



## Junior Coaching Manual (U13)

### Preface - The Right Way to play

New Zealand has a long-standing history of producing world class athletes. Baseball is a new sport to this great country, with correct fundamentals and coaching that progress and develop at each respective level from Kiwi Ball grade on upward, will ensure that our baseball players enjoy the game of baseball more, have the correct skills to be competitive locally and on an international stage.

The following philosophies are proven and engrained in baseball cultures around the world in the USA, Japan, Dominican Republic, to name a few. For our coaching to be effective and our players to be competitive we must first embrace these philosophies, so that all our players start playing the game the right way.

#### **‘Have Fun!’**

- The most important reason to play the game is to have fun! As coaches we must find a way to make baseball fun for all of our players

#### **‘Be Ready!’**

- All position players (except the catcher) should be taking a preparatory step (moving in and getting into a ready position) on EVERY pitch of the game and expect the ball to be hit to them
- When taking an at bat, your player should approach every pitch, as a pitch to drive. If the pitch is not there to be driven, then they can take it, but they should never be fooled by a good pitch to hit
- Base runners should take well-timed secondary leads so that they are ready to react to a ball in play, or pass ball
- Spend time teaching all areas of the game during practice time, so your team is prepared for anything come game time

#### **‘Hustle!’**

- While on the field, no player on your team should ever be walking. This means that at practice, during and between drills, they hustle. During games in-between innings, they hustle. If they hit a ground ball to the shortstop, they hustle down to first. etc
- Coaches need to constantly remind players that not hustling, is not acceptable

#### **‘Be Aggressive!’**

- We want our players to play the game in an aggressive manner, but there has to be an element of control to all actions on the field
- When swinging, swing HARD, but swing at good pitches and stay balanced throughout
- When throwing the ball throw it HARD, but make sure they have their feet under them when making throws
- Pitchers should attack the strike zone at all times, to make the opponent earn their way on base

### **'Stay Positive!'**

- Baseball is a game of failure, so creating a positive atmosphere within a team is essential to bring out the best in your players
- Positivity must be established by the coach, and can be reinforced by senior players on the team
- Bad body language has a negative effect on a team's positive atmosphere, and should be discouraged
- Encourage your players to 'pick each other up' when someone makes a mistake, or does not perform the way they expected to

## Introduction

Firstly, thank you for taking the time to read this manual. Whether you are looking to help your child improve their game, or you have chosen to take on a role as a coach for a club or school team, thank you for helping push the game of baseball forward, here in New Zealand.

This coaching manual will be split into three sections, part one will look at DEFENSE, part two will look at OFFENCE and part three will be about PITCHING. Each section will build on the foundations that have been laid in the previous coaching manuals for KiwiBall and U11. It is assumed that the players that you are coaching are proficient in all the areas that have been touched on in those manuals. If your child, or a child you are coaching is new to the game, please make sure that they are brought up to speed as quickly as possible on the fundamentals taught in the earlier manuals.

While this manual may seem in-depth, there is always room for you to be your own coach and Baseball NZ encourages you to bring your own approach and knowledge to your coaching, within the framework of the ideas explored in these manuals.

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## Part one - Defense

### INTRODUCTION

The ultimate goal of a defense is to prevent runs from scoring. This section will explain fundamental and technical skills that your players must develop to become quality defenders. Most of the information in this section is based around individual skills, for information on team defense systems, please refer to the *Baseball NZ Cut off and Relay system*

#### Being prepared mentally

As coaches we must encourage every defender to understand the situation BEFORE the ball is put in play. Before each new batter starts his plate appearance, each defender should think:

1. What do I need to do if the ball is hit to me?
2. Where do I need to be if the ball is not hit to me?

#### Being prepared physically

Every infielder and outfielder must take a preparatory step as the pitch is being delivered to the plate. A good preparatory step will bring the player onto the balls of their feet and their glove out front, so they are ready to react to any ball that is hit. This is known as the players READY POSITION.



Infield ready position



Outfield ready position

#### Playing Catch

Playing catch refers to throwing and catching the baseball. This fundamental skill is the most important aspect of playing defense, so a strong emphasis should be put into developing each players ability to play catch.

*Refer to Intermediate Throwing and Pitching Manual*

## INFIELD

### Positioning

A common error for young infielders is playing too shallow, as players arm strength develops they should move back off the base line to allow themselves to get to a wider range of balls hit to their left or right.

### NORMAL DEPTH

Normal depth is where the infield should play when there is no one on base.

1B and 3B - starting from the base go 5 steps towards second, and 5 steps away from home plate.

SS and 2B - starting at second base, take 7 steps toward third and first base, respectively, then 10 steps away from home plate.

Diagram

### DOUBLE PLAY DEPTH

Double play depth is used when there is a runner occupying first base and less than two outs. The defense is trying to get two outs from one play.

1B - holding the runner on if only first is occupied, or if it is first and third. Playing behind the runner if it is first and second or loaded bases.

2B/SS - the middle infielders will move two or three steps closer to second base, sacrificing a bit of range for the chance of a double play

3B - will take two or three steps in toward the base line

Diagram

### INFIELD IN

Infield in is used when there is less than two down and a runner on third base who's run is important in the context of the game. All four of the infielders will play slightly in front of the baseline to try and prevent the run from scoring.

Diagram

## Fielding

For our players to become consistent infielders they must be able to get a good hop, get into a good fielding position, transition from their fielding position into a good throwing position, throw the ball well, and follow through.

1. Getting a good hop - infielders should play the ball on a short hop, or a long hop. A short hop is when the ball bounces just before the players glove, where as a long hop bounces quite far in front of the player and they will field it at the top of its arc. Most miss played balls by infielders are a result of not getting a good hop, or they did not get into a good fielding position. To get to a good hop infielders must move quickly to the area where they believe they will get the best hop and go right foot, left foot into a correct fielding position.
2. Fielding position - Infielders must work hard to get into a correct fielding position every time. Once they are in this position they must use both their glove and their bare hand to secure the baseball and allow for a quick transfer. (Refer to diagrams below)
3. Fielding position to throwing position - after the ball is secure, infielders must **REPLACE THEIR FEET** this is a verbal cue that means to take your right foot to your left foot and your left foot to the target while simultaneously allowing the hands to travel to the belly button where the ball is taken out of the glove and is ready to be thrown.
4. Throw the ball - once the ball is in the infielders throwing hand, (using a four seam grip!) they should allow the hands to break by taking pinky fingers away from each other. The shoulder of the infielders front side should point directly to the target and the throwing arm should take a small arc behind the body. The throwing arm should come through and fire the ball out front just after the left foot hits the ground.
5. Follow through - after the ball is thrown the infielder should **FOLLOW THEIR THROW**. This means that their footwork should continue toward the intended target in a straight line, this will help the infielder get their whole body behind the throw.



Routine



Backhand



Forehand



Slow roller



## Receiving the ball

Whether the infielder receiving the ball is getting ready to make a force out, a tag play, or turn a double play the same basic principles apply when getting ready to receive the ball. They should get to the base early, become athletic, expect a bad throw, and use correct footwork to make the play.

1. Get to the base early - whenever the ball is in play on the infield, players who are not fielding the ball should cover all the bases in which there could be a possible play. They need to get there as fast as possible, so they can get properly set up.
2. Become athletic - once the infielder is at the base they need to get into an athletic position to receive the ball. They want their feet about shoulder width apart and to sink into their legs a bit by bending at the knees and the hips at the same time.
3. Expect a bad throw - now that the infielder is in an athletic position, they must anticipate that the ball thrown their way may be wayward. This will allow them to react faster to any throws that are up, down, left or right.
4. Make the play using correct footwork - the infielder must understand what type of play they are executing, this will dictate their footwork. (Illustrated below)



FORCE OUT



TAG PLAY



DOUBLE PLAY (2B receiving)



DOUBLE PLAY (SS receiving)

Applying these basic principles will help infielders make a high percentage of plays that comes their way, which in turn makes the infield better as a unit.

## Other duties as an infielder

### CUT-OFF MAN

A cut-off man is needed whenever the ball is hit to the outfield. The cut-off man should be directly in line with the outfielder and the base that the ball is being thrown to. They should position themselves approximately 1/3 of the way from the base to where the outfielder is going to field the ball. The infielder who is assigned the cut-off in each situation can be found in the Baseball NZ Cut off and Relay System.

Once the cut-off man is in position they should square off their shoulders to the outfielder and with their hands in the air yell 'hit me! hit me! hit me!'. Once the ball is in the air the cut-off man must use his feet to get into a position where they can catch the ball on their glove side, replace their feet, make a strong, low throw to the base, and follow their throw on line.

### BACKING UP THROWS

There are many situations in which a throw will need to be backed up by an infielder. Backing up throws is one of the many intangible things (there is no stat for these things) that all good teams do consistently.

Over the course of the season backing up throws will save your team from giving up unnecessary extra bases, which in turn will save your team runs against and give you a better chance of winning each game. Here are a few common examples of situations where a throw needs to be backed up:

- runner on third - 2B and SS must back up the throw from the catcher to the pitcher after EVERY pitch
- pick off to first base - 3B must back up the throw from the 1B back to the pitcher
- catchers throw down or back pick - 2B and SS are required to back each other up on a throw down or back pick to second base, as well as backing up throw downs or back picks to first base and third base respectively
- ball in dirt and pitcher covering home - 1B must crash into the middle of the field to back up the throw from the catcher to the pitcher

There are other situations where throws will need backing up, there are just a few common ones. A good rule for your infielders to play by is to never assume that a play/throw back will be executed, this way you will never be caught off guard if there is a bad throw.

## OUTFIELD

### Positioning

Many factors go into the positioning of an outfielder, here are a few examples of the more basic factors - whether the batter is lefty or righty, size of the batter, count, situation in the game, prior knowledge of batters tendencies, and where the coach wants the outfielders to play.

Outfielders should be constantly communicating with each other about their positioning, especially the center fielder who is the captain of the outfield. If the center fielder decides to reposition himself he should relay this information to both his corner outfielders so that they can move in unison.

### STRAIGHT UP

This is the position that the outfielders should go to, unless one of the other factors dictate that a different position is optimal.

CF - line up directly in line with home plate and second base, playing slightly closer to the wall than to second base.



LF - line up with the base line between first and second base then take 3-5 steps toward the foul line, playing slightly closer to the wall than to second base.

RF - line up with the base line between third and second base then take 3-5 steps toward the foul line, playing slightly closer to the wall than to second base.

Below are general rules on how your outfielders should shift with respect to each factor. Although there will always be players who break the trend, so always teach your players to be adaptable and smart.

