1970

Tee-Ball

Merl E. Brothers
Central Washington University

TEE-BALL

A Thesis

Presented to

the Graduate Faculty

Central Washington State College

In Partial Fulfillment

of the Requirements for the Degree

Master of Education

---

by

Merl E. Brothers

July, 1970

APPROVED FOR THE GRADUATE FACULTY

_____

James G. Nylander, COMMITTEE CHAIRMAN

_____

Gary Frederick

_____

Lloyd Gabriel

ACKNOWLEDGMENT

I wish to express my appreciation to Dr. James Nylander, Graduate Committee Chairman, Mr. Gary Frederick, and Dr. Lloyd Gabriel for the guidance and assistance they offered during the course of the study.

TABLE OF CONTENTS

CHAPTER PAGE

LIST OF TABLES

CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS

Those who have an interest in youth baseball have a responsibility to the young people in our communities to establish the best possible programs to teach the basic baseball skills and sportsmanship in the most effective way known. There is always a need for improved methods in teaching beginners and Tee-ball could make a significant contribution.

I. THE PROBLEM

Hypothesis. The hypothesis of this study was that boys between the ages of seven to nine playing Tee-ball would receive a significantly higher number of opportunities to learn baseball skills than boys playing in the Atom Leagues; and as a result of the greater number of opportunities to learn, Tee-ball would result in greater improvement than would Atom ball over one season.

Importance of the study. If boys are to learn the proper skills in baseball it is most important that better programs are developed to improve physical abilities.

Limitations of the study.

1. The boys in this study have been grouped only by age. They have the choice to participate in what ever league they desire.
2. The ability of various coaches must be assessed.
3. The amount of intrinsic motivation created within the boys themselves must be ascertained.
4. The tabulation for the statistics will be taken from a random sampling of teams in both leagues.

Basic assumptions about the study. It was assumed that every team observed would exert maximum effort to help his team win. Secondly, it was assumed that except for pitching and hitting a pitched ball, both leagues worked on the same basic baseball skills.

II. DEFINITIONS OF TERMS USED

Atom league. The Atom league is a baseball program sponsored by the Y.M.C.A. for boys seven through nine. A ten inch softball is used with Little League bats. The bases are forty-five feet apart with the pitcher's rubber

thirty-five feet from home plate. Little League rules are used with official interpretations based on the National Alliance Code.

Tee-ball. Tee-ball is a lead up game to baseball using certain alterations from the normal Little League rules. The game is played by boys between the ages of seven and nine. There are five innings per game with nine players on a team unless otherwise agreed upon by both coaches. Each team will bat all boys every inning.

The ball is batted off a twenty-four inch tee rather than pitched. The tee is adjusted to the height preferred by the boys and each gets as many swings as he needs to hit a fair ball. The ball is considered fair by normal baseball rules with the exception that it must reach the pitchers rubber in order to be playable. No bunting is allowed.

Official baseball rules are used with these exceptions:

1. No player may lead off.
2. A runner must be advanced by a ball hit fair, no stealing is allowed.
3. The infield fly rule has been eliminated.
4. When the ball is placed on the tee by a defensive player all play ceases.
5. The number nine batter or the last hitter on the line-up will be the final boy to the plate in the inning no matter how many outs

there are. He must attempt to go as far as possible before the ball is placed on the tee to end the inning. In other words, he must hit a home run or he is put out.

A ten inch softball is used with Little League sized bats. The bases are forty-five feet apart with the pitcher's rubber thirty-five feet from home plate. There is no pitcher's mound and home plate is the base of the tee.

Runs may be scored until there are three outs. After the third out the bases are cleared and play resumes with the same team batting for three more outs. All runs are counted until all players have batted throughout the inning.

On all over throws the runner or runners may take one base, however, they advance at their own risk. The batter is out if he throws his bat beyond the batters box, more than five feet.

There are two umpires and two base coaches. One of each is located at first base and third base.

III. OVERVIEW OF REMAINDER OF THESIS

Chapter two of this study will present briefly some of the attitudes and effects of competition on young people. The development of some of the big controversies will be reviewed with both the positive and negative aspects discussed. The development of competitive youth programs as well as related studies will be included.

