Summer 8-1-1963

A Training and Conditioning Program for the High School Baseball Pitcher

Orville E. Johnson
Central Washington University

A TRAINING AND CONDITIONING PROGRAM FOR THE HIGH SCHOOL BASEBALL PITCHER

A Research Paper

Presented to

the Graduate Faculty

Central Washington State College

In Partial Fulfillment

of the Requirements for the Degree

Master of Education

---

by

Orville E. Johnson

August 1963

THIS PAPER IS APPROVED AS MEETING THE PLAN 2 REQUIREMENT FOR THE COMPLETION OF A RESEARCH PAPER.

_____

Everett A. Irish

FOR THE GRADUATE FACULTY

ACKNOWLEDGMENTS

The author wishes to express his sincere appreciation to Dr. Everett Irish, chairman of the committee, and Mr. Albert Poffenroth and Mr. Arley Vancil, committee members.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Statement of the Problem	1
	Purpose of the Study	1
	History	1
II.	THE PITCHING GAME	6
	Qualifications of a Pitcher	6
	Training Rules	7
	Pre-season Weight Training and Conditioning	9
	Daily Conditioning during the Season	14
	Types of Pitches	16
	Mechanics of Pitching	18
	The Pitcher as a Fielder	23
III.	SUMMARY AND RECOMMENDATIONS	27
BIBLIOGRAPHY		30

CHAPTER I

INTRODUCTION

I. STATEMENT OF THE PROBLEM

Baseball is one of the leading spectator sports in the United States. According to experts in the field, between 75% and 90% of any team's success is due to the ability of the pitcher. Many factors contribute to the success of the pitcher: talent and desire to work, willingness to condition himself, and a solid knowledge of game mechanics.

II. PURPOSE OF THE STUDY

The purpose of this study is to present in a clear and concise form the rudimentary mechanics of the game and an adaptable conditioning program for the high school baseball pitcher. While organizing the paper, the author hoped to gain further insight into the complexities of improving the young pitcher during the high school's short spring season.

III. HISTORY

The modern game of baseball was invented by Abner

Doubleday, a West Point cadet, at Cooperstown, New York, in 1839. One hundred years later the National Baseball Museum was opened at Cooperstown to honor Doubleday.

Baseball did not receive a standard set of rules until 1845 when Alexander Cartwright organized the Knickerbocker Baseball Club of New York. The rules that Cartwright set up for this team were widely adopted. They formed the basis of the game as it is played today.

Cartwright's team had nine players. The game consisted of nine innings, three outs to each inning. At first the pitching distance was 45 feet, increased to 50 feet in 1881, and in 1893 to 60 feet, six inches. It was played on a "diamond" infield with the bases 90 feet apart. After all these years, it still is 90 feet, a magical and inspired distance. Interest in the game grew rapidly, and in 1858 there were 25 amateur teams in the New York area. During the Civil War, interest waned, but following the cessation of hostilities the number of teams increased quickly to over 200 (16:5).

The Cincinnati Red Stockings were the first professional team and began play in 1869. In 1871, the first professional league was formed which later became the present National League. The American League was organized in 1900 due primarily to the fact that

the National League had become too unwieldy with 12 teams (16:27).

In 1914, the Federal League was formed strictly on the basis of capital investment. James A. Gilmore, a wealthy coal magnate, who had been rebuffed in an attempt to get into major league baseball, interested other wealthy men into enticing major leaguers such as Joe Tinker, Mordecae Brown, and Otto Knabe to "jump" the major league teams in order to set up a third major league. Suits were filed in federal courts in 1915, and Judge Kenesaw M. Landis, the future commissioner of baseball, declared in favor of the American and National Leagues (12:29).

There has been little change in the make-up of the two leagues until 10 years ago, at which time the Boston Braves franchise, in the National League, was moved to Milwaukee. With declining attendance in some cities and the threat of the formation of a third league, the Continental League, there have been numerous franchise shifts. In 1961, two new teams, Washington and Los Angeles, were added to the American League and in 1962 Houston and New York joined the National League (3:359).

