

Hitting 101 for RH Hitters

SOLANA BEACH LITTLE LEAGUE

Video Taken from **MLB** and **PastimeAthletics**

Video Name: Manny Machado Hitting Mechanics Slow Motion Home Run Baseball Swing

<https://www.youtube.com/watch?v=GbTSgebTrzg>

Video Name: BOBBY WITT JR. Slow Motion Baseball Swing Hitting Mechanics Instruction MVP

<https://www.youtube.com/watch?v=pPWpZ3nPcQo>



Source: <https://www.pinterest.com/pin/542965298807073650/>

- All material cited and readily found on the Internet

** Please understand that when participating in any exercise or physical activity program there is a possibility of physical injury, and choosing to engage in these drills is done so at your own risk. If the activity seems too rigorous for you, please take a break.

Created for Solana Beach Little League

Swing Progression



Source: <http://sluggerselite.com/hitting/>

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7 BASIC STEPS IN A SWING

Step 1 – Load your hands and weight onto inside of back leg

Step 2 – Striding

Step 3 – Back hip explosion towards the pitcher

Step 4 – Throw your hands at the ball

Step 5 – Contact

Step 6 – Extension

Step 7 – Follow through

BATTING STRATEGY (WHEN TO SWING?)

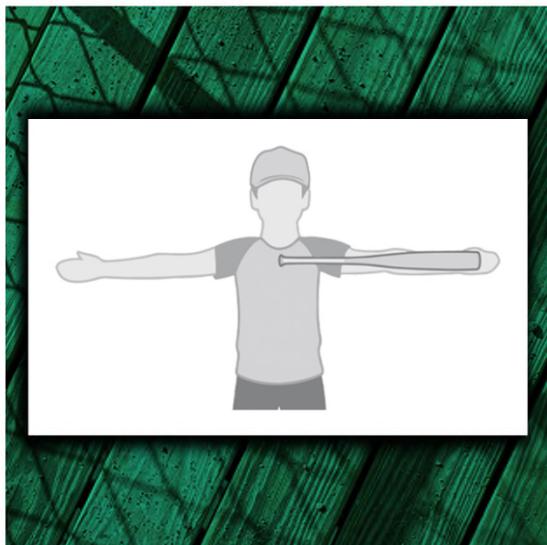
- Hitting is all about timing, pitching is all about disrupting a hitters timing
- Always think fastball and adjust if off speed
- Know your strengths / weakness, what do you hit best?
- Your swinging “frame” changes based on count:
 - 0 strikes → ***perfect*** pitch to hit (fastball in your spot)
 - 1 strike → ***probably*** a strike (something you can drive)
 - 2 strikes → ***possibly*** a strike (protect the strike zone)
 - Simplify mechanics and just get bat on ball
 - Lessen the leg kick
 - ❖ Modify based on how many balls (3 balls & 1 strike = 0 strikes)
- Other factors, what to ask yourself:
 - What's the scenario?
 - What's your job? (Runners on-base? Number of outs? Score?)
 - How's the pitcher? (Wild or Controlled? Aggressive or Cautious?)
 - What happened last time? (Don't fall for the same trick twice!)

BAT SIZING

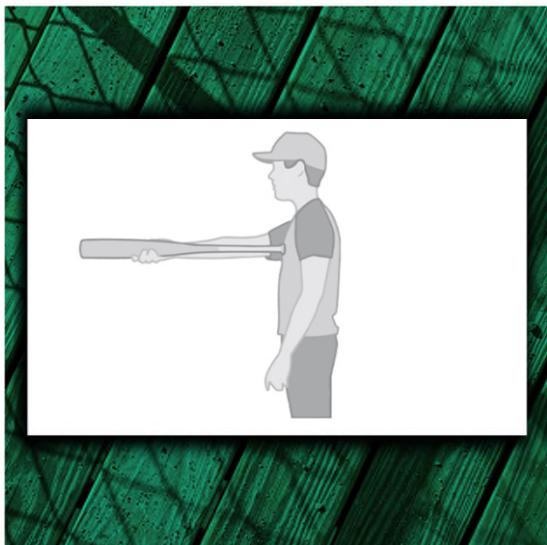
DETERMINING YOUR IDEAL BAT LENGTH

Using the right length of bat is critical to achieving proper swing mechanics and results at the plate. Too long, and you can risk compromising bat speed or accuracy. Too short, and you can limit your plate coverage, giving up a portion of your strike zone

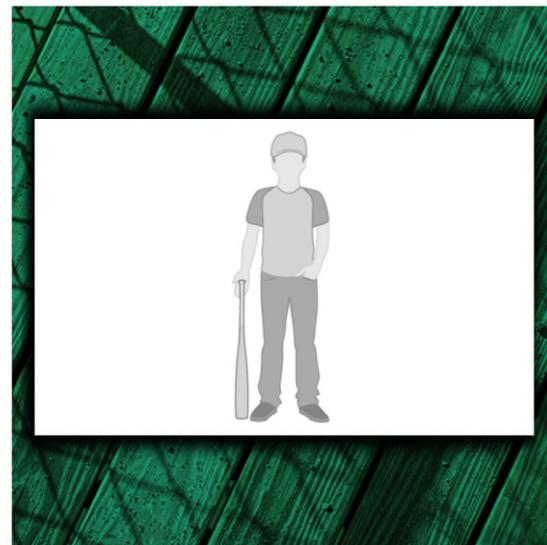
If you're in a store or visiting one of our [HitTrax cages](#), here's a few Pro Tips on how to measure for the proper length:



1. Place the bottom of the bat in the center of your chest, pointing it to the side, parallel to your outstretched arm. If you can comfortably reach the top of the bat with your fingertips, the bat is the right length.