Chapter three will explain the procedures of investigation, evaluate the instrument use and how to administer the test.

Chapter four presents the results of the study and the statistical analysis of data.

Summaries, conclusions, and further recommendations are given in the final chapter.

CHAPTER II

REVIEW OF THE LITERATURE

I. THE BATTING TEE

The emergence of the batting tee in baseball is not a recent development but dates back over several decades, a scout for the Chicago Cubs introduced and demonstrated the batting tee at Western Michigan College in 1947.

Joseph R. Cooper, baseball coach at Marshall High School in Marshall, Michigan believes the batting tee to be an invaluable aid in the teaching of batting fundamentals. He uses the tee both indoors and out for the following reasons:

1. To help the boy gain confidence and rid himself of slumps.
2. To help the boy find and correct his faults.
3. To utilize the time wasted while a boy is awaiting his turn at batting practice.

Cooper further states that, like any useful tool, the batting tee is only of value when properly used. Many boys attempt to hit the ball as if hitting a golf ball in a driving range. This would be detrimental to good batting form as shown in Appendix A. (7:30)

Tee-Softball. The batting tee has also been utilized as a lead-up activity to softball. The ball is hit off a

tee which is around five feet behind home plate. Every person on the team bats each inning, receiving one swing per player. The catcher is not involved in the play until after the ball is hit, thus eliminating the need for a mask (5:23).

The players are given numbers which indicate their playing positions as well as batting order as found in Appendix B.

II. LITTLE LEAGUE BASEBALL

Little League baseball has mushroomed into a big business since its first origins in 1939 when a summer baseball program for boys eight to twelve years of age was organized in Williamsport, Pennsylvania. Today millions of Americans are involved in this summer program including players, parents, coaches and sponsors. It is probably safe to say that Little League has become a way of life for over 50,000,000 people. Like any activity which directly or indirectly involves millions of youngsters, Little League baseball has been alternately praised and maligned. Experts question the effects of comeptition upon the participants who are obviously far from mature in their reactions to stress and pressure. Doctors warn of possible injury to bones and joints of the growing boy. Despite dire warnings of physical and emotional damage, Little League continues to occupy the

time and efforts of many boys and their families (16:350).

Physical Effects of Little League Baseball. Little League Elbow and Little League Shoulder. Youngsters who participate in Little League baseball may develop Little League elbow which is a result of the fact that the bones and cartilage have not hardened enough to withstand the strain of a sustained pitching effort. The medial epicondylar epiphysis is pulled from its proper position by tendons and muscles and may be fractured (8:60).

Little League shoulder occurs when the cartilage at the end of the humerus is torn loose. Both injuries should be immobilized with a sling, cast or splint. In many instances these injuries are diagnosed by parents or coaches as pulled muscles and treated accordingly (8:60).

Elvera Skubic's study of Little League baseball reveals the results of four questionnaires given to the parents and players involved in this program. One of the questionnaires attempted to determine the number and extent of injuries sustained by the players in one baseball season. One hundred forty questionnaires were sent out with one hundred completed and returned. The following questions were included in the questionnaires:

1. What part of the body was injured during this season?
2. How many times was each part injured?
3. In what situation were you injured?
4. How many days of baseball playing did you miss because of the injury?
5. List injuries that are still troublesome.

A total of two hundred forty-four injuries were reported. The relatively minor injuries included one hundred forty six bruises and twenty four cuts. Sixty nine sprains and five broken bones were also reported. Out of the one hundred questionnaires returned, twenty seven boys reported not having been injured at any time during that season. The highest number of injuries involved the fingers, probably resulting from the boys' lack of dexterity in manipulating a hard ball.

In a game situation, the most Little League injuries occurred when the boys were fielding thrown or batted balls, or 38% of the total injuries. Twenty seven percent of the injuries were incurred when the batters were hit by pitched balls. Skubic feels that the short pitching distance of forty-four feet may be instrumental in causing injuries to batters, since a batter with slow reflexes may not have time

to step away from a pitched ball. Fifteen boys reported an injury which is still troublesome (22:97-109).

Steps for Improving Little League Baseball. The Little League Organization, interested in making its program as beneficial as possible, distributed questionnaires to forty-four states to determine its advantages and disadvantages. The results of this questionnaire led to several suggestions for the improvement of Little League baseball.

