ABSTRACT

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Offensive softball(SB) statistics were examined for 69 Michigan (MI) and 120 Iowa (IA) teams that had qualified for their respective state SB tournaments to determine the effect of playing seasons on their performance. State qualifying team statistics were organized into groups according to state, year, and class size. It was concluded that IA teams offered significantly ($p < .05$) more offensive opportunities. IA teams averaged significantly ($p < .05$) more games, at bats, hits, and doubles than the MI teams; however the MI teams did significantly better ($p <. 05$) in the areas of batting averages, triples, and homeruns. It was determined that due to the lack of previous studies further investigations on defensive statistics are needed to establish the relevance of playing seasons for SB in the Midwest.

AN OFFENIVE SEASONAL ANALYSIS OF GIRLS' HIGH SCHOOL FAST-PITCH SOFTBALL in IOWA AND MICHIGAN (1994-1998)

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

INTRODUCTION

This study provides the significant findings of how different playing seasons affect girls' high school fast-pitch softball. Presently, high school teams play their official fast-pitch softball season in the summer, fall, or spring; state athletic associations make those decisions. Therefore, there was a need to study which season provided more playing opportunities.

The purpose of this study was to examine the two official playing seasons for girls' high school fast-pitch softball in the Midwest region. The randomly selected states possessed teams that played girls' fast-pitch softball in the spring or summer. This study was intended to provide athletic associations, coaches, and schools with a documented analysis of the season that created more playing opportunities and was offensively more beneficial for girls' high school fast-pitch softball players in the Midwest region. A defensive analysis may be an option for future investigation.

The study specifically examined the offensive categories that the National Federation of High School

Associations has illustrated in their record books. It demonstrated which time of the year was the most beneficial according to those criteria and to those that were found to be common in the randomly selected Midwest states.

Data were based on the regular playing seasons in Iowa and Michigan. Each state athletic association has established specific playing guidelines for their girls' fast-pitch softball teams. One such regulation was in Iowa where the summer playing season begins on the 45th week of the year and ends with the first round of districts. Iowa teams have been allowed 50 games, including tournaments during the regular season. That was a total of nine and a half weeks with only seven weeks for competition. An example was the year 1999 when the first official practice date was May 12th and the fist game was played on May 31st.

The Michigan state association was somewhat different. Their teams were allowed 56 games or days of competition. In 1999 their start date was March 13, which was also the first day they could play a game. District competition began on May 30th, which was also the end of regular season play. The competition period was a total of 11 weeks.

Each state noted that even though Iowa and Michigan allow 50 and 56 games respectively, a team does not have to

play that many games. There were no minimum numbers given. It was also mentioned that if Iowa high school coaches expressed strong enough support, it is very possible that the summer season could be moved to spring (Hersom, 1996).

This study highlights the results of the offensive analysis. It first describes the process used to acquire the offensive statistics. It then presents the results of the averages computed for both seasons from 1994 to 1998 and the statistical significance of those numbers in regard to which season was offensively more opportune for fast-pitch softball players. The article concludes with related literature, which illustrates why a study such as this is relevant and timely.

DATA, VARIABLES, AND MEASURES

The data were acquired from the final season team offensive statistics that were presented to the Iowa and Michigan state athletic associations to be entered into the state tournament programs. Data include the final averages of 120 summer teams from 1994 to 1998 and 76 spring teams during the same time period that qualified for the state tournament. The data were also representative of the different class sizes involved in each state per season. Iowa used a three class system of A, 2A, and 3A, and

Michigan used a four class system of A, B, C, and D until 1998 when they switched to divisions. In this study, we used the term classes.

The first step involved accumulating the data by contacting the National Federation of State High School Associations in Kansas City. The initial contact consisted of acquiring a list of all the states and contact people for girls' high school fast-pitch softball in the Midwest region. The states were Illinois, Indiana, Iowa, Michigan, Wisconsin, and part of Kentucky.

A random selection process was used. Each state representative was contacted in order of the selection and asked which season they conducted girls' high school fast-pitch softball. The selected states were Iowa for summer and Michigan for spring.