#### Lefty/Righty hitter

On a left handed hitter the outfielders should all move a few steps toward the right field line, as well as the right fielder taking a few steps back and the left fielder will take a few steps in.

When a right handed hitter is at the plate the outfielders will do the opposite, they will play closer to the left field line with the left fielder farther back and the right fielder in a few steps. This is because batters will have more power to their pull side.

#### Size of batter

If the hitter is of above average size, take a few steps back

If the hitter is below average size, take a few steps towards home.

#### Count

On two strikes all the outfielders should take a few steps in and a few steps to the batters opposite field side. As the hitter is likely to a more defensive swing then they would take in a 0 strike or 1 strike count.

We will delve more into positioning in the U16 and Up Manual as there is far more to it, but these three factors are a good start for your outfielders.

### **Fielding**

A good outfielder will have the mindset that any ball that is hit to the outfield in the air can and will be caught. They will do anything to catch the ball, sprint, dive, slide and/or run into the wall. If all of your outfielders have this mentality, you have the foundation of your outfield defense set.

#### FLY BALLS

Not all fly balls will be directly at a outfielder, in fact most aren't. If a fly ball is hit in the direction of an outfielder they must move quickly to get into the spot where they believe the ball will land and whenever possible set up 1 or 2 steps behind the spot. Then they can move into the catch to generate some momentum toward the infield so they can quickly get off a strong throw.

First step - an outfielders first step should always be directly toward where they think the ball will land. This will allow them to take the most efficient route to the baseball (a straight line!). The first step to a ball hit to the outfielders left or right, or in front of them should come quite naturally, but on balls hit over the outfielders head, they must take a first step behind them, this is known as a

#### DROP STEP

Drop step - any balls hit over an outfielders head should be approached with a drop step. Like any other first step, the drop step should be taken directly to where the outfielder thinks the ball will land. After they have taken the drop step, they must cross over with their other leg so that they are running toward where the ball is going to be, rather than backing up.

#### GROUND BALLS

Outfielders usually have to make longer throws than infielders, so their footwork for fielding ground balls is based around generating momentum toward where the throw needs to be made.

Similar to the infield, outfielders must read the hops to make sure that they field the ball on a short or long hop. When they are approaching the hop that they want to field, their chest must be square to the base in which they are throwing to, field the ball, transition into crow hop throw, and follow through.

Fielding the ball should be either just outside their glove foot, or off the instep of their throwing foot.

Crow hop - after fielding, the crow hop is either left-right-left for a right handed thrower, or a right-left-right for a left handed thrower. The second step should go in front of the other foot to allow for a dynamic movement toward the direction of the throw.

## **Throwing**

Most throws from the outfield have to travel a long distance, so outfielders must work on having a long arm path to generate velocity and carry. They must also always throw with a four seam grip, generating as much 12 to 6 backspin as possible, so the ball does not deviate through the air.

When throwing to a base where there could be a play, the outfielder should throw the ball **THROUGH** the cut-off man rather than to the cut-off man. If there is not going to be a play at a base, the outfielder should make a firm throw to the cut-off man straight after they field the ball. There is no reason an outfielder should ever hold onto the ball.

### Throwing through the cut-off man

Throwing through the cut-off man means throwing the ball flat and hard at around head height with enough velocity so that if the cut-off man decides to leave the ball, it will still continue to travel with good carry toward the intended base.

## **Other duties as an Outfielder**

### **BACKING UP**

This goes back to the mindset on defense that we should never assume that a play is going to be made. Outfielders should back up each other if the ball is hit to the outfielder next to them, they should also back up all balls hit to the infielders, as well as throws made by the infielders and the other outfielders whenever possible.

Common situations where back up is needed:

### Right field

- balls hit to the CF, 2B or 1B
- any time a throw is being made to first base
- double play feeds from 3B or SS to 2B
- left fielder throwing to second base

### Center field

- balls hit to LF or RF, as well as balls hit at the SS and 2B
- pick offs or throw downs to second base
- bunt plays or comebackers when the play is at second base

### Left Field

- balls hit to the CF, 3B or SS
- any throws made to third base
- double play feeds from 1B or 2B to SS
- right fielder throwing to second base

## CATCHERS

### Setup

A catcher should work to setup so that visually the pitcher is encouraged to throw the ball to the target. Feet should be square to the pitcher, or right foot slightly further back from home plate, they should be squatting as deep as they can go, unless the pitch is purposefully up in the zone, chest should be square to the pitcher, and glove should be in line with the center of the body. The glove arm should never be fully extended, nor should it be too close to the body, let your catchers find somewhere in between that is comfortable for them.

### Receiving/Blocking

Receiving - A pitch should be received in the pocket of the catcher's mitt. A well received pitch should make a loud sound on impact with the mitt, regardless of velocity.

Blocking - blocking the ball will help stop base runners advancing on bad pitches.

A good catcher will block every pitch that bounces. This starts with having the mentality that every pitch thrown could be in the dirt.

The optimal result of a block is for the ball to hit chest protector and land softly in front of the catcher. The catcher is NOT trying to catch the ball.

To get into a sound blocking position the catcher's glove goes straight to the ground between their legs, followed by the knees falling either side of the glove. The catcher's torso should be leant forward and lastly they must tuck their chin down towards their chest to protect their neck.



