EFFECTS OF BLOCKING STYLES ON INJURY RATES AND SPORTSMANSHIP DURING INTRAMURAL FLAG FOOTBALL GAMES

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PREFACE

This study was conducted to provide new knowledge pertinent to the style of blocking used during intramural flag football games. Specifically, this study was conducted to compare the rate of injuries and unsportsmanlike conduct at universities that utilize contact blocking during their respective flag football leagues to those universities using screen blocking. Another objective of this research was to examine the effect on injuries experienced by varying gender composition: male-only, female-only, or co-recreational (mixed). Analysis of Variance was used to examine the injuries sustained during intramural flag football seasons at 11 universities. A Two-Sample Wilcoxon Rank-Sum test was used to examine unsportsmanlike conduct.

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CHAPTER 1

INTRODUCTION

"Intramurals" is derived from the latin words "intra," meaning within, and "muralis," meaning wall. Thus, the term can be defined as activities, games, and sports played among members of the same institution (Rokosz, 1975). In the late nineteenth century, intramural sports in colleges and universities began with student-initiated and sponsored athletic contests in which students participated. Student organizations assumed leadership by conducting games for those students who were not on varsity athletic teams. The first reported intramural sports were football, basketball, baseball, track, and tennis (Stewart, 1992; Mitchell, 1993).

Intramural sports have come a long way since the late nineteenth century. Expansion of intramural programs in the early 1900's created a demand for trained personnel to organize and manage programs across the country. To meet this personnel problem, many universities eventually began to introduce master's degree programs offering specialization in intramural sports (Mueller & Reznik, 1979). Master's programs are still evident at many universities. Because there are many different factors involved in running an intramural sports program, highly trained and organized professionals are needed. With many colleges and universities having an intramural sports budget over $100,000.00, recreation professionals need to have the resources and experience to manage their program effectively.

One sign of an effective intramural program would be its ability to get students involved. Many programs offer a variety of different sports as a tool to gain student participation. Thus, a majority of programs will not only offer traditional sports such as basketball, football, and soccer, but other, more non-traditional sports like ooof ball,

pickleball, and table tennis. For example, in 1993-1994, the Campus Recreation Department at Oklahoma State University offered over 30 different intramural sports for students (Campus Recreation, 1993-94). A similar number of intramural sports can be found at other universities around the country. Programming for intramural activities varies with the university: no two programs are identical. Different philosophies, traditions, populations, geographies, facilities, budgets, and managers are just a few of the reasons for varying program styles (Lankford, Rice, Chai, & Hisaka, 1993).

Intramural sports are often the cornerstone of participation, interest, and visibility of a Campus Recreation Department at universities across the United States. Intramurals provide students not only with a physical outlet, but with social and educational advantages as well (Rokosz, 1975). In addition to offering students the opportunity to make many friends and acquaintances, intramural sports provides the additional opportunity to become acquainted with "lifetime sports" that they might otherwise never experience. A healthier mental outlook, physical fitness, and social awareness can also be seen as benefits of intramural participation (Farley, 1985; Rokosz, 1975). "Intramural sports programs can largely justify their existence on the basis of the many positive experiences that can be associated with a recreational environment" (Hall, 1990, p. 8).

There are also a few negative aspects related to intramural sports. Intramural professionals must acknowledge the existence of certain human elements that can negatively influence any competitive setting. By the very nature of sports competition aggressive behaviors emerge (Hall, 1990). Aggressive behavior can become unsportsmanlike when it no longer makes a positive contribution to a contest. Hall continues by stating that, ultimately, unsportsmanlike behavior, whether in the form of physical action or verbal expression, can seriously detract from the structure of a positive recreational environment. Nevertheless, the positive effects of participation in intramural sports far outweigh the negative.

A majority of intramural programs across the nation offer the highly competitive activity of flag football. Forms of touch (one- or two-hand) football have given way to the newer game of flag football, where the goal is to pull a flag belt from an opponent's waist. Flag football was introduced in 1947 as a potential means of reducing injuries (Korsgaard, 1957). In touch football, pushing and shoving later became the operating tool used in "touching" a player (Maurer et al., 1984). Consequently, in the past five decades intramural football has gone through a number of rule changes.

Providing a safe environment for participants is necessary and important in order to maintain the integrity of intramural competition (Maurer, Hailey, McQueen, Parker, & Slepitza, 1984). Administrators and programmers of intramural sports continually search for ways to ensure a safe environment. It is believed that modification of sports rules will make games safer, have a positive influence on sportsmanship, and reduce the number of injuries that occur during play (Baletka & Smith, 1981; Puckett, Trupp, & Ford, 1987).

The game of flag football, however, was not entirely immune to injuries and unsportsmanlike conduct. Intramural administrators felt the game still resulted in substantial injuries. Pushing and shoving, which were evident in touch football, were still occurring in flag football (Brown, 1992; Maurer et al., 1984). Prior to 1983, blocking (without protective wear) was prevalent across the nation in intramural flag and touch football programs. However, because injuries seemed to be on the rise in the 1970's and early 1980's, intramural administrators began to develop new rules that would reduce the number of injuries sustained during a flag football contest (Maurer et al., 1984).

Since 1983, in an effort to reduce the incidence of injuries, a number of institutions across the country have begun utilizing a noncontact "screen" block as the standard legal blocking technique for flag football (Brown, 1992). This shift came about after a number of studies researched the relationship between blocking types used and injuries experienced in flag football. These studies reported not only reductions in injuries, but also an

improvement in sportsmanship, at universities that had switched from contact blocking to non-contact screen blocking (Maurer et al., 194; Baletka and Smith, 1981; Puckett, Trupp, & Ford, 1987).

However, a large number of institutions still utilized, and continue to use, the more traditional form of "contact" blocking. A recent study found that while 66.2% of responding National Intramural-Recreational Sports Association (NIRSA) member institutions use screen blocking in their intramural sports programs, the remaining 33.8% of responding institutions permit varying degrees of contact blocking (Gaskins, Maurer, & Ehling, 1989).

Purpose of the Study

The purpose of this study is to compare the rate of injuries and unsportsmanlike conduct at institutions that utilize contact blocking in flag football to those institutions using screen blocking. In addition, the study will examine the effect on injuries experienced by teams of varying gender composition: male-only, female-only, or co-recreational (mixed).

Definition of Terms

Injury is defined as having occurred as a result of participation in an intramural flag football contest. An injury requires the injured to desist from the activity, absent himself/herself from the sport for a period of time, and receive either first aid or medical attention (Darmon, Hoerner, & Shaw, 1986).

Minor Injuries are defined as sprains or related injuries, a cut or a laceration.

Major Injuries are defined as any type of break or separation of a bone, or any type of head injury. A head injury would include, but not be limited to, such things as a concussion or a dental injury.

Unsportsmanlike Behavior is any action that warrants the ejection of a player from an intramural flag football contest. Fighting, abusive language directed at an official or an opponent, and unnecessary roughness are examples that could be classified as unsportsmanlike behavior.

Screen Blocking is defined as obstructing an opponent without initiating contact with him/her with any part of the blocker's body (Maurer and Potter, 1993).