The second step included calling the summer and spring athletic associations. The researcher requested a copy of the final season team statistics of each of the top 10 teams in each district for the past five years. The contacted states did not have that information available to them. The information that was agreed upon was the final season offensive statistics for the teams that advanced to the state tournaments from 1994 to 1998. State tournament

qualifiers were seen to be a fair representative of all teams in each state since playoffs began with every team involved. The teams that made it to the state tournament had successfully advanced past the other teams that were their same class size.

The data were examined carefully and then analyzed. The final offensive statistics were averaged according to team, class, and state and then entered into both SSPS 9.0 for Windows and Excel 97 for Windows spread sheets. The following dependent variables were measured: number of games, number of times at bat, runs, hits, batting average, doubles, triples, and home runs. Each of these were tested against state, year, and class in order to determine whether or not there were significant differences ($p < .05$).

OFFENSIVE ANALYSIS

The following information includes the mean offensive statistics for summer and spring teams that qualified for their state softball tournaments from 1994 to 1998. The data were organized according to years and highlighted specific offensive statistics that showed the greatest contrast from state to state. Data will indicate the final totals of all the classes combined over the five years for

each state and illustrate which areas demonstrated significant differences.

Summer's three classes were compared to the four spring classes, and the summer and spring classes were broken down according to school size. It was also necessary in several cases to compare one summer class to two spring classes in order to present a fair population comparison.

The summer system possessed 402 teams. The 3A teams were the largest 64 whose schools had between 1848 and 467 students. The 2A Class involved the next largest 96 schools with 446 to 229 students. Finally, Class 1A included the rest of the teams whose population numbered less than 229 students. There were a total of 232 schools in Class 1A.

The spring state association has taken the total number of schools, 634, and divided by four. The largest 25% were in Class A, the next 25% in Class B, then Classes C and D respectively. Class D absorbed the extra team(s) if there was an unequal number. Class A involved 160 schools whose population was 1093 or greater. Class B had 159 teams from schools of 1092 to 570. The Class C team possessed 159 schools that had a population of 569 to 302.

The smallest Class D had 156 teams from schools of 301 to 1.

The Analysis

The following information includes the mean offensive statistics for the summer and spring teams that had qualified for their respective state softball tournaments from 1994 to 1998. The data were organized according to years and highlighted specific offensive statistics that showed the greatest contrast from season to season. Tables 1 and 2 represent the final offensive averages for each of the summer and spring seasons (IGHSAU AND MSHSAA, 1994-1998).

Table 1
1994-1998 Summer Offensive Averages

Year	Games	AB	Runs	Hits	AVE	2P	3B	HR
1994	42.5	1136.2	259.0	345.0	.302	NA	NA	NA
1995	43.6	1187.4	254.7	334.5	.285	50.0	13.3	3.7
1996	45.9	1194.0	272.5	375.5	.304	59.3	17.0	4.8
1997	45.3	1208.3	254.3	364.6	.298	56.2	13.1	4.3
1998	44.5	1224.0	248.7	362.0	.293	55.2	13.8	4.5
Total	44.4	1190.0	257.8	356.3	.296	55.2	14.3	4.3

Final Totals and Statistical Significance

This section describes the information that was found to be statistically significant using a 1 x 8 ANOVA and a .05 level of significance. The two independent variables that produced significant differences were class and state. The year variable was not significant.

The class to state analysis showed that Iowa teams were significantly higher ($p < .05$) in games, times at bat, and hits. The analysis used summer and spring seasons and then the classes were combined according to school size. The smaller schools included summer Classes A and 2A and spring Classes C and D. The larger schools were summer Class 3A and spring Classes A and B.

The state to state analysis showed that the summer teams were significantly higher ($p < .05$) in games, times at bat, hits, and doubles. Table 1 revealed that they averaged 44.5 games per season, which was 11 more than the spring teams. The times at bat seen in Tables 1 and 2 showed averages of 1190 and 879.6 for summer and spring respectively, and summer teams averaged 97.1 more hits. The summer teams also averaged 53 6 doubles per season compared to spring's 39.3 average.

