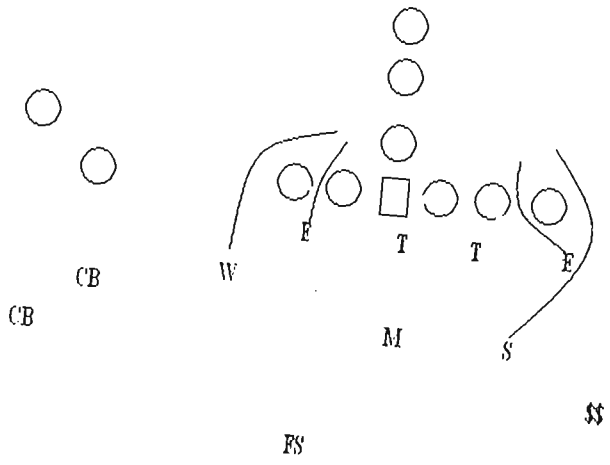


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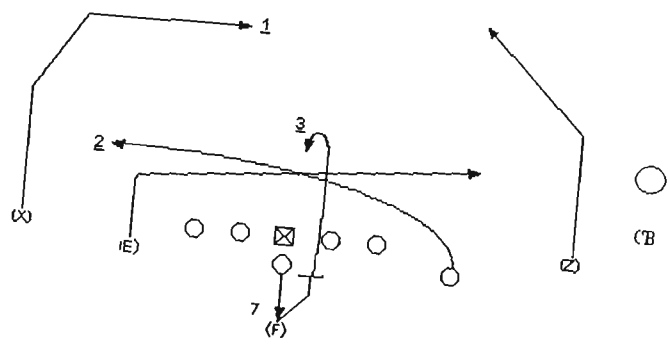