Contact Blocking is defined as obstructing an opponent by contacting him/her above the waist and below the shoulders. Any type of contact is done with arms extended and open palms. At no time can a player use his/her elbows during a block.

National Intramural-Recreational Sports Association is a non-profit professional organization dedicated to the establishment and development of quality recreational sports programs and services. Founded in 1950 "...to foster growth of quality recreational sports programs by providing for the continuing growth and development of recreational sports professionals" (Recreational Sports Director, 1993), NIRSA now has 575 institutional members.

Safety: An activity is safe if its risks are deemed acceptable. Acceptability is a matter of personal and societal value judgments (Feigley, 1987).

Significance of the Study

Blocking styles in flag football have sparked interest and controversy among intramural administrators throughout the past few decades (Maurer et al., 1984). While some administrators feel that contact blocking does affect injuries and sportsmanship, others see no relationship at all.

This study will reveal more information on the topic of blocking styles used during

flag football games. Recent studies (Maurer et al., 1984; Baletka and Smith, 1981) have shown reductions in injuries and unsportsmanlike behavior at institutions that changed from contact to screen blocking. This study, however, will compare injuries and sportsmanship at institutions still using contact blocking to those utilizing screen blocking during the same year. Authors of previous studies have compared injury rates and unsportsmanlike activity only at their own institutions. The study will also analyze three different types of participation in intramural sports: male games, female games, and co-rec games.

The data gathered will be of use not only to those institutions now considering changing rules in their flag football programs, but also to the more than six million players of flag and touch football across the nation (Smith, 1986). The NIRSA, and especially the NIRSA Flag Football Rules Advisory Committee, which actively promotes the game of flag football, can also benefit from this research.

Assumptions

Several assumptions surround the interpretation of this study. One assumption is that the submitted data regarding injuries and unsportsmanlike conduct are correct and true. In order to gain accurate information, complete confidentiality is guaranteed to each institution participating in this study. Another assumption is that participating universities have a common understanding of what constitutes an injury during intramural competition.

Limitations

The focus of this study is limited to 11 universities that offer flag football in their

respective intramural programs. Four of the universities allow contact blocking during their flag football games, while seven authorize screen blocking as the only legal form. Because of the small sample size, results cannot be generalized to all universities and other institutions offering flag football leagues.

Hypothesis

The literature suggests that injuries in flag football are reduced when an institution switches from contact blocking to screen blocking. However, because numerous colleges and universities still use contact blocking, the rate of injuries at these institutions apparently does not warrant a switch to screen blocking. Therefore, it was hypothesized that the rate of injuries and unsportsmanlike behavior at schools using contact blocking is no greater than at those institutions utilizing screen blocking.

The next major section of this paper will be a review of related literature. This will give the reader a sense of how different blocking styles have evolved in flag football, and their role in helping intramural administrators structure their respective flag football leagues. For example, if an intramural activity is judged to be unsafe at an institution, that administrator will seek changes in the activity, to promote a healthier environment. Legal liabilities, as well as the welfare of the participants, motivate some administrators to ensure a safe environment.

CHAPTER 2

REVIEW OF THE LITERATURE

The review of the literature will give an overview of how and why intramural football rules have changed over the years. From "touch" football to the present game of "flag" football, the sport has sparked interest and controversy. Injuries, and their prevention, have fueled the fire of the controversy.

Of all sports offered by a recreational program, one could conclude that flag football elicits the most violence (Rokosz, 1987). For example, flag football is certainly a violent sport compared to tennis or swimming. Since the first game of football was played, the sport has long been symbolized as a game of aggression with significant body contact considered an essential element. Thus, throughout the past few decades, most intramural programs have permitted some form of body contact in their football leagues. Body contact was most often permitted in the form of blocking, but blocking began to cause problems in the 1970's and 1980's for many intramural programs across the nation (Brown, 1992).

During the 1970's and early 1980's, injuries were at an alarmingly high level at many programs across the United States, reaching an all-time high in the early 1970's. At about this time, a number of institutions discontinued flag football in their intramural programs (Brown, 1992). Consequently, NIRSA became a principal guiding force for the refinement and promotion of flag football (Gaskins, Maurer, and Ehling, 1989).

Fiegley (1987) believes that nearly two-thirds of all sports injuries could be prevented. While some believe that most sports injuries are the result of accidents, these accidents are usually the result of factors that lead predictably to injuries. This is evident in the fact that different sports have different frequencies of injury. Feigley continues by claiming that often these injuries can be traced directly to social, environmental, and/or

behavioral factors which, if regulated, would result in a dramatic reduction in injuries.

The National Safety Council defines an accident as "the occurrence of a sequence of events which usually produces unintended injury, death, or property damage" (National, 1984). This definition classifies an injury as one of many possible outcomes of any accident. Because injuries and accidents are closely associated, the prevention of injuries must be a priority for all administrators of recreational programs. Evaluation and modification of specific sport rules can establish the safety of a recreational program (Feigley, 1987).

"An assumption might be made that rules governing intramural football have an influence upon the number and types of injuries that occur during play" (Baletka, Maurer, Ehling, 1989; Brown, 1992). A review of the literature does support the notion that changes in rules, when specifically applied to blocking style, might have an effect upon the injury rates during flag football games (Maurer et al., 1984; Baletka & Smith, 1981; Puckett, Trupp, & Ford, 1987).

NIRSA, in 1979, established the NIRSA Flag and Touch Football Rules Committee. The first task of this group was to develop a standardized code of rules for the association. In order to carry out this mission, the committee needed data concerning the injury rate of contact versus screen blocking. "This controversy had been going on for years." (Maurer et al., 1984)

In what was considered to be a "massive research project," a study investigated the relationship between blocking types used and injuries experienced in flag football at five universities that had made the conversion from contact to screen blocking (Maurer et al., 1984). This research project compared the 1981 football season to the 1982 football season, when all five universities made a switch from contact blocking to screen blocking. Specifically, it compared the seasons in terms of sportsmanship and injuries. Results showed an improvement in sportsmanship in addition to a reduction in the number and

severity of injuries with the use of screen blocking.

This study, combined with comparable studies by Baletka & Smith (1981) and Puckett, Trupp, & Ford (1987), helped the NIRSA Flag and Touch Football Rules Committee develop a national code of flag and touch football rules. However, there are some inherent problems present in both the Baletka and Smith (1981) and the Puckett, Trupp & Ford (1987) studies. For example, Baletka and Smith analyzed injury rates after specific rules had been changed that were unrelated to blocking. This study compared injury rates from the 1979-80 season to the 1980-81 season at the University of Illinois even though four rules were changed following the 1979-80 season. "These were: 1) no 3- or 4-point stance allowed; 2) a fumbled ball was considered dead; 3) all punts were announced with no rushing allowed; and 4) a minimum of three offensive players were required on the line of scrimmage" (Baletka and Smith, 1981). The University of Illinois utilized a form of contact blocking in 1979-80 and continued to use it during the 1980-81 season. While the university did find a reduction in the number of injuries from 1979-80 to the 1980-81 season, it can be attributed to the four rule changes mentioned above. Since contact blocking was still utilized, the style of blocking had no effect on the number of injuries sustained during the season. Although Baletka and Smith refer to two universities that experienced a reduction in injuries when they switched to screen blocking, the type of blocking was not a factor in their specific study. Nevertheless, their study is continually referenced in other literature (Brown, 1992; Maurer et al., 1984; Puckett, Trupp & Ford, 1987) as a study that shows a reduction in the number of injuries when institutions switch from contact blocking to screen blocking during flag football games.