### Throwing

Throwing back to the pitcher - a catcher should come to their feet to throw the ball back to the pitcher every time, regardless of whether there are runners on or not.

Throwing to bases - all throws to bases should start with the catcher getting their feet lined up to the base they are throwing to. After the ball is received, your catcher should get their right foot under them, then take their left foot toward the base they are throwing to, at the same time, they should transfer the ball into their throwing hand with a four seam grip and use a smaller arm circle to release the ball as quickly as possible.

## Part Two - Offense

The number one goal of the offensive side of the game is scoring RUNS! Everything we should be teaching on offense is based around how to generate runs for our team. Individual results do not matter at bat to at bat, as long as we are developing players who understand what they can do to help the team score.

Offense is made up of two parts, hitting and base running. It is important as coaches that we understand and work on both aspects of offense, as this will help us develop more quality all round ball players.

### HITTING

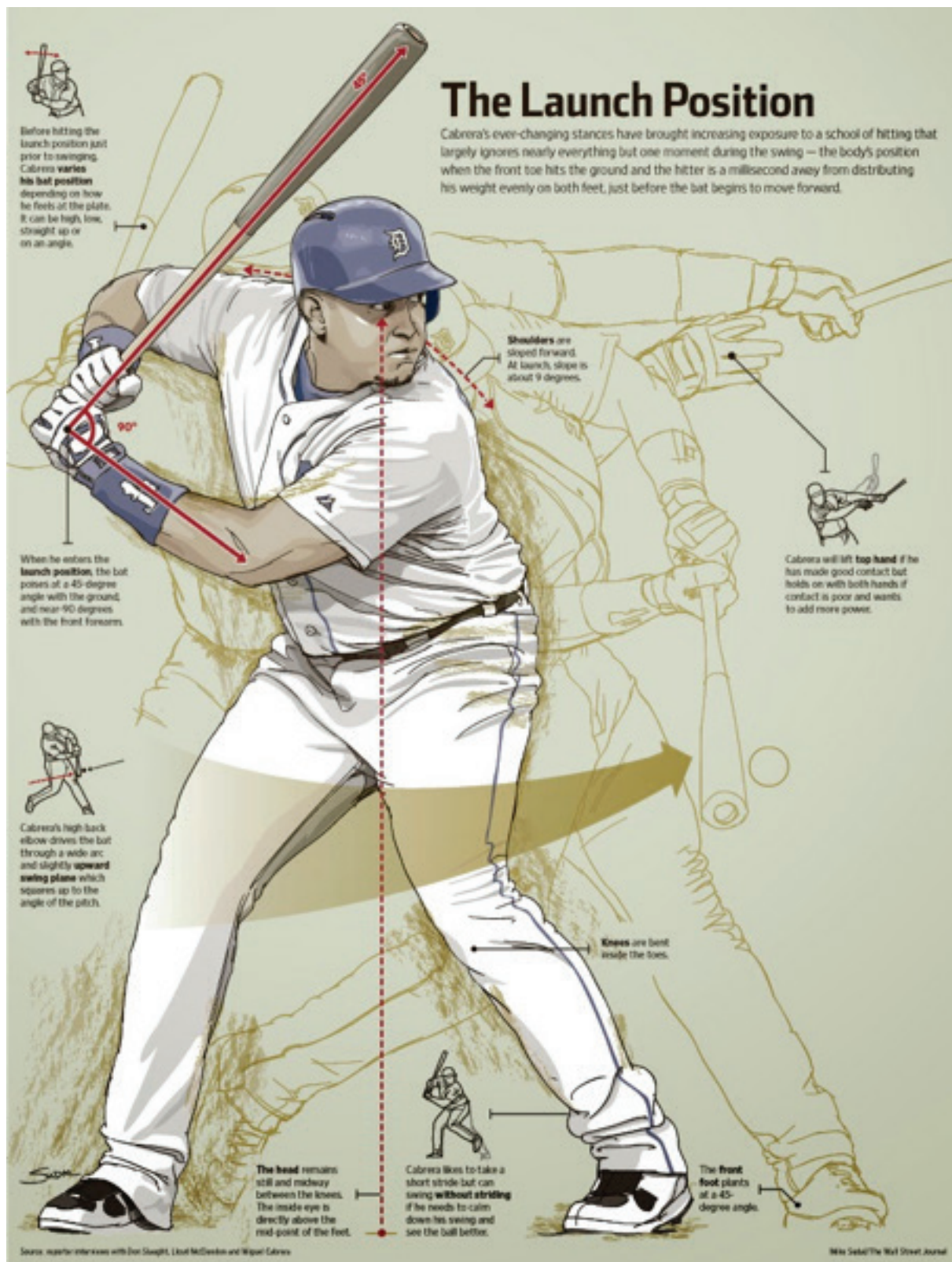
No two hitters are the exactly the same, however all good hitters get to the same point in a couple of fundamental positions during their swing - launch position, and contact point.

#### Mechanical

Setup - a hitters setup should be athletic and comfortable. This will allow the hitter to be relaxed while waiting for the pitch to be delivered.

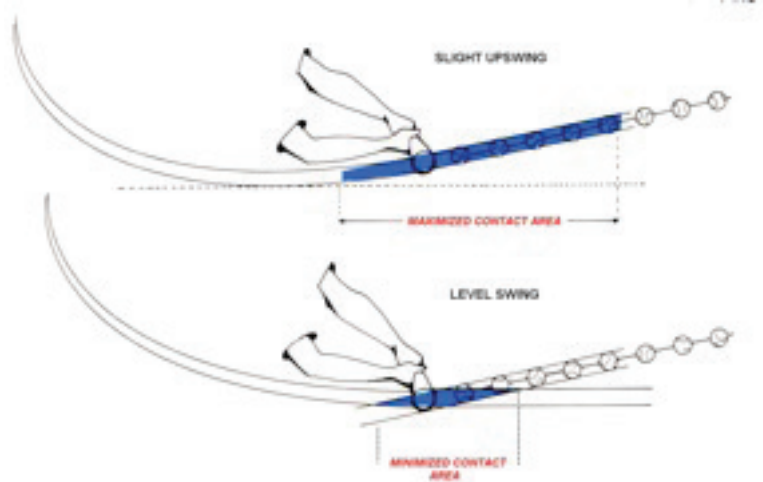
Load/Stride - when the pitch is on the way the hitter must prepare to hit. They do this by loading, which includes shifting their weight to the back side and moving their hands to around their back shoulder and tipping the barrel of the bat so that it is around 45° with the ground, and directly above the helmet. After the hitter is loaded he will then stride, (not all hitters will stride, but all hitters must load) straight towards the pitcher. Now they are in their launch position

Launch Position - this term describes the position a hitter is in a moment before their swing starts. Getting into a correct launch position consistently is crucial to becoming a good hitter. Here is a great example of a launch position with notes, based on Miguel Cabrera's launch position:





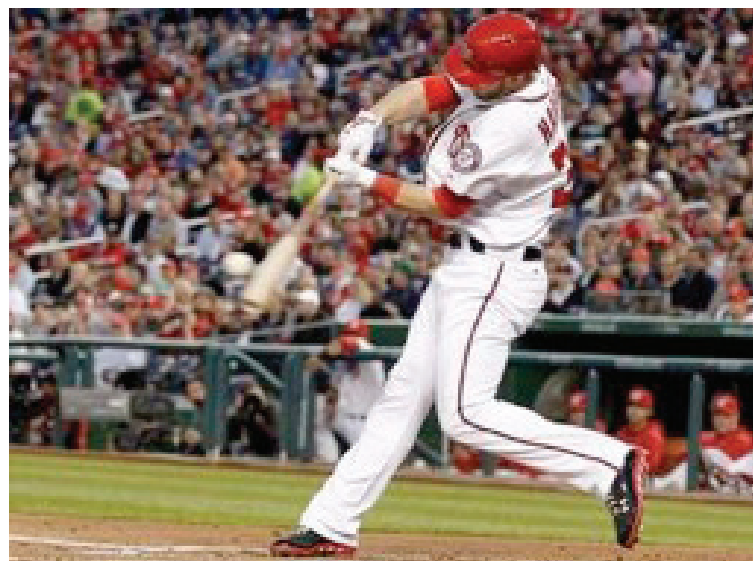
On time, and on plane - from our launch position, we want our hitters to be on time and on plane with the pitch. This means that they should start their swing early enough so that their barrel is in the hitting zone when the ball passes through. As well as this, hitters should establishing a swing plane that is similar to the plane at which the ball is travelling in on. The more the hitter is on time and on plane with the pitch, the more solid contact they will make



Contact Point - All good hitters will reach a similar position when they make perfect contact. The perfect contact point will result in a hard line drive at a slightly upward trajectory. If the player has enough bat speed, and launch angle between  $25^{\circ}$  and  $35^{\circ}$ , perfect contact should result in a home run!

Some of the components of a perfect contact point - the back leg will have the heel pointing to the sky, because the hips will have come through and weight will be shifting into the front side, front leg will be fully extended, stopping the weight from going any further forward and allowing it to be transferred into the swing. Head will be directly between the feet and looking down at contact, hands will be above the barrel with the top hand palm facing up and the bottom hand palm facing down. Finally, back elbow will be bent and close to the body, in a powerful position.

Here is what it looks like:





Swing hard, stay balanced - we want our hitters to hit the ball hard! Therefore we must encourage them to swing the bat hard often, at practice and in the games. However, there must still be an element of control in their swings. A good rule of thumbs is to have your hitters swing as hard as they can, while still remaining balanced throughout their swing.

Just because a hitter has a mechanically sound swing it does not automatically mean that he is a good hitter. There are other aspects to hitting that go into being a good hitter such as being mentally prepared to hit, understanding the situation, and keeping their body in the right condition to swing correctly. If a hitter can combine these attributes, then they are laying a foundation to becoming a great hitter.

## **Mental**

### ON DECK PREPERATION

When the hitter is on deck, they should be watching each pitch thrown to the hitter in front of them. While each pitch is being made they should be working on their load/stride into their launch position. They want to make sure that they are in their launch position before the ball is entering the hitting zone. This is known as timing the pitcher, it will allow the hitter to be ready to hit from the first pitch of their own plate appearance.

### DURING PLATE APPEARANCE

Hitters should have the mentality that they are going to swing at every pitch that is thrown their way, this way they are never fooled when they get a good pitch to hit.

Hitters should also be able to make adjustments mid plate appearance, with 0 or 1 strike counts, hitters must be looking to swing hard and drive the ball. However, if the hitter gets to a 2 strike count, they should be looking to do whatever it takes to put the ball in play and force the defending team to execute a play (two-strike approach).

### REFLECTION

All good hitters take something from every plate appearance to help them get better, regardless of the result. Here are some questions your hitters can ask themselves when reflecting on their plate appearances:

- Was I ready to hit every pitch?
- Did I swing at strikes?
- Did I take good quality swings when I was ahead in the count?
- How well did I compete with my two strike approach?
- Did I contribute to my team offensively?

The mental side of hitting is often neglected by coaches, but is very important in player development, because of this it should be worked on and talked about often. Mentally aware and/or mentally tough hitters will find ways to help their team score and this makes them a huge asset to any team.

## Situational Hitting

There are many ways that a hitter can help the team without having to get a hit. All of these situations and techniques involve helping the runners move up a base with little risk. In this manual, we will cover two such strategies that hitters can implement to help the team get into a better position to score a run - bunting and the hit and run

### SACRIFICE BUNT

The purpose of a sacrifice bunt is for the hitter to give himself up as an out, in order to advance the runner/s currently on base. Bunting usually happens in situations where there are no outs and runners on first only, first and second, second only, or first and third.

Executing a sacrifice bunt is all about committing to the cause. The best bunters are the ones who get their head into a position where they can track the ball all the way onto the bat, and 'catch' the ball on the end third of the barrel.

When sac bunting the hitter should square around when the hitter starts his motion. They should shuffle their feet to the front of the batter's box, to give them the best chance to bunt the ball fair. Their feet should be slightly staggered with the back foot closer to home plate and toes pointing at a 45° angle. The bat should be brought in front of the body and the top hand should slide up the bat till the start of the barrel, the bottom hand can stay where it feels comfortable.

The barrel of the bat should remain slightly higher than the hands, and be set at the top of the strike zone. If the pitch is a strike, the hitter should use their knees to take them to the height of the ball, rather than dropping their hands, as this will cause the barrel to drop down. The hitter should watch the ball all the way onto the bat and use the end third of the barrel if possible.



### HIT AND RUN

The purpose of the hit and run is to get the runner/s in motion to get out of a double play situation. A hit and run is usually used with 0 down and runners on first only or first and second.

This is a two part play, with both the base runners and the hitters having to be switched on to execute it correctly. The hitters job in the hit and run is to swing at ANYTHING, and put the ball on the ground.

If the play is executed correctly, it will result in:

At worst - the runner/s move up one base and the hitter will make an out at one.

At best - the ball may get through the infield and the runner/s will move up two bases and the hitter is safe on first!



## BASE RUNNING

We must encourage all our players to become good base runners. For this to happen they must understand that you do not need to be the fastest runner to be a good base runner and on the flip side, being a fast runner does not automatically mean that you are a good base runner.

Running the bases well requires - aggressiveness, awareness, anticipation and a good understanding of what they should be trying to achieve given the situation, (baseball IQ)

U13's is the first introduction to leads, so there will be an emphasis on introducing correct primary and secondary lead techniques. Note, leads are different at first, second and third base, so make sure that you take the time to teach base running at all three bases during your practice sessions.

A primary lead is the initial lead you take off the base, while the pitcher still has the ball. During this time, the pitcher can pick off (throw over to any occupied base), or make a pitch to the plate. As the pitcher makes a pitch, then base runners start their secondary lead.

### Leads

#### LEADS AT FIRST

Base runners spend more time at first base than any other, so making sure that your players understand the primary and secondary lead from first base is the best place to start.

Primary lead - starting with both feet on the base, the base runner must make sure that the pitcher has the baseball. Once the pitcher is on the mound with the baseball, the base runner can start their primary lead. It is extremely important that base runners keep their eyes on the pitcher AT ALL TIMES when they are off the base.

The base runner should step off the base with their left foot, then step with their right foot and square their chest up to home plate. Once they are square to the plate, they should then take two side shuffles toward second base while staying in an athletic position and anticipating a pick off at any time.

Secondary lead - as the pitcher make a pitch to the plate, the base runner can now take their secondary lead. The secondary lead consists of two aggressive shuffles toward second base. They should work on timing their secondary so that they finish their second shuffle as the ball goes through the hitting zone. This way they are ready to react to any ball put in play. If the pitch caught by the catcher, the base runner should move quickly back to the base, in case of a back pick.

## LEADS AT SECOND BASE

Base runners can will take their largest primary lead at second base for two reasons:

1. No one is holding you on the base
2. They are further away from the pitcher and catcher than at any other base

Primary Lead - same set up as at first start with both feet on the base and make sure the pitcher has the ball and is on the mound, before starting their lead.

Starting with the left foot, take a walking lead of five steps, the base runner should then square their chest to home plate and take one side shuffle into an athletic position. Remembering to have eyes on the pitcher the whole time.

Secondary Lead - same concept as at first base with two aggressive shuffles, timed so that they finish their second shuffle when the ball is going through the hitting zone. Again, if the pitch caught by the catcher, the base runner should move quickly back to the base, in case of a back pick.

## LEADS AT THIRD BASE

Leads at third base are a bit more conservative than at any other base. At third base runners are close to scoring, and are unlikely to be stealing, so their main job is to be ready to react to a ball in play or a ball that gets past the catcher. While not getting too far off the base and allowing the catcher to back pick.

Primary Lead - the primary lead at third base MUST be taken in foul territory. This is because if a batted ball hits the runner in fair territory, the runner is out. The distance of the primary lead will be dictated by how far the third baseman is playing off the base. The base runner should mirror the distance the third baseman is playing off the base, or a minimum of three steps off third.

Secondary Lead - at third, base runners should take a 3 step walking secondary lead. Right-left-right, with the right foot getting down as the ball goes through the hitting zone. They should be landing in an athletic position ready to react toward home on a pass ball or ball in play. If the pitch caught by the catcher, the base runner should move quickly back to the base, in case of a back pick. The base runner should return to the base in fair territory to cut down the catchers throwing lane.

## **Breaks**

Now that we have established our leads at the three bases. We can talk a bit about what should be happening next. The ball will either be hit, make it to the catcher's mitt, or not be caught by the catcher. We will talk about a few common scenarios and what the base runner should be doing.

Firstly, if there are two outs, RUN! If the ball gets put in play, run hard no matter what base you started at. Run hard until either out is made, you score, or someone stops you from advancing further.

### Breaks at first -

Ball on the ground: try to break up the double play by running hard to second and making a fair, hard slide into the base.

Ball in the air: go approximately half way to second, unless the ball is popped up close to first base. Advance to second quickly if the ball drops. Tag up if it is caught.

### Breaks at second -

Ball on the ground: base runners should advance to third on all balls hit right at them or behind them (left hand side). On a ground ball in front of the runner (right hand side), they should return to second.

Ball in the air: if the fly ball is deep, return second and tag, try to advance to third. If the fly ball is shallow or a pop up, the runner should come off second far enough so that they can get back if the ball is caught. If the ball drops, the runner should decide if they can advance or not.

Ball in the air runners on first and second, or loaded bases refer to Infield Fly Rule in Know the Rules section

### Breaks at third -

Ball on the ground: depending on where the infield is back, the runner should score on any ground balls that pass the pitcher, except a hard hit ball to the third baseman. If the infield is in, the base runner should see the ball through the infield before advancing.

Ball in the air: tag up straight away on all balls in the air, including foul balls. Usually the third base coach will let the runner know whether or not they think they can go. So it is important for the coach to know the oppositions arm strengths.

## Other Base Running Strategies

### Stealing

Technically a base runner can try to advance to an unoccupied base anytime the ball is live. However the conventional way to steal a base is as follows - take a normal primary lead, when the pitcher moves their front foot the base runner will take off to the next base and slides to give them self the best chance to beat the throw.



### Sliding

There are two main types of slides: Feet first - one leg tucked and the other leg straight out toward the base, hands in the air to protect your hands/wrists, weight on your glute/hamstring. The base runner will use their extended leg to get to the base.

Head first - sliding on the front of the body with arms reached out front. The base runner will try and reach the base with one or both of their hands.

### Base running on a bunt

The most important thing for base runners to realise when they know that the hitter is bunting is that not every pitch will be bunted. The pitch may be a ball, or the hitter may miss getting the bunt down. Because of this it is important for the base runner not to cheat towards the next base. Runners should take their normal primary and secondary leads and READ THE BALL DOWN.

### Base running on a hit and run

The base runner during a hit and run should make sure the pitcher is committed to the plate before taking off to the next base. While the runner is advancing they should be looking in to home to read what kind of contact is made, (if any) and adjust accordingly to where the ball is hit.



## Part Three - Pitching

### MECHANICS

#### INTRODUCTION

Proper pitching mechanics are critical for both the success and health of a baseball pitcher of any level. Poor mechanics can lead to increased stress on the elbow or shoulder, increasing the risk of serious injury. Studies have shown that proper pitching biomechanics use proper motions and forces of all body parts in an optimal sequence. This optimal sequence is known in science as the “kinetic chain”; it is known in sports as “proper coordination.” Proper pitching mechanics can reduce elbow and shoulder stress as well as maximize ball velocity. The purpose of this summary is to point out some key aspects of proper and improper pitching mechanics.

#### BIOMECHANICAL RESEARCH

Research has shown few differences between the biomechanics of successful youth and adolescent pitchers and the mechanics of successful collegiate and professional pitchers. The major difference is that younger pitchers generate less joint force and torque, which of course is no surprise. Another difference is that younger pitchers are less consistent pitch-to-pitch. Research has also shown very few biomechanical differences between pitching from the windup and from the stretch. After the front foot lands, the motions are similar. The peak force and torque values are also similar between the two styles. Ball velocity is also similar between windup and stretch techniques. These findings are consistent with the fact that some pitchers are successful with both techniques and some other pitchers (mostly relievers) are successful always pitching from the stretch.

## PROPER PITCHING MECHANICS

While each pitcher is a different person and can display some individuality in his mechanics, everyone has similar anatomy (the same muscles, bones and ligaments in the same locations) and is throwing following the same laws of physics (force = mass x acceleration, etc.). Thus, research has shown common traits among healthy, successful pitchers. What follows is a description of proper mechanics, based upon three-dimensional high-speed automated analysis of thousands of pitchers by the American Sports Medicine Institute and other biomechanics labs. The photographs are a high school pitcher who displayed proper biomechanics during testing.

