



PITCHING MANUAL

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Introduction: "Good pitching beats good hitting"

This is not an "easy-reading" instruction manual on how to develop a pitcher. This book is a scientific approach to pitching, and as such, is much more of a technical manual than a "How To" book. The information is invaluable in the development of pitchers, however you should be sure you devote full attention while reading. If you have any questions about the terminology I've used, please contact me rather than guessing.

The information on the following pages has been gathered from many sources. The pitching mechanics are directly from the American Sports Medicine Institute. The pitching eligibility rules are from the Little League rulebook. I created the chart and scenario to simplify the rules. The information about coaching and catching are from Little League and personal experience. There is probably very little here that you don't already know, however you may wish to skim through it for additional points.

When it comes to winning ballgames, that quote sums up the difference between winning teams and losing teams. At every level of baseball, pitching plays a bigger role in a team's success than any other factor. Many coaches dismiss theories as too complex for Little League and scale down their expectations. The advice in this book works, even in "B" Division.

There is no question that it is harder than ever to find dominant pitchers. Kids don't play baseball anymore. Nintendo, VCR, Cable TV and Shopping Malls have

all combined to keep baseball diamonds about as busy as the famous Maytag Repairman. For most kids, their only baseball experiences are while wearing a uniform in front of coaches and umpires. Fortunately for the pitchers, most hitters get a grand total of 30 plate appearances over a season, so they can get away with lobbing a fat one over the plate without getting killed by the line-drive that should follow.

The most important thing to realize is that all the prodding in the world from coaches is not going to change anything. Baseball skills are only gained from repetitive experience. We can drill a pitcher until he drops, but if he doesn't throw a baseball outside of a game or practice, he won't improve much. You must adopt a philosophy of either having frequent team practices, or instilling their importance with players so they will work on their own, or all the pitching knowledge in the world won't help.

Ultimately, we must teach the skills necessary to play the game, we must teach why the skills are important, and we must try to instill a love of the game. If we fail in any of these three areas, there will be very little improvement in the players and baseball skills will continue declining. We are quickly approaching the day where the Major Leagues will be more interesting in hoarding the limited number of work visas than expensive free agents. With only 700 to go around for both the Minor and Major Leagues, teams will find themselves shut out from the vastly improving Caribbean, South American, Asian and Australian prospects.

Prevention of Pitching Arm Injuries

The most common cause of pitching arm injury in young pitchers is overuse--pitching when fatigued. This may be the result of: (1) throwing too many pitches during one outing, (2) not having enough recovery time, or (3) not having a maintenance program between pitching assignments. Coaches should be aware of these factors, and realize that pitchers vary in arm stamina and need for recovery time. Make certain there is a good in-season active recovery program available for and used by pitchers.

The number of pitches a pitchers should be allowed to throw depends on physical development, age, prior rest and recovery time, pitching experience and the pitcher's arm stamina. I believe pitch count as a measure is more effective and reliable than the number of innings pitched.

In a competitive situation, often a pitcher will not admit that he is fatigued, overly sore, or has a minor arm injury. It is very important that a coach is able to recognize changes in a pitcher's normal motion. Besides a loss of some velocity, and usually control, a pitcher will often change his mechanics to compensate for the loss of arm strength or to protect his arm from further pain. Look for changes such as:

1. The pitcher rushes his motion, trying to generate more force with his body and reduce the stress on his arm. It will look like the pitcher is dragging his arm and he'll have a loss of hand speed because he has disrupting his normal throwing sequence.

2. The pitcher may shorten his follow through (deceleration of the arm) and will not use his normal arm extension upon and after ball release.

3. The pitcher may not get his hand up into a normal high cocked position. It will appear that he has dropped his elbow during the cocking and acceleration phases.

4. Between innings, the pitcher may hold or massage his arm displaying pain. With muscle fatigue, a pitcher's hand often trembles.

5. Between pitching assignments, the pitcher may be reluctant to throw, or throw properly during drill work, since he is attempting to protect his arm from further stress and pain.

I suggest that coaches work closely and communicate with the parents. Often times a pitcher will confide in his parents but will not tell his coach of the injury because he wants to pitch and contribute to the team. A coach should keep the information from the parent confidential, so the player continues to confide in his parents.

In addition to subtle mechanical changes, there are often some noticeable physical signs which indicate tissue damage about the shoulder, elbow or forearm which need to be recognized :

1. Redness or discoloration.
2. Swelling or extreme tightness.
3. Heat - a burning sensation in the area.
4. Sharp pain versus a dull ache.
5. Deformity - loss of extension, flexion or range of motion.

When the coach observes these signs, he should stop the pitcher from throwing, apply ice to the injured area, and allow more recovery time between pitching assignments. If there is only slight improvement after rest within a given time frame, the player should consult a physician. After proper treatment, the pitcher should be reconditioned via a modified throwing program before pitching competitively.

A coach can help prevent arm injuries by:

1. Making certain pitchers are properly conditioned (total body) before throwing full velocity or pitching competitively.
2. Making certain pitchers have and use a proper stretching and warm-up program before throwing.
3. Having the pitcher throw at reduced velocity and shorter distances when learning new mechanical techniques or pitches, or when experimenting with different grips.
4. Making certain a pitcher uses proper throwing mechanics. While each pitcher throws somewhat differently within his own style, through the critical phase of throwing (from hand break through deceleration phase), most successful injury-free pitchers use very time-proven techniques.
5. Limiting the amount of throwing the pitcher does during drills and practices at his other defensive position(s). The defensive positions which would cause the least amount of stress on the arm are first base or the outfield.
6. Making certain the pitcher dresses properly for warmth during cold temperatures, or to prevent early heat exhaustion during very hot weather. Also, be aware of proper intake of fluids to prevent early dehydration and muscle fatigue.

Finally, while light weights, full range of motion conditioning and strength all work, I sincerely believe that the best method to build throwing arm strength and stamina is to throw a baseball often, and throw it using correct mechanics.

Daily Stretching Exercises

The following exercises are useful for all players, not just pitchers, and should be used before practices and games, especially in cold weather. Exercises with an asterisk (*) should be repeated for the opposite arm, leg, or direction. These exercises substantially reduce the risk of non-impact injury.

(10 Repetitions each):

1. Arm swing (arms out, slowly swing forward and return).
2. Arm rotation clockwise (arms out, slowly rotate, change direction)
3. "Windmills" (feet apart, arms out, reach down, touch opposite foot)
4. Trunk Flexion (both arms overhead, lock fingers, reach up, reach down)

5. Trunk Twist (both arms over head, lock fingers, reach up, rotate down and around)
 6. Trunk Rotation (both arms over head, lock fingers, slowly rotate half- way each direction)
- (4 Repetitions each):
7. Hamstring Stretch (heel to toe, slowly bend, touch ground, hold for 5 seconds)
 8. Groin Stretch (feet apart, slowly bend until chest touches thigh, hold for 5 seconds)
 9. Achilles/Calf Stretch (Same as groin stretch, hold 5 seconds, except keep back leg straight)
 10. Wrist Extension (throwing arm forward, use other arm to pull fingers and wrist back)
 11. Arm extension (reach up as high as possible, slowly extend to tip-toes)
 12. "Hitch-hiker" (hand on waist, keeping elbow high, rotate backwards, forwards, return)
- (10 Repetitions each):
13. Rotator Cuff (arm out, elbow flexed at 90 degrees, very slowly reach as far back only rotating arm)
 14. Lunges (Feet together, stride forward and reach until back knee touches ground)
 15. Mimic Throws (« speed only!!! Include crow-hop)

Pre-Game Warm-Up

These exercises are geared for pitchers and are designed to ease into game performance. Once pitchers accept these as part of their ritual, they will often start without being reminded. The first several times a pitcher uses these, a coach should supervise to assure the player does not "rush" through the warm-up.

1. Jogging (one lap, final 60 feet backwards at slower speed)
2. Remove jackets, etc. to begin throwing (all at 50% speed) :

- a. Start 30 feet apart, 10 throws, throwing naturally.
 - b. Move to 45 feet apart, 5 throws, throwing naturally.
 - c. Concentrate on pitching (catcher should crouch): Pitcher throws until successful 5 times for each :
 1. "Throw strikes" (aims for chest protector)
 2. "Hit the mitt" (aims for catcher's mitt)
 3. "Call your shot" (announces corner, throws until hits)
 4. "Groove" (pitcher throws strikes, working up to 100%)
 - d. Pitch at 100% velocity (8 pitches) 3. Return to bench (unless weather is cold).
4. Go to the mound for final warm-ups.

New Inning Warm-Ups

1. On hot days, give the pitcher water, even if he isn't thirsty.
2. Always wear warm-up jacket over pitching arm, even on hot days.
3. Stretch arm and shoulder while walking to the mound (arm swing, full shoulder rotation)
4. Use first warm-up pitches to locate strike zone.
5. Once strike zone is found, increase speed to 100%.