Puckett, Trupp & Ford (1987) analyzed not only the form of blocking used during football games, but the type of game as well. In the Fall of 1984 at Auburn University, one-hand touch football with contact blocking was played during the intramural football season. In 1985, Auburn switched from one-hand touch football to flag football as well as from contact blocking to screen blocking. Results showed a decrease in the number of

injuries sustained from 1984 to 1985. However, because some (Brown, 1992; Korsgaard, 1957) have discussed the fact that touch football is a rougher sport than flag football, the reduction can be partly attributed to Auburn's switch from touch football to flag football in their intramural program.

Since the first edition of NIRSA football rules appeared in 1983, a growing number of colleges and universities have adopted screen blocking as the standard legal blocking technique (Brown, 1992). The NIRSA Flag /Touch Football Committee has even prepared a paper to help colleges and universities make the change from contact to screen blocking (Brown, 1992). In this "Conversion Prospectus," Brown (1982) makes the assumption that the "NIRSA Flag and Touch Football Rules promote a game that emphasizes fun, finesse, speed and agility as compared to the size, physical strength and power aspects of traditional tackle football." Brown continues to claim that when NIRSA rules are utilized, flag football is a great deal more fun to play, participation increases, the incidence of injuries is drastically reduced, and the decrease in contact leads to an increase in sportsmanship and fewer disciplinary actions.

These rules, however, have not been adopted by all NIRSA members across the country. Gaskins, Maurer, & Ehling (1989) found that only 66.2% of responding institutions utilize screen blocking. Thus, "...a significant percentage (33.8%) of NIRSA member institutions continue to allow various forms of contact blocking in their intramural football programs" (Gaskins, Maurer, & Ehling, 1989 p. 119). Brown (1992) suggests that possible explanations for this situation include resistance to change and the problems associated with the conversion process. Whatever the reason, many institutions still use contact blocking.

CHAPTER 3

METHODOLOGY

This chapter will deal specifically with methodology. The subjects, instruments, and the research design and procedure will be discussed.

Subjects

This study will report on 11 universities that offered an intramural flag football league in 1993 (August - December). Two universities have student populations of 5,000 to 10,000, four have 10,000 to 20,000 students, three have 20,000 to 30,000 students, and two enroll between 30,000 and 40,000. Geographically, nine universities are located on the west coast of the United States, while two are in the midwest. The universities have from eight to 250 football teams playing in intramurals.

Four of the the universities were selected for the study because their intramural programs utilize contact blocking. The remaining seven were selected because screen blocking is their standard. The universities, then, logically fall into one of two categories (screen blocking or contact blocking). The study will specifically examine these two groups. The representatives of each institution who were involved in the completion of the research instrument were recreational sports professionals.

Instruments

Data for the study were collected using a survey instrument designed by the researcher. Each university was sent an injury tally sheet for the 1993 season along with a survey for reporting unsportsmanlike behavior (Appendix 1). The tally sheet which was

modeled after an instrument used in a study conducted by Baletka and Smith (1981) was intended for reporting injuries throughout the 1993 season. It consisted of five sections: 1) sprains and related injuries; 2) cuts and lacerations; 3) breaks and separations; 4) head injuries; and 5) "other" injuries. Each university had room to record injuries that happened during men's games, women's games, and co-recreational games (men and women playing on the same team).

By reviewing the survey input, the researcher knew how many men's, women's, and co-recreational (co-rec) flag football teams registered to play, the number of incidents of unsportsmanlike behavior, and the total number of games played in each men's, women's, and co-rec league at the respective universities.

Open-ended questions regarding preference of blocking style were asked, to gain insight into different philosophies of recreation professionals on the subject of blocking in intramural flag football.

Content validity and scorer reliability were determined by a panel of six experts in the recreational sports field. Each professional assessed the intended content area. By doing so, reliability was also established. Because each professional will check each item of the survey for validity, a percent agreement can be expressed. A reliability coefficient of between .80 and .95 was used.

Research Design

The design is descriptive in nature. Specifically, the research was designed to investigate the 1993 flag football season at 11 universities. This design sought to obtain the universities' injury and unsportsmanlike conduct rates through self-reports. By acquiring information about each university, the researcher could make comparisons about institutions using contact blocking vis-a-vis those using screen blocking.

Data were collected through self-reports. That is, each university provided the

requested information regarding its Fall 1993 flag football season. This information pertained to issues of injuries, the number of games played, and the number of teams each university had signed up during their respective seasons. The data was then analyzed by both parametric and non-parametric testing. An analysis of variance was used to compare injury rates and a Two-Sample Wilcoxon Rank-Sum test was used to study both the ejection and fight rate at all institutions. Because confidentiality is guaranteed to all participating institutions, invalid results are minimized. The design of this study has been approved by the Institutional Review Board (IRB).

Procedure

All universities in the study were contacted prior to the beginning of the 1993-1994 school year, to ensure their participation. Once this was done, the institutions were sent the self-report instrument for flag football (Appendix 1). Specifically, the intramural professionals in charge of flag football received the instrument via U.S. mail. A cover letter accompanied the instrument (Appendix 2). A detailed description of the study and its purpose was the main thrust of the letter.

Two weeks after the initial mailing, calls were made to the respective professionals to ensure delivery of the survey as well as to answer questions regarding the study. Six weeks after the initial mailing, a follow-up letter was sent to all professionals participating in the study (Appendix 3). This letter served as a reminder to the intramural professionals to return the completed survey immediately after the end of their respective seasons. Any professional who had failed to return the completed survey by the second week of December was called by the researcher at that time.

CHAPTER 4

ANALYSIS OF DATA

The data were analyzed by both parametric and non-parametric testing. Because similar results were found in both tests, the parametric results will be used when discussing injury rates. Even though this study does indeed violate certain assumptions associated with parametric testing, most were met by the robust amount of data collected to describe the population. Also, given the way the data was collected, using the game as the unit of analysis was not advisable in non-parametric testing (Stata Reference Manual, 1992).

An analysis of variance was used to compare the injury rates at institutions using contact blocking to those using screen blocking. A probability level of .05 was used to compare the injury rates. The data were examined by using two different units of analysis. One unit was weighted by "season" and the other by "game." Because no significant results were found using the "season" as the unit of analysis, most of this chapter will be devoted to analyzing the "game" as the unit of analysis.

Table I shows the breakdown of all games played and the injuries for each of the men's, women's, and co-rec leagues at each university.