The minors are only six years younger than the first major circuit, having been formed in 1877. By 1884, there were eight active minor leagues. Through the years most minor league teams

have been supported and maintained by the major leagues, due mainly to the fact that minor league baseball remained a financially precarious venture. In the past three or four years, the number of minor leagues has decreased measureably. Presently there are two AAA leagues, three AA leagues, and eleven A leagues. Most recently play in winter leagues in Florida, California, and Arizona has helped to hasten the movement of players up to the parent clubs. An agreement with the NCAA has been consummated which will allow collegiate players to play in the summer time for semipro teams subsidized by the commissioner's office. These players will be provided summer jobs in the towns for whom they are playing. Commissioner Ford Frick and the Executive Council are supporting this plan with a $50,000 contribution (15:14).

Outside of organized baseball, great interest has developed in the amateur field during the past few decades. Intercollegiate baseball started in the late 1860's with the three great universities of Yale, Harvard, and Princeton. Its popularity spread to the Middle West and Pacific Coast and shortly after the Second World War a World Series was started by the colleges (16:397).

In 1931, a semipro baseball tournament was inaugurated in Wichita, Kansas, by Raymond Dumont. This field is open to anyone

not active in professional baseball and thousands of teams in all 50 states engage in district, state, and regional tournaments to qualify for the national championships each August in Wichita (16:396).

During the past 35 years, there has been a swing to interest the youth of our country in baseball. In 1925, the American Legion Junior Baseball program was started which is culminated in their World Series each August. Interest in this program has increased tremendously since its inception until in 1955 there were 18,123 teams and more than 250,000 youths participating (16:399).

In recent years, the youth program has expanded to include the Little League (boys under 12 years of age), The Pony League (13-14 years of age), Babe Ruth League (13-15 years of age), and the Connie Mack League (18-19 years of age) (16:401).

On the high school level, the number of schools playing baseball has increased greatly, generally due to the increase of the summer program. Many states have a series of playoffs in which a state champion is determined. The main difference in the game, as played by the professionals, is that 7 innings constitute a game.

CHAPTER II

THE PITCHING GAME

I. QUALIFICATIONS OF A PITCHER

When selecting pitchers for high school baseball, the coach should look for six qualities:

1. Control. This is the most important asset a pitcher can have. It is more important than speed or curves. By control is meant the ability to pitch the ball where he wants to at any given time. Control can be gained by almost anyone by sufficient practice. Every toss of the ball, in pepper games, warming up and in hitting practice should be thrown to a spot. Acquire the habit of throwing each ball to a certain object (9:28).

There are certain basic requirements in mastering the art of control:

a. Adopt one method of delivery and use no other.

b. Do not attempt to throw at full speed when practicing.

c. Throw to a spot down the middle of the plate.

d. As control becomes better, pitch inside and outside, high and low, with one's target the catcher's knees and shoulders (2:11).

2. Intelligence and self-confidence. These will help him

meet the changing situations in a game and enable him to develop the mental control so necessary for poise on the mound.

3. Willingness to condition and observe training rules. An old axiom in baseball is "the arm is only as good as the legs."

4. A good natural fast ball. Stubblefield states:

> There are three reasons why a fast ball pitcher is successful in high school:
>
> a. There are many weak hitters who can be over-powered.
>
> b. Most high school pitchers have trouble controlling their "breaking stuff."
>
> c. Catchers have difficulty handling the curve ball effectively (14:28).

5. Coordination and body control. The search is for physique and strength, but a small wiry boy is often extremely effective.

6. Natural speed and ease of motion. These qualities cannot be coached into a boy. It is wise to look for a lad who has them naturally.

II. TRAINING RULES

The following training rules are recommended for the high school pitcher. In addition, certain school requirements must be met in order to be eligible such as a medical clearance slip, passing grades, and adequate athletic insurance.

1. Smoking and the use of alcoholic intoxicants are forbidden.

2. Be in bed by 10 o'clock each night with the exception of Friday and Saturday when curfew is midnight.

3. Be careful of diet. Eat good, nourishing food, but do not overeat.

In addition, the following points are recommended in order to build good citizenship and establish an esprit de corps on the team.

1. Theft and vandalism will not be tolerated.

2. Good citizenship in school is a requisite of all squad members. Making up time in detention is an unexcused absence from practice.

3. Passing grades must be maintained in order to play.

4. No horseplay will be countenanced in the locker room. Benches, slippery floors, hot water, etc., are all potential hazards.