Off-Day Routine

Day before game:

Stretching, 5 or 6 minutes of throwing at 50% speed. No sprints.

Day after game

Full stretching. Sprints (Walk to first, run first to third, walk home, run home to second, walk to third, run home). Defensive glove work (when fielding, don't throw, just drop balls in a bucket). No throwing.

In between days

Full practice unless high pitch count in game.

The Fine Art of Pitching (From the Coach's Perspective)

The following chapter is written by coach Bill Thurston, the head baseball coach at Amherst College and the pitching consultant for the American Sports Medicine Institute in Birmingham, Alabama.

Bill Thurston has been a head baseball coach for 28 years, has coached many international teams, and has conducted pitching clinics throughout the United States and many foreign countries. He has done extensive research and video analysis of the throwing mechanism and pitching motions of high school, college, and professional pitchers.

The sections within this chapter are written in coaching terms and hopefully will be understandable and useful for pitchers, coaches, trainers and interested parents.

Basic and Efficient Pitching Mechanics

Pitching is a very individualized, highly skilled activity. Certainly, not all successful pitchers throw exactly alike. A pitcher's motion will depend upon size, strength, balance, flexibility, leverage and coordination. Therefore, when teaching pitching mechanics, a coach should teach within a pitcher's own style, physical abilities, potential and limitations. If a pitcher is successful, let him use his natural delivery unless:

1. His mechanics create unnecessary stress or fatigue on the arm and are likely to cause injury;
2. His motion causes inconsistent control or performance;
3. His techniques limit his pitching potential.

It is difficult, and perhaps inadvisable, to attempt to change a pitcher's arm action once he has done a lot of pitching, since he has ingrained various habits and developed specific muscles for throwing. I personally believe that the best ages to teach pitching and make adjustments, particularly in arm action, is under 18 years old. The pitcher should be mature enough to understand, practice and feed the change, yet he has not ingrained various faults over a long period of time that the muscle development is permanently affected.

It has been previously stated that not all successful pitchers pitch exactly the same way, but after studying many professional and college pitchers via high speed video, I have discovered that through the critical phase of pitching (ie, from the hand-break through the deceleration), most successful pitchers use basically the same arm action.

Some of the common traits I have observed in successful pitchers are:

1. Proper balance, flexibility and control of the body
2. Good body and arm alignment
3. Proper weight transfer
4. A long, smooth arc of deceleration of the pitching arm.

When analyzing the pitching motion, most biomechanists divide it into 5 phases: the wind-up, arm-cocking, arm acceleration, arm deceleration and follow-through. As a coach and teacher of pitching, it is necessary to teach and be specific within each sequence of the total throwing mechanism.

The following breakdown of the pitching motion is meant to be a guide for a coach who is instructing a young pitcher, or is attempting to make adjustments with a pitcher who is experiencing specific problems within his motion. As a coach, the key element is to be able to identify the specific fault which is causing the problem. The pitching motion is sequential and often an original fault that leads to a series of other faults or compensating actions.

It is not necessary that each and every pitcher use these specific techniques. If the end result is that a pitcher is successful with his own style and motion, do not change him. Use the following breakdown as a guide and check-list.

A. Preliminary Stance.

- * Pitcher should have good balance, be relaxed and squared off to the plate.
- * The pivot foot spikes should be in front of the rubber and slightly open.
- * The free foot should be slightly behind the pivot foot, about shoulder width apart.
- * The pitching hand and wrist should be held within the glove, hiding the grip from others.

B. The Pump.

- * The pitcher may use an overhead motion or compact chest-high pump.
- * If a pitcher has balance or coordination problems, use a chest- high pump. There is less movement and fewer things to go wrong.

C. The Rocker Step.

- * Take a soft, short step back with the free foot at about a 45 degree angle.
- * For best balance, the head should stay over the pivot foot and the center of the body.

D. The Pivot Foot.

- * The pivot foot should be pivoted to a parallel position off the front edge of the rubber.
- * A RHP usually pitches from the right half of the rubber, a LHP from the left. This

helps the pitcher stride in a straight line to home plate and also improves the angle of a breaking pitch from a RHP to a RHH and LHP to LHH in the future.

E. Leg Lift.

- * The lead leg knee should be lifted up, not kicked or swung which puts many pitchers out of balance.

- * Let the free foot hang straight down from the knee.

- * Rotate the front hip closed. A RHP's knee should point to 3rd base, a LHP's to 1st.

- * Keep the weight back over a straight, firm posting leg to maintain balance.

- * Do not allow the body to drift forward until the lead leg reaches its maximum height and rotation (towards 1st or 3rd).

- * A pitcher may lift his lead knee to his chest if he can maintain good balance.

F. Hand Break.

- * The hands should break between the letters and belt, directly in the center of the chest, close to the body.

- * The hands should break when the lead leg starts downward.

- * The throwing hand should go down, back, then up in towards the cocked position in a continuous motion, keeping the fingers on top of the ball.

- * The wrist is either in a neutral position (straight, with forearm), or extended back slightly.

- * The glove hand moves forward and upward toward the hitter.

G. Lead-arm Action.

- * Good lead-arm action helps proper shoulder alignment, trunk arching, flexion and rotation.

- * High glove action can be deceptive to the hitter.

- * There are two basic methods of developing effective lead-arm action:

1. Fire the glove and lead arm toward the plate and following stride foot contact, violently whip the glove and elbow down and back outside the lead hip. Do not allow the glove to go far behind the lead hip.

2. Lead with the elbow right at the plate and following stride foot contact, whip the elbow down and back outside the lead hip.

- * Both methods help to create trunk arching, horizontal trunk rotation, and centrifugal forces of the upper body which generates arm speed and ball velocity.

H. The Stride.

- * As the stride leg lowers, the lead foot should move downward (not swung out!) and slide just above the mound surface.

- * The body should just glide forward.

- * The pitcher should not push off until the stride foot has landed, stabilizing the body.

- * Technically, it is a pulling action of the hip flexors and a pull of the back knee forward and inward rather than a push-off from the rubber.

1. Stride Direction.

* Measure from the ball of the pivot foot directly to home plate. The ball of the stride foot should land within 1 or 2 inches across the midline. This position helps keep the front side closed, yet does not prevent good hip and trunk rotation.

2. Stride Length.

* Measuring from the front edge of the rubber to the toe of the stride foot, the length of the stride should be the pitcher's height.

* A longer stride is not a problem if the pitcher can get his head and shoulders over the lead leg at the time of ball release.

3. Landing Foot Position.

* The pitcher should land on the ball of the stride foot, or flat footed.

* The toes should point slightly in a closed position (for a RHP, 10 degrees towards the 3rd base foul line, or 1st base foul line for a LHP).

* If the pitcher lands hard on the heel, the foot will usually fly open which causes the hips and trunk to rotate too soon. It will also cause the pitcher to get onto a stiff front leg too early which results in a recoil action that puts him out of proper balance during the acceleration phase. This negatively impacts control and velocity.

I. Transfer of Weight.

Nearly all pitchers have a problem with rushing their motion. Rushing means that the body has moved forwards toward the plate too early, causing the arm position to be too low at the time of stride foot contact and arm acceleration.

* The weight is held back over the posting leg until the lead leg starts downward (almost like "falling" forward).

* The lead foot comes downward a little more than shoulder width apart and slides along the ground to the contact area.

* The upper body and head stays at the top center of the widening triangle of the body.

* The body has only drifted, or "fallen" forward. There is no major push or drive forward until the front foot has landed and stabilized the body.

* Upon firm stride foot placement, the lead leg is flexed at the knee at about a 135 degree angle.

* As the trunk is rotated to a squared off throwing position, the lead leg starts to brace-up so there is a firm base, a firm front side to rotate up against.

J. Rotational Forces of the Hips, Trunk and Shoulders.

* The bracing action of the lead leg stops the body from continuing to move forward, allowing the hips, trunk and shoulders to generate tremendous horizontal rotation and centrifugal forces which produce great arm and hand speed, resulting in greater velocity.

* Many young pitchers, after foot contact, allow their lead knee to stay flexed and actually continue to drift forward. This prevents good rotational forces and causes a loss of power and velocity.

K. Trunk Extension to Flexion.

* As the high velocity pitcher moves to his maximum cocked position, there is

an arching of the spine. This becomes much more pronounced as the trunk rotates, squaring off to the plate.

- * The chest is thrust out and the spine arched back.

- * Upon acceleration and release. the trunk springs from extension to flexion and the head and shoulders come over a braced lead leg. This action generates additional force, power and proper alignment.