3. \_\_\_\_\_

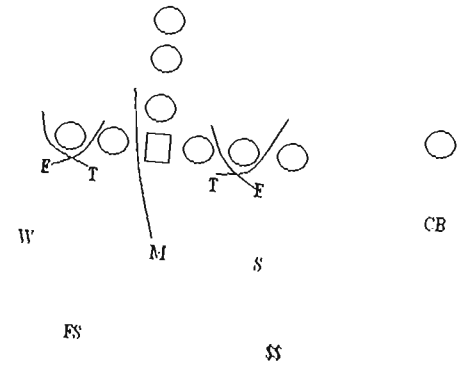
4. \_\_\_\_\_



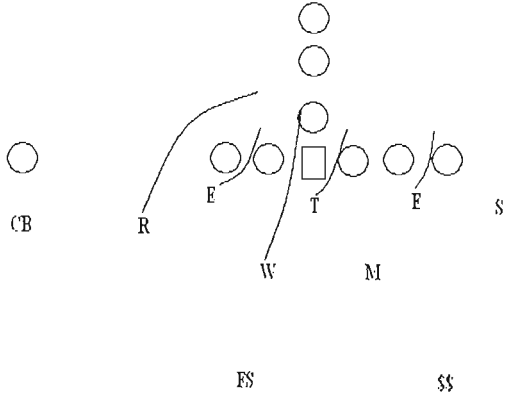
5. \_\_\_\_\_



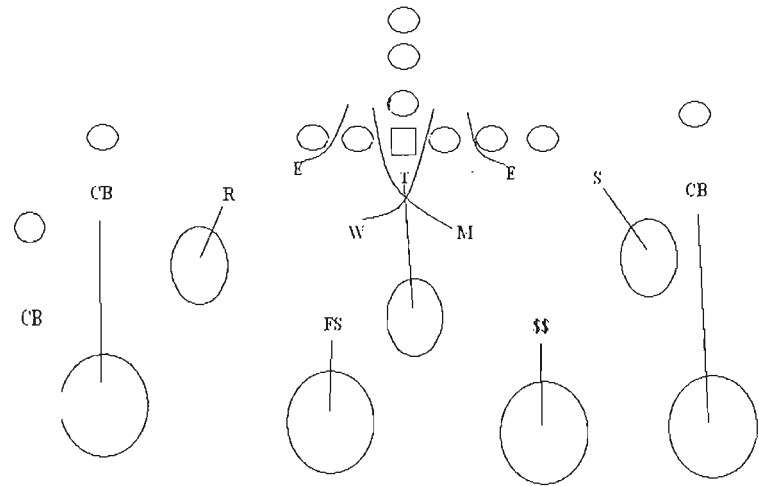
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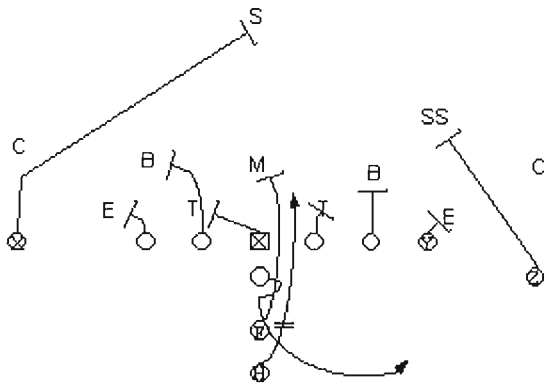
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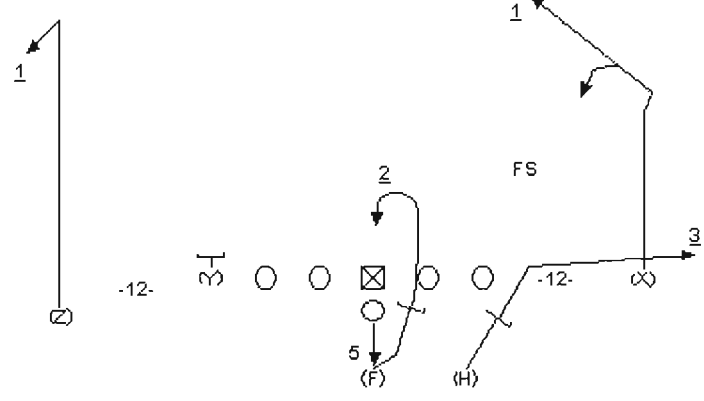
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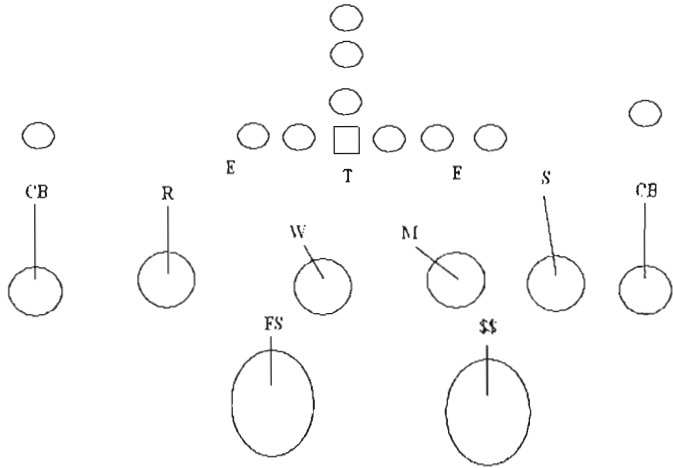
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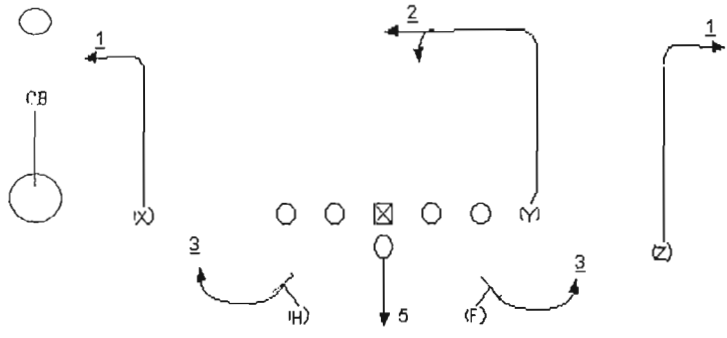
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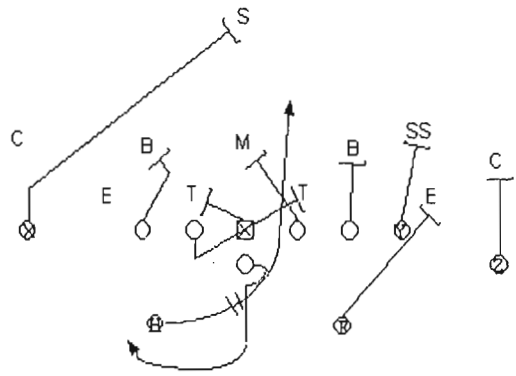
11. \_\_\_\_\_



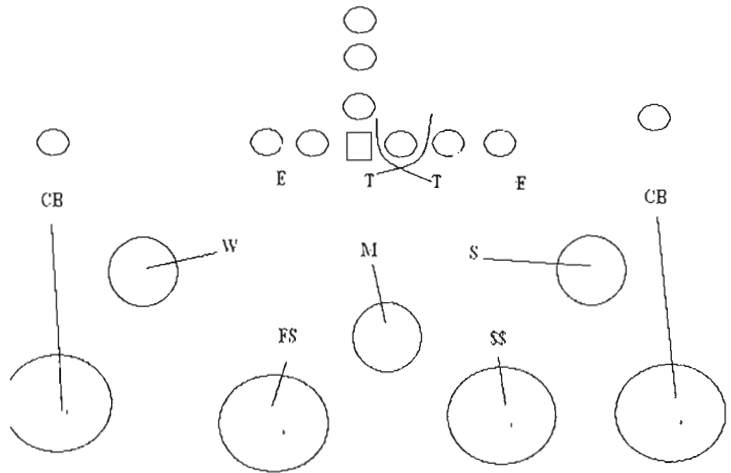
12. \_\_\_\_\_



13. \_\_\_\_\_



14. \_\_\_\_\_



15. \_\_\_\_\_

16. \_\_\_\_\_