TABLE I

BREAKDOWN OF GAMES PLAYED AND REPORTED INJURIES

School	Block	Sex	Games Played	# of Injuries
Univ 1	1	A	443	36
Univ 1	1	B	120	13
Univ 1	1	C	29	3
Univ 2	1	A	190	9
Univ 2	1	B	40	1
Univ 2	1	C	11	0
Univ 3	1	A	373	12
Univ 3	1	B	39	5
Univ 3	1	C	48	0
Univ 4	1	A	39	10
Univ 4	1	B	24	2
Univ 4	1	C	20	1
Univ 5	1	A	28	6
Univ 5	1	B	4	1
Univ 5	1	C	4	0
Univ 6	1	A	210	7
Univ 6	1	B	28	4
Univ 6	1	C	30	1
Univ 7	1	A	164	2
Univ 7	1	C	33	0
Univ 8	2	A	53	2
Univ 8	2	B	7	0
Univ 8	2	C	47	1
Univ 9	2	A	344	6
Univ 9	2	B	78	0
Univ 10	2	A	532	28
Univ 10	2	C	166	7
Univ 11	2	A	504	19
Univ 11	2	C	91	6

1 = Screen Blocking
2 = Contact Blocking

A = Male Games
B = Female Games

C = Co-rec Games

Seasonal Analysis

There were many distinct "seasons" played during 1993 flag football at the

universities. Some universities offered male, female, and co-rec "seasons," while others offered only male and co-rec "seasons" or only male and female "seasons." These various "seasons" totaled 29, and can be seen in Table I. Because some universities have an enrollment of 40,000 students, and others have less than 10,000, one sees a great discrepancy in the number of games played at the universities. For example, University 10 played 698 flag football games while University 5 played only 36. Even though the numbers of games played at each institution are not similar, the total number of games played is quite balanced. There were 1877 screen blocking games and 1822 contact blocking games played.

The mean number of injuries for the 29 specific "seasons" that were played can be seen in Table II. As it indicates, the total population injury rate at all universities, regardless of sex or type of blocking, is .06. Without taking any other data into account, there is a .06 injury rate for all seasons of flag football at these universities. However, this injury rate per season varies when the type of blocking used and the gender make-up of a particular season are analyzed. Looking at the mean blocking rates alone, screen blocking appears to have almost three times the injury rate of contact blocking, .08 compared to .03.

As Table II indicates, there were 11 male seasons, 10 co-rec seasons, and eight female seasons at the universities. The corresponding injury rates indicate only the injury rate of all male-only, female-only, and co-rec seasons and do not take into account the type of blocking utilized during games. As indicated, there does not appear to be a great difference in injury rates for male-only compared to female-only seasons, .07 compared to .09. However, the co-rec rate of .03 appears to be one-half to one-third of the single-sex rates.

Once the blocking type is accounted for, the raw numbers give a better sense of what is actually taking place. It is interesting to note that mean injury rates for co-rec seasons (contact vs. screen) are the only rates that are somewhat similar (.03 and .04), and

both are substantially lower than the single-sex rates. In the single-sex seasons, screen blocking injury rates for both sexes are greater than the contact blocking rates. Male screen blocking seasons have a mean of .10, while the male contact blocking seasons show a rate of .04. Because there were no reported injuries during any female-only contact blocking games, there is a .00 injury rate for this group.

TABLE II

SUMMARY OF INJURY RATES FOR SEASONAL DATA

Total Population:			
Injury Rate = .06			
Number of Seasons = 29			
Type of Block:	Screen		Contact
Injury Rate	.08		.03
Number of Seasons	20		9
Sex:	Male	Female	Co-rec
Injury Rate	.07	.09	.03
Number of Seasons	11	8	10
Interaction:	Male	Female	Co-rec
Screen Blocking			
Injury Rate	.10	.12	.03
Number of Seasons	7	6	7
Contact Blocking			
Injury Rate	.04	.00	.04
Number of Seasons	4	2	3

As indicated before, an Analysis of Variance test was run on the "seasonal" data collected from the 11 universities. The results of this test indicate whether the variance of means from the grand, or total, population mean of .06 (Table II) is due to chance alone, or, is indeed statistically significant. For example, both the contact blocking mean (.08) and screen blocking mean (.03) "vary" from the total population mean. This test not only

analyzed the effect of blocking on injuries, but also examined the effect of sex, ignoring the type of blocking.

Even though the analysis did give some indication that screen blocking causes more injuries during flag football games than contact blocking, no significant results were discovered. This can be attributed partly to the small sample size of 29 "seasons." It was found that if this analysis were repeated on similar data, a difference in the mean injury rates due to random distribution of injuries by blocking would occur about 10% of the time. Furthermore, when the effect of sex was analyzed, ignoring the type of blocking, these results had a significance of .1805. Thus, these results would be seen almost 20% of the time because of random chance alone.

Upon further analysis of the "seasonal data," the Analysis of Variance also yielded the Eta Squared Statistic for both the effect of blocking type and the effect of sex. This number indicates what percentage of the variance accounts for the injuries sustained during these flag football "seasons." It was determined that "blocking alone" accounts for 10% of the variance and "gender alone" explains 12% of the variance. Combined, then, 22% of the variance of the mean number of injuries per season for a given sex and blocking season from the grand mean (.06) is explained by gender make-up and blocking.

Game Analysis

Rather than using "season" as the unit of analysis, the following information pertains to utilizing the "game" as a unit of analysis (games will be weighted). The total number of games played at the universities was 3699. Of this number, 1877 were screen blocking games and 1822 were contact games. Table I, again, breaks down the total number of games played at each university. As opposed to the "Seasonal Analysis" above,

the "Game Analysis" will help to better explain the different injury rates simply because a much larger sample size (3699 games) will be used.

The grand mean injury rate of all the games, regardless of sex or type of blocking, is .05. However, this number varies with male-only games as opposed to female-only games, and with the type of blocking. Table III breaks down this information. The mean injury rate for the 1877 screen blocking games is .06, compared to the contact blocking mean of .04 for 1822 games. And, if we look at the games regardless of the type of blocking, the co-rec games have the lowest injury rate (.04) and female-only games have the highest at .08.

Inspection of the mean injury rates for each category of game played shows interesting findings as well. Female screen blocking games, for example, have the highest injury rate at .10, while female contact blocking games have the lowest rate of .00. The differences in injury rates for male and co-rec games are not as dramatic (.05 for male screen blocking to .04 for male contact blocking games; .03 to .05 for co-rec games). Table III show the data in their purest form. The number of reported injuries, the number of games played, and the mean injury rates are all shown. The intention, then, is to determine if the variance of the means from the total population mean of .05 is statistically significant.