L. Arm Action.

At this point in analyzing the pitching motion, let's focus only on the throwing arm action. I sincerely believe this is one of the least studied and discussed phases of pitching; yet is one of the most important aspects of throwing a baseball. It is also a phase in which many improper techniques such as wrist hooking, arm hooking, flailing behind the back, stiff arming, etc. can occur and severely limit a pitcher's potential and performance. Again, through the study of high speed video of professional, college and high school pitchers, I have discovered common traits of high velocity successful pitchers, and have seen common faults with pitchers who either cannot throw hard, have control problems, or have experienced arm injuries.

In the following section, I will cover only the techniques observed in high velocity successful pitchers. The arm action begins with the hands breaking apart, so we must go back to that point of the motion.

1. Hand Break.

- * The hands should break between the letters and belt, directly in the center of the chest, close to the body.

- * The hands should break when the lead leg starts downward.

- * The throwing hand should go down, back, then up in towards the cocked position in a continuous motion, keeping the fingers on top of the ball.

- * The wrist is either in a neutral position (hand straight with forearm), or extended back slightly.

- * The glove hand moves forward and upward toward the hitter.

2. Arm Path.

- * The path of the throwing hand should go down, back, and up in a continuous, controlled motion with the fingers staying on top of the ball.

- * Some hard throwing pitchers "short-arm" the backswing (never fully extend the arm). Most drop the hand to a near-full arm extended position as it drops downward from the hand break. Both types of pitchers flex the elbow early (reducing the arc of the cycle), allowing the hand to get up into a high- cocked position quickly and efficiently.

- * During the arm swing, the hand and arm should be generally aligned with the body and shoulders (in a line between home plate and second base).

- * The arm should not flail behind the pitcher's back.

3. Early Cocking Position.

* Upon stride foot contact, the pitching hand should be approximately cap high.

* The hand of a RHP will be slightly closer to third base than the elbow.

* The hand and forearm should be extended back (towards second base) slightly further than the elbow, with fingers on top of the ball.

4. Maximum Cocked Position.

* At this point, the body is ready to rotate and square off.

* The pitchers should have the ball cap high or higher, the elbow at shoulder height, and the forearm nearly perpendicular to the ground with the palm of a RHP facing the shortstop (a LHP's palm will face the second baseman).

* The wrist is extended back slightly in a loaded position.

==> Note: The flexibility of children's muscles will allow some to reach more than 180 degrees backwards without pain. This is extremely dangerous when repeated. Be sure your pitcher does not extend beyond 170 degrees when reaching back.

5. Acceleration Phase.

* As the hips, trunk and shoulders rotate and square off the plate, the shoulder externally rotates.

* The elbow leads forward.

* The forearm and hand then fires forward, coming outside of the elbow (pointed away from the pitcher's head).

* The trunk goes from extension (arched back) to flexion.

* The arm and hand accelerate to the release point.

6. Release Point.

* As the hand comes parallel to and crosses the trunk and face, the wrist snaps from an extended back to a neutral position at release.

* The fingers are behind and on top of the ball and angled outward close to 45 degrees.

* The body flexes at the waist over a braced front leg.

* Upon release, the hand will naturally pronate as the arm starts to decelerate.

7. Deceleration of the Arm.

* This is the time of great force and stress in the posterior shoulder muscles. There should be a long, smooth continuous arc of deceleration and a transfer of forces onto the major muscle groups of the trunk and legs.

M. Follow Through (of the body).

* The body weight is brought onto the braced lead leg and the throwing shoulder should come down over the lead leg with the hand finishing down outside the lead leg shin.

* Some pitchers may need to use a "jump-step" to square off and control the body.

* The glove should be brought back in front of the body quickly to protect the pitcher and help field his position.

N. Return Throw.

* To conserve energy and maintain a good visual perception of the plate, a pitcher should back up on the mound while receiving the return throw from the catcher.

* An accurate return throw allows the pitcher to maintain his rhythm.

* A pitcher may not be on the rubber without the baseball, or a balk may be called.

Faults and Techniques Common to Youth Pitchers (By Bill Thurston, Pitching Consultant, ASMI)

Due to a lack of muscle and skeletal strength, youth pitchers often use different throwing techniques than a more mature (high school age) pitcher. It is important that coaches and parents recognize and understand some of these differences and that they don't expect or force the youth pitcher to attempt techniques and skills which he is physically incapable of performing. As the young pitcher gains strength, coordination and balance, proper throwing techniques and skills should be taught and practiced.

One of the major reasons that so many high school and college players have major throwing problems and lack arm strength and arm stamina is that they never threw enough during their formative years, and never developed proper throwing mechanics. In the past, many young pitchers learned proper techniques by trial and error. They learned what felt good, learned which techniques were effective for them and just did a lot of throwing on their own because it was fun to play catch. We have come to a point now where throwing skills need to be taught and drilled because young players don't do enough throwing on their own, or working on the game on their own.

1. From the Wind-Up Position:

A. Problems coordinating the legs and body with throwing arm action.

1. Poor balance during the leg lift; improper and early weight transfer forward (rushing).

2. Lead leg and hip doesn't close up enough; therefore the front shoulder never closes properly.

B. Problems with the timing and action of the hands breaking apart.

1. Hand breaks backward instead of downward, causing the throwing arm to hesitate during the backswing and disrupt the throwing sequence.

2. The pitching hand often stays under (instead of on top) of the baseball.

3. Causes a short-arm (infielder's) throwing action.

C. Stride Problems.

1. Short stride, landing on a stiff leg.

2. Direction: Usually youth pitchers stride open 2-3 inches since they don't

have enough hip flexor and abdominal muscle strength to properly rotate the trunk. This action adds a lot of stress on the arm and shoulder.

D. Grip Problems.

1. Due to a lack of hand size, finger length and grip strength.

E. Ball Release Problems.

1. Undercut the ball trying to impart a side spin.
2. Throwing elbow and hand are too low too far out to the side.
3. Lack of hand speed; they lead too much with the elbow and shoulder, causing the hand to drag. This is probably due to a lack of arm muscle strength as well as the front shoulder flying open too early.

F. Follow-through Problems.

1. Recoil action of upper body and arm due to: * Landing on a stiff leg. * Weak abdominal muscles preventing good forward trunk flexion.
2. Short-arm follow-through action.
3. Lack of balance throughout the acceleration, release and follow-through phases.

G. Common Arm Injury Problems.

I personally believe that players 10-13 years old experience more elbow than shoulder injuries. At this age, the bones have not fully developed and hardened and the ligaments are not as firmly attached as they will be after puberty. Also, the arm muscles may not be sufficiently developed to support and decelerate the throwing arm properly.

Youth pitchers do not usually generate enough force to cause injury to the larger shoulder muscles and ligaments. Also, players at this age have great joint flexibility and range of motion which may help to prevent injury.

Youth pitchers should not throw breaking pitches because these pitches put more stress on the elbow joint than the fastball or straight change. Encourage youth pitchers to develop their fastball, control and change of speeds.

The earlier a pitcher can learn proper mechanics and good throwing action, the better his chances are of avoiding throwing arm injuries, plus he will be a more effective pitcher with improved control and velocity.

The following specific technique drills are useful as a reference guide for adjusting mechanical flaws. Each drill isolates a specific technique within each phase of the pitching motion. A pitcher with one or two flaws will benefit from careful attention with the drill prescribed to correct the flaw.

Unusual techniques and mechanical faults limit a pitcher's potential, performance, control, velocity, and can lead to serious arm injury. You should try to identify the fault(s) and what causes the problem(s). Once discovered, the fault(s) can be adjusted using these drills.

These drills can also be used when instructing first-year players. Since Farm League does not teach players how to pitch, many of our first- year players enter Little League with no prior pitching experience. They rely on the techniques

they've learned for infielders and outfielders (assuming they've learned anything there).

Each pitcher has his own set of strengths and weakness. Generally speaking, pitchers tend to be weaker in some areas, but rarely all. This is a convenience when developing pitchers, as they don't need as much attention in all areas. Players should use all these drills, but focus more on problem areas. For example, a player with good balance but poor deceleration should do the balance drills once, but the deceleration drills three or four times.

These drills are neither time-consuming (about a minute each) or physically demanding (players can do additional repetitions if needed unless otherwise noted). They are used to develop "muscle memory" and to make the pitcher more conscious of his delivery until it becomes second nature. This will only happen if the player takes his time to do them correctly and if they are practiced daily. You may encounter resistance, as the pitcher may feel "silly" doing these pantomime motions off the field. Suggest he do these in a bedroom or another private place. If your player does not do these drills every day, he will not benefit from them! Your pitcher must be committed to these drills if he is to make any significant progress.

After a couple of weeks of drills, you should see definite improvement, however a great deal depends upon where a pitcher started from. A player with poor mechanics will improve greatly, while someone with good mechanics will be somewhat fine-tuned. These drills take longer to correct an older player, as he has much more to "unlearn" before he can pitch correctly. Be patient and reassuring to avoid discouragement.