2. Position the bottom of the bat in the center of your chest, facing outward. If your arm can reach out and grab the barrel of the bat, then it is the correct length.



3. Stand the bat up against the side of your leg. If the end of the bat reaches the center of your palm when you reach down, it's the appropriate length.

Source: <https://www.dickssportinggoods.com/rc/baseball-bat-buying-guide>

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KNOW YOUR PITCH COUNT

The Baseball Hit Chart

Count	Hitter's Expectation (Thought)
0-0	Fastball (See it-Hit it!)
0-1	Pitchers Choice (My Pitch/My Zone)
0-2	Any Pitch Close (Put it in play/Battle)
1-0	Fastball (Tighten my zone)
1-1	Pitchers Choice (My Pitch/My Zone)
1-2	Any Pitch Close (Put it in play/Battle)
2-0	Fastball (Drive it!)
2-1	Fastball (Drive it!)
2-2	Pitchers Best (Protect/Compete!)
3-0	Fastball (My best Zone only!)
3-1	Fastball (Drive it!)
3-2	Typically Fastball (Compete!)

For the 0-0 pitch count:

- Unless the pitcher is fairly advanced, hitters will almost always see a fastball around the zone.
 - Pitch count at 0-0 is not much different than any X-0 count
- Be aggressive, but selective, on the first pitch

Source: <https://www.beabetterhitter.com/the-baseball-hit-chart/>

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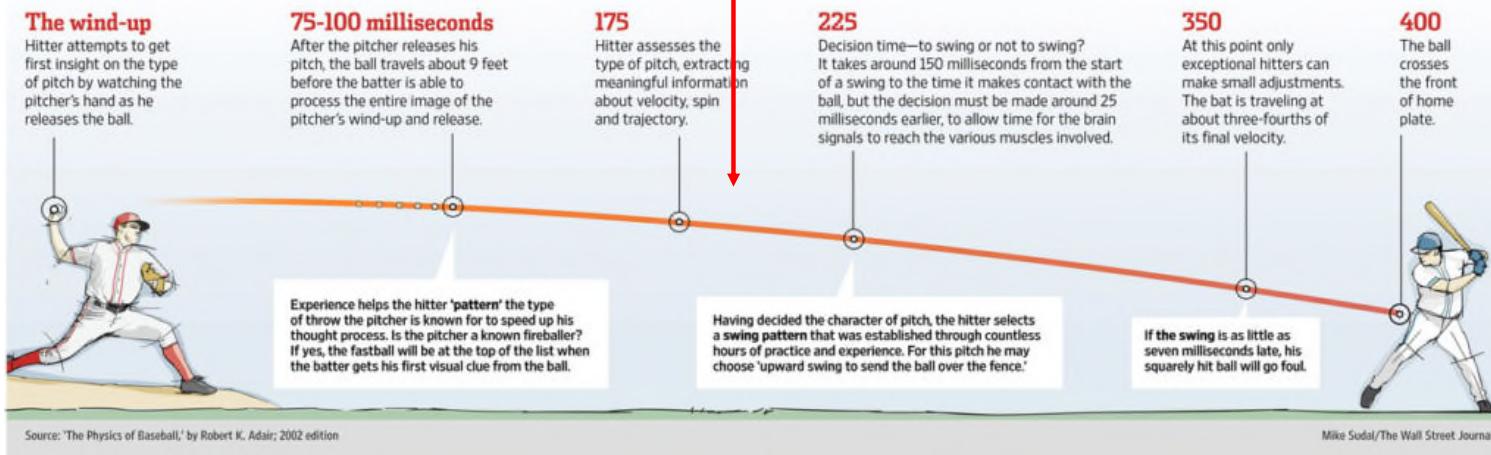
GETTING YOUR TIMING DOWN

- Depends on how long of a load you have
 - If you have a long front leg lift, then you can start your load when the pitcher breaks his hands
 - If you have a short front leg lift, then you can start your load right before pitcher releases the ball
- No matter when you lift your front leg, the ball of foot touch should happen when the ball is about half way to you and your swing begins

***Front foot touch occurs about when the pitch is half way to you; then the swing begins if it is a hittable pitch*

Inside the Mind of a Hitter

A look at how quickly a hitter must assess and react to a 90-mph fastball.



Sources: <https://tornadobaseball.com/2018/12/23/how-to-improve-timing/>

Great video resource: <https://www.diamonddreamsba.com/timing-hitters-perspective/>

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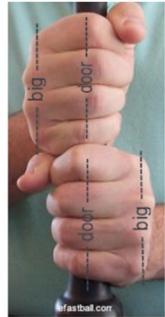
SIMPLE TIPS

- Eye on the **BALL**
- **KEEP IT SIMPLE AND STAY ATHLETIC**
- Focus on the pitchers release point
- Hitting is about timing (“wind-up” or “dance” with the pitcher)
- Don’t squeeze the bat (stiff hands = stiff body = BAD)
- Keep your front shoulder in
 - Think about driving the ball to right center field
- Keep your back elbow up when you start your swing
 - Do not drop your elbows or else will lose power
- Drive your back hip to the pitcher
 - Don’t just open up the front hip to get power or else will drop the bat and slice across the ball and come up on it
- Don’t think too much! (in-game, keep it simple)
- Don’t get discouraged, hitting is hard! (Tony Gwynn averaged .338 and he was one of the greatest hitters = 66% failure)

Different types of baseball grips

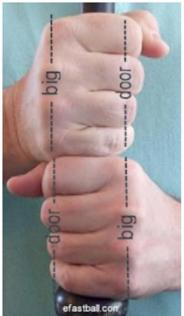


Big Knuckles
aka Punching
Knuckles



Door Knocking
Knuckles
aka Middle
Knuckles

- These are the 3 common grips
- Choose a grip that is comfortable for YOU
- **I usually suggest either box grip or between door knocking knuckles and box grip (usually called the rings grip)**
- I would NOT suggest lining up big knuckles



Line Up the Rings
aka Box Grip
aka Offset Grip

Source: <https://www.efastball.com/hitting/how-to-grip-the-bat-knuckle-alignment/>

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STANCE

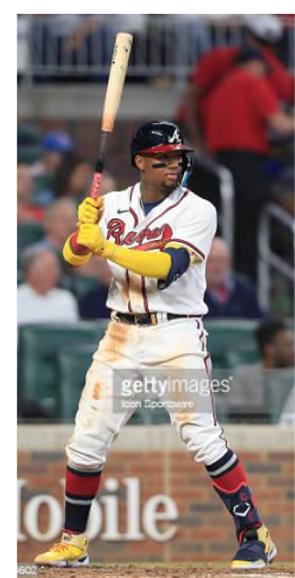
- Just be relaxed, can waggle the bat to stay loose (don't strangle the bat)
- **Weight should be 50/50 on both feet**
- **Have some pre pitch movement in your body to stay loose (don't stand there like a statue or else can't react quickly)**
- Keep stance perpendicular to pitcher (can start with a neutral or open position but never a closed stance)
- Feet wider than shoulder width, weight balanced on both feet and knees slightly bent (athletic position)
- Measure up the distance to edge of the plate by taking bat and slightly bending over to see if you can touch the outside part of the plate
- Your hands should be holding the bat somewhere between your neck and outer right shoulder (both hands past your right shoulder is probably too far)
 - Height wise your hands can be anywhere but I would aim for your upper hand to be no lower than your armpit and no higher than top of ear
 - Need space for your hands so aim for your hands to be along the toe line, not too far in front or too close to you
 - Make sure you have space between front elbow and body (don't pinch your front elbow to body)
- Back elbow up (between parallel to shoulder to 45 degrees down)
- Eyes looking at the pitcher



- Some hitters see the ball better with a slightly open stance like Manny but you have to straighten out towards the pitcher as you stride

Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

VARIOUS BATTING STANCES (no one right way)



Source: https://www.google.com/search?q=different+baseball+battting+stances&tbm=isch&ved=2ahUKEwjPrXh2i2EAxW8hu4BH5u0BSQQ2-cCegQIAAA&oq=different+baseball+battting+stances&gs_l=psy-ab_1p=EgNpbWclmRpZm2lcmVuqCBYXNymFbCBiYXR0aW5nIHNDYw5jZXNlBFQrgVjIhBwAHgAkAEAmAfkoAHVA6oBA2uMbgBAIgAPg8AYoCC2d3cy13aXozaW1wglFEAAYgATCAgYQABgHGB6BgE&client=img&ei=Ju92c-KLbyNur8Pq-ic0Ak&bih=874&biw=1927&client=firefox-b-1-d

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TIMING TRANSITION / LOAD

- You have to time your load to when you think the ball will enter the hitting zone (do this “timing up” on the on-deck circle); can be right after hand break, etc.
- Start load by gently shifting weight back onto INNER part of your back leg (not over the back leg) and lifting front leg towards back hip (leg kick can be small or big depending on how you like to time your pitches) and COILING into your back hip (do NOT rock back past your back foot or else you lose power and will have to lunge forward to get back to hitting position)
 - On the load, if you have a traditional stance, hands can start to point the knob towards the catcher
 - If you have your hands higher or lower, you'll typically move your hands into a more traditional position (knob pointing towards catcher)
- Feel like you're getting your weight onto the inside part of your back leg (do not rock or lean backwards)
 - Back left pocket will turn ever slightly towards the pitcher (feels like a little coil; belt buckle will point towards the catcher)
 - This is what they call “loading into the back leg”
- Keep your head mostly steady (your head can move back and forward a little, just NOT up and down)

- LOOK AT LOADING INTO THE BACK HIP AND HANDS CAN START TO POINT THE KNOB OF BAT TOWARDS CATCHER; BELT BUCKLE SLIGHTLY TURNED TO CATCHER



- Shoulders level

- Think about bringing front knee to back hip



Do not dip front shoulder down too much or it makes the bat tilt too far forward; kids tend to dip this front shoulder thinking it's giving them more power; STAY LEVEL

Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

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Mookie Betts Hand Loop on Load and Full Swing

Notice how hands come down and then loop back up to get to LAUNCH position



Sources: <https://www.youtube.com/watch?v=qXHeICaQG98>

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Loading into the back hip



Source: Instagram Castro_bros

<https://www.instagram.com/theultimateswing/p/DFbHCahSzcl/ohtani-loading-phasedifferent-strokes-for-different-folks-but-this-is-what-ohtan/>

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TIMING TRANSITION / STRIDE

- Do NOT lunge at the ball when you're striding forward (kids tend to lunge forward when you tell them to stride)
 - The head will move slightly forward BUT the head will stay level (not bobbing up and down)
- Take a long enough stride where you still feel balanced (*no exact stride length is best but shoot for length of your inseam up to 50% of height*)
- **As you stride, you will pull your right elbow back and slightly up which will contract your right back muscle (this will get the bat to tilt forward a bit)**
 - Depending on if your hands start higher or lower in your stance, when you pull your right elbow back your hands will move towards LAUNCH position
 - For example, if your hands start high like Trout, then your hands will come down as you pull your elbow back to get to launch position and vice versa if you're lower
 - **DO NOT just push hands directly back or bring hands diagonally up**
- Start to look at the pitching window/slot to see the baseball leave the pitcher's hand (do not follow the ball from the start of windup)
 - Start tracking the baseball and looking for what type of spin so you can guess the pitch
- ALWAYS STRIDE STRAIGHT TOWARDS THE PITCHER
 - If you start with an open stance, then you will have to stride slightly closed



- Hands walk away from the pitcher as you stride forward (does not have to be aggressive)
 - Shoulders level
 - Can slightly dip front shoulder but not too much
- Can kick the left heel out to control your stride a bit rather than just stepping and putting your foot on the ground



Pitching Window/Slot

- **KEEP YOUR STRIDE LENGTH CONSISTENT**

Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=qXHeICaQG98>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

BASEBALL SPIN RECOGNITION

- **The Four Seam Fastball**

- A solid reddish/brownish shade. Tighter spin. Typically is the pitch with the least amount of movement. Occasionally a pitcher with a three-quarters release or a left-handed pitch will have some natural movement on their four-seam fastball.

- **Two Seam Fastball**

- Slight horizontal, looser spin with a lighter shade. The Pitch cuts towards the pitcher's throwing side.
- The movement is similar to a left-handed four-seam or a three-quarters release.

- **The Curveball**

- A Light shade. The Pitch pops out of pitcher's hands at the release point. Occasionally breaks 12 to 6 o'clock. Occasionally, you can also pick up the curveball from the angle of the wrist.
- The wrist will seem wider as the pitcher's fingers are placed on the side of the ball.
- A beginner's curveball will occasionally have the index finger up and off the ball.

- **The Slider**

- A darker shade than a breaking ball. Resembles the fastball
- The slider breaks toward the pitcher's glove side. There's also a "red dot" at two o'clock.

- **The Changeup**

- The lightest shade of all the pitches. An off-white tint. The spin direction is the opposite of the breaking ball. When thrown right, the pitch seems to "drop off the table."

PITCH SPIN, PLANE & BREAK TYPES

HOW WELL DO YOU SEE THE BALL?

Pitch Type	Spin Description	Shade Description	Movement Description
FOUR SEAM FASTBALL	A SOLID REDDISH/BROWNISH SHADE. TIGHTER SPIN.	REDDISH/BROWNISH SHADE	LEAST AMOUNT OF MOVEMENT
TWO SEAM FASTBALL	SLIGHT HORIZONTAL LOOSER SPIN. LIGHTER SHADE.	LIGHTER SHADE	SLIGHT HORIZONTAL CUT
CURVEBALL	LIGHT SHADE. PITCH POPS OUT AT RELEASE POINT. VERTICLE SPIN.	LIGHT SHADE	12 TO 6 O'CLOCK BREAK
SLIDER	OCCASIONALLY BREAKS 12 TO 6 O'CLOCK.	DARKER SHADE	TOWARD PITCHER'S GLOVE SIDE
CHANGEUP	BREAKS TOWARD PITCHER'S GLOVE SIDE. RED DOT AT TWO O'CLOCK.	LIGHTEST SHADE	OPPOSITE OF BREAKING BALLS. DROPS OFF THE TABLE

APPLIEDVISIONBASEBALL.COM

Source: <https://appliedvisionbaseball.com/reading-spin-movement-for-better-pitch-recognition/>

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HITTING POSITION / "LAUNCH" POSITION

- This is what they refer to as being coiled up like a rubber band and ready to explode into the baseball
 - Hands are back and front BALL of left foot has touched
 - Notice belt buckle still pointed at catcher
- Land gently on the BALL of your front foot slightly open WHILE KEEPING YOUR FRONT HIP CLOSED
 - Also keeps your front hip from firing too quickly
 - Landing with your front foot slightly open allows for you to launch your hips more easily
- **Keep shoulders and hips closed at foot touch**
 - Do not open your hips prior to foot touch or else will drop your hands and slice across the ball
- The head will move slightly forward BUT the head will stay level (not bobbing up and down)



- Shoulders level
- Don't dip this front shoulder!

Notice belt buckle still pointed at catcher

Land gently on ball of foot to control your hips



Hands should be as high at launch position as you can comfortable hit a high strike

Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=qXHeiCaQG98>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

LAUNCH POSITION



It does NOT matter where your hands start at the beginning of your but all hitters get into a good launch position!

Source: <https://coachtraub.com/smilenowcoach/topics/motivation/55-baseball-softball-launch-position-for-hitters>

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ROTATION (STARTING SWING) – FIRST MOVE

- Key move here is how they START their swing from launch position, you need to start by DROPPING your left heel and firing the BACK hip to the ball
 - BACK right hip starts to turn lower body and drive towards the pitcher (do not fire the back hip too quickly though)
 - Then the triangle that's formed by your arms move together by pulling your lead arm and top hand together (more detail on next slide)
- The back hip initiates the swing but everything fires almost at the same time (you don't want to be disconnected with the hips firing and the arms dragging too far behind)
 - Kids also tend to fire the left shoulder open at the beginning of their swing thinking they're swinging hard but they're just really slicing across the ball and dragging the bat head through the hitting zone
- Your right knee will drive and turn into your left knee as your hips turn
 - Let your right foot turn naturally and roll up on front inside of right foot but you do NOT “squish” the bug (some kids think squishing the bug just means twisting their right foot and staying back but that doesn't generate any power)
- Notice how steady the head position is
 - Head will not move from this position, DO NOT TILT BACKWARDS

Don't dump this back elbow as your first move, leads to a pushy swing



BACK right hip starts the turn and drives towards the pitcher

Do not dip this back shoulder thinking you're going to get more launch angle

- Shoulders level
- Don't dip the front shoulder!

When left heel drops, then back hip and swing start to turn!



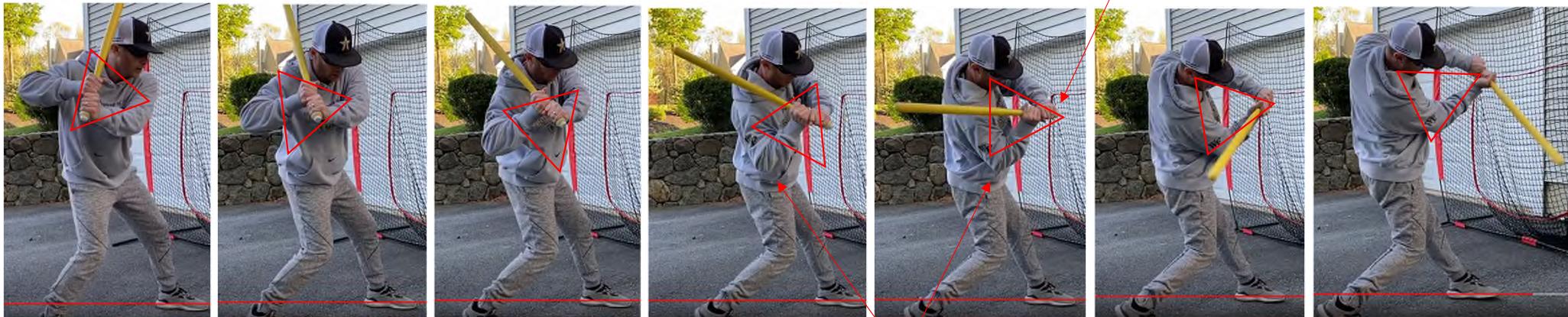
Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
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Initial transition from load to hitting zone

- As the back hip turns, the triangle starts moving
 - DO NOT DROP YOUR HANDS
 - DO NOT COLLAPSE THE BACK ELBOW INTO YOUR SIDE
 - Do not chop down on the ball; let the barrel turn deep to get inside the ball
- Keep the triangle moving by pulling lead arm and driving towards ball with top hand
 - Head stays still
 - Notice knob of the bat going towards the ball but does NOT mean swing down on the ball
 - Weight stays back (not lunging forward)
 - Notice the elbow never shoots forward (this causes bat drag)
 - **Hands continue down the line so as not to open up too quickly and slice across the ball**
- At impact hands are palm up and palm down and NOT rolling over
- Lead shoulder will be higher than back shoulder as your swing through the hitting zone

Knob of the bat at the ball and hands going down the line



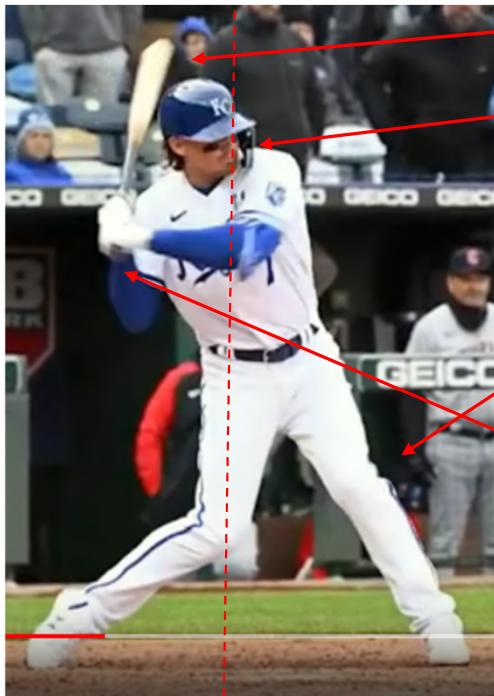
Notice elbow is not shooting forward (if shoots forward, creates bat drag)

Source: <https://www.youtube.com/watch?v=CA5Rom9d5yM>

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ROTATION (INITIATE BY BRINGING THE KNOB OF THE BAT TO THE BALL)

- Back hip continues to drive towards pitcher and open up; the shoulders and arms naturally uncoil with the hips (everything turns after back hip fires, not step by step)
- Right knee continues to drive and turn into left knee and back foot continues to come up
- **Back foot, notice how it's kind of rolling on the big toe, you do not need to turn onto your toes too quickly (do NOT squash the bug)**
- When starting rotation, initially get the knob of the bat to the ball but does not mean swing down on the ball (want to get on a good bat path)
- DO NOT DROP THE BAT HEAD (lots of kids do that thinking they're getting the bat on plane with the ball but they lose quickness to the ball and power)
 - Keep shoulders level, do NOT dip the back shoulder
- Elbow also does NOT need to stay tucked against the side of the body like the golf swing (leads to bat drag)
 - Kids like to fire their right elbow forward which also causes bat drag and a pushy swing



Bat shallows out and allows you to rotate into the ball

Notice how steady the head position is

- Left knee is still bent a little and not totally straight
- Do not think you need to straighten your left leg immediately on the swing or else will cause you to cast

The knob follows the back knee, don't let one or the other out race the other



Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

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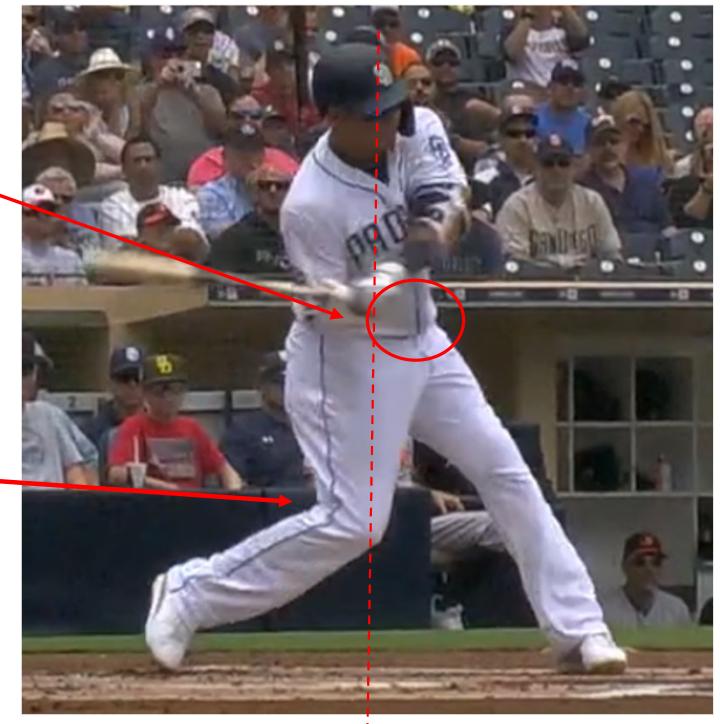
ROTATION (BRINGING BAT INTO THE HITTING ZONE)

- Back hip continues to open towards pitcher
- Back foot pretty much on toes now because of the almost full hip turn
 - Full rotation so much so that back foot is on the toes
- Knob of the bat at this point is pointing at the ball
- **Hands are firing down the line but don't push them (pretend your hands follow the line of the batters box)**
- Notice how steady the head position is
 - KEEP THE HEAD DOWN, DON'T PULL OFF THE BALL

Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>



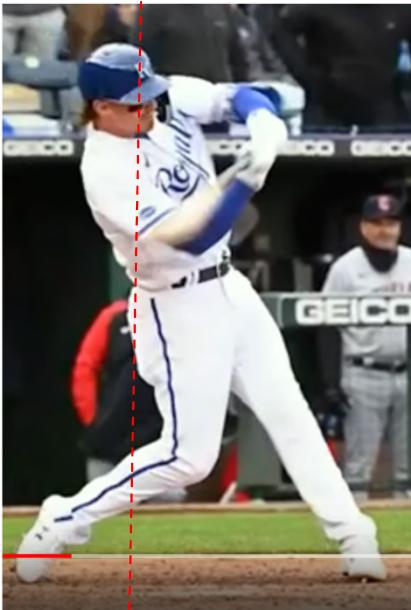
Turn the belly button to the ball, can't dip if turn belly button to the ball



Shoot for some bend in your back knee as your right knee drives forward

ROTATION (PRIOR TO CONTACT)

- Bat head releases as the ball enters the hitting zone
- Right palm up and left palm down
- **Hands continue down the line; pretend your hands follow the line of the batters box (don't want to pull off the line and slice across)**
- Keep good bat path and keep the bat in the zone for as long as possible
- Weight is balanced and not falling side to side
 - Left knee is straight now (this is what it means to swing on a firm left side) and back foot on toes
- Notice how steady the head position is
- Could draw a straight line through their heads as they're rotating through the hitting zone



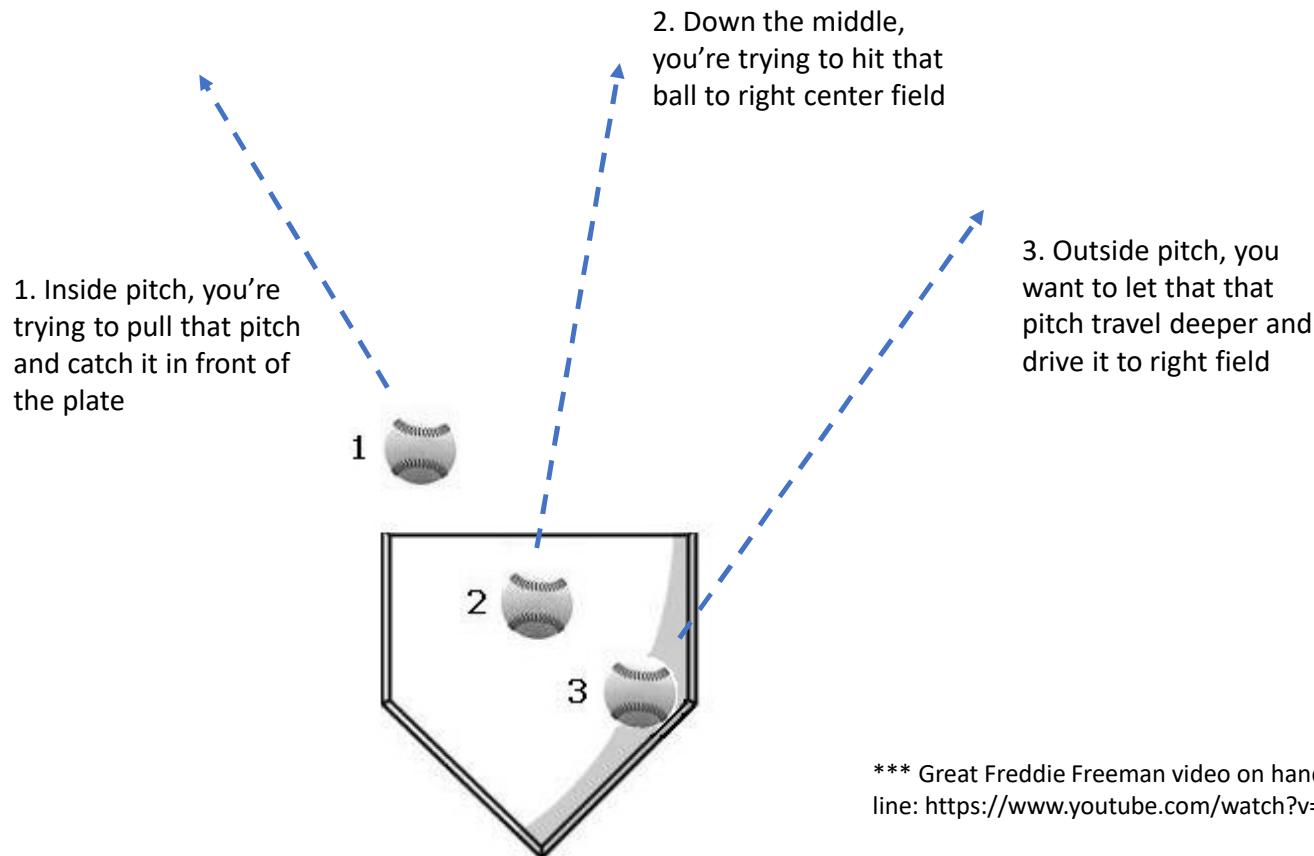
*** Great Freddie Freeman video on hands down the line: <https://www.youtube.com/watch?v=VBGjLcNTbLw>

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Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

PITCH SELECTION

- Below you have an inside pitch, down the middle and outside pitch to a right handed batter
- Do not change your swing



Source: <https://www.beabetterhitter.com/go-with-the-pitch-every-pitch/>

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CONTACT

- Right palm up and left palm down
- Center of mass is behind your front leg
 - Your right foot can come off the ground if you're generating enough force
- Notice how steady the head position is
- Could draw a straight line through their heads as they're rotating through the hitting zone



Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>

<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

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EXTENSION

- Do not roll your hands over at extension but rather try to think about shaking hands with the pitcher as long as possible
 - This lets the bat stay in the hitting zone longer and creates more launch angle)
- Notice how steady the head position is



Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

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EXTENSION - CONTINUATION

- Notice how the right hand hasn't completely rolled over the left hand
- Still balanced
- Extend the barrel (Machado really extends the barrel)
- Notice how steady the head position is
- So much power is released that the front foot has rolled onto its side
- Also notice the swing and barrel is going slightly up and not just a flat swing around shoulders



Notice there is
still bend in the
back knee



Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

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EXTENSION – FINISHED FOLLOW THROUGH

- Bat just continues to travel naturally after unleashing all that stored energy
- Can either finish with 2 hands or let go of your right hand
- Finish above the lead shoulder

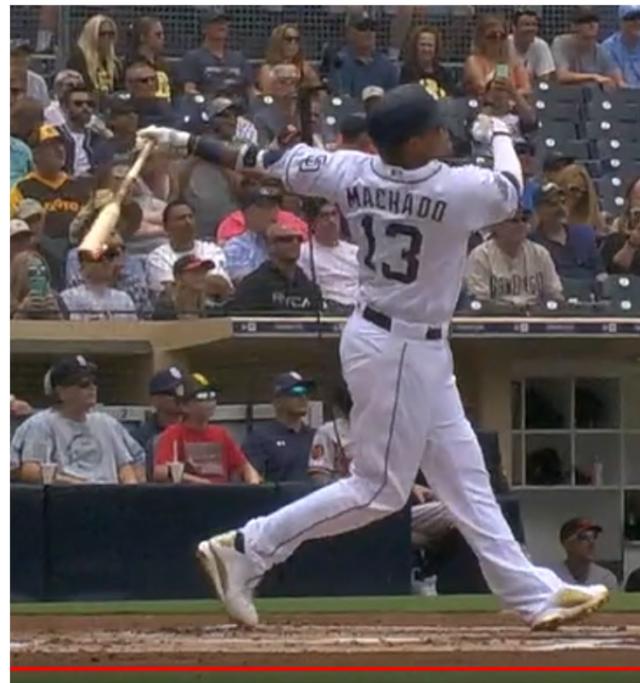


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EXTENSION – FINISH

- Doesn't really matter how you finish
- NEVER fall backwards, that means your balance is really bad and you're probably spinning out
- You can fall forward towards the plate 1 step with your back foot but not more than that or else you're probably out of control



Sources: <https://www.youtube.com/watch?v=GbTSgebTrzg>
<https://www.youtube.com/watch?v=pPWpZ3nPcQo>

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Throwing batting practice

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Batting Practice Routine at batting cage

- Stretch
- Tee Work
 - Trying to drive the ball to the back of the cage when tee in center
 - Set tee to outside of plate to work on hitting to right side of net
 - High tee work to keep level swing and staying on top of the ball
- Soft toss from 12-15 feet
- Live throwing from 24 feet and L screen

Conversion for Speed and Distance



EQUATION

Longer Distance (feet) ÷ Shorter Distance (feet) × MPH

For the longer distance, enter the typical mound to plate distance. For example, enter [60.5 feet for a field that follows MLB guidelines](#). Next, the shorter distance (also in feet) represents the distance from the pitching machine to the plate. Lastly, multiply by the miles per hour (MPH) of the pitch.

EXAMPLE

A pitching machine is set at 70 mph. When the machine is placed 60 feet from home plate, the pitch appears to be traveling at 70 mph (it's actual speed) when it reaches the player. Now if the machine is moved half the distance home, so 30 feet away, the same pitch appears to travel at 140 mph.

So, in the example above, the longer distance is 60 feet and the shorter distance is 30 feet. The MPH is 70. When we plug those numbers into the equations, we get:

$$(60 \div 30) \times 70 \text{ MPH} = 2 \times 70 \text{ MPH} = 140 \text{ MPH}$$



Calculation for batting cage

Conversion for Pitching Speed and Distance

(in feet)	Pitching Distance	Base Distance
Little League	46	60
11 and 12U	50	70
13 and 14U	54	80
15U and up	60	90

Current Pitching Distance (in ft) **50**
 Soft Toss (in ft) **20**
 Live BP (in ft) **24**

Distance from Hitter (in ft)	Speed to Hitter (in mph)								
	15	20	25	30	35	40	45	50	
12	62.5	83.3	104.2	125.0	145.8	166.7	187.5	208.3	
15	50.0	66.7	83.3	100.0	116.7	133.3	150.0	166.7	
18	41.7	55.6	69.4	83.3	97.2	111.1	125.0	138.9	
21	35.7	47.6	59.5	71.4	83.3	95.2	107.1	119.0	
24	31.3	41.7	52.1	62.5	72.9	83.3	93.8	104.2	
27	27.8	37.0	46.3	55.6	64.8	74.1	83.3	92.6	
30	25.0	33.3	41.7	50.0	58.3	66.7	75.0	83.3	
33	22.7	30.3	37.9	45.5	53.0	60.6	68.2	75.8	
36	20.8	27.8	34.7	41.7	48.6	55.6	62.5	69.4	
39	19.2	25.6	32.1	38.5	44.9	51.3	57.7	64.1	
42	17.9	23.8	29.8	35.7	41.7	47.6	53.6	59.5	