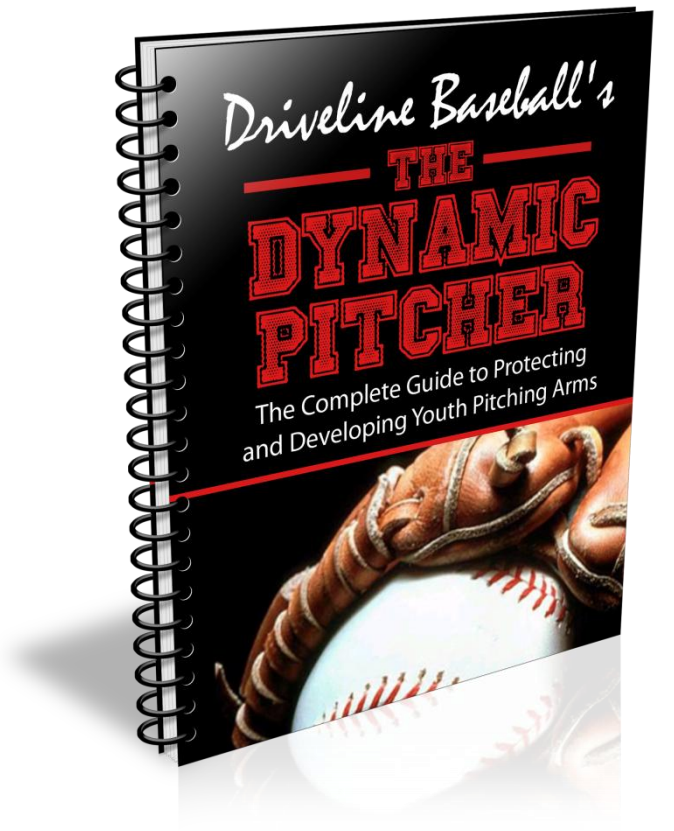

The Complete Guide to Protecting and Developing Youth Pitching Arms

Kyle Boddy – Owner of Driveline Baseball

The Dynamic Pitcher

Always consult your physician before beginning any exercise program. This general information is not intended to diagnose any medical condition or to replace your healthcare professional. Consult with your healthcare professional to design an appropriate exercise prescription. If you experience any pain or difficulty with these exercises, stop and consult your healthcare provider.

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Acknowledgements

It's pointless to try and appropriately thank everyone who has helped me make this project a reality (since I will undoubtedly fail), but I'll give it my best effort nonetheless.

The following individuals have significantly influenced my thinking on training athletes in one way or another – in no particular order, I must stress: Ron Wolforth, Bill Peterson, Eric Cressey, Mark Rippetoe, Alan Jaeger, Brent Strom, Dr. Mike Marshall, Lyle McDonald, Trevor Bauer, Mike Reinold, Dan John, Paul Nyman, Andy Lodato, Jim Wagner, Trip Somers, and so many others I'm sure I am forgetting.

Without the genius of Dr. Jesus Dapena and Michael Feltner, biomechanical video analysis techniques would never have been possible. Special considerations go to Richard Betzel, who studied under Dr. Dapena and walked me through many sleepless nights in the lab.

If it weren't for the incredibly strong devotion from my first clients who stood by my side through thick and thin, I would have quit long ago. Thank you, Eli Mathieu and Jack Scheideman. Additionally, I am indebted to Jim and Laura Mathieu for always supporting my vision.

Without the undying support from Herb Good, our facility would never have gotten off the ground. He deserves his own line in this chapter.

And, of course, thanks to all the athletes who volunteered to be in this book as models. Lookin' good, gentlemen.

Special Thanks

My wife – **Astrid Gielen** – deserves more than a chapter, and probably more than a full book to describe her influence on my life and her partially insane support of my pursuit of developing baseball pitchers. She supported my desire to quit the very lucrative world of software development in order to chase the not-very-lucrative dream of working in baseball, not once complaining about the reduction of disposable income, the complete eradication of free time that I had, and my temperament waxing and waning depending on how often I let ignorant coaches rent space in my mind.