These drills are little more than segmented portions of the pitching motion described earlier. Each drill is designed to perfect that segment of the pitching motion. If you feel comfortable in your understanding of the correct pitching motion, feel free to add drills of your own within the context of what is being done. Remember, however, that these drills are not strength and conditioning drills! It would be dangerous to attempt strength and conditioning drills within these. If you intend to use strength and conditioning drills, use an approved method specifically designed for the muscle group, and be sure it has been approved with children of Little League age. There are a great deal of weight-training programs, however a child's muscular, skeletal and central nervous system vary greatly from adults and even teens!

A. Wind-Up Balance Drill

Purpose: Teaches body control during rocker step, pivot and leg lift. Helps prevent rushing the motion.

Drill:

1. Pitcher assumes his position shortly before he pitches.

2. Pitcher takes a short, soft rocker step.
3. Pitcher moves pivot foot to front of rubber.
4. Pitcher continues into leg-lift until thigh is parallel with ground (at belt height).
5. Pitcher balances on posting leg for 5 seconds. Posting Leg must be firm and straight. Head must stay right over pivot foot. Front hip should be closed (knee of lift leg pointing to 3rd for RHP, 1st for LHP).

Repetitions: Repeat 10 times daily. When done at home, pitcher should use mirror for front and side view.

B. Wall Drill Purpose:

Teaches pitcher to get balanced without moving forward before lead leg starts downward. Helps prevent rushing the motion.

Drill:

1. Pitcher stands facing a wall or fence about 1 foot away.
2. Pitcher assumes his position shortly before he pitches.
3. Pitcher takes a short, soft rocker step.
4. Pitcher moves pivot foot to front of rubber.
5. Pitcher continues into leg-lift until thigh is parallel with ground (at belt height).
6. Pitcher balances on posting leg for 5 seconds. Posting Leg must be firm and straight. Head must stay right over pivot foot. Front hip should be closed (knee of lift leg pointing to 3rd for RHP, 1st for LHP).
7. If pitcher is in balance, he will not move towards the wall or fence.

Repetitions: Repeat 10 times daily. When done at home, pitcher should use mirror for front and side view.

C. Lead-Leg Action Drill

Purpose: To control forward weight shift with a "drift" forward instead of a "lunge". To lead with a closed foot instep, not an open foot.

Drill:

1. Work with a coach or mirror.

Front View:

- a. Foot should lower while drifting towards home plate.
- b. Should see the outside bottom of foot (opposite arch).
- c. Only when foot makes contact does foot open (point towards plate, however it should still stay closed 20 to 30 degrees).
- d. Hip will open slightly on landing, but shoulder should remain closed.

Side View:

- a. Leg lowers with feet about shoulder-width apart. The foot should glide just above the ground before making contact.
- b. As the body drifts to a stabilized foot contact, the head should be centered between lead and pivot feet.
- c. The pivot foot rolls over with laces facing home plate.
- d. Trunk rotation should begin at this point.

Repetitions: Repeat 10 times daily, more if necessary. After doing this drills, do "Form Throw" (drill Q) while practicing technique.

D. Hand-Break and Lead-Arm Action Drill

Purpose: Teaches timing and location of hand-break (mid-body, between letters and belt). Teaches pitcher to break his throwing hand downward with fingers on top of the baseball. Teaches pitcher to throw his glove hand forward and whip it back and outside body to help trunk arching and downward rotational momentum.

Drill:

1. Start in hand-break position (hands together) with pivot foot parallel and in front of rubber.
 2. Break pitching hand out of glove while throwing glove (or lead elbow) towards hitter.
 3. Get lead arm and throwing arm in sequence (both upper arms parallel with shoulders).
 4. Whip lead elbow and glove down and back as trunk begins rotating.
- Repetitions: Repeat 10 times daily. Do not use baseball!

E. Arm Path Drill

Purpose: Teaches smooth down, back and up arm swing with loose but controlled wrist and forearm. Teaches pitcher to keep his fingers on top of baseball and get into high cocked position. Teaches keeping pitching hand aligned with shoulders by flexing elbow while cocking arm.

Drill:

1. Put pitcher in hand-break position, pivot foot parallel to rubber with a 3-4 foot stride towards the plate.
 2. Hands are chest high, together in glove.
 3. Coach stands behind pitcher, taking his throwing hand by the wrist and breaks his hand from the glove moving down, back and up to a high cocked position.
 4. Check arm path alignment, elbow flexion, fingers on top of baseball.
- Repetitions: Repeat 3 or 4 times with coach. Pitcher should 10 times daily.

F. Cocked Position to Acceleration Phase Drill

Purpose: Teaches high hand position in the cocked position. Teaches pitcher how to load up (extend) his wrist. Teaches how hip rotation (angular velocity) is coordinated with the arm action.

Drill:

1. Start pitcher in stride position, pivot foot on the rubber.
2. Hand (with ball) is in a high cocked position with the palm of the hand facing the SS.
3. Throw from this cocked position by starting the wrist and moving through the acceleration phase.
4. Rotate the hips and shoulders to square off the body towards the plate. Work on trunk extension.
5. Upon release, work for good trunk extension to flexion and a long arc of deceleration.

6. The feeling of throwing "downward" is normal.

Repetitions: Repeat 10 times daily, use as a warm-up throwing drill.

G. Kneeling Drill (Pivot Knee on ground)

Purpose: Teaches feeling of trunk flexion over a flexed front leg. Teaches good alignment with arm swing after ball release. Develops forearm, wrist and hand speed. Develops correct arc of deceleration.

Drill:

1. Kneel on pivot foot knee with stride foot in front, with knee flexed at 90 degree angle.
2. Square-off towards throwing partner, 20-30 feet away.
3. Start with hands together, break normally and using pitching motion, throw half-speed.
4. Use long arc of deceleration so throwing arm swings outside bent knee

Repetitions: Repeat for 10-15 throws after sufficiently warming-up. If necessary to repeat, do other drills before repeating.

H. Back Fence Drill

Purpose: To check pitcher's arm path and alignment. To stop pitcher from flailing arm behind his back.

Drill:

1. Place pitcher's back facing wall, heels 6 inches from wall.
2. Pitcher starts motion from centered hand-break position.
3. Throw with normal arm action at half-speed.
4. If pitcher has a proper arm path (down, back and up), the arm will move freely.
5. If the pitcher flails, his hand will hit the wall.

Repetitions: Use this drill only with pitchers who flail their arm behind their back. Repeat 20 times.

Note: Pitcher may want to wear batting glove on throwing hand if against a chain-link fence.

I. Stride Drill (Direction, Length and Landing)

Purpose: To check the direction of pitcher's stride (should be straight). To check length of stride (head and shoulders must be able to get over front knee). To check stride leg knee flexion (approximately 135° on landing). To check stride foot landing (slightly close, landing flat-footed, not on heel).

Drill:

1. Mark a straight line from the ball of the pitcher's pivot foot to the plate.
2. Have the pitcher start in a wind-up or set position and go through his pitching motion.
3. The pitcher's stride foot should land on or within 2 inches of the line.
4. For pitchers with a problem, put a towel over the improper landing spot, so pitcher can concentrate on plate while "feeling" when he lands in the wrong

area.

Repetition: Repeat 20 times. Can drill this during B.P.

J. Lead-Leg Bracing Drill

Purpose: To practice and feel lead leg from flexion to extension. During acceleration and release phase, the lead knee should brace the front side so the trunk may rotate against it.

Drill:

1. Starting in kneeling position using proper arm action.
2. Pitcher starts motion from centered hand-break position.
3. Throw with normal arm action at half-speed.
4. As the arm accelerates and nears the release point, brace (extend) the front leg and bring the body up over the leg.
5. After release, flex at the waist, bringing head and throwing shoulder down over the braced front side.

Repetitions: Repeat 5-10 times without baseball, 10-15 times throwing.

K. Pivot-Foot Rollover Drill

Purpose: To teach pitchers to release the hips into the pitch by rolling over their pivot foot. To teach pitchers that their pivot foot comes forward even before releasing pitch.

Drill:

1. Put pitcher in a stride position with pivot foot still parallel and in contact with rubber.
2. Pitching hand is in high cocked position.
3. Coordinate the arm action with the roll-over of the pivot foot (without releasing ball).
4. Pitcher should feel the hips and shoulders rotate and square off. The lead leg should stay flexed (instead of stiffening too early).

Repetitions: Repeat 10-15 times daily.

L. Back Knee Drive Drill

Purpose: To teach pitcher to drive pivot leg knee forward and inward after stride foot lands. This technique increases angular velocity of hips (a major source of power in pitching). Proper hip rotation allows pitcher to square off to plate which places arm path at the proper angle.

Drill:

1. Pitcher throws one-third-speed with an easy motion.
2. As the stride foot lands, the pitcher pulls pivot leg forward with hip flexors.
3. Note: This will bring pitcher up on a straight stride leg with trunk flexion which is not a good technique (which is why pitchers should never throw full or even half speed!)