First of all, it was agreed by parents, players and coaches that each boy should have the opportunity to participate in every game, even if only for a short time, if he is to receive the benefits inherent in the program. Nothing is more discouraging to a child than to attend every practice, meet all of the requirements only to warm the bench game after game.

Another recommendation was to recruit qualified personnel to work with the boys; people who know both baseball and the needs of young boys. It has been suggested that if such a person cannot be found, perhaps two people with complementing qualifications can be recruited.

It is important that parental interference be kept to a minimum. Policies and procedures should be established to prevent this disrupting and sometimes damaging factor. It may be in order to make a rule which prohibits any adult contact with the players during a game with the exception of the coach and manager (16:359-361).

J. J. McCarthy, assistant baseball coach at Mankato State College, Mankato, Minnesota, also feels the need for reforms in Little League baseball. He feels that the money now being used for uniforms, unnecessary equipment, awards, stadiums and travel could be better put to use by instituting a long-term continuous compulsory educational program to train Little League volunteers and officials at the team level and to pay qualified people to manage and supervise at the administrative and league level.

McCarthy also recommends that newspaper publicity playing up individual accomplishments rather than the objectives and values of the total program should be eliminated. He further suggests that only the team standings, schedules and results of games should be published. League championships at the district, state and national levels as well as all-star games tend to exert a considerable amount of pressure on the young boy.

McCarthy further states that an adequate uniform might consist of an inexpensive sweatshirt or T-shirt and cap. Little Leaguers need not be dressed as junior professionals neither do they require grandstands, lights and other contrivances fashioned in the adult pattern, mainly for the comfort and enjoyment of the adult spectators.

Geographical areas should be established for team and league memberships and travel should be confined to the immediate locale. Team size should be limited to fifteen

players chosen by lot taken from a general registration by age groups of all interested boys.

McCarthy suggests that the maximum number of innings played by each player be reduced to three. In addition, he states, pitchers should be prohibited from pitching two days in succession whether in a game, batting practice or scrimmage. Practices should be limited to two two-hour sessions per week on days other than game days.

McCarthy feels that an innovative method of umpiring might be beneficial to young boys learning the game of baseball. He suggests that designated umpires be eliminated with the coaches and managers being used in this capacity and that the boys should be encouraged to handle the tactical aspects of the game themselves. He also believes that the traditional three outs per inning should be abolished utilizing instead the entire lineup sequence each inning thus giving every player a chance to bat each inning (13:80-3).

These suggestions are intended to help provide more opportunities for boys to learn baseball skills and reap the benefits that can be gained in a youth baseball program, but are sometimes sadly lacking. These suggestions could be advantageously used in either a youth league or Tee-ball situation.

CHAPTER III

PROCEDURES OF INVESTIGATION

The principle plan of the study was to determine if boys playing tee-ball were provided with greater opportunities to learn skills than boys playing youth league baseball. This required a measuring device that would be appropriate to teams in both leagues. After administering the test for a seven week period both programs were evaluated.

I. INSTRUMENT OF MEASUREMENT

The new game of Tee-ball was started in Selah, Washington in 1964. There seemed to be many advantages in this new type of baseball for boys seven through nine. A comparative study between Tee-ball and Little League seemed pertinent to evaluate these advantages.

A list of skills was picked that would be easy to identify with little difficulty in distinguishing success or failure. The administrator of the test must have some knowledge about the game of baseball. In judging the opportunity to perform a skill successfully would require the same ability as distinguishing between a hit or an error on a groundball, a flyball, or a throw. Each test item is judged on the number of opportunities and with what degree of success. A chart was devised to keep tabulations on each skill for games in both leagues (Appendix B).

Ground Balls. A ground ball is a ball batted on the ground anywhere in fair territory that a defensive player has a good chance to field cleanly.

Fly Balls. A fly ball is a ball batted in the air that a fielder has a good chance to catch before it touches the ground.

Throws to First. A throw to first would be a throw from a defensive player in an attempt to put the offensive runner out. Only the throw is to be judged, not the receiving of the ball by the person covering the base.

Throws to Second. Throws to second base are to be judged the same as to first base except the ball is being thrown to a defensive player covering the base in an attempt to put out a runner or to keep a base runner from advancing.

Throws to Home. Throws to home base are to be judged the same as second base except the throw from the defensive player is attempting to put out the runner coming from third or to keep him from advancing.

Put-outs at First Base. In judging the put-out at first, we are evaluating the catching of the ball or the tag on the runner. A successful attempt would be a put-out.

Put-outs at Second Base. The put-outs at second base are to be judged by catching of the ball or the tagging of the runner. A successful attempt would be a put-out.

Put-outs at Third Base. The put-outs at third base are to be judged by the catching of the ball or the tagging of the runner. A successful attempt would be a put-out.

Advancement to First Base. In judging the advancements of the offensive runners to first, only those may be counted that are attempting to reach the base safely on a ball hit in fair territory. A walk or a batter hit by a pitched ball would not be scored. An unsuccessful attempt would be a put-out.

Advancement to Second Base. In both leagues, Tee-ball and Little League, the runners must be advanced from first to second by a batted ball, a walk, or a player hit by a pitched ball. We are judging only the runner moving down to second base on a batted ball.

II. ORGANIZATION OF TEST SITUATION

The following criteria were considered in the observation of the testing situations.

Leagues Observed. Only those teams participating in Selah Tee-ball and Yakima Y.M.C.A. Atom Leagues were observed. All games used in the study were selected at random.

Sequential Administration of Tests. The tests were administered during three periods throughout their schedules. Three games were observed in the early, middle and late parts of the season in both leagues.

III. COLLECTION OF DATA

Reliability of Measuring Device. If it can be assured that the following statement is true then it can be concluded that the measuring device is reliable. The measuring device should consistantly yield the same results when administered under the same conditions (2:265).

Test for Validity of the Measuring Device. If the measuring device is administered by two different people to the same group, then the correlation between the results will be significant at the .05 level. In other words, the probability of obtaining significantly related scores by two different people administering the same measuring device to the same sample group is .95. If the hypothesis is valid, then the measuring device is reliable.

The coefficient of stability, sometimes referred to as test retest reliability coefficient, as related to the measuring device, is dependent upon the significance of the Pearson Product-Moment Correlation Coefficient r. The correlation Coefficient r was calculated to be +.84 (4:187). Since the number of skills (N) is less than 30 to test for the significance of r, the t-test must be used. For the measuring device t score was calculated to be +5.02 with the degree of freedom being 8. This t of +5.02 is larger than the .01 value (3.355) for a two tailed test but less than the .001 value (5.041), therefore it can be concluded

that this t value is significant beyond the .01 level (4:218-19). (Appendix C).

In addition since a .05 level is considered significant and a .01 level of significance was attained, the measuring device is highly significant (1:112).

CHAPTER IV

ANALYSIS OF DATA

The results of the study show that boys participating in Tee-ball received a much higher number of opportunities to learn baseball skills. Greater gains were noted in skill improvement over the seven week period in Tee-ball compared to Atom League. Evidence of this can be found in Tables I through VI. It should be noted that in seven out of the ten test items, there is a significant difference in the development of skills between Atom League baseball and Tee-up baseball (Table VI). In all areas, except the two categories of base running, there was a higher percent of success for Tee-ball over Atom League (Table III and IV).

Seven out of the ten testing areas, including ground balls, fly balls, throws to first base, throws to second base, throws to home plate, put-outs at second base, and put-outs at third base, supported the study's original hypothesis stating that skill improvement would be greater in Tee-ball. It soon became evident that the increase in the defensive areas would cause the offensive skills at base running to decrease (Tables I through V).

There was an overwhelming number of opportunities and successes registered for Tee-ball in every test item (Table IV).

Each individual mean of all skills measured were compared using the t test to determine the significant

difference at a .05 level of significance. The results indicated that there was a significant difference in seven out of the ten test items (Table VI).

It is felt that the significant differences of the first five skill areas dealing with the defensive abilities of fielding ground balls, catching fly balls, and throwing to first base, second base, and home plate, are very pertinent to this study. These areas are concerned with basic skills which are easy to distinguish between success and failure and are definitely indications of a player's abilities.

TABLE I

PERCENT OF SUCCESS FOR EACH SKILL
IN EACH TEE-BALL GAME

Skill	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7	Game 8	Game 9
Ground Balls	68	65	45	79	72	79	88	77	84
Fly Balls	53	62	21	58	76	64	70	77	71
Throws to First Base	42	29	73	79	75	76	79	75	86
Throws to Second Base	100	59	69	83	85	82	90	100	75
Throws to Home Plate	50	65	40	67	86	86	80	75	90
Put-outs at First Base	69	83	33	67	72	55	62	70	47
Put-outs at Second Base	100	100	50	100	100	71	63	56	100
Put-outs at Third Base	100	100	00	71	100	50	50	00	100
Advancement to First	95	87	97	86	90	84	86	78	75
Advancement to Second	100	92	98	87	86	100	98	97	72

TABLE II

PERCENT OF SUCCESS FOR EACH SKILL
IN EACH ATOM LEAGUE GAME

Skill	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7	Game 8	Game 9
Ground Balls	43	55	45	25	40	00	50	50	38
Fly Balls	100	00	00	00	00	50	00	00	50
Throws to First Base	00	00	33	50	33	00	00	50	33
Throws to Second Base	00	100	00	50	50	50	00	00	50
Throws to Home Plate	00	100	33	00	00	00	00	50	00
Put-outs at First Base	100	00	75	00	17	17	100	33	50
Put-outs at Second Base	00	75	00	00	00	00	00	67	50
Put-outs at Third Base	00	50	00	00	00	00	00	00	00
Advancement to First	80	100	87	100	90	100	78	100	88
Advancement to Second	100	100	100	100	100	100	100	100	88

TABLE III

EARLY, MIDDLE AND LATE SEASON PERCENTAGES OF SUCCESS

	TEE-BALL			ATOM LEAGUE		
Skill	Early Season	Mid-season	Late Season	Early Season	Mid-season	Late Season
Ground Balls	59	77	83	48	22	46
Fly Balls	45	66	73	33	17	17
Throws to First Base	48	77	80	11	28	28
Throws to Second Base	76	83	88	33	50	17
Throws to Home Plate	52	80	82	44	00	17
Put-outs at First Base	62	65	59	58	11	61
Put-outs at Second Base	83	90	73	25	00	39
Put-outs at Third Base	67	74	50	17	00	00
Advancement to First	93	87	80	89	97	89
Advancement to Second	97	91	89	100	100	96

TABLE IV

SEASON'S OPPORTUNITIES, SUCCESSES AND OVER ALL PERCENTAGES

Skills	TEE-BALL			ATOM LEAGUE		
	Opportunities	Success	Percentage	Opportunities	Success	Percentage
Ground Balls	538	400	74	67	30	45
Fly Balls	221	139	63	20	6	30
Throws to First Base	238	168	71	19	6	32
Throws to Second Base	95	76	80	13	6	46
Throws to Home Plate	85	60	71	13	3	23
Put-outs at First Base	175	109	62	28	12	43
Put-outs at Second Base	66	55	83	12	6	50
Put-outs at Third Base	21	16	76	7	1	14
Advancement to First	665	569	86	78	71	91
Advancement to Second	404	377	93	65	64	98

TABLE V

GAMES IN PERCENT OF SUCCESS FROM EARLY TO LATE SEASON

Skill	Ground Balls	Fly Balls	Throws First	Throws Second	Throws Home	Put-outs First	Put-outs Second	Put-outs Third	Advance to First	Advance to Second
TEE-BALL										
Early	59	45	48	76	52	62	83	67	93	97
Late	83	73	80	88	82	59	73	50	80	89
Gain	+24	+28	+32	+12	+30	-03	-10	-17	-07	-08
ATOM LEAGUE										
Early	48	33	11	33	44	58	25	17	89	100
Late	46	17	28	17	17	61	39	0	89	96
Gain	-2	-16	+17	-16	-27	+3	+14	-17	+6	-4

TABLE VI

SIGNIFICANCE BETWEEN THE MEANS OF PERCENT OF SUCCESS

Test Item	Tee-Ball Means	Atom League Means	"t"	Significance
Ground Balls	73	38	4.950	.05
Fly Balls	61	22	2.910	.05
Throws to First Base	68	22	4.693	.05
Throws to Second Base	83	33	3.968	.05
Throws to Home Plate	71	20	3.923	.05
Put-outs at First Base	62	44	1.286	---
Put-outs at Second Base	82	21	4.878	.05
Put-outs at Third Base	63	6	3.826	.05
Advancement to First Base	86	91	-1.316	---
Advancement to Second Base	92	98.7	-2.030	---

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The purpose of the study was to determine whether boys between the ages of seven to nine would receive greater opportunities to learn baseball skills in Tee-ball as compared to Atom League and consequently improve more.

Nine games in each league were subjected to a measuring device covering ten skill areas.

Following the seven week period, the test scores of each of the ten skill areas were used to compute the mean differences in each league. The Test for Significance of Difference Between Two Proportions was used in order to determine any statistically significant differences between the two groups.

II. CONCLUSIONS

Boys between the ages of seven to nine playing Tee-ball were found to receive a significantly higher number of opportunities to learn baseball skills than boys playing in the Atom Baseball League. As a result of the greater number of opportunities to learn, boys playing Tee-ball showed a greater skill improvement in most areas than those playing Atom League Ball. Skill improvement was found in seven out of ten testing areas. No significant difference was found in the amount of skill improvement dealing with put-outs at first base

or in both categories of base running. It is felt that in observing put-outs at first base, too many variables were involved to properly evaluate one particular skill. As the season progressed, base running skills in Tee-ball decreased. It is quite evident that this occurred as a result of the noticeable skill improvement in the other seven defensive areas.

Due to the overwhelming number of skill opportunities in Tee-ball compared to Atom League, the statistical conclusions could be misleading. It was not unusual to tabulate an Atom League game in which certain testing areas came up with zero opportunities. This was never the case in Tee-ball.

III. PERSONAL OBSERVATIONS OF THE RESEARCHER

The following statements are personal observations concerning the advantages and disadvantages of Tee-ball.

Advantages. In Tee-ball every boy takes a turn at the plate each inning. The batter stays at the plate until contact is made, therefore receives more practice in the skill of swinging the bat. The batter is relaxed since fear-inducing situations are eliminated in the following ways: (a) the pressure to bat successfully is removed since he is allowed as many swings as he needs to hit a fair ball and (b) the batter cannot be hit with a pitched ball.

Tee-ball players are much more physically active than Atom League players, thus physical fitness benefits are evident. Furthermore, the boredom factor is decreased since

each defensive player must anticipate his involvement in the next play. There is a defensive maneuver for every batter that comes to the plate, thus the action is continuous.

In Atom League play, it is not uncommon for a defensive player to have no contact whatsoever with the ball throughout an entire game. The action is concentrated around the pitcher and catcher.

In Tee-ball it is extremely rare to see an unhappy boy despite the outcome of the game. Throughout the season, seven Atom League players were observed crying, none in Tee-ball.

In practice sessions, Tee-ball game situations can be simulated with a batting tee and only four players. This eliminates the difficulties encountered with a pitcher trying to hit the strike zone during batting practice.

Tee-ball seems to eliminate the "best player" concept since the ball is hit so often and to so many different areas of the playing field, all players get a chance at defensive skills.

The possibility of arm and shoulder injuries caused by excessive pitching at this age is removed in Tee-ball. In contrast, a pitcher in the Atom League was observed pitching seventy six times in just one inning.

Tee-ball games rarely last longer than one hour and fifteen minutes while Atom League games may last as long as two hours and fifteen minutes.

Disadvantages. The "last batter" rule in Tee-ball in which the batter must run as far as he can go until he is put out should be revised or removed entirely because it teaches the boy to swing as hard as he can. Sometimes accuracy and a level swing are sacrificed for brute strength. In addition, it is extremely discouraging to the last batter to be always faced with the ultimatum, either hit a home run or be put out.

Hitting off the tee sometimes causes the boy to continually change his stance to hit toward a weak fielder or open spot. Early in the season, some players tend to undercut the ball. They soon discover that they cannot generate enough power to hit over the outfielders' heads. As a result, they usually adjust to a level swing, attempting to hit a line drive.