I have no idea why she stuck with me throughout this whole ordeal – fully knowing that I'll never cure myself of chasing my version of Captain Ahab's white whale – but I'm an incredibly lucky man, a trait she won't let me forget.

I also owe quite a debt to my parents – **Brian and Lori Boddy** – who quickly realized they had a stubborn child for a son (through no fault of their own, mind you) and encouraged me to always pursue my goals, even if they didn't always agree with them.

If there's one thing I've learned from my father's examples, it's that a strong work ethic can and often does trump a lucky starting place in life.

Preface

This book is the result of years and years of research and experimentation. At Driveline Baseball, we've kept up on the most current research available from various biomechanics and youth research labs in the country. However, we've taken it a step further by building our own biomechanics lab with six high-speed video cameras. We've shot thousands of hours of high-speed film to analyze the pitching delivery as well as the training methods that apply to youth pitchers.

We have developed **The Dynamic Pitcher** manual for the express purpose of keeping youth arms safe, healthy, and active.

We hope that you find the material in this book interesting, useful, and most importantly, actionable.

Kyle Boddy
Owner of Driveline Baseball, Inc.

Introduction

It's time to face facts: Injuries to youth pitching arms are rising every year, despite well-intentioned concepts like more static stretching, less static stretching, more dynamic warm-ups, less dynamic warm-ups, more long toss, less long toss… you get the idea. As a former Little League and Pony Baseball coach – and current coach of many youth, high school, college, and pro pitchers – it killed me to see injuries piling up, especially since I suffered an injury to my pitching shoulder and couldn't get straight answers. So I decided to do something about it and started reading research papers (over 70 by my last count) and textbooks on anatomy, kinesiology, and biomechanics (over 20 sitting on my shelf as I type this) and found out that despite all this information, we still don't have a good idea on how to actually train youth athletes!

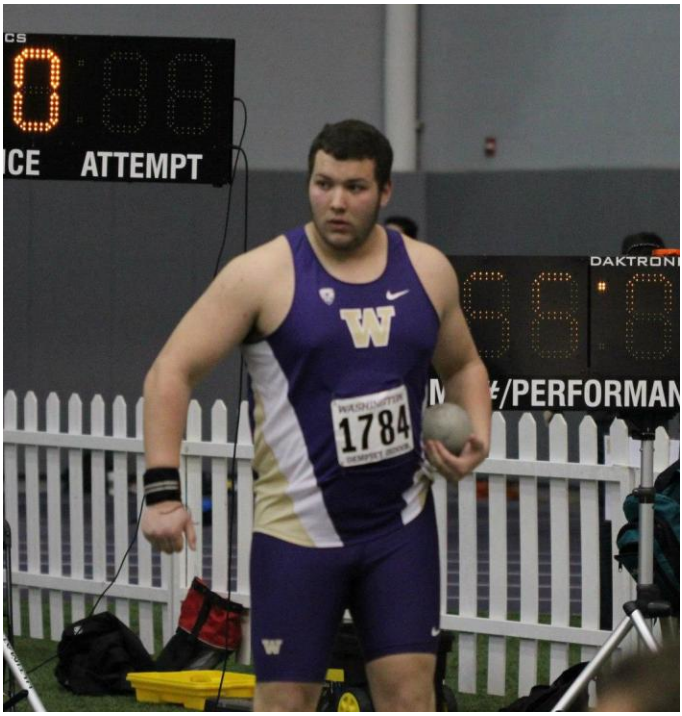
Me, wrapping my aching arm in an ice sleeve in 2007.

So I did what any well-intentioned youth baseball coach would do – I bought four high-speed cameras and set up shop in a warehouse in Seattle to analyze the pitching delivery from the ground up.

OK, maybe not everyone would do that, but I figured if I wanted to get some answers, I needed to do my own research and experimentation. I tested out various types of training on myself, and despite having a partially torn rotator cuff; I threw a career

high in innings with 120 in a season – with no pain, and no fatigue. In fact, I got stronger as the season went on!