Repetitions: Repeat 15-20 throws daily. Do other drills before repeating.

M. Hip Rotation Drill (Front Pocket to Back Pocket)

Purpose: To teach proper hip rotation in leg lift position (closing front side, hips and shoulders). To teach proper hip rotation during pitching motion forward.

Drill:

1. Coach (or mirror) in front of pitcher.
2. Pitcher takes full wind-up and at leg lift, look to see front hip pocket.
3. Using normal pitching motion, on follow through, look to see back hip pocket.

Repetition: Repeat 10 times in front of mirror, 10 times throwing at half-speed.

N. Hand Speed Drill (Flat-foot technique)

Purpose: To increase throwing hand speed (which will increase velocity) To drill proper arm path To develop good wrist action

Drill:

1. Be sure pitcher is warmed-up!
2. Have pitcher face catcher with stride foot forward approx. 2-3 feet forward.
3. Pitcher and catcher should be 30 feet apart.
4. Pitcher starts with hands together in front of body.
5. Break the hands properly while keeping feet in place.
6. Rotate the hips and shoulders back as hand comes into high cocked position.
7. Come out of high cocked position into the acceleration phase quickly and hard.

Repetitions: Repeat 12-15 times every other day, or two days after last pitching assignment, whichever is later.

O. Arm Deceleration Drill

Purpose: To develop proper arm extension and path during a long smooth arc of deceleration. Practice bringing the throwing shoulder over the lead leg. To regain good glove position to protect himself defensively.

Drill:

1. Use a coach or mirror in front of pitcher.
2. Use "slow motion" pitching motion (without a baseball).
3. With a proper follow through, coach (or player looking into mirror) should be able to see the top, back of the throwing shoulder.
4. The arm should end up outside the lead leg.
5. 90% of the pitcher's body weight should be on stride leg.
6. A pitcher may bounce-step (crow hop) with the stride foot to regain balance for fielding.

Repetition: Repeat 10-12 times daily.

P. Return to Rubber Technique

Purpose: Teaches pitcher to conserve time and energy between pitches. Teaches pitcher to maintain visual and mental focus of the plate.

Drill:

1. After throwing a pitch which has not been hit, start backing up (facing the plate).
2. Catch the return throw while backing up.
3. Relax, take a deep breath, then toe the rubber and get sign.
4. With no runners on base, 8-10 seconds between pitches is a comfortable rhythm.
5. With runners on base, 12-15 seconds between pitches is a comfortable rhythm.

Note: In youth leagues which do not allow leads, pitcher should stay in 8-10 second rhythm.

Repetitions: Practice this during BP, while warming up, or doing off- day throwing.

Q. Form Throwing Drill

Purpose: Teaches pitcher to focus on specific techniques within his motion without worrying about control. Also, a pitcher can perform many repetitions without fatigue.

Drill:

1. Throw into fence or net from a 10-15 foot distance at half or quarter speed.
2. Concentrate on one technique at a time (hand break, lead-arm action, etc.)

Repetition: Repeat 15-20 times while working on each technique, with a maximum of 50-60 throws.

R. Long-Toss Throwing Program

Purpose: Stretch and strengthen throwing muscles of shoulder, arm and back. Strengthen and increase stamina of arm and shoulder muscles. To develop better hand and arm speed to increase velocity.

Drill:

1. Jog and stretch. Throw short distances to warm-up.
2. Get into outfielder's stance (to catch fly ball).
3. Use an outfielder's crow-hop to gain momentum.
4. Throw overhand or 3/4 (never sidearm!)
5. Use proper lead-arm action (throw glove at target).
6. Get full extension of the arm at target.
7. Flex at waist during release.
8. Finish with a long, full arc of deceleration of the throwing arm. Hand should end up outside lead leg.
9. Throws should be "line-drives", not upwards.
10. If player cannot reach full distance, continue throwing straight and let the ball bounce.
11. Follow through with body. Transfer arm and shoulder forces into body and legs.

Repetitions:

1. Start throwing 45 feet apart.
2. After 4-5 accurate throws, back up to 50, 60, etc.
3. When pitcher reaches maximum distance, throw 5 at 3/4 effort 5 at 90% effort, 5 at 100%.
4. Cool down by tossing easy at 30-40 feet.

Note: If a pitcher feels early fatigue, shoulder or back strain, stop him from throwing. A pitcher may have to do a modified long-toss program at shorter distances and fewer repetitions to build up arm strength and stamina before a full long-toss program.

Teaching a curve or slider to a Little League pitcher is an invitation to disaster. The stresses and injuries have been documented, yet there are still many ignorant coaches who condone and even encourage their use. The blame for the resulting injuries falls exclusively on these individuals, as they have blatantly disregarded the trust placed in them by children, parents and fellow coaches. I consider this act to be a violation of the trust parents and children place in us as coaches to watch out for the child's best interests.

The greatest irony to this is that most children do not have large enough hands to make breaking pitches truly effective. Using different grips, a pitcher can get almost as much movement on his fastball without endangering his arm and without any alterations to his delivery. Furthermore, since they are only minor variations from the true fastball, pitchers will not struggle to gain control of the pitches. If your pitcher can throw a fastball for a strike, he can learn these variations without much difficulty.

1. Four-Seam Fastball. The four-seam fastball has the highest velocity, but has less movement, which makes it marginally easier to control. A RHP's four-seam fastball will move slightly in to a RHH. It is especially effective against hitters who swing late. This should be your "challenge" pitch when it is power against power. The ball is gripped across the wide (horseshoe) seams with the pointer and middle finger pads (the lower half of the fingertips, just below the swirl in the fingerprint), not the fingertips. The RHP's middle finger will be closer to the seam curve. If the pitcher's hand is too small, you can move the ring finger to a 2 o'clock position for better grip. The top fingers should be in the 11:00 and 1:00 position (approximately 1/2 to 3/4 of an inch apart). To improve movement, move the fingers closer together, to improve control, further apart. The thumb is placed directly underneath the baseball (at the 6:00 position). The ring finger is bent towards the palm, the ball rests on the second knuckle for balance. The ball is held shallow in the palm (it should not touch the fleshy part of the palm). The grip should be firm but not tight (approximately as tight as you would hold a tomato). The wrist and forearm muscles must be loose and relaxed.

2. Two-Seam Fastball. The two-seam fastball does not have the velocity of the four-seam, however it has more movement. A RHP's two-seam fastball will move down and away from a RHH. It is especially effective against pull hitters.

Because of the downward motion, it can lead to pitches in the dirt if underthrown. Your catcher should be ready for this pitch. The ball is gripped parallel and on top of the narrow seams with the pointer and middle finger pads (the lower half of the fingertips, just below the swirl in the fingerprint). The top fingers should be in the 11:00 and 1:00 position (approximately 1/2" to 3/4" apart). To improve movement, move the fingers closer together, to improve control, further apart. The thumb is placed directly underneath the baseball (at the 6:00 position). The ring finger is bent towards the palm, the ball rests on the second knuckle for balance. The ball is held shallow in the palm (it should not touch the fleshy part of the palm). The grip should be firm but not tight (approximately as tight as you would hold a tomato). The wrist and forearm muscles must be loose and relaxed.

3. "Cut" Fastball. The "cut" fastball offers better horizontal motion, however is much harder to control. It has less velocity than the two-seam fastball, but more than the no-seam. The motion is determined by the thumb position, however there is very little room for error. It is thrown exactly like the two-seam fastball, however the thumb is moved in either direction. It should be used very carefully if there are runners, because this fastball is most likely to skip to the backstop. Move the thumb from the 6:00 position away from the side where you want break (a pitcher moving his thumb to his right will make the ball break to the left and vice versa). When you look at this grip, you will see a "fat" side of the baseball. That is the direction the ball will move. Note: Not many youngsters have hands large enough to throw the cut fastball effectively. Velocity and control will decrease significantly when this pitch is attempted by someone with smaller hands.

4. No-Seam Fastball. The no-seam fastball (also known as a "Little League Sinker") has the least velocity of the fastball family, however it has the greatest movement. A RHP's no-seam fastball will move more down and slightly away from a RHH. It is especially effective against power hitters, who will rarely be able to get under the ball to drive it, and will instead ground it somewhere. Because of the downward motion, it is the hardest to control and will often lead to pitches in the dirt. It should only be used with an experienced catcher when baserunners are not able to advance. The ball is gripped parallel and between the narrow seams with the pointer and middle finger pads (the lower half of the fingertips, just below the swirl in the fingerprint), not the fingertips. If the pitcher's hand is too small, you can move the ring finger next to the other two for better grip. The top fingers should be touching. The thumb is placed directly underneath the baseball (at the 6:00 position). The ring finger is bent towards the palm, the ball rests on the second knuckle for balance. The ball is held shallow in the palm (it should not touch the fleshy part of the palm). The grip should be firm but not tight (approximately as tight as you would hold a tomato). The wrist and forearm muscles must be loose and relaxed.