5. Choose associates carefully. Good companions are essential and help to keep players out of trouble.

6. Observe good conduct on trips. Honorably represent the squad and the school. Don't bring discredit to either (13:32).

III. PRE-SEASON WEIGHT TRAINING AND CONDITIONING

> From the first day of practice through the last game, the pitcher must be the best conditioned boy on the squad. He must expect to work harder than anyone else on the squad to get into shape and to stay that way (14:28).

In order to get an early start, the pitchers who are not turning out for other sports are put on a weight training program prior to the start of outdoor practice and find it has the following advantages:

1. Baseball accentuates the sprint type of running. And sprinting requires strength rather than endurance, with specific demands upon the legs and arms.

2. Increased arm strength is also important in throwing and in batting. It is of utmost importance to exercise care in the selection of the exercises.

3. Injuries may be reduced by weight training. The stronger the player, the less susceptible he is to minor types of injuries which hamper his playing or temporarily incapacitate him (23:36).

During the three weeks prior to the outdoor workouts, turnouts are held on Monday, Wednesday, and Friday. Below is listed the type of work in which each of the boys participates.

Second week in February. Jog one lap. Stride 40 yards--4 times. Windsprints--sprint 40 yards, walk 40 yards--8 times.

Weight program. Two sets of each exercise:

1. Warm-ups.
2. Forward shrugs.
3. Squats.
4. Wrist curl.
5. Sit-ups.
6. Supine press on the bench.
7. Rise-on-toes.
8. Bent arm lateral raise.
9. Wrist curl--barbell.

Third week in February. The same warm-up program as the previous week. In addition, throw to the catcher for 15 minutes from regulation distance at half speed.

Weight program. Two sets of each exercise:

1. Warm-ups.
2. Forward shrugs.
3. Squats.
4. Wrist curl.
5. Sit-ups.

6. Supine press on the bench.

7. Bent arm lateral raise.

Fourth week in February. The same warm-up program as the previous week. Throw to the catcher for 15 to 20 minutes, at regulation distance at three-quarters speed working especially on control.

Weight program. Two sets of each exercise:

1. Warm-ups.

2. Wrist curl.

3. Squats.

4. Bent arm lateral raise.

5. Supine press (7:42).

First week in March. If the weather permits, practices are held outside. The program is Monday through Friday with the weight lifting program being discontinued.

Jog one lap. Stride--40 yards--4 times. Throw to the mitt for 15 to 20 minutes. "Hot boxes"--one set of 25. Windsprints--sprint 40 yards, walk 40 yards--8 times. "Hot boxes"--one set of 25. Pepper game.

Second week in March. Monday through Friday: Jog one

lap--stride--40 yards--4 times. Throw to the mitt for 20 minutes. "Hot boxes"--one set of 50. Interval running--run 375 yards, rest for five minutes--3 times. "Hot boxes"--one set of 50. Pepper game.

Third week in March. General turnout on the baseball field (23:36).

Weight training exercises.

1. Warm-ups. Use the barbell with a light load. Stand close and grasp the bar with the knuckles up and the hands at shoulder width. Keep the back straight and lift to the thighs. Lower to the floor and repeat three times. On the third time, keep the weight at the thighs and pull to the chest. Lower the barbell to the thighs and repeat three times. On the third time, raise weight to the chest and push overhead five times. One set.

2. Forward shrugs. Use the barbell in a supine position. Hold the arms straight over the chest and raise and lower the shoulders over as large a range of movement as possible. The shrug should be up and forward. Keep the arms straight at the elbows. Three sets.

3. Squats. Place the barbell at the shoulders at the back

of the neck. Stand with the feet shoulder width apart and elevate the heels two inches. Keeping the back straight and the chest high, the body is lowered to a three-quarter squat. Three sets.

4. Wrist curl. Load a dumbbell at one end and hold the opposite end in the hand, with the arm straight down at the side. Raise the weighted end as far forward as possible by bending the wrist. Extend the weight backward and repeat the exercise. Two sets of each.

5. Sit-ups. Assume a supine position, knees bent, with the feet flat on the floor, and the hands holding the weight behind the head. Sit up, touching the left elbow to the right knee, and alternately touch the right elbow to the left knee. Twenty-five repetitions.

6. Supine press on the bench. With the barbell on the chest, press to a full arm extension. Have partners place the barbell in position. Three sets.

7. Rise-on-toes. Have partners place the barbell on the shoulders at the back of the neck. Elevate the toes two inches, rise on the toes, and then lower the heels to the floor. Two sets.

8. Bent arm lateral raise. Grasp a pair of dumbbells and lie supine on a bench. Extend the arms over the chest and lower

the weights to each side in a full arc. Return in the same arc. Three sets.

9. Wrist curl--barbell. Sit on a bench and grasp the barbell with the palms of the hands down, resting the forearms on the thighs. Lift the bar as far as possible moving only at the wrist joint. Three sets (7:42).

IV. DAILY CONDITIONING DURING THE SEASON

During practice a pitcher must be on the move constantly. He should be given a variety of tasks such as road work, in the form of laps and wind sprints, chasing fly balls, helping out on rundown situations, hitting fungoes to the outfield, and pitching batting practice. By using this method, the boys are conditioned almost without knowing it.

Because batting practice takes up so much time, it should be organized so that all pitchers get the maximum work with little opportunity to slow down. At the same time the jobs should be varied so that interest does not wane.

When the pitching arms are loose and warm, the team batting session is held. One pitcher is called to the mound and given a set number of pitches to deliver. During the early part of the

season, 20 pitches are enough. Later, when control is better, the pitcher can pitch to five or six hitters. The first pitcher works to the hitters, while two others warm-up with one of the catchers, and two others hit fungoes to the outfield and "shag" throws from the fielders. The number of boys hitting fungoes and "shagging" throws can be more or less depending upon the number of pitchers on the squad.

When the first pitcher has finished his chore on the mound, he is relieved by one of those in the bullpen. One of the pitchers, who has been hitting fungoes to the outfield, then goes to the bullpen and begins his warm-up. On being relieved, each pitcher runs two laps around the field and then four or five 50-yard wind sprints. He then assists the pitcher who is hitting to the outfielders.

By following this routine, young hurlers get back and shoulder exercise in hitting to the outfield, leg work and speed from running, control work and foot-work in warm-ups, and game practice by actually facing batters in hitting practice. By doing each exercise for a short time, none becomes tiresome or monotonous. Each pitcher will complete this routine three or four times during a practice session in the early season. Later, after the season starts, this will be varied depending on who will be pitching on the following day in the regular game.

The "fill-in" activities between stints on the mound serve to keep the boys warm without hurting their throwing arms. By using the fungo and running, the pitchers are not allowed to cool off, thus necessitating a long warm-up period before taking the mound again.

The practice of letting each pitcher toss up 20 to 30 pitches at a time is done because it approximates the amount of work in one inning. There will be fewer sore arms if this practice is followed (14:28).

V. TYPES OF PITCHES

The fast ball. The ball is gripped with the first two fingers on top and across the widest part of the seams, with the thumb underneath, and the third finger along the side. The fast ball should have a hop. This hop is caused by rotation and the amount of pressure developed in front of the ball. Rotation develops from the proper release with the pressure of the speed with which the ball is delivered. Although the ball is released off the ends of both fingers, it leaves the second or controlling finger last, since it is the longer of the two.

If the ball does not hop, the pitcher should use greater pressure with the second finger and release the ball off the tip on the side nearest the third finger (17:6).

The curve ball. In delivering a curve ball, the initial grasp and arm action should be the same as that used for a fast ball. However, as the arms swing backward with the ball well hidden in the glove, the ball is shifted so that good contact is made by placing the second finger along a seam. The second finger grasps the ball more tightly and does the work; the first finger acts as a guide. As the arm starts forward in delivery, the wrist is bent inward and the ball is released over the first and second joints of the first finger. Here a good wrist snap is essential. A three-quarter overhand delivery will cause the ball to break opposite the side of delivery and downward (17:6).

The change-up. The ball is held well back against the crotch of the hand, gripped loosely, and thrown with a tight wrist. The fingers remain crooked to serve as a brake. The looser the grip, the slower will be the pitch.

A second way of throwing the change-up is to raise the fingertips and grip the ball as though the fingers were cut-off at the second joint. The ball is thrown with a stiff wrist and no snap, the motion being closely akin to that used in pulling-down a window shade. The raised fingers mean that the ball is shoved in shot-put fashion.

A third method often used is a combination of the above two,

lengthening the stride and dragging the rear foot, turning the hand towards the inside with a reverse twist of the wrist which takes away much speed.

The change of pace should be neither too slow nor too fast and should be kept low. It is thrown primarily to "throw" the batter off-stride so that he will swing either too early or too late (19:26).

VI. MECHANICS OF PITCHING

In his article on mechanics, Edwards states:

> The pitcher should take his windup when there are no runners on base or when the bases are full. With the bases full, two outs and a count of three balls and two strikes on the hitter, the pitcher should take his stretch to prevent the baserunners from getting too much of a start (6:40).

The following mechanics are in sequence in the use of the windup:

Getting the sign. As he looks for the sign, he relaxes his back muscles by bending over. His front foot is on the rubber with the back foot about two feet in back.

Keep the ball hidden. As he winds up, the pitcher keeps the ball into and behind his glove. This is done by placing the ball behind the webbing, and his hand should be fitted comfortably into the pocket of the glove.

Keep the pivot foot parallel to the rubber. As he winds up, the pitcher should place his pivot foot in a 45 degree angle with the rubber. As he leans back into his initial wind-up, he pivots on the ball of his push-off foot. He places his front spikes in front of and in contact with the rubber in a parallel position.

Rotate the hips. By placing the foot parallel to the rubber, a pitcher can insure himself of a good thrust from it, and thus get his body behind the pitch. Furthermore, he will hide the ball by rotating his hips first to the side, and then into the forward stride toward the plate.

Stride in direction of throw. The striding foot must be brought clear around and on a line toward the direction in which the pitcher is throwing. This movement will allow his body to continue forward into a proper follow-through.

Don't overstride. The striding foot should be placed at a distance which will allow the pitcher's body to follow-through with the pitch. A long stride will cause the striding leg to be placed in a too straight-out position which will prevent the pitcher's body from getting behind the pitch.

Don't land on the heel. A proper stride makes it possible for the foot to be placed evenly and comfortably on the ground. The toe is pointed toward the plate. When you overstride, you come down on the heel.

Don't drag the push-off foot. To enable the body to follow-through with the pitch, the push-off (pivot) foot must be exploded off and not dragged off the rubber.

Keep the feet parallel. The pitcher must finish his delivery in a good fielding position with his feet parallel to each other.

Follow-through. A pitcher will have few sore arms if he will follow-through in a smooth delivery, bending his back and keeping his knees flexible. The hand should almost scrape the ground as he comes through on the pitch.

Keep the glove up. Don't move the glove hand to the back of the body, but keep the glove up in front of the chest. Be on the balls of the feet, ready to move in any direction (21:34).

Balk position. Pitchers should throw from the stretch position with runners on first, first and second, or with the bases loaded if there are two outs and the count two and three on the

batter. This is to keep the baserunners from running on the wind-up and possibly permit all three men to score on a single (19:26).

Position of the feet. When getting the sign the pitcher straddles the rubber, helping to eliminate the balk. As he goes into his stretch, the right handed pitcher slides his right foot onto the rubber and parallel to it.

Stretch. This is used to relax the arm and shoulder muscles as was the pump in the wind-up. The starting position is with the hands at the side. He then lifts his hands over his head and lowers them slowly bringing the hands together just as they start down. As a pitcher's hands swing up, his front foot is drawn back a few inches with the weight transferring to his back foot. When his hands are going up, the pitcher should take a deep breath and hold it until he pitches.

Set position. This is the position the pitcher must come to and hold for at least one full second before delivering the ball to the batter. For this second the ball and glove must be brought together. The exact placement of the hands can vary between the chest and the belt. While in the set position, the pitcher's right knee should be slightly bent with the weight on his right leg.

The kick. Once in the set position, the kick and movement in delivering the ball to the plate must be as rapid as possible and without wasted movement. That is why the correct placing of the hands is emphasized. The right foot is parallel to the rubber with the back half of the foot against the rubber. The left foot is about twelve to twenty inches ahead and slightly toward first base. In the kick, the front leg is merely lifted slightly and shoved forward toward the plate. With the weight on the back foot and the back knee slightly bent for a forceful push-off there need only be a minimum pivot of the hips to deliver the ball.

The pick-off. Three commonly used methods of picking off runners at second base are: the count system, the "jockey" system, and the daylight system. For the high school player, a combination of the count system and the daylight system works very well. In this method, whenever there is daylight showing between the runner and the shortstop's right side the shortstop gives the signal to the pitcher, such as touching the cap or flicking the glove. As soon as the signal is given, both pitcher and shortstop start counting to themselves. The shortstop breaks for second base on the count of two. The pitcher whirls and throws on three. The right-handed pitcher whirls the long way with his left shoulder turning

toward first base. A left-handed pitcher would turn his right shoulder toward third base in whirling to throw to second base. The pivot foot should spin or pivot from its immediate position during the throw and should not back off and then pivot (11:147).

Follow-through. This is important in order to get the maximum speed out of the effort and to get into a proper fielding position (6:40).

VII. THE PITCHER AS A FIELDER

Smilgoff makes this comment:

> A pitcher's job is quite an involved one. He not only relies on his pitching arm, he is a fielder as well: a ninth fielder on the team who is in the center of the infield. He must be quick on his feet and quick with his hands in the process of fielding his position. He must be as accurate with his throws as his teammates are (10:6).

Covering first base. Whenever a ground ball is hit to the left of the pitcher, he should start towards first base immediately. His run will take him to a point just inside the foul line and approximately 10 to 15 feet short of first base. He then circles to the left and continues toward first base. The throw should be received from the first baseman while the pitcher is a step or two away from the bag. He can then catch the ball and look down and touch first base

with his right foot (4:25).

Backing-up bases. With runners on base and a single hit to the outfield, the pitcher must move to back up third base or home plate. He must be at least 20 feet back of the fielder receiving the ball. If he is too close, and the ball caroms off the fielder's glove, it will bounce past the pitcher before he can shift his position. Whenever the pitcher is in doubt as to whether to back up third base or home plate, he should go half way between the two bases and wait for the play to develop (8:94).

Bunts. A good fielding pitcher anticipates a bunt. In fielding bunts to the first base side, the right-handed pitcher should overrun the ball slightly and scoop it into the glove with his bare hand. He then straightens up, double steps, and throws to first base.

The left-handed pitcher overruns the ball slightly, uses the glove to stop the ball, scoops it into his glove with his bare hand, spins on his left foot to the right until he faces first base, and then throws to that base.

In fielding bunts to the third base side, a right-handed pitcher fields the ball just inside and toward the front of his right

foot. He then slides his weight over his right foot for throwing power, steps toward first base with the left foot, and throws. Since the throw is longer on a third base side bunt, body actions in throwing must be quicker and held to a minimum, so double stepping is eliminated.

A southpaw hurler will field a bunt down the third base side by placing the glove in front of the ball. Then he scoops the ball into the glove with his throwing hand, spins on the ball of his left foot so as to face first base, and throws.

All throws to first base should be to the second base side of the bag so as to avoid hitting the baserunner with the ball.

In throws to second base for a force play on a bunt, the footwork in fielding is similar to the throw to first base except for a longer pivot by the right-handed pitcher and shorter foot pivot for the southpaw.

The throw to third base for a force play involves a larger pivot for the right-hander and practically no pivot for the left-hander. On this play the right-hander overruns the ball with his right foot, fields the ball inside of and toward the front of the left foot, pivots on the right foot, steps with the left foot toward third base, and throws.

The squeeze play. When a baserunner on third base definitely breaks for home plate on the wind-up, the pitcher should pitch high inside and right at the batter's shoulder if the batter is a right-handed hitter. This makes it difficult for the batter to bunt and also forces him away from the plate. When the batter is hitting from the left side of home plate, the pitch should be low and about two feet outside, so as to make a bunt difficult and a tag play for the catcher easy.

If the ball is bunted, the pitcher should use his throwing hand whenever possible to save time and make the toss underhand to the catcher (11:152).

CHAPTER III

SUMMARY AND RECOMMENDATIONS

This study has given evidence that:

1. The high school pitcher is at least 75% of a team's success in winning baseball games.
2. At this stage of physical development, physique is not too important in the high school boy. Small, wiry boys often have better coordination.
3. Look for boys who have intelligence, confidence, natural speed and ease of motion.
4. A pitcher must take care of himself and observe good, healthful rules of living.
5. Weight training, in the pre-season workouts, is advantageous in that it increases strength and lessens susceptibility to minor injuries.
6. A pitcher will be only as good as his legs. If he will not condition himself by lots of running, he will not be too successful.
7. It is recommended that a varied program of conditioning be used. By keeping him moving from one type of

exercise to another, he is conditioned almost without his knowing it.

8. Stay with the three basic pitches: fast ball, curve ball, and the change-up. Use the "freak" deliveries after the basic three have been mastered and controlled or not at all.
9. Learn the proper stance on the mound. Be comfortable because relaxation is essential to effectiveness.
10. With no one on base, use a pumping motion to help the rhythm.
11. With runners on base, take the stretch position in order to lessen the chances of baserunners stealing.
12. Learn a good move to first and second base.
13. On the squeeze play, use the throwing hand in order to save time in making the underhanded toss to the catcher.
14. Use the glove to cover up the type of pitch.
15. Be smooth. Don't force the delivery. The more a pitcher strains the faster he tires.
16. Get the body into the pitch with a good follow-through in order to field the position better.
17. Watch the stride. Point the front foot towards home plate.

18. Keep the pivot foot parallel to the rubber. As the ball is thrown, the rear foot should not be dragged off the rubber, but pushed off in a forceful manner.

19. Learn to field the position especially in fielding bunts, backing-up the bases, and in covering first base on balls hit to the pitcher's left.

20. Think! There must be a thought behind every pitch.

While writing this research paper, the author has gained further insight into new methods of conditioning the high school baseball pitcher and discovered new coaching techniques which will enable him to better fulfill his task as an athletic coach.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Allen, Ethan, and Tyler Micoleau. Baseball Techniques Illustrated. New York: A. S. Barnes and Company, 1951. 96 pp.

2. Barry, J. M. "Keys to Successful Pitching," Athletic Journal, 30:11, February, 1950.

3. "Baseball--America's National Game," Compton Yearbook, pp. 359-60. Chicago: F. E. Compton and Company, 1962.

4. Coombs, John W. Baseball. New York: Prentice-Hall, Inc., 1947. 340 pp.

5. Edwards, Donald K. "Achieving Control in Pitching," Athletic Journal, 42:61, January, 1962.

6. _____. "Mechanics of Pitching," Athletic Journal, 42:40, March, 1962.

7. Hooks, Gene. "Weight Training in Baseball," Athletic Journal, 40:42, December, 1959.

8. Lai, William T. Championship Baseball. New York: Prentice-Hall, Inc., 1954. 214 pp.

9. Smilgoff, James. "Pitching Control," Athletic Journal, 34:28, February, 1954.

10. _____. "The Ninth Fielder," Athletic Journal, 36:6, March, 1956.

11. _____. Winning High School Baseball. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1956. 324 pp.

12. Spink, J. G. Taylor. Judge Landis and Twenty-Five Years of Baseball. New York: Thomas Y. Crowell Company, 1947. 306 pp.

13. Stromgren, George. "Diet and Nutrition in Athletics," Athletic Journal, 41:32, October, 1960.

14. Stubblefield, Charles. "The Heart of Your Defense, Pitching and Catching," Athletic Journal, 33:28, April, 1953.

15. The Sporting News [St. Louis, Missouri], May 18, 1963, p. 14.

16. Turkin, Hy, and S. C. Thompson. The Official Encyclopedia of Baseball. New York: A. S. Barnes and Company, 1956. 583 pp.

17. Vogel, Otto H. "Types of Pitches," Athletic Journal, 32:6, March, 1952.

18. Watts, Lew. "Pitching Mechanics," Scholastic Coach, 28:11, February, 1959.

19. _____. "Pitching Mechanics," Athletic Journal, 28:26, March, 1959.

20. _____. "Developing the Curve Ball," Athletic Journal, 29:24, February, 1960.

21. Weiskopf, Don. "Do's and Don'ts for Pitchers," Athletic Journal, 39:34, April, 1959.

22. _____. "Break It Off," Athletic Journal, 41:12, February, 1961.

23. Wickstrom, Ralph L. "Weight Training for Baseball," Scholastic Coach, 29:36, March, 1960.