TABLE III

SUMMARY OF INJURY RATES FOR GAME DATA

Total Population:				
	Injury Rate	.05		
	Number of Games	3699		
	Number of Injuries	182		
Type of Block:		Screen		Contact
	Injury Rate	.06		.04
	Number of Games	1877		1822
	Number of Injuries	113		69
Sex:		Male	Female	Co-rec
	Injury Rate	.05	.08	.04
	Number of Games	2880	340	479
	Number of Injuries	137	26	19
Interaction:				
	Screen Blocking	Male	Female	Co-rec
	Injury Rate	.06	.10	.03
	Number of Games	1447	255	175
	Number of Injuries	82	26	5
	Contact Blocking			
	Injury Rate	.04	.00	.05
	Number of Games	1433	85	304
	Number of Injuries	55	0	14

The results of the Analysis of Variance show some significant findings when the "game" is used as the unit of analysis. In Table IV, we see the mean number of injuries for both screen (.0602) and contact (.0379) blocking. When the F-test is run, the F of 343.1405 has a significance of < .0001 or 1 in 10,000. According to the findings, this is highly significant. Remember, these findings represent only screen blocking and contact blocking games. This specific F-test does not take into account whether the game was male, female, or co-rec. As a result, two important issues arise. One is that the difference in mean rates is not due to chance, and two, screen blocking has an injury rate twice that of contact blocking.

TABLE IV

SUMMARY OF ANALYSIS OF VARIANCE: SCREEN VS. CONTACT BLOCKING

Dependent Variable	INJURY 2	Injuries per Game	
By levels of	BLOCK	Type of Blocking	

Value	Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1.00	Screen	113.00	.0602	.0490	4.4987	1877
2.00	Contact	69.00	.0379	.0160	.4691	1822
Within Groups Total		182.00	.0492	.0367	4.9678	3699

Source	Sum of Squares	d.f.	Mean Square	F	Sig.
Between Groups	.4611	1	.4611	343.1405	.0000
Within Groups	4.9678	27	.0013		

Eta = .2914 Eta Squared = .0849

Table V shows the mean injury rates of male-only, female-only, and co-rec games (.0476, .0765, .0397). Like the screen vs. contact mean differences, the mean differences observed by type of game played are also highly significant. With an F of 109.6404 < .0001, it is not likely due to chance that female-only games have a higher injury rate than male and co-rec games. Again, these results are concerned only with the makeup of the game being played, not with the blocking style used.

TABLE V

SUMMARY OF ANALYSIS OF VARIANCE: MALE, FEMALE, AND CO-REC GAMES

Dependent Variable By levels of	INJURY 2 SEX	Injuries per Game Gender			
Value Label	Sum	Mean	Std Dev	Sum of Sq	Cases
1.00 Male	137.00	.0476	.0358	3.6985	2880
2.00 Female	26.00	.0765	.0563	1.0742	340
3.00 Co-rec	19.00	.0397	.0271	.3521	479
Within Groups Total	182.00	.0492	.0372	5.1248	3699

Source	Sum of Squares	d.f.	Mean Square	F	Sig.
Between Groups	.3040	2	.1520	109.6404	.0000
Within Groups	5.1248	3696	.0014		

Eta = .2367 Eta Squared = .0560

The previous two tests were concerned with the type of block utilized during games and the gender make-up of the game played. Table VI, however, is the culmination of the analysis (analyzing gender and blocking together). These results analyze both the relationship of the type of blocking utilized during games and the gender composition of the game itself. This analysis concerns itself with the differences observed between the mean injury rates for all types of games played. The "Interaction" cells in Table III indicate a difference in mean injury rates. For example, male screen blocking and male contact blocking do not have the same mean injury rate. Table III also indicates that male screen blocking games have a rate of .06, while male contact blocking games have a rate of .04. Co-rec screen blocking games have a rate of .03, while contact blocking games have a rate of .05. There is an observed difference between female games as well.

An "F-test" was run to determine whether these observed differences are significant. Table VI show the results of this specific test. As the numbers indicate [all significance levels {Sig. of F} are < .0001], all observed differences in injury rates are significant and not due to random chance. Thus, one can conclude that, at these specific

universities, female screen blocking games have the highest injury rate per game played (.10), while female contact blocking games have the lowest injury rate (.00).

TABLE VI

RESULTS OF F-TEST

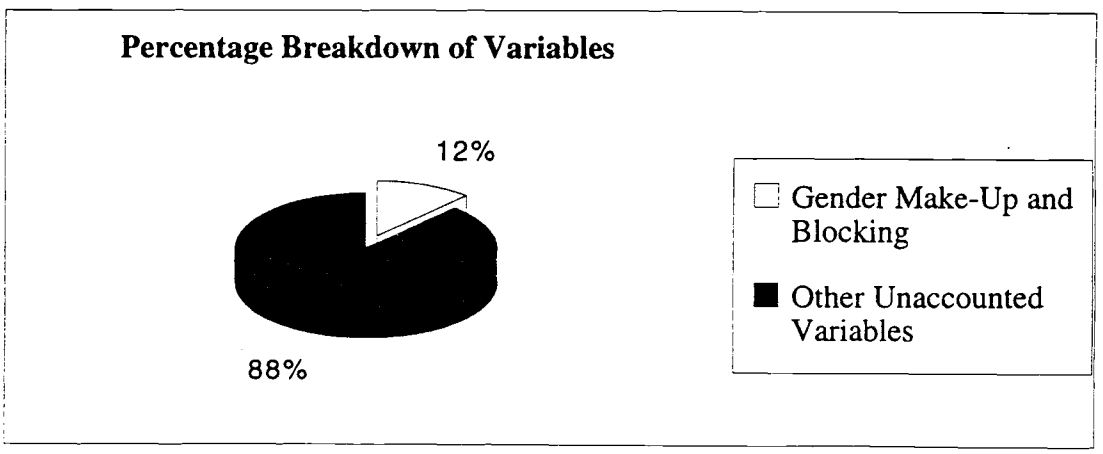
Source of Variation	Sum of Squares	DF	Mean Squares	F	Sig. of F
Main Effects	.655	3	.218	192.613	.000
BLOCK	.351	1	.351	309.681	.000
SEX	.194	2	.097	85.591	.000
2-Way Interaction	.586	2	.293	258.566	.000
BLOCK SEX	.586	2	.293	258.566	.000

Finally, the "Multiple R Squared Statistic" is also important to assess. Before getting into the implications of this statistic, let us first discuss the intent of the author in using it. Told that the total population mean injury rate is .05, one may assume this will be the injury rate for all types of flag football games played. However, if one knew the type of blocking used and the gender composition of the league, one would have more information to better estimate the injury rate for the type of game played. One number would be offered for screen blocking versus contact blocking games, and another number if the gender composition were known. It is exactly this variation in which the Analysis of Variance is interested.

Thus, when the Multiple R Squared statistic has a value of .121, it tells us that the variables of gender make-up and blocking explain only 12% (Figure 1) of the variance of the mean number of injuries in any one game from the overall grand mean. This analysis shows that other variables, which are not measured, would better estimate injury rates per game in addition to sex and type of blocking. Nevertheless, for both the seasonal and

game analyses, the interesting finding is that contact blocking in single-sex competition is safer than screen blocking.

FIGURE 1



Severity of Injuries

Although no statistical test was performed on the severity of injuries that occurred during both contact and screen blocking games, it is interesting to look at the mean injury rates.

On the original survey that was mailed to each participating institution, the injury tally sheet was broken down into five different categories (Appendix 1). These five categories were: 1) sprains and related injuries; 2) cuts and lacerations; 3) breaks and separations; 4) head injuries; and 5) "other" injuries. For the purposes of the analysis, the severity of the injury has been divided into two categories. One category falls into the class of "minor injuries" (sprains/related injuries and cuts/lacerations). The second category is referred to as "major injuries" (breaks/separations and head injuries). Table VII shows the minor and major injury rates for both contact and screen blocking games.