The change-up is perhaps the most misunderstood and poorly used pitch. Ironically, it can be the most effective pitch when used properly. A good change-up will also keep a hitter from getting too aggressive, and when used by a pitcher with above-average velocity, becomes a potent weapon.

The largest myth to dispel is that the change-up is only effective when it is missed. While that is the best case scenario, it is very effective to inducing weak contact when it catches the hitter off guard. Furthermore, it prevents the hitter from "sitting on the fastball".

The second largest myth to dispel is that it is a good strike-out pitch. On the contrary, it is much more effective as a setup pitch. The fastball sets up the change, and the change sets up the fastball. This complimentary relationship is terribly misunderstood.

This being said, the change-up should not be thrown when:

- * There is likely to be a steal attempt.
- * On 3-2, 2 out situations.
- * Generally on 2 strike situations (most hitters will shorten up to make contact).
- * On inside-out or controlled swingers.
- * On weak hitters. Bury weak hitters, don't do them any favors.
- * Immediately after another change-up.

The best time to use a change-up are when:

- * Facing a big-swinging, aggressive hitter.
- * When the batter is ahead in the count (1-0, 2-0 or 2-1) or anytime he is trying to "muscle up".
- * Pull hitters or hitters swinging in front of pitches.
- * You want to setup another fastball.

The change-up is an easier pitch to control, because you are throwing at 80% velocity. Furthermore, the ring finger around the outside edge of the ball gives greater stability.

- * Don't set the grip until the hand is hidden in the glove!
- * The ball is gripped across the wide (horseshoe) seams (just like the four-seam fastball).
- * The fingertips are raised slightly, and the finger pressure is between the first and second joints (on players with smaller hands, it may be difficult to raise the fingers, instead simply make sure they are not gripping the ball with the fingertips or finger pads).
- * The ball is held deeper in the palm, barely touching the fleshy part of the palm.
- * The top three fingers should be between 1/4 to 1/2" apart.
- * The thumb is placed directly underneath the baseball (at the 6:00 position).
- * The little finger is bent towards the palm, the ball rests on the second knuckle

for balance.

- * The grip should be firm but not tight (approximately as tight as you would hold a tomato).

- * The wrist and forearm muscles must be loose and relaxed.

- * It is thrown exactly like a fastball, except as the ball is released, raise the top three fingers.

- * Instead of pulling forward in the stride, pull forward and SLIGHTLY downward (this should take something off the pitch without tipping off the batter).

The previous section was based on information from the American Sports Medicine Institute. The information is not merely opinion, but scientific fact. Deviating from these principles will eventually catch up to a pitcher, whether it is an arm injury, or simply not making the cut because of control or velocity difficulties. Teaching your pitchers to throw properly (despite objections by players and in some cases parents) benefits everyone in the long run.

The following section deals specifically with Little League restrictions, coaching strategies and personal observation. I firmly believe that these strategies have made a difference in the development of my pitchers. Four of my former pitchers in "B" have gone on to pitch in the "A" division All-Star game over the past three years. Over the past two years, my "B" division team lost only one game by more than four runs.

As I've stated before, coaching is teaching. The following page contains information which should be taught to a promising pitcher. This advice will give your pitcher a mental edge that should result in greater confidence on the mound. Furthermore, it starts the pitcher down the path towards the "inside" game. Remind your pitcher of it before each game until he/she memorizes it. In the early stages of a season (especially with a rookie pitcher), I have drilled these tips with my pitchers between innings. As excessive as it sounds, the constant reminders reinforce your practices.

You will also find advice for devising a pitching rotation, the importance of monitoring pitchers, and ways to spot a tiring pitcher an inning before giving up runs. While a pitching rotation may seem too complicated a concept for Little League, it does your players a service. Pitchers can rest on game day, they can invite parents and friends to games, and most importantly, they will understand that their role on the team.

Monitoring a pitcher is exceptionally important, but unfortunately is the most often overlooked coaching responsibility. It means additional work (pitch counts and close scrutiny). As Clint Eastwood once said, "A man's got to know his limitations." You cannot expect 10-year olds to figure this out on their own.

Finally, spotting a tiring pitcher before he/she gives up runs is often the difference between victory and defeat. Earl Weaver had two very important philosophies

which every baseball coach should memorize :

ù The winning team usually scores more runs in one inning than the opponent does in the entire game (the "big inning" theory). If you can prevent your opponent's big inning, you'll win a lot more than you'll lose.

ù Never leave a player in a position where he is more likely to fail than succeed. (A tired pitcher is a prime candidate for giving up the aforementioned "big inning"). A pitcher is far less embarrassed leaving an inning too early than leaving an inning too late. To put it another way, "When in doubt, take him out."

Setting-Up Hitters

1. Pitching Inside

Pitchers (especially young pitchers) are reluctant to throw inside to hitters out of fear that they will hit them. They don't want to risk hurting them, and they also know that they'll be standing in the batter's box soon. The only way to overcome this fear is to help the pitcher develop confidence in his control so that he feels can throw inside when he needs to. If a pitcher cannot pitch inside, his effectiveness is very limited.

Teach the pitcher to focus on the area between the knees and hips. There is a larger margin of error there. A pitcher throwing higher can hit the arm, elbow or head.

A pitcher can not worry about hitting the batter. The batter must watch out for himself.

A pitcher with a good fastball will be far more effective inside than a pitcher with an average or below-average fastball.

A good fastball pitcher should throw inside about 25% of the time.

2. When to pitch Inside or Outside

When ahead in the count, pitch inside, since the batter is more defensive and may wait longer with an inside-out swing.

When behind in the count, pitching on the outside 1/3 of the plate. The hitter will probably be overswinging, trying to pull the ball.

On an 0-2 count, pitch low and away. There are far fewer mistakes made there.

If your pitcher doesn't throw hard, don't pitch inside for strikes. Pitch inside to brush the hitter back and to set up the outside edge.

3. Change Location

After throwing a strike, don't repeat the same speed and same location. The hitter has just seen that one, and will be able to recognize it sooner.

After throwing a ball, you can repeat the same area for a strike. The hitter is likely to give up on the pitch sooner.

4. Change Speeds

Change speeds on the best hitters (big swingers). They gear themselves up for fastballs

Don't change speeds on weak hitters. Bury them!

Make certain you get these hitters out. The best hitters will get their share of hits anyway.

Don't change up with 2 strikes on a hitter! They are using their protective swing and a change-up is easier to hit with this type of swing.

Destroy a hitter's timing and you destroy his effectiveness and usually his aggressiveness.

If your pitcher can keep the opponent's top hitters off base, it will have a devastating psychological effect on the remaining hitters.

5. Mental Process

Visualize your target. Concentrate on hitting the target.

DON'T FEAR FAILURE! Think positive. The pitcher is the boss.

Relax between pitches. Take a deep breath, but stay focused on pitching.

Know the hitter. Does this batter swing at the first pitch? Does he try to pull everything? Does he swing for contact or power?

Know the game situation. Where are the runners? Who is the tying and winning run? Which throw are you going to back up on a single?

In a jam, use your pitcher's best pitch. It's frustrating to lose with your best pitch, but it's even worse to lose on your worst pitch.

Keep your pitcher in emotional and mental control. Baseball is the most individualistic team sport, which means more pressure. These are children who may not have the maturity to deal with frustration and disappointment.

Pitchers should start learning to throw inside to hitters as soon as possible. A pitcher's life expectancy decreases as you move down the bat. This is especially useful for pitchers with substandard velocity. Inside pitches, even if slower, result in fewer line drives.

If your pitcher does not have the confidence to throw consistent strikes, position a coach in each batter's box and have the pitcher throw 20-30 pitches, working up to "game" velocity. A young pitcher will be less nervous with adults standing in the batter's boxes. As the pitcher improves, instruct the coaches to "crowd" the plate on one side, then the other, and finally both. When you get weak hitters on an 0-2 count, go right after them. Help yourself keep your pitch count down.

When you get strong hitters on an 0-2 count, throw "your" strike (the pitch you want them to hit) that is off the plate, but not necessarily a ball.

A hitter in a low crouch usually cannot reach a high fastball, but can handle low pitches.

A hitter with an upright stance usually cannot hit a low fastball for power, but can handle pitches up in the strike zone.

A pitcher should always be prepared to handle bunts, especially against weak-hitting teams, or teams that have been shut down for most of the game.

A batter taking "defensive swings" can usually be struck out on high pitches.

Foot position for batter are a tip-off for where a hitter is trying to hit, and what he is expecting:

- * With two strikes, batters are more likely to use a "contact swing".
- * A batter trying to hit to the opposite field should be pitched inside.
- * A batter trying to pull the ball should be pitched outside.
- * Watch for a change in foot position between pitches!