“Torque” is rotational force. Whereas a force pushes or pulls a body segment, a torque produces or resists angular motion. A simple example is that when you bend your elbow to bring your hand toward your shoulder, your biceps (and other muscles) are applying an elbow flexion torque. When pitching from the windup, the pitcher rotates his back foot parallel and in front of the rubber, whereas when pitching from the stretch, the pitcher’s back foot starts parallel and in front of the rubber. The front leg is then lifted and the pitcher strides towards the plate. In the windup, the leg lift occurs first; from the stretch, the front leg is not lifted as high and the leg lift and the stride occur more at the same time (as a strategy to control the running game).



From its maximum height, the front knee drops and then starts to stride toward the plate as the throwing hand takes the ball out of the glove.



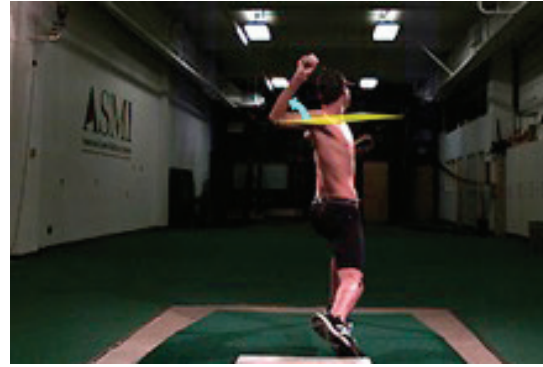
As the front leg strides forward, the two arms swing down, apart and then up. The throwing hand should be on top of the ball during this motion. This is difficult for some youth pitchers due to small hands and limited strength, but all grown (post-puberty) pitchers should be able to keep their hand on top of the ball.



At the instant the front foot makes contact with the mound, the throwing arm should be rotated up as shown. Specifically, the throwing elbow should be lifted high enough to create an armpit angle (“abduction angle”) of about 90 degrees. In other words, if you drew an imaginary line through the two shoulders, the throwing elbow should be on this line.



Another critical aspect of the arm is the “external rotation.” That is, the forearm should be at about a 45-degree angle above horizontal at the instant of front foot contact. If the forearm is already vertical or past vertical, then the arm is too “early.” Conversely if the forearm is not up enough – that is, the hand is not much higher than the elbow – the arm is too “late.” For some pitchers, the arm is so late that at the time of foot contact, the hand is below the height of the elbow. The colloquial expression for this is “Inverted W.” Pitchers with a late arm or early arm have poor timing between their upper body and lower body, increasing the risk of arm injury and reducing their ability to generate velocity.



At the instant of foot contact, the stride length should be slightly less than body height. It is also important that the front foot should step slightly across the back foot, with the front foot rotated slightly inward. By foot contact, the pelvis (hips) has started to rotate to face home plate, while the upper trunk (shoulder) has not started to rotate. This allows the pitcher to stretch the core muscles in his trunk for extra energy. If you look closely, you can see the muscles stretched in these front view and side view pictures of foot contact. A pitcher who rotates his lower trunk and upper trunk at the same time is not using his trunk enough.



Next is the “arm cocking” phase. During this dynamic phase, the front knee is straightened a little, in order to stop the lead hip moving forward and allow the pelvis to rotate (that is, allow the belly button to face the plate). The upper trunk then rotates to face the plate, while the arm rotates back into a fully cocked position (maximum shoulder “external rotation”). The elbow should still be bent about 90 degrees; in other words, the forearm and upper arm should be in a “L” shape. Maximum torques are produced at the elbow and shoulder near the time of maximum external rotation. These torques slow down the arm cocking and initiate the arm’s forward rotation (shoulder “internal rotation”).



Next is the “arm acceleration” phase. During this brief explosive phase, the arm straightens at the elbow then “internally rotates” at the shoulder. The arm acceleration phase ends at the instant of ball release.



There are many different “arm slots” at ball release. Some pitchers are more overhand, while others are more “3/4 arm” or sidearm. Regardless of the arm slot, the shoulder abduction angle should be about 90 degrees. In other words, different pitchers can have different tilts to their shoulder-to-shoulder line, but the throwing elbow should be approximately on the shoulder-to-shoulder line at the instant of ball release. Having the elbow far below or far above the shoulder line is dangerous for the tendons and ligaments in the shoulder joint.



A good follow-through is important for a pitcher’s health. The arms, trunk and legs need a good follow-through to dissipate the energy in the throwing arm. For a 3/4 style pitcher, the throwing hand should come across the lead thigh. The hand will come across more toward the lead hip for a sidearm pitcher and more toward the lead knee for an overhand pitcher. The trunk should become close to horizontal, with the back of the throwing shoulder visible to the batter. The pitcher should be in a prepared position to defend himself against a line drive hit at him.



## CONCLUSION

Each pitcher should strive toward the positions and timing of proper pitching mechanics to maximize his performance without placing undue stress on his elbow and shoulder. Proper mechanics are described here in general. While professional teams have used biomechanical analysis for years, advances in technology now give amateur players opportunities to measure their mechanics. However biomechanical technologies are just tools for coaches and players to determine what to work on. Proper mechanics are achieved by players and skilled instructors working together.

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Information from Pitch Smart USA program developed by Baseball USA

## PROGRESSION

Once a pitcher has developed good pitching mechanics, we can then start teaching them how to better their success by bettering their approach in every at bat. The reason we want to teach this after they have developed good pitching fundamentals, is that we don't want to over complicate an already very complicated task.

For bettering a pitcher's approach, please refer to the Baseball New Zealand Throwing and Pitching Manual.