TABLE VII

SUMMARY OF MINOR AND MAJOR INJURY RATES AT ALL UNIVERSITIES

Contact Blocking

Minor Injury Rate

Men	35 injuries / 1433 games	=	.02 injury rate per game
Women	0 injuries / 85 games	=	.00 injury rate per game
Co-rec	7 injuries / 304 games	=	.02 injury rate per game
Total	42 injuries / 1822 games	=	.02 minor injury rate

Major Injury Rate

Men	20 injuries / 1433 games	=	.01 injury rate per game
Women	0 injuries / 85 games	=	.00 injury rate per game
Co-rec	7 injuries / 304 games	=	.02 injury rate per game
Total	27 injuries / 1822 games	=	.01 major injury rate

Screen Blocking

Minor Injury Rate

Men	61 injuries / 1447 games	=	.04 injury rate per game
Women	21 injuries / 255 games	=	.08 injury rate per game
Co-rec	4 injuries / 175 games	=	.03 injury rate per game
Total	86 injuries / 1877 games	=	.05 minor injury rate

Major Injury Rate

Men	21 injuries / 1447 games	=	.01 injury rate per game
Women	5 injuries / 255 games	=	.02 injury rate per game
Co-rec	1 injury / 175 games	=	.01 injury rate per game
Total	27 injuries / 1877 games	=	.01 major injury rate

Men's flag football games show interesting findings. For example, for the 1433 contact blocking games held, 35 minor injuries were reported. However, for the 1447 screen blocking games, 61 minor injuries were reported. Screen blocking games have almost twice the minor injury rate of contact blocking. The total minor injury rate for screen blocking (.045) almost doubles that of contact blocking (.023).

However, the major injury rates for both types of blocking are much more similar. Both contact and screen blocking schools reported a total of 27 major injuries. Of these,

there were 13 reported head injuries during screen blocking games, and nine head injuries during contact blocking games. The only dramatic difference in the major injury rate is between female and co-rec games. There were seven reported major injuries in 304 contact blocking co-rec games, as opposed to only one reported major injury in 175 co-rec screen blocking games.

On the injury tally sheet that all schools utilized for this study (Appendix 1), there is one section for "contact/collision" in Section (2) (cuts and lacerations). While this researcher did indeed expect the contact blocking schools to report injuries in this section, it was not expected that screen blocking schools would report injuries under the "contact/collision" column. (The expectation for contact blocking schools is due to the occurrence of collision, or physical block, on almost every play of a contact game. In contrast, there is to be no "contact" during a screen blocking game.)

Nevertheless, 10 of the reported injuries for screen blocking games were listed in the cuts/lacerations column by "contact or collision." Is screen blocking, then, doing what it is intended to do? It is the researcher's understanding that screen blocking was introduced into the sport of flag football to take "contact" completely out of the game. And, if contact did occur, wouldn't any injury occasioned by the contact be reported under the "incidental contact" column?

On the other hand, only five of the reported cuts/lacerations in contact blocking games were due to "contact or collision" rather than "incidental contact". One might expect these numbers to be reversed. In other words, because there is indeed "contact" on just about every play during contact blocking games, it would be appropriate to assume that a larger number of cuts/lacerations due to contact would be reported during contact blocking games rather than during screen blocking games.

Ejections and Fights

Because some studies (Maurer et al., 1984; Baletka and Smith, 1981; Puckett, Trupp & Ford, 1987) have shown an improvement in sportsmanship at universities that switched from contact blocking to noncontact screen blocking, the number of ejections and fights were compared within these 11 institutions for this study. A Two-Sample Wilcoxon Rank-Sum test was used to study both the ejection rate and the fight rate at both contact blocking schools and screen blocking schools. This particular test is a non-parametric test that is concerned with the medians of the two groups. This test determines how "equal" the medians are in both groups.

Fights

Out of the 3699 total games that were played during the 1993 flag football seasons at these universities, there were 12 reported fights. Of these acts of violence, four were reported as "bench-clearing brawls" (not isolated to two people) while the other eight were reported as one-on-one fights. Two of these bench-clearing brawls occurred during contact blocking games and two occurred during screen blocking games. Table VIII shows the breakdown of fights that occurred during both types of games.

TABLE VIII

SUMMARY OF FIGHTS DURING FLAG FOOTBALL GAMES

	Type of Blocking	Number of Games	Number of Fights	Fight Rate
Univ 1	Screen	592	2	.34
Univ 2	Screen	241	4	1.66
Univ 3	Screen	460	0	.00
Univ 4	Screen	83	0	.00
Univ 5	Screen	36	1	2.78
Univ 6	Screen	268	0	.00
Univ 7	Screen	197	0	.00
Univ 8	Contact	107	1	.93
Univ 9	Contact	422	1	.24
Univ 10	Contact	698	2	.29
Univ 11	Contact	595	1	.17

Test: Equality of Medians (Two-Sample Wilcoxon Rank-Sum)

Sum of Ranks : 27 (block = 2)
Expected Sum : 24

z-statistic	0.57
Prob > |z|	0.57

As Table VIII indicates, seven of the 11 universities experienced some type of physical violence during their seasons. All four contact blocking schools reported at least one fight, while only three out of the seven screen blocking schools reported any type of physical violence.

There is no significant difference in the fight rates between teams using the two forms of blocking. Part of this can be attributed to limited observation - only 11 schools where compared. The Prob > |z| of 0.57 shows that these findings occur 57% of the time because of chance alone.

When looking at the total fight rates between the two forms of blocking, similar results are also found. Screen blocking games have a rate of .004 (seven fights out of 1877 games) while contact blocking games have a rate of .003 (five fights out of 1822 games). Fighting does not seem to be a huge problem for any of the 11 universities. "University 2" is the only institution that reported more than two fights for their flag

football season.

Ejections

Similar to the "fights" data, the differences between ejections were not found to be statistically significant. In the 3699 games played, there were 103 reported ejections. There are many reasons to eject a player during a flag football contest. The survey that was mailed to all institutions (Appendix 2) listed abuse (physical/verbal) toward officials, unnecessary roughness, and fighting as categories for ejected players. In addition to these categories, some of the universities reported other reasons for ejecting a participant, including tied flag belts, swearing at the intramural sports director, ineligible players, and shoving.

TABLE IX

SUMMARY OF EJECTIONS DURING FLAG FOOTBALL GAMES

	Type of Blocking	Number of Games	Number of Ejections	Ejection Rate
Univ 1	Screen	592	34	5.74
Univ 2	Screen	241	12	4.98
Univ 3	Screen	460	1	.22
Univ 4	Screen	83	8	9.64
Univ 5	Screen	36	4	11.11
Univ 6	Screen	268	5	1.87
Univ 7	Screen	197	5	2.54
Univ 8	Contact	107	4	3.74
Univ 9	Contact	422	12	2.84
Univ 10	Contact	698	16	2.29
Univ 11	Contact	595	2	.34

Test: Equality of Medians (Two-Sample Wilcoxon Rank-Sum)

Sum of Ranks : 19 (block == 2)
Expected Sum : 24

z-statistic -0.94
Prob > |z| 0.34

As Table IX indicates, all universities experienced at least one ejection during their flag football seasons. Some universities had many (e.g., University 1 experienced 34 ejections) while others did not (University 3 experienced only one ejection). Nevertheless, with a Prob > |z| of 0.34, these results can be expected to happen 34% of the time because of chance alone. Again, because of the small sample size, it is hard to arrive at statistically significant findings.