A batter chasing a high pitch will probably do so again, but not necessarily on the next pitch. If a batter chases, throw another high one. If he/she doesn't go for it, return to the strike zone, but remember that it could be an option later in the game, especially if the pitcher is ahead 0-2 or 1-2 and it is a clutch situation.

A pitcher who throws mostly strikes can sometimes fall victim to hitters relying on him being around the plate with pitches. Sometimes it is a good idea for this type of pitcher to throw pitches "just outside". If the umpire calls it a strike, move a little further away from the hitter until the limit is reached. If a batter does manage to make contact, it is less likely going to be a hard shot.

Dominant pitchers should practice fielding bunts. For weaker hitters, this may be their only way to reach base.

Pitchers shouldn't be distracted by runners bluffing a steal once the pitcher has the ball. Walk to the mound, toe the rubber and make the runner commit. If the runner continues to dance, ask the umpire for "time". Once the runners see this doesn't rattle the pitcher, they'll usually stop. The pitcher does NOT have to pitch immediately after the batter steps into the box. In a tight situation, have your pitcher wait for the batter to get into his stance then pause an extra 2-3 seconds before starting his delivery. This slight break in tempo (providing it isn't overused) can break the hitter's concentration.

The strike zone is what the umpire says it is. Don't expect him to change it to suit your style. Find his strike zone and pitch to it.

Little League Pitching Eligibility

To figure out a pitcher's eligibility, look up the number of innings he/she has pitched down the left column. Move across to the day of the week he/she pitched, and where the 2 points meet, that is the pitcher's next eligible date. This chart assumes the player has innings of eligibility remaining in the current week! For example, a 10-year old pitching 3 innings on a Sunday would meet the rest requirements to pitch Thursday, however he/she would have already used his/her eligibility up for the week.

10 Year Olds

IP	SUN	MON	TUE	WED	THU	FRI	SAT
1-2	TUE	WED	THU	FRI	SAT	SUN	MON
3	THU*	FRI*	SAT*	SUN	MON	TUE	WED

* This pitcher has depleted his/her eligibility for the week.

11 Year Olds

IP	SUN	MON	TUE	WED	THU	FRI	SAT
1-2	TUE	WED	THU	FRI	SAT	SUN	MON
3	THU	FRI	SAT	SUN	MON	TUE	WED

For the examples below, except the following conditions:

Players #1 and #2 are 11 years old.

Players #3 and #4 are 10 years old.

Situation:

A Saturday game, player #1 pitches 4 innings, player #3 pitches 2 innings. On

Tuesday's game, pitcher #1 would get a fresh 6 innings because of a new week, but could not pitch because he/she has not had 3 days' rest! Player #3 would be eligible for 3 innings.

Situation:

A Saturday game, player #1 pitches 3 innings, player #3 pitches 3 innings. On Tuesday's game, player #1 is eligible because of a new week. Player #3 also gets a fresh 3 innings, but could not pitch because he/she has not had 3 days' rest!

Situation:

A Saturday game, player #1 pitches 3 innings, player #3 pitches 2 innings and player #4 pitches 1 inning. On Tuesday's game, all pitchers are eligible. They all receive fresh innings because of a new week.

Situation:

A Saturday-Sunday game. Any pitcher appearing in Saturday's game may not pitch in Sunday's game, because there is a mandatory 1 day's rest, regardless of innings pitched!

Devising a Pitching Rotation

An ideal pitching staff should consist of 2 players ages 10, 11 and 12. This will give you many options. It is especially useful because you can keep 2 relievers ready for each game. In my lineup, there are always relievers available at any given point.

Your pitching staff should be adjusted towards your competition. It would be foolish to use your 2 best pitchers against a weak team. You would be far better of using lesser quality pitchers. There are several good reasons for this:

- * Resting your top pitchers. Regardless of Little League rest requirements, pitchers get tired, especially in the hot months.

- * Your lesser pitchers will gain confidence from (hopefully) a successful outing.

- * Your weaker pitchers will gain valuable experience, which will be especially useful for next year. This year's "project" could be next year's "ace".

- * It can help prevent a blowout. This is good for your players (who become overconfident), and for the other team (who have probably had a few too many blowouts already). Furthermore, it keeps you from having the game shortened due to the 10-run rule.

One successful method is to rank your pitchers #1 through #4. Against your tougher opponents, you can use #1 and #3 and save #2 and #4 for weaker opponents. For "must win" games, you can use #1 and #2, and for "easy win" games, you can use #3 and #4. This rotation is not meant to advocate the development of only 4 pitchers! It is only a guideline for pre-planning games.

During the course of a game, there will be opportunities for pitchers outside your top 4. In blowouts, it is very useful to experiment with other pitchers. It allows them to keep fresh, gives them useful game experience and allows you to rest your top pitchers for a more important game. This game experience is especially useful for players with 1 or 2 more years' of Little League remaining.

If you plan on using any pitcher for a limited amount of time (Eg: Starter for 3 innings, reliever for 2 innings and a closer for 1 inning), it is helpful to tell these players ahead of time. It allows them to pace themselves properly, and lets them know that their playing time is not dependent on their pitching. This is a tremendous boost to younger players, who may be still struggling to gain self-confidence.

Finally, you should not underestimate "one inning pitchers". There are many players who can give you a good inning, but don't have the stamina for more than that. Utilizing these players can give you a very flexible pitching staff that allows you to keep all your pitchers fresh.

Monitoring Pitchers

One of the keys to managing a team is monitoring the pitcher's progress during a game. I spend much more time watching pitchers than I do hitters. For one thing, a hitter can only use so much help. A hitch in the swing cannot be fixed in a game. A late-swinger also needs time. The pitcher controls the game, and by controlling the pitcher, you can assure optimum performance from your pitching staff.

The single-biggest (and easiest) factor is pitch count. Every pitcher has a limit. This limit is often unique, because factors such as leg strength, mechanics and velocity all factor into the equation. Every coach should keep a pitch count, even if it is not exact (Eg: Knowing that your pitcher is in the 60-70 range is acceptable).

The problem is in learning what each pitcher's pitch count. Furthermore, this is modified by conditions. If the pitcher has had some innings requiring more pitches than others, this will tire him/her sooner. In hot weather, a pitcher usually cannot go his/her regular distance. In cooler weather, the pitcher may have more stamina.

As a general guideline, you can expect a young athlete in good shape to be able to throw 60-70 pitches without losing control or much velocity. Factor in a player's prior experience, athleticism, weather and game situations to arrive at an anticipated pitch limit.

If you are close to the pitcher's limit at the end of an inning, that is the ideal time to make the change. There are several reasons for this:

* It saves the pitcher's dignity. No one wants to leave the mound in the middle of an inning.

* It saves your starter an inning of eligibility. Remember, a single pitch thrown constitutes an inning. If your starter pitches 4 1/3 innings and your reliever finishes the last 1 2/3, that constitutes 5 innings for your starter and 2 for your reliever. You've wasted an inning's eligibility.

* It allows your reliever plenty of time to warm-up.

* Your reliever will take the mound with no baserunners to worry about.

* Your defense won't "fall asleep" waiting for the reliever to warm up. This substantially reduces the likelihood of the defense forgetting the number of outs, baserunners, etc.

* It eliminates the chance of injury from your starter. Tired pitchers deviate from their mechanics and get lazy. For stronger (physically) pitchers, this can spell trouble.

* Poor defense or struggling with control can force a pitcher to throw 20 or more pitches in an inning. If your pitcher was already close to his/her limit, this could be dangerous.

Remember: Two long innings take more out of a pitcher than four short ones, even if the pitch count is identical. Watch for a lot of long at-bats. If a few batters take your pitcher deep into the count, you may want to replace the pitcher before reaching his/her pitch count.

Game Adjustments

A common problem with young pitchers is suddenly "losing it". Often is due to a high pitch count and is simply due to the pitcher tiring. Other times, however, it is often a perfectly fresh pitcher fighting through a mechanical flaw. When you sense your pitcher has lost his control, you should carefully watch his delivery on a few pitches. This is a guide of symptoms, possible causes and effective cures. When you think you've found the problem, make a trip to the mound. Remember, you may make one visit per inning. Take advantage of this visit.

Symptom: Wild High

Possibilities: Understriding. Lengthening stride will bring the ball down.

Rushing. Pitcher should slow down through delivery. Hand not high enough when starting forward. Hand should be above shoulder when starting forward rotation.

Symptom: Wild Low

Possibilities: Stride too long. Shortening stride will bring the ball up. Collapsing too soon. If pitcher collapses trunk early, release point could be late. Upper body diving in. Pitcher leads stride with hips, not pitching shoulder. Arm circle too small. Pitcher should break keeping hand on top of baseball, bring ball down, back and up.