Table 2
1994-1998 Spring Offensive Averages

Year	Games	AB	Runs	Hits	AVE	2B	3B	HR
1994	34.4	923.8	253.0	299.0	.333	NA	NA	NA
1995	31.5	857.1	265.1	285.2	.325	37.9	16.5	6.8
1996	31.2	819.5	287.2	301.0	.340	40.6	16.7	5.0
1997	33.8	876.5	260.2	285.0	.315	40.5	14.6	6.1
1998	36.4	920.8	277.2	326.1	.344	41.3	14.6	5.8
Total	33.5	879.5	268.5	299.3	.331	40.1	15.6	5.9

The spring teams produced significantly ($p < .05$) higher batting averages. The spring average was .331, which was .035 points higher than summer's .296 average.

These figures reveal a significant ($p < .05$) difference in the playing opportunities that were presented to high school girls' fast-pitch softball players in the Midwest region. The summer teams provided more playing opportunities for the girls in the average number of games played each season and in the number of times at bat. The point that makes these findings even more interesting was that the summer system only allowed their teams 50 games over a 7 week playing schedule. The first two and a half

weeks were solely for practice. The spring system, however, allowed their teams 56 games in 11 weeks of competition.

While this study clearly shows that summer softball offers girls' high school fast-pitch softball players more playing opportunities, it also shows that there were benefits to playing in the spring system. Spring players, while playing fewer games, had significantly higher batting averages.

CONCLUSION

This study and current related literature support the need to improve the playing opportunities that are offered to high school athletes. The late twentieth century has been categorized as a period of growth for girls' athletics. Growth became more possible in 1972 with the passing of Title IX. Garrison and Manship (1993) stated that Title IX gave girls the opportunity to compete in interscholastic and intercollegiate competition with the same benefits and equality as men.

As a result, there has been an increased number of participants year after year. Howard and Gillis (1998) reported that during the 1997-1998 school year girls' participation in high school athletics was at 2,570,353, an

increase of 98,290 participants from the previous year. Fast-pitch softball grew by 19,767 participants in one year.

The increased demand for high school fast-pitch softball, available facilities, budget, Title IX standards, and the changing weather patterns are just a few limitations that have forced athletic association to make decisions relating to a team's playing season. In fact, the game was born while trying to find a way to deal with inclement weather. Pagnoni and Robinson (1990) explained that at the turn of the century some professional baseball players felt that it would be beneficial to continue their play during the winter months. Playing outdoors was out of the question due to the inclement weather. Thus, the idea of indoor baseball came about. Adjustments were made to accommodate the indoor facilities, so a large, soft ball was needed that would not travel as far as a baseball. That game evolved into the very sport that we are examining today.

There was a need to study and evaluate each of the summer and spring seasons that have been used by the Midwest region in order to see which season produced the

most playing opportunities for girls' high school fast-pitch softball.

Athletics has emphasized success and achievements. Thus, state systems have tried to produce optimal playing conditions for their athletes. Athletes need to be in an environment that is the most productive for their sport and given the opportunity to improve their game to the highest level possible.

REFERENCES

IGHSAU Media Staff. 1994 Iowa Girls State Softball Tournament: Press Information Book. State Softball Tournament, Inc., 1994.

IGHSAU Media Staff. 1995 Iowa Girls State Softball Tournament: Press Information Book, State Softball Tournament, Inc., 1995.

IGHSAU Media Staff. 1996 Iowa Girls State Softball Tournament: Press Information Book, State Softball Tournament, Inc., 1996.

IGHSAU Media Staff. 1997 Iowa Girls State Softball Tournament: Press Information Book, State Softball Tournament, Inc., 1997.

IGHSAU Media Staff. 1998 Iowa Girls State Softball Tournament: Press Information Book, State Softball Tournament, Inc., 1998.

Garrison, L., and Manship, S. "The Centennial Celebration: The Current State of Athletics." Athletic Administration, 28(3), pp.12-23.

Hersom, T. "For the Record: If They Must Do it, Must We Here in Iowa, Too?" Sioux City Journal [On-line]. Available: http://www.trib.com/scjournal/ARC/1996/MAY5_17_96/forrecord.html

Howard, B., and Gillis, J. "High School Athletics Participation Continues to Rise." Athletics Participation Survey [On-line]. Available: http://www.nfhs.org/PR-98part.htm

MHSAA Media Staff. 1994 Softball Finals Press Notes, State Softball Tournament, Inc. 1994.

MHSAA Media Staff. 1995 Softball Finals Press Notes, State Softball Tournament, Inc. 1995.

MHSAA Media Staff. 1996 Softball Finals Press Notes, State Softball Tournament, Inc. 1996.

MHSAA Media Staff. 1997 Softball Finals Press Notes, State Softball Tournament, Inc. 1997.

MHSAA Media Staff. 1998 Softball Finals Press Notes, State Softball Tournament, Inc. 1998.

Pagnoni, M., and Robinson, G. Softball: Fast and Slow Pitch. Indianapolis, IN: Masters Press, 1990.

APPENDIX A

REVIEW OF RELATED LITERATURE

REVIEW OF RELATED LITERATURE

Introduction

Grafftey (1991) wrote that softball is a game that possesses many dimensions and comes in many different forms: fast-pitch, slow-pitch, lobball, and many other variations. Games have been and still are played in parks, streets, and open fields throughout the world. It has been virtually impossible not to see the factors that contributed to the popularity and success of the sport. Factors have included characteristics of the community population, weather, type of industry, societal rank, and the size/type of school.

The purpose of this study was to examine factors that contributed to the offensive statistical success of girls' high school fast-pitch softball in the Midwest Region. The National Federation of High School Associations (NFHS) has established a common set of rules for all participants to follow which did not guarantee the success of every program in every state. Each state athletic association has developed its own set of principles and basic ideas for desired expected outcomes and they have evaluated their teams on the criteria essential to that sport. The

individual state associations have also determined the time of year to conduct all sports.

This study attempted to examine the performance outcomes of two randomly selected states in the Midwest Region that had chosen to conduct their high school fast-pitch softball seasons at different times of the year. The study intended to demonstrate which time of the year was the most beneficial according to that criteria and those that were found to be common in Iowa and Michigan.

This review of literature provides a short history of softball and how it arrived at the point to which it could be evaluated. The next portion examined the area that determined offensive success. That area of focus was batting. The final portion explained the importance of evaluating those criteria and the relevance of keeping accurate statistics in order to complete such a study.

Softball has been unique and should not be considered simply as a modified version of baseball. The playing skills of fielding balls, baserunning, pitching, and batting all have had their own techniques (Dobson and Sisley, 1980). Both the offensive and defensive aspects of the game have complimented one another. The offense scored the runs and the defense attempted to keep the opponents

from scoring (Meyer, 1982). The more pressure one team's offense placed on the opposing team's defense, the more pressure was relieved from the first team's own defense.

History

The present game of fast-pitch softball was a descendent of baseball, both of which were variations of the English game called 'rounders' (Dobson and Sisley, 1980). It evolved around the turn of the twentieth century and was called kitten ball, ladies' baseball, and soft baseball (Meyer, 1982). There were several opinions as to how and when this sport actually came into existence. One such version gave credit to alumni of Yale and Harvard. It was noted by Monteleone and Crisfield (1999) that the alumni were looking for a diversion on a wintery day. The final score was 41 to 40.

Pagnoni and Robinson (1990) explained that at the turn of the century some professional baseball players felt that it would be beneficial to continue their play during the winter months. Playing outdoors was out of the question due to the inclement weather. Thus, the idea of indoor baseball came about. Adjustments were made to accommodate the indoor facilities, so a large soft ball was needed that

would not travel as far as a baseball. There were few other rules and equipment changes.

The idea never really captured the publics' attention. The lack of enthusiasm was attributed to the players themselves. The players themselves were hard to motivate to play this indoor game (Pagnoni and Robinson, 1990). The new leagues that were emerging in the Caribbean and South America and spring training in Florida and Arizona were more appealing. So indoor baseball soon went away, but the softball seed had been planted.

Dobson and Sisley (1980) added to that version and gave credit to George W. Hancock, a Midwesterner who was a reporter for the Chicago Board of Trade. In 1887 a group of young men allegedly tied a battered boxing glove into a ball and hit it with a broomstick. The next week Hancock wrote the official rules and designed a "soft-ball" and rubber tipped bat. Later Hancock introduced a 16 inch ball with large raised seems to restrict the flight indoors.

The game flourished for several years, but was eventually replaced by Lewis Rober's version of outdoor softball. By 1895 Rober's version was the rage in the Midwest. The game used a 12-inch slick cover ball similar

to a baseball and was played outdoors (Pagnoni and Robinson, 1990).

Another version was called diamond ball or kitten ball and was published by playground leaders in the Minneapolis/St. Paul area in 1900. This was the version acknowledged for the framework of softball rules today (Dobson and Sisley, 1980). It also led to further expansion in the Midwest area.

The first official softball rules book was developed in 1906 (Pagnoni and Robinson, 1990). The rules were modified in 1926. The base paths were made smaller and therefore was seen as an acceptable form of baseball for girls (Berlage, 1994).

Softball became popular during the depression and was seen as an inexpensive form of entertainment. The first tournament was held in 1933 at the World's Fair in Chicago. It involved both men and women. That same year the Amateur Softball Association (ASA) was formed and made the term 'softball' official. It also developed a common set of rules which were necessary in a time when teams were making up some of their own rules (Meyer, 1982).

Manteleone and Crisfield (1999) wrote that the first slow pitch championship exclusively for women was held in

1957. That was followed by a period of growth in the 1960's. In 1965 the Raybestos Breakettes of Stratford, Conneticut participated in a world tour to expand the game globally. That same year the team participated in the first women's world fast-pitch tournament in Melborne, Australia.

Since then girls have played softball all over the world. There have been specifications made on equipment and base path lengths depending on the version that teams were playing. Meyer (1982) noted that it has become relatively well organized with local, state, national, and international championships. Some have traveled within a city or state or to participate in state, regional, or national tournaments.

The Iowa and Michigan girls' athletic associations have also established specific guidelines to regulate competition. Iowa practices have begun on the 45th week of the year. An example that was given is the year 2000 in that the first official practice date will be May 10th and the first game may be played on May 29th. Iowa teams have been allowed 50 games which includes tournaments, and seasons end with the first round of district playoffs. The

competition season has been a total of nine and a half weeks and only seven weeks for competition.

The Michigan state association was somewhat different. In 1999 their start date was March 13, which was also the first day they could play a game. The teams were allowed 56 games or days of competition. Their district competition began on May 30th which was also the end of regular season play. That was a total of 11 weeks.

Each state noted that even though Iowa and Michigan allow 50 and 56 games respectively, a team does not have to play that many. There were no minimum numbers given. It was also noted that if Iowa high school coaches expressed strong enough support, it was very possible that the summer season could be moved to spring (Hersom, 1996).

Offense

Potter and Brockmeyer (1999) explained that the offensive part of the game was that which involved batting, baserunning, stealing bases, and runs. A successful offensive team has achieved high averages in each of those areas and has attempted to improve in order to raise their statistics. Potter and Brockmeyer (1991) also clarified that the number of outs, the location of the runners on base, inning, the score of the game, the ball-strike count,

the strengths and weaknesses of the batter, and the strengths and weaknesses of the pitcher all are factors that characterize the offensive situation. The ultimate objective has been to score runs.

It has been imperative that a team was strong offensively in order to win softball games. They not only have had to be physically able to hit the ball, but mentally tough enough to know why and when to swing and run. Those have been the areas that a coach must focus and work on to make their team competitive.

Potter and Brockmeyer (1999) stated that batting involved moving the bat from a stationary position behind the back shoulder into the path of the ball. One made contact with the ball out in front of the front foot and followed through by completing the swing while keeping the body in a balanced position.

No two players bat exactly alike. Each athlete develops her own style of batting and tries to use those techniques to produce the best results. Linde and Hoehn (1985) said that a team wins by scoring more runs than their opponent and a run can only happen with runners on the bases and those runners attaining the bases by being able to hit the ball safely.

It is also important for the batter to know the strike zone. She needs the ability to classify the pitch instantly as a ball or strike. This is crucial to a batter's success (Meyer, 1982).

Pagnoni and Robinson (1990) claimed that batting in fast-pitch softball is just as tough and sometimes tougher than batting in baseball. "Hitting was certainly the most difficult thing I've ever tried to do," shared Michael Jordan of his experience with the game (Monteleone and Crisfield, 1999, p.4). Olympic pitcher Lisa Fernandez challenged major league all-star David Justice and struck him out three times (Monteleone and Crisfield, 1999).

The top women pitchers have thrown more than 70 miles per hour over a 40-foot distance. The batter literally has a split second to decide whether or not to swing. Meyer (1982) claimed that knowing the strike zone and having the ability to classify the pitch instantly as a ball or strike are important to a batter's success. The batter has to be aggressive and want to hit the pitched ball. They should have felt confident enough to go after any pitch in the strike zone. Meyer (1982) added that it has been more difficult for the pitcher to throw successfully against an aggressive hitter than against a batter who waits for her

pitch. "Let me tell you. This is a hitter's game. You need to be putting some time into hitting. If you are scoring 6 or 7 runs a game, you are not going to lose too many games," states Ralph Weekly, coach of the U.S. National team (Monteleone and Crisfield, 1999, p.5).

Statistics

Statistics have been a product of sports for at least 100 years when the simple won/lost record was kept. In 1874 Henry Chadwick was deemed the father of scoring and gave record keepers the eternal 'K' for recording strikeouts (Dickson, 1996).

Statistics have been the documented account of the events that happened during the softball game. Pagnoni and Robinson (1990) stated that keeping score in softball was more than tallying runs and hits; it is an accurate pitch-by-pitch, inning-by-inning account of the action.

Dickson (1996) explained that scoring is based on a universal system of numbers and a varied collection of letters and symbols. The score sheet started as a blank grid with the innings running across the top and spaces for the names of the players running down the left-hand side. There was also room for their position and sometimes uniform number. The boxes opposite each players' name

contained a small softball diamond. Extra lines were given for players who entered the game.

Richards and Hill (1974) noted that a statistician possesses a crucial role as the record keeper and a good one makes all entries exactly as they occur on the playing field. It has been essential that the statistician be accurate on each individual play because the final game statistics are only as valid as the sum of the statistics that were recorded. The depth of the statistics recorded has varied with the level of play and the competency of the recorder. They have also been dependent on the demands of those that are controlling the program. Dickson (1996) contributed that the intent was to record everything in proper context and with full description so that someone could later determine exactly where the ball hit to the outfield went through the infield.

The competent scorer should have been well versed and had a working knowledge of scorer's shorthand. They have made the game flow smoothly by doing their job accurately. It was also noted that reliable statisticians seldom make changes once a scoring decision has been made. Those changes should have only been made if additional

information had become available from a source of authority (Pagnoni and Robinson, 1990).

Richards and Hill (1974) stated that softball is a sport that possesses a great variety of situations and as a result has very specific scoring rules which are detailed enough to cover every possible situation. Authorities should have rarely had to intervene in the recorded final game statistics. Statistics have given associations and teams the information needed to evaluate a team. The information was looked at, studied, and compared to the numbers of seasons and years past. Schools and administrators then determined if their team had been playing at the level demanded by district and state criteria.

REFERENCES

Berlage, G. Women in Baseball: The Forgotten History. Westport, CT: Praeger, 1994.

Dickson, P. The Joy of Keeping Score: How Scoring the Game Has Influenced the History of Baseball. New York, NY: Walker, 1996.

Dobson, J., and Sisley, B. Softball for Girls. New York, NY: Krieger, 1980.

Grafftey, H. Safety Sense at Play. Ottawa, Canada: Safety Sense Enterprise, 1991.

Hersom, T. "For the Record: If They Must Do It, Must We Here in Iowa, Too?" Sioux City Journal [On-line]. Available: http://www.trib.com/scjournal/ARC/1996/MAY5_17_96/forrecord.html.

Linde, K., and Hoehn, R. Winning Women's Softball. Englewood Cliffs, NJ: Prentice Hall, 1985.

Meyer, G. Softball for Girls and Women. New York, NY: MacMillan, 1982.

Mc::teleone, J., and Crisfield, D. The Louisville Slugger Complete Book of Women's Fast-Pitch Softball. New York, NY: Henry Hold, 1999.

Pagnoni, M., and Robinson, G. Softball: Fast and Slow Pitch. Indianapolis, IN: Masters Press, 1990.

Potter, D., and Brockmeyer, G. Teaching Softball: Steps to Success. Champaign, IL: Leisure Press, 1989.

Richards, J., and Hill, D. Complete Handbook of Sports Scoring and Record Keeping. New York: Parker, 1974.