The overall ejection rates for both types of blocking are interesting to analyze, however. Screen blocking games had a total ejection rate of .04 (69 during 1877 games), while contact games had a rate of .02 (34 during 1822 games). Screen blocking games experienced twice the ejection rate of contact blocking games in the 3699 games studied.

CHAPTER 5

DISCUSSION

While previous studies have indicated that the use of screen blocking during flag football games leads to a reduced number of injuries and unsportsmanlike activity (Baletka & Smith, 1981; Maurer et al., 1984; Puckett, Trupp & Ford, 1987), the data for this study showed something different. The results indicate that contact blocking, not screen blocking, is the safer of the two forms of blocking. Overall, for both seasonal and game analysis, the findings indicate that contact blocking in single-sex competition is safer than screen blocking.

This finding, however, is not as convincing when the "season" is used as the unit of analysis. For example, even though it was found that screen blocking seasons had almost three times the injury rates of contact blocking seasons (.08 vs. .03), these results were not found to be statistically significant.

Nevertheless, there were some effects present. It was found that blocking alone explains 10% of the variance, gender alone explained 12% of the variance, and the combination explained 22% of the variance. As stated previously, the fact that the sample size is small (29 seasons) can contribute to a lack of significant results. Also, blocking and gender accounted for only 22% of the total variance, indicating that other factors might help to better predict the mean number of game injuries per season. A few of these factors will be discussed later in this chapter.

The results that indicate contact blocking is safer than screen blocking become more convincing when the "game" is used as the unit of analysis. It was found that screen blocking games did indeed produce more injuries than contact games at all 11 universities

studied. The hypothesis claiming no difference between injury rates during screen and contact blocking games can be rejected. The difference between the screen blocking injury rate of .06 and the contact blocking injury rate of .04 is highly significant. However, like the seasonal analysis results, co-rec games were found to be the only games that are safer when played using screen blocking. Both male and female games are safer when played using contact blocking as the legal form of blocking (Table III). It seems plausible that the co-rec games do produce fewer injuries than the single-sex games. For example, because co-rec sports involve both men and women, the games might be more social than competitive. Both men and women might be taking the action a little less seriously than they would during female-only or male-only games. During contact blocking games, the blocking is probably less intense when both men and women are on the field at the same time. This is not to say that participants of co-rec sports are not competitive. It's just that when compared to the single-sex flag football games, co-rec games might not be as intense.

Besides the overall injury rates, the minor injury rate is also much higher during screen blocking games (Table VII). This might be due to the fact that players must avoid, or "run around," opponents during screen blocking games. Because contact is taken completely out of the game, players must try to avoid running into one another. This might lead to an increase in quick lateral movement by players trying to avoid oncoming opponents. Thus, a reason there are more sprains and related injuries during screen blocking games might be partly attributable to this quick lateral movement. If participants are not gifted with speed and agility, the screen blocking game might lead them to experience a higher incidence of sprains and related injuries.

Table VII indicates there is not much difference between the rates of major injuries sustained during either type of game. There were 27 reported major injuries for both contact and screen blocking games. Thus, the minor injury rate is where the difference lies. There were 42 total minor injuries reported for contact blocking games and 86 total minor injuries reported for all screen blocking games.

Even though it was found that contact blocking is the safer form of blocking at these universities, the Multiple R Squared statistic sheds more light on what is actually taking place. Using the "game" as the unit of analysis, the Multiple R Squared statistic has a value of .121. The variable of sex and blocking, then, explains only 12% of the variance of the mean number of injuries in any one game from the total overall grand mean. Unlike the seasonal analysis, it is not due to a small sample size. This analysis shows there are other factors, which are not measured, that would help better estimate injury rates per game in addition to gender and type of blocking. These factors might include the type of playing surface, age of participants, and levels of physical fitness, among others.

The claims of Maurer et al (1984), Baletka and Smith (1981), Brown (1992), and Puckett, Trupp & Ford (1987) that there is an increase in sportsmanship and fewer disciplinary actions during screen blocking games were also put to the test in this study. As Tables VIII and IX indicate, no significant differences were found in sportsmanship and disciplinary action during contact and screen blocking games. Even though screen blocking games had a higher rate of both ejections and fights per game, these differences were not found to be significant. Thus, the hypothesis stating that unsportsmanlike behavior at schools using contact blocking is no greater than it is at those institutions using screen blocking can be accepted for the purposes of this study.

These findings, then, pose some interesting questions. If screen blocking games do indeed have a higher rate of injury than contact blocking, why do schools play screen blocking flag football? Should all schools now play with contact blocking as part of their rules? Because unsportsmanlike behavior rates are similar for both types of play, isn't safety the only concern for program directors when deciding which type of flag football to play? These questions, and similar ones, are very difficult to answer for all program directors across the country. Philosophies, traditions, student populations, and facilities are just some of the many factors that influence the decisions of program directors. Thus,

the decision to play contact or screen blocking flag football rests solely with the preference of the particular intramural program.

Should this study have an influence upon a director's decision? This study, and similar ones, all should have an influence upon a decision regarding flag football. However, if an institution is leaning towards switching to screen blocking because of NIRSA pressure only, this study offers another look into the game of flag football. Blindly changing the blocking style of your flag football program might not be the best decision. And as this study indicates, more research needs to be conducted. There are many factors besides blocking that have an effect upon injuries during flag football games.

Recommendations for Further Research

Both the "seasonal" and "game" analyses showed certain unaccounted factors that would be better predictors for injuries during flag football games. For example, if the playing surface at each university were known, it might be discovered that artificial turf is implicated in more injuries than grass fields. Or, perhaps the majority of people injured during the 1993 flag football seasons at these specific universities were not physically fit. Participants in athletic competition who are not physically fit might have higher injury rates than the physically fit. This would help to explain all the sprains and related injuries that were sustained during the flag football seasons. If everyone were physically fit, it would be safe to assume that the number of injuries would probably be reduced, at least by a small percentage. The competence level of all players might also have an effect upon injury rates. If all participants are familiar with the game, this might lead to a reduction in injuries. However, because many people grow up playing "tackle" football, participants might not be fully accustomed to playing flag football until after one or two seasons of play.

Whatever the reasons may be, further research is needed to gain more insight into the subject of injuries as they relate to the style of blocking used during flag football games.