Symptom: Loss of velocity

Possibilities: Pitcher tired. Especially common in hot weather, late in the season or consecutive games. Gripping ball too tight. Ball should be gripped as loosely as a tomato. Gripping ball too deep in hand. There should be room between baseball and thumb/forefinger joint. Rushing. (Body looks ahead of arm). Pitcher should slow down through delivery. Throwing across body. RHP's foot should land just left of center and vice-versa. "Aiming" the ball. Take a breath, relax, focus and throw. "Short-arming" the ball (hand, elbow and shoulder are at less than 90 degrees). Remind pitcher to extend arm.

Symptom: Wild outside (to Right-Handed Batter)

Possibilities: Lands on a stiff leg (knee not bend) during stride. Keep knee bent, don't "dig in" when landing on front heel. Fingers on side of ball instead of on top. Usually due to incorrect hand break. Tilting body. Leading with hips should open up body correctly.

Symptom: Wild inside (to Right-Handed Batter)

Possibilities: Throwing across body. RHP's foot should land just left of center and vice-versa. Lack of trunk rotation (release point too early). Don't let go of ball before landing. Flailing arm behind body after hand break. Keep elbow flexed to prevent this. "Flying open". Lead shoulder (opposite throwing) should move directly toward the plate during stride forward.

Note: At the Little League level, 90% of all problems occur in the stride and landing. Pitchers start shortening their stride and throwing across their body as they tire.

Symptoms of a Tiring Pitcher

A pitcher can benefit tremendously from minor observations. A pitcher throwing across his/her body can be corrected almost instantly if they know what they should be doing. Most problems occur when a pitcher starts to tire. If caught and corrected soon enough, your pitcher can stay out of trouble. If left alone, things will deteriorate quickly, and your pitcher will be too tired to correct the problems.

By far, the worst part of a manager's job is having to pull a pitcher. Your young pitchers' blood runs cold when he/she looks up to see you coming from the dugout. They already are aware of what they perceive to be their "failure", but being removed from the mound is a public reprisal. Relieving a pitcher before trouble starts makes everyone happier.

Each pitcher is different, and will do different things. Ultimately, the manager needs to know the pitcher to look for symptom(s). Spotting trouble in advance will save your pitcher and your team some grief.

Stride. Is the pitcher not striding as far or suddenly throwing across the body? The legs and hips may be tired. You might get an extra inning out of them, but don't count on it.

Rushing. They are catching the ball and looking to throw right away. Often, simply reminding the pitcher to slow down will get them through a tough inning.

Stalling. Is your pitcher taking too long between pitches? He may be trying to "catch his breath". They rarely do.

Losing velocity. A pitcher who is normally unhittable is now giving up some hard hits. Even if the fielders are making the plays, often times the pitcher is losing his/her stuff.

Irritability. Is your pitcher getting frustrated? Whining over close calls? Blaming fielders for errors? The pitcher may be fine, but as Yogi Berra says, "90% of this game is 50% mental." We are dealing with children, who may not yet have the maturity to deal with adversity.

"Losing the plate". Are there more pitches that "just missed"? It's easy to convince yourself that you're not getting the calls, but it is likely that the pitcher is tiring.

Hitting the batter. Are there a few too many "close calls" with the hitter? A right-handed pitcher against a right-handed hitter will start drifting inside because he/she has dropped his arm from 3/4 to sidearm delivery. Inevitably, they overcompensate with outside pitches.

"Losing the ball". Are there more Wild Pitches/Passed Balls? Did it really "slip".

"Aiming the ball". Are the pitches suddenly becoming throws? Do you notice more body english with your pitcher? Is he now "short-arming" it?

Mechanics. Is your pitcher no longer using a leg kick? Is he not striding towards the plate as far? Does he appear off balance?

Tips for Catchers

Catching is the most overlooked position, and ironically, second in importance only to the pitcher. Yet few coaches spend time developing catchers, and are merely thankful that someone will play the position. The following tips are effective ways to assure the efforts of your pitchers aren't squandered by their batterymate.

- * The feet of the catcher should be located under their shoulders, at least a foot apart. Too many catchers keep their feet closed and can't reach for a wide pitch without falling over

- * While the Johnny Bench technique (placing the throwing hand behind your back) has been advocated to prevent injuries, it is better for catchers to keep this hand behind their mitt because:

- * It is easier for them to keep their balance.

- * Their hand is just as protected by the mitt

- * Helps them if they have to dig a pitch out of the dirt (they can set up quicker).

- * Helps them absorb the impact of the ball hitting the mitt (by bracing the mitt, the energy is absorbed in both arms rather than in the forearm of their glove hand). This results in less strain in the tendons.

- * The catcher must never reach for a strike (let it arrive to his chest) to avoid interference.
- * The catcher must get in front of wild pitches instead of pouncing at them.
- * Teach the catcher to anticipate their pitcher. For example, if the count is 0-2, if your pitcher has been instructed to waste a pitch low and away, the catcher should be ready for it.
- * Arrange signals on where the catcher should set up (Eg: the catcher should give the pitcher an outside target for a hitter who has pulled the ball well).
- * The catcher is the only player with the entire play in front of them. They should be watching for appeal plays (runner tagging-up too early, missed bases, etc.)
- * Recognize and setup for steal situations. A catcher turning 45 degrees towards his throwing arm will be able to transfer and throw the ball easier. Note: This position will leave them more vulnerable to foul tips and wild pitches inside to a right-handed hitter, but most wild pitches are outside anyway. Against left-handed hitters, this strategy is less effective, as they screen the catcher's throw anyway.
- * When blocking the plate for a play at home, point the toes of the left leg towards THIRD, not the pitcher's mound! A runner sliding into this leg will bend it in it's normal fashion. If the leg is pointing in any other direction, a sprained or dislocated knee is far more likely.
- * Leading the pitch. If the catcher can set the mitt before the pitch arrives to it (as opposed to moving the mitt to stab at the pitch), you are far more likely to get a strike call, even on a pitch that might normally be called a ball.

Practice Drills for Catchers

For any team to win, it must be strong up the middle. It is easy to recognize and develop talents of middle infielders and the center fielder. Furthermore, they demonstrate their value in obvious ways. The catcher's value is not as easily recognized, and usually only appreciated by pitchers and coaches. This makes an already unattractive job even less desirable. Those rare individuals want to play the position do not have the luxury of watching televised games to see ways to improve their game. While the catcher spends more time on television than any other player, little (if any) time is spent explaining their position or what they've done to make a play.

Practice Techniques:

Set up two cones at the backstop about 3 feet from each edge of the plate. Select a pitcher to throw the ball. For each pitch which hits the fence between the cones, the pitcher gets 5 points. For each pitch that is cleanly caught, the catcher gets 3 points, for each pitch that is blocked but near the catcher (but not behind), 1 point. First to 100 (or whatever) points gets extra batting practice (or a suitable "prize"). I've used this drill and it becomes an all-out war.

A catcher must learn to point his leg down the third base line when blocking the plate. When using this technique, the runner sliding in will cause the catcher's

knee to bend normally. If the catcher's leg is pointing in another direction, there is a very real possibility of a sprained, dislocated or even broken knee. This drill sounds violent, and will shock onlookers, but works very well to teach the catcher correct form. Have your outfield/infield relay a throw home (which is also good practice for them). As the throw comes to the plate, a coach should swing a wiffle ball bat lightly but firmly into the catcher's leg towards home plate. If the bat strikes the shinguard only, the catcher's technique is acceptable. If the bat hits the side or back of the leg, there is a problem. To an observer, this will look like child abuse, however it is a very effective way to teach catchers without having players slide into them (which poses a risk to both the catcher and runner!)

Home Practice: Most dropped balls are the result of the catcher blinking when the bat is swung. An easy and effective cure for this is to position the catcher 10 feet from the television (something tells me this won't be difficult to arrange!), wearing the face mask. An adult should stand a safe distance away, swinging a wiffle ball bat through the catcher's line of vision. The catcher should not flinch when the bat crosses through his/her field of vision. After a few minutes, the catcher should be used to this. Repeat this several times a day for several days until the problem disappears.

A catcher must have a quick release when throwing to a base. He/she cannot afford the luxury of a long wind-up. "Snap throws" (also known as "short-arm throws") are used in these instances. This can be practiced easily enough during infield practice. Simply shout "steal second" and toss the ball to the catcher. This also provides infielders with practice on covering bases on steals. Note: This type of throw is very stressful on the catcher's elbow, so it shouldn't be done several times in succession.

By far the hardest play for a right-handed catcher is bunt right down the first base line. Too often, this ends up in extra bases for the hitter as the throw skips down the right field line. The catcher must learn to take the extra step towards the pitcher's mound so the throw will be easier for him/her to make, and the first baseman to catch (the first baseman's view will be obstructed by the hitter as he/she runs down the line). This should be practiced by simply positioning the catcher in the box and laying down a bunt. Stand two or three players (with helmets) along the first base line close to the base, several feet apart. They should be turned towards the catcher so they can get out of the way if necessary. After the catcher gains proficiency, practice this play with a "live runner".