Recommendations. Tee-ball enhances the learning opportunities dramatically in certain aspects of baseball, however, it has some limitations. Hitting the pitched ball, catching behind a batter, pitching to the strike zone of a hitter, and bunting are all skills that are not experienced in this game. These are all vital skills that should be introduced at the early stages of skill development. By using one of the recommendations below, the combination of both leagues could provide well-rounded experiences for beginning baseball players.

1. One half of the season might be played using Tee-ball rules with the last half under Atom League rules.
2. Games one and two could be played under Tee-ball rules, and the third using Atom League rules. This procedure would then be repeated throughout the season.
3. Each game could be divided into three innings under Tee-ball rules and the last three innings under Atom League Rules.
4. Games throughout the entire season might be played under Tee-ball rules while practice sessions could introduce and familiarize the players with all basic baseball skills such as pitching, hitting a pitched ball and catching a pitched ball behind the batter.

This study has dealt primarily with the physical skill improvement of boys playing Tee-ball. This investigation into physical skill development is just one approach to youth baseball. Another complete study might compare the emotional reaction of young boys participating in Tee-ball and those playing regular baseball. This research appears to be needed and the results might prove enlightening to parents and those interested in this program.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Alder, Henry L. Introduction to Probability and Statistics. San Francisco: W.H. Freeman and Co., 1962.

2. Benjamin, Harold (ed.). Understanding Educational Research. New York: McGraw-Hill Book Co., 1962.

3. Borg, Walter R. Educational Research, An Introduction. New York: David McKay Co., 1963.

4. Bruning, James L. and B. L. Kentz. Computational Handbook of Statistics. Illinois: Scott-Foresman Co., 1968.

5. Burrus, Henry C., and Eric Pearson. "Tee Softball," Journal of Health, Physical Education and Recreation, 26:63, March, 1955.

6. Cohn, Howard. "Big League Little Leaguers," Colliers, 136:72-73, July 8, 1955.

7. Cooper, Joseph R. "The Batting Tee," The Athletic Journal, 30:6, March, 1950.

8. "Dangerous Arm," Time, June 1, 1962, p. 60.

9. Gilmore, Bob. "Practice Aids for Little Leaguers," Better Homes and Gardens, 38:28, June, 1960.

10. Hopkins, Lorraine L. "The Little Leagues," Atlantic Monthly, 202:84-85, September, 1958.

11. Jackson, C.O. "Just Boys, Not Little Adults," The Physical Educator, 18:42, May, 1961.

12. Kleindienst, Viola K. and Arthur Weston. Intramural and Recreation Program for Schools and Colleges. New York: Appleton-Century-Crofts, 1964.

13. McCarthy, J.J. "Little League Lunacy," National Elementary Principal, 33:80-83, November, 1963.

14. Meyer, William J. and Deabold B. Van Dalen. Understanding Educational Research. New York: McGraw Hill, 1962.

15. Mosteller, Frank, Robert E.K. Raurke and George B. Thomas, Jr. Probability with Statistical Applications. Massachusetts: Addison-Wesley Co., 1961.

16. Patterson, Norris A., "Are Little Leaguers Too Big for Their Britches?" Childhood Education, 35:359-361, April, 1959.

17. "Place for Pee Wee," Newsweek, 38:80, August 20, 1951.

18. Scott, M. Gladys (ed.). Research Methods in Health, Physical Education, and Recreation. Washington D.C.: American Association for Health, Physical Education and Recreation, 1959.

19. Shuck, Gilbert R. "Effects of Athletic Competition on the Growth and Development of Junior High School Boys," The Research Quarterly of the American Association for Health, Physical Education and Recreation, 33:288-292, April, 1963.

20. Shreffler, Lance. "Let the Children Play," Scholastic Coach, 65:5, November, 1965.

21. Skubic, Elvera. "Emotional Responses of Boys to Little League and Middle League Competitive Base-Ball," Research Quarterly of the American Association for Health, Physical Education and Recreation, 26:342-351, October, 1955.

22. Skubic, Elvera. "Studies of Little League and Middle League Baseball," Research Quarterly for the American Association for Health, Physical Education and Recreation, 27:97-109, March, 1956.

23. Thompson, John C. "Elementary and Junior High School Athletics," The Physical Educator, 27:4, December, 1960.

APPENDIX A

PROCEDURE IN USING THE BATTING TEE

1. The batter should assume the same stance that he would use when facing a pitcher.

2. The batter should try to imagine the pitcher going through his wind-up and delivery, keeping his eye on the make-believe pitcher and not on the ball resting on the tee.

3. After the imaginary delivery, the batter should move his eyes to the tee and hit the ball. There are several important points to remember when swinging:

   A. Batter should use normal stride, neither over nor under striding.

   B. He should put his hips and legs into each swing.

   C. Swing should be level and natural, and not exceedingly hard.

   D. He should be sure to follow through.

APPENDIX B

TALLY SHEET

DATE_____ TEAMS_____

LEAGUE_____

Ground Balls		Fly Balls		Throws to first		Throws to second	
Oppor.	Succ.	Oppor.	Succ.	Oppor.	Succ.	Oppor.	Succ.

Throws to Home		Put-outs at 1st		Put-outs at 2nd		Put-outs at 3rd	
Oppor.	Succ.	Oppor.	Succ.	Oppor.	Succ.	Oppor.	Succ.

Advancement to 1st		Advancement to 2nd	
Oppor.	Succ.	Oppor.	Succ.

APPENDIX C

PRODUCT MOMENT CORRELATION COEFICIENT

Skill	X	Y	X·Y	X^2	Y^2
I	1.00	1.00	1.00	1.00	1.00
II	.40	.40	.16	.16	.16
III	.40	.50	.20	.16	.25
IV	.20	.50	.10	.04	.25
V	1.00	.50	.50	1.00	.25
VI	.67	.57	.38	.45	.33
VII	0.00	0.00	0.00	0.00	0.00
VIII	1.00	1.00	1.00	1.00	1.00
IX	.89	.69	.62	.79	.48
X	1.00	1.00	1.00	1.00	1.00
N=10	X=6.56	Y=6.16	XY=4.96	X^2=5.60	Y^2=4.72

$$r = \frac{N\Sigma X \cdot Y - (\Sigma X)(\Sigma Y)}{\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2}}$$

$N \cdot \Sigma XY = 10(4.96) = 49.60$ $\quad N \cdot \Sigma XY - \Sigma X \cdot \Sigma Y = 49.60 - 40.41 = 9.19$

$\Sigma X \cdot \Sigma Y = (6.56)(6.16 = 40.41$

$N\Sigma X^2 = 10(5.60) = 56.00$ $\quad N \cdot \Sigma X^2 - (\Sigma X)^2 = 56.00 - 43.03 = 12.97$

$(\Sigma X)^2 = (6.56)^2 = 43.03$

$N\Sigma Y^2 = 10(4.72) = 47.20$ $\quad N \cdot \Sigma Y^2 - (\Sigma Y)^2 = 47.20 - 37.94 = 9.26$

$(\Sigma Y)^2 = (6.16)^2 = 37.94$

$$\left[N\Sigma X^2 - (\Sigma X)^2\right] \cdot \left[N\Sigma Y^2 - (\Sigma Y)^2\right] = (12.97)(9.26) = 120.10$$

$$\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2} = \sqrt{120.10} = 10.96$$

$$r = \frac{N\Sigma XY - \Sigma X \cdot \Sigma Y}{\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2}} = \frac{9.19}{10.96} = +.84 = r$$

TESTING FOR SIGNIFICANCE OF r

N's smaller than 30 compute $t = r\sqrt{(N-2)/(1-r^2)}$

$n - 2 = 8$

$r^2 = (.87)^2 = .76 \quad 1 = r^2 = 1 - .76 = .24$

$\frac{(N-2)}{(1-r^2)} = \frac{8}{.24} = 33.33$

$\sqrt{(N-2)/(1-r^2)} = \sqrt{33.33} = 5.77$

$t = r \cdot \sqrt{(N-2)/(1-r^2)} = (.87)(5.77) = +5.02 = t$

degree of freedom $= N - 2 = 8$

With a degree of freedom of 8 any t value larger than 1.86 is significant at the .05 level when a two-tailed test is used.