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APPENDIX 1

1993 Flag Football Injury Tally Sheet

Please total injuries in each category for both Men and Women

****If your injury reports do not indicate how injury occurred, please indicate if injuries were sustained due to incidental contact or not. For example, was the injury due to blocking, pass coverage, etc. Also, please send me a copy of all injury reports.****

Name of Institution:

Type of Injury:	Men	Women	Co-Rec	
			Men	Women
I. Sprains and Related Injuries				
Knee	____	____	____	____
Ankle	____	____	____	____
Wrist	____	____	____	____
Other	____	____	____	____
II. Cuts and Lacerations	Men	Women	Co-Rec	
			Men	Women
Due to Contact/Collision	____	____	____	____
Incidental Contact	____	____	____	____
III. Breaks and Separations	Men	Women	Co-Rec	
			Men	Women
Arm/Shoulder	____	____	____	____
Leg/Ankle/Knee	____	____	____	____
Nose	____	____	____	____
Hand/Finger	____	____	____	____
Jaw	____	____	____	____
IV. Head Injuries	Men	Women	Co-Rec	
			Men	Women
Concussions	____	____	____	____
Dental	____	____	____	____
Other	____	____	____	____
V. Other Injuries (please specify)	Men	Women	Co-Rec	

Please take the time to answer each question, thank you.

1. How many Flag Football teams signed up to play in 1993?

Mens:_____ Womens:_____
Co-Rec:_____

2. How long is your season? (ie.: 5 week season plus a single elimination playoff tournament)

3. How many hours were spent training the officials before the season started?

4. Do you meet with the officials during the regular season?

_____ Yes >>>>> How Many Times?
_____ No

5. How many officials are assigned to each game? #_____

6. How many participants were ejected this year? #_____

(a.)Due to abuse (physical/verbal) towards officials? #_____
(b.) Unnecessary Roughness? #_____
(c.) Fighting? #_____
(d.) Other (please specify)

7. Did your institution experience any acts of physical violence this year (fights)? _____ Yes _____ No

If so, how many were isolated incidents (one-on-one) and how many were "bench-clearing brawls"?
One-on-One #_____
Brawls #_____

8. Does your school use:

_____ Contact Blocking
_____ Screen Blocking

9. Do you agree with the type of blocking your institution uses?

____ Yes - Why?

____ No - Why?

10. In the past 10 years, has your school switched from one type of blocking to another?

____ Yes - Please explain why?

____ No

Please send completed forms **and** a copy of all injury reports to:

Keith Moore

117c Colvin Center

Oklahoma State University

Stillwater, Oklahoma 74078

1993 Intramural Flag Football - Game Totals Sheet

Please Provide the total number of games played in each division:

Men's Division _____

Women's Division _____

CoRec Division _____

Please attach this sheet to the original survey you have already received. If this is not possible, please send to:

Keith Moore
Oklahoma State University
117c Colvin Center
Stillwater, OK 74078

APPENDIX 2
Cover Letter for Injury Tally Sheet

Name
University
Campus Recreation Office
Recreation Hall
City, Sate Zip

October 25, 1993

Dear ,

Thank you for agreeing to participate in this study comparing injuries at institutions that utilize contact blocking in flag football to those institutions utilizing screen blocking. The beginning of the year is always busy for everyone. Therefore, I am truly grateful that you have been so kind as to give up some of your time and effort to help shed more light on to this controversial subject.

As explained to you over the phone, I have provided your institution with a tally sheet for recording injuries for the entire season. In addition to the tally sheet enclosed, I have asked a few questions about your football program in general. Your honesty in answering these questions will assist me greatly. A copy of all your injury reports for the 1993 season will also prove to be useful (they will be destroyed after collecting data). Because I will have a copy of all the injury reports, I would be willing to fill out the tally sheets for your institution if time does not permit you to do so.

University of ....., ... University, University of ....., University of ....., University of ....., University of ....., University of ....., University of ....., University of ....., ... University, University of ....., University of ....., and ..... University have also agreed to participate in this study.

The results of this study will be used for my thesis at Oklahoma State University. Currently, I am in my second year at O.S.U. (School of Health, Physical Education, and Leisure) and will be graduating in the Spring of 1994. I am also in my second year as a Graduate Assistant in Intramural Sports. The results might also be of interest to the NIRSA.

After completing this study, I would be more than happy to send you the results. If you have any questions or comments, please feel free to contact me at Oklahoma State University.

Thank you again for your time and effort.

Sincerely,

Keith Moore
(405)744-7407
117c Colvin Center
Oklahoma State University

Christine Cashel
Thesis Advisor
Associate Professor
Leisure Studies

APPENDIX 3
Follow-up Letter for Injury Tally Sheet

Name
University
Student Recreation Complex
City, Sate Zip

December 2, 1993

Dear ,

I hope your Intramural flag football season is going as well as you expected. Here at Oklahoma State University, we have just finished our five week regular season and playoffs are just about to start. Because all teams, regardless of their record, are put into the playoffs, our tournament will continue for the next couple of weeks.

My reason for writing is twofold. For one, I again wish to offer my sincere gratitude for your continued participation in this injury comparison study. I am sure that the results of this research study will shed more insight on the issue of "blocking" in intramural flag football. The other reason I am writing is because I need just one more piece of information from your football season. I would appreciate it if you could provide me with the total number of games played this year in all divisions. This would mean for the men's, women's, and co-rec divisions.

Enclosed, you will find a form which will allow you to total the number of games played this year. Please attach this form to the original survey you have already received. If you have any questions, please feel free to call me at (405) 744-7407. Thank you again for all your help.

Sincerely,

Keith A. Moore
117c Colvin Center
Oklahoma State University
Stillwater, OK 74078

VITA

Keith A. Moore

Candidate for the Degree of

Master of Science

Thesis: EFFECTS OF BLOCKING STYLES ON INJURY RATES AND SPORTSMANSHIP DURING INTRAMURAL FLAG FOOTBALL GAMES

Major Field: Health, Physical Education and Leisure

Biographical:

Personal Data: Born in Torrance, California, On September 17, 1969, the son of Berrien Moore and Linda Moore.

Education: Graduated from Chadwick High School, Palos Verdes, California in June 1987; received Bachelor of Arts degree in Political Science from the University of California at San Diego in June 1992. Completed the requirements for the Master of Science degree with a major in Campus Recreation at Oklahoma State University in May 1995.

Experience: Employed by the University of California at San Diego, Department of Campus Recreation as an undergraduate supervisor in Intramural Sports; employed by Oklahoma State University, Department of Campus Recreation as a Graduate Assistant in Intramural Sports; employed by the University of California at San Francisco, Department of Recreation as the Assistant Intramural Sports Director, 1994 to present.

Professional Memberships: National Intramural-Recreational Sports Association.

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 03-15-95 **IRB#:** ED-94-054

Proposal Title: EFFECTS OF BLOCKING STYLES ON INJURY RATES AND SPORTSMANSHIP DURING INTRAMURAL FLAG FOOTBALL GAMES

Principal Investigator(s): Chris Cashel, Keith Moore

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): None

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL. ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

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Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

IF THE APPLICATION HAD BEEN SUBMITTED IN A TIMELY MANNER, IT WOULD HAVE BEEN APPROVED AS EXEMPT.

Signature: _____ Date: March 15, 1995
Chair of Institutional Board