"Huh. Maybe there's something to this," I thought. I enlisted a few youth clients to train under a similar program and we set to work. I'm happy to say that all of my initial clients went on to have completely healthy and effective arms, and two of the five initial group are playing college baseball while a third is throwing the shot put at a major Division-I school.



Jack - proving rotation is rotation regardless of sport!

Over time, we figured out what worked and what didn't by meticulous planning and trial by error. We tested all sorts of equipment and methods until we settled on the golden standard that we'll never get rid of – and those are:

- Resistance Bands
- Weighted Baseballs
- Wrist Weights
- Sand-Filled Plyometric Balls
- Elbow Buddy / Shoulder Tube / Total Bar

In fact, we thought so much of those products that we ended up manufacturing our own line of products to ensure the highest quality and the perfect design. The only product that does not appear in this book are weighted baseballs, as these are for high school and older athletes only.

This book will show you how to get the most out of those pieces of equipment, introduce a safe and effective year-round throwing program, and how to maintain pitching arm strength in the off-season without pitching at all.

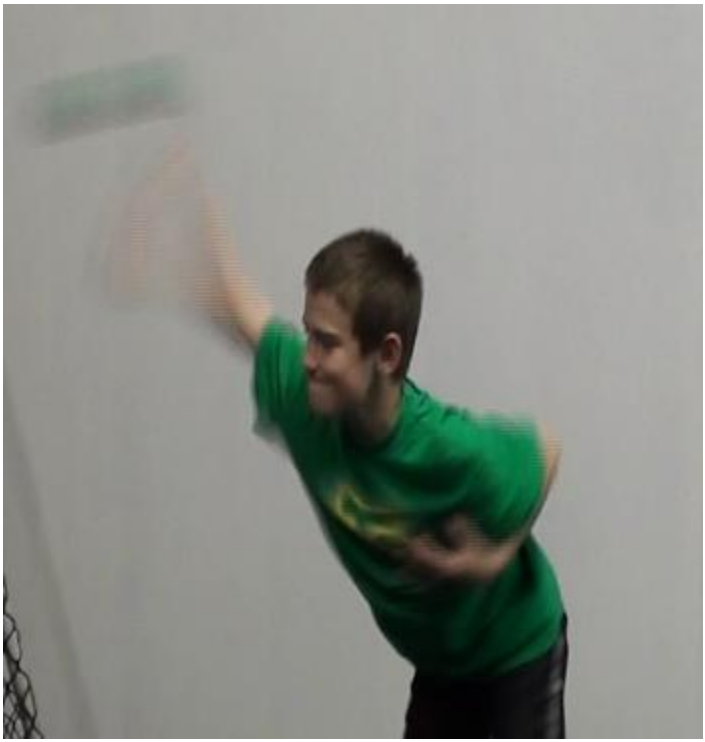
The only pieces of equipment that are absolutely mandatory to complete this program are the resistance bands and the wrist weights, however, we **highly recommend** picking up at least a set of sand-filled balls to go with them.

The **Dynamic Pitcher** manual talks a lot about warm-ups, and the truth is that most of these exercises are done every day by our college and professional pitchers. They scale perfectly to all skill levels and ages, which makes them a great addition to any training program. However, for youth athletes, doing all of the work prior to a practice or a game may be a bit much, so we encourage you to experiment and see what works for you and your athletes. By cycling some of the exercises in and out of warm-ups, in-practice drills, and post-practice cool-downs, I think you'll see the greatest benefit. We'll recommend our cycles, but ultimately you have to make it work for your pitchers!

How We Approach the Problem

All of the throwing-specific exercises (wrist weight throws, sand-filled ball throws) were designed to help gently reorganize the mechanical patterns of athletes

and nudge them in the right direction in terms of throwing harder with less chance of injury. We don't believe that an ideal mechanical model of pitching exists, and that drills where the arms are positioned in static poses and manually instructed to go through ranges of motions haven't been shown to be effective in our experience.

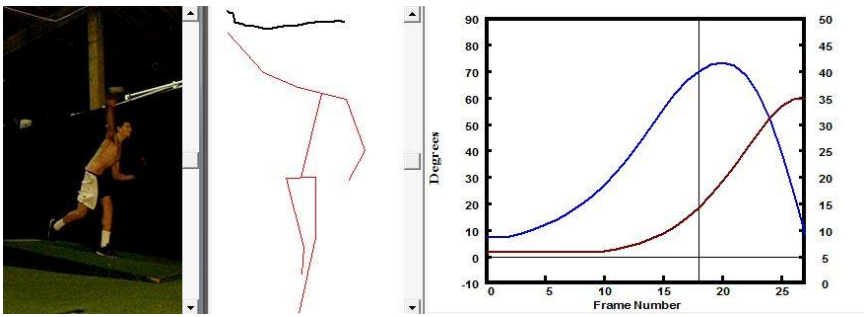


Teach by feel, not by lecture.

Athletes tend to learn best when they can internalize the motor patterns without being specifically instructed on what they are looking to

achieve. By giving them an implement that is unfamiliar to them, it helps them get outside their standard mechanical model and allows them to focus on the training exercise at hand. Over time, this training effect not only gives the athlete a good physiological stimulus that will help protect the arm and make him a more durable and efficient pitcher, but will also help to guide his mechanics along the path that will produce the most force with a lowered chance of injury.

As such, many of the exercises and movements in the book are totally foreign and new to most of the readers! We have designed the exercises and tested them in our Driveline Biomechanics Laboratory with multiple high-speed cameras that accurately capture what's really happening in a three-dimensional movement like the baseball throw. We also used wearable computers to measure angular velocities and positions of the arm during various exercises and throws with different types of balls – for example, the same sand-filled balls that are recommended for use in this program!



By using this data, we were able to actually evaluate what forces we saw on the body when it comes to our training techniques. As far as we know, no other coach out there goes to those kinds of lengths to design a proper training protocol for their athletes!

We do not subscribe to "common wisdom" or typical drills that you'll find by local or national coaches. Our approach is highly scientific and we are constantly questioning and improving our process. We openly encourage our athletes – and you! – to send in your questions, concerns, and comments about our methods. Many times, we have investigated and followed-up on feedback from our clients and changed parts of our training methods to better accommodate the end goals.

Athletes must learn how to properly throw a baseball before they need to worry about pitching a baseball, and as such, all the throwing exercises in this book are meant to be done off flat ground into a net with no specific target. Improving the "feel" of how an exercise or throw is properly done is one of the best ways to improve command and control of the baseball once the athlete gets on the mound. Over-stressing the control portion of the throw leads to anxiety and makes the athlete "push" the baseball, which leads to decreased velocity output and significantly stunts the chances of future growth. It's important to look at baseball player development from the long run viewpoint – is the goal to have a

nine year old throw lots of strikes in Little League, or is the goal to ensure that the young athlete continues his love for the game, love for training, and stays healthy with a high chance of throwing hard later in life?

Build ability before skill.

Additionally, we expect all exercises to be done with low to medium effort the first few times through, but once mastery is gained, we encourage all athletes to go at full speed. Once you get on the diamond and actually compete, everything will be firing at maximum output, so training in such a way

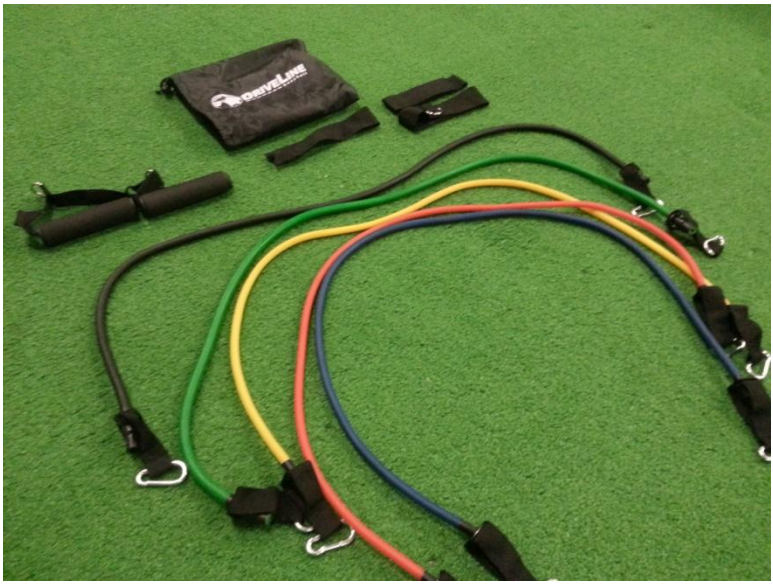
that does not accommodate for this very basic (and obvious) fact will reduce effective athletic carryover. We must train with the same intensity we want to compete at!

This book is not meant to be an exhaustive analysis of all of the techniques, though quite a bit of detail is included! For more information on deeper research, analyses, and thoughts, please check out our blog at **drivelinebaseball.com** which is updated frequently and always free!

Chapter One
Equipment

This chapter will be short and exists to describe the equipment we use in **The Dynamic Pitcher** manual as well as where you can purchase the equipment.

Resistance Bands: We recommend you purchase the Driveline Baseball Velocity Bands, which come with both D-Handle and Wrist Cuff attachments, a door anchor for indoor use, and five different tensile strengths to accommodate athletes of all skill levels and ages.



Wrist Weights: We recommend wrist weights that are 5 pounds per hand (so 10 lb sets). The manufacturers always change, but look for them from Valeo, Altus, or Oates' Specialties.

Connection Ball: We recommend the TAP Connection Ball available from Oates' Specialties. In a pinch, however, you can use a beach ball or other inflatable ball that adequately spaces the pitching arm away from the body and is durable enough not to rupture during throwing.

Sand-Filled Plyometric Balls: We recommend Oates' Specialties Sand-Filled Weighted Ball - Extreme Duty Set. Purchasing the entire set of six sand-filled plyometric balls is likely to be the most cost-effective options, however in this manual, only the 14 oz. (yellow), 21 oz. (blue), and 32 oz. (green) are used.

Elbow Buddy / Shoulder Tube / Total Bar: The Elbow Buddy and Shoulder Tube are exclusive to Oates' Specialties. The Shoulder Tube is meant for athletes who are 14+ years of age and is a bit too large for youth pitchers to effectively use. If you want to incorporate rhythmic stabilization and dynamic balance methods that are outlined in this manual, we highly recommend buying the Elbow Buddy.

Total Bar: The Fitryo Total Bar is a good alternative to the Shoulder Tube or Elbow Buddy – though it's a bit stiffer, it is slightly smaller and quite a bit less expensive.

Advanced Command Trainer: The Oates' Specialties Advanced Command Trainer is an excellent piece of equipment that we use to build command and control skill in our athletes. It is the size of a small strike zone and covered in leather, which rings out a very satisfying sound when struck by baseballs.

All of these products and updated links to them are also available on **The Dynamic Pitcher** membership site under "Equipment."

Chapter Two
Dynamic Warm-Up and Mobility Drills

Warming up for pitching seems like a simple enough task, but in reality, it's pretty complex. We spend a long time at the Driveline Baseball facility training athletes how to properly warm-up, and our high school, college, and pro pitchers take 30+ minutes per day to adequately warm-up before they even touch a baseball! While that's a bit extreme for youth athletes, the idea is all the same – if the warm-up isn't done properly, the rest of the practice, workout, or game will suffer.

A good dynamic warm-up will:

- Promote good blood flow and raise core temperature of the athlete
- Mobilize areas of the body where the end range of movement will be taxed
- Help stabilize areas of the body where athletes will push off or experience rapid changes of direction
- Be fast, simple, and easy to repeat over time
- Not have wasted movements for the sake of activity

- Not use static stretching where it's not needed

This chapter will cover the dynamic warm-up drills and mobility drills that we think are useful in a pre-game or pre-practice setting. Note that it does combine both dynamic movements as well as static movements, as both have a place in a proper warm-up for youth athletes. Research suggests that simply doing static stretching – or static stretching the wrong muscle groups – can cause a drastic decrease in power output. (*The acute effects of combined static and dynamic stretch protocols on fifty-meter sprint performance in track-and-field athletes: JSCR, Fletcher 2007*)

A common hamstring stretch – not advised!

Research also indicates that static stretching the wrong muscle groups does not decrease muscle soreness and/or risk of injury in athletes. (*Effects of stretching before and after exercising on muscle soreness and risk of injury: systematic review: BMJ, Herbert 2002*)

With that in mind, let's get to some effective dynamic and static stretches that we like!

High Knees

High knees are done with a moderate pace across a field or gym floor. Bring the knee up to the chest while lightly jogging across the target area.

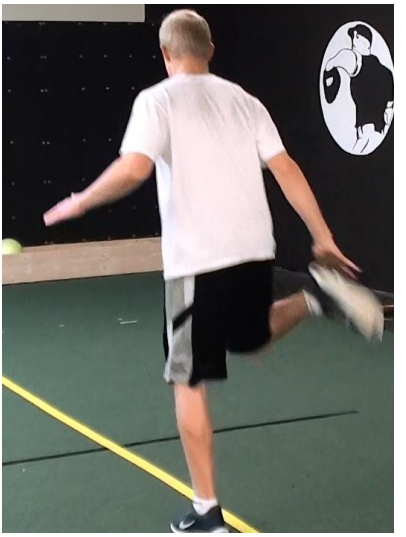
- **Movement Type:** Dynamic
- **Target Area:** Lower Half, Legs

Butt Kicks


Butt kicks are done with a moderate pace across a field or gym floor. The athlete should try to kick himself in the behind with his heels while jogging across the target area.

- **Movement Type:** Dynamic
- **Target Area:** Lower Half, Legs

Side Foot Touches



Side foot touches are done with a moderate pace across a field or gym floor. Rotate the leg while jogging while touching the outside of the foot.

- **Movement Type:** Dynamic
- **Target Area:** Lower Half, Hips

Lateral Leg Swings


Lateral leg swings are done while the athlete braces against a fence or wall. Swing the leg laterally across the body and away from the body to a comfortable height, slowly increasing the distance traveled throughout the set.

- **Movement Type:** Dynamic
- **Target Area:** Lower Half, Hips

Cradle Walks


High knees are done with a slow pace across a field or gym floor. Rotate the hip by driving the knee away from the body and bringing the foot closer to the body and getting a stretch in the hips.

- **Movement Type:** Dynamic
- **Target Area:** Lower Half, Hips

Ichiro Stretch

Named after the famous Japanese outfielder, the Ichiro Stretch is done in a stationary position while squatting down. Get into a squatting position while pushing the knees away from the body. Get as low as possible while keeping the heels on the ground.

- **Movement Type:** Static
- **Target Area:** Lower Half, Hips

Cobra Poses

Cobra Poses are done while laying in a prone position. Do a half push-up with the back in extension and hold the top pose for a few seconds before returning to the starting position.

- **Movement Type:** Dynamic + Static
- **Target Area:** Core, Back

Arm Swing Circles

Arm Swing Circles are done while standing stationary. Swing the arms in wide circles going forward, then reverse direction and use wide circles rotating backwards.

- **Movement Type:** Dynamic
- **Target Area:** Upper Half, Shoulders

Arm Swing Goalposts


Arm Swing Goalposts are done while standing stationary. Bend the elbows to 90 degrees with the palms facing away from the body, then rotate the arm internally and externally – it will look like the athlete is getting into a "goalpost" position and an inverted "goalpost" position. The transition should be smooth and without a significant bounce.

- **Movement Type:** Dynamic
- **Target Area:** Upper Half, Shoulders

Forearm Flexor Stretch

The Forearm Flexor Stretch is done while standing stationary. Raise the arm level with the shoulders with the palm facing skyward. With the other arm, pull the fingers downwards and the elbow into extension. Hold the end range of motion position.

- **Movement Type:** Static
- **Target Area:** Upper Half, Elbow

Chapter Three
Resistance Band Exercises

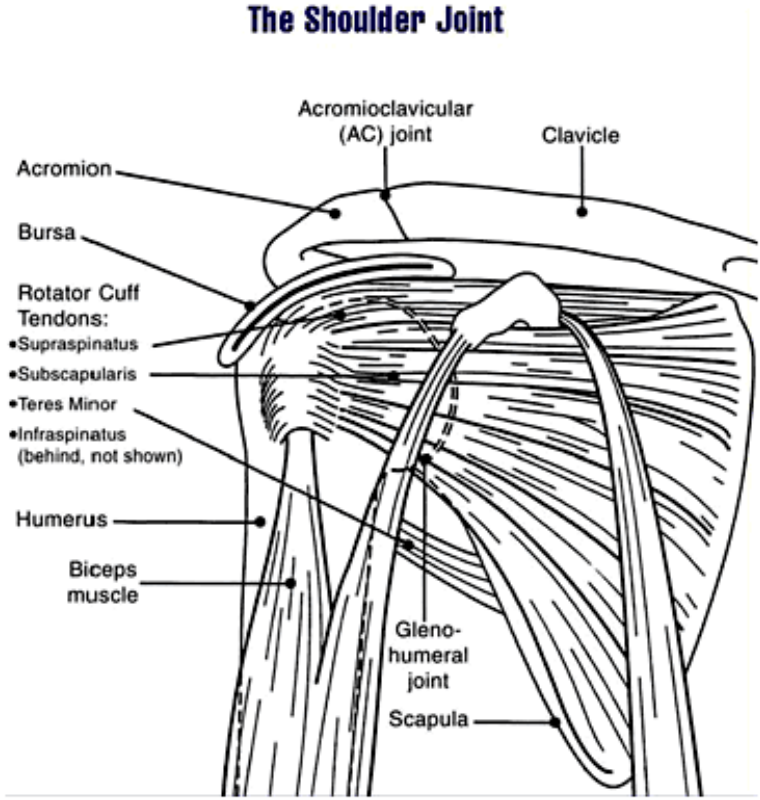
Resistance bands have been in use for years in baseball - you see them in use on TV by college and professional pitchers alike. However, there's a ton of misinformation out there on the use of resistance bands. There are sites and books that recommend using resistance bands to exhaustion; that their main use is to help target the small rotator cuff muscles and build endurance in the surrounding structure. In this chapter, we'll go over a bit of functional anatomy and discuss why these good-natured concepts are not only wrong, but possibly harmful to the youth pitcher.

The Rotator Cuff

The rotator cuff is a group of muscles and tendons that exists to help stabilize the shoulder. The humerus is the bone of the upper arm and it sits in the glenoid fossa of the scapula (shoulder blade). You can think of it like a mortar and pestle combination, or a golf ball (head of the humerus) and golf tee (glenoid fossa).

While the arm is moving in various directions, the rotator cuff muscles are compressing the humeral head and helps keep the bone from dislocating and

causing inefficient movement patterns as well as injury. However, the muscles that make up the rotator cuff are not very large.



A detailed look at the shoulder joint

The muscles of the rotator cuff and their functions are:

- **Supraspinatus**: Abducts the arm (moves arm away from body)

- **Infraspinatus**: Externally rotates the arm (cocking position)
- **Teres Minor**: Externally rotates the arm (cocking position)
- **Subscapularis**: Internally rotates the humerus (throwing the ball)

When people think about "strengthening" the rotator cuff, the idea that comes to mind is the concept of getting the muscles to become larger and to contract harder. However, the cross-section of the rotator cuff is actually quite small. Additionally, research shows that lots of direct rotator cuff work done to fatigue causes the humeral head to migrate and cause further impingement in the shoulder – which is exactly what we're trying to avoid! (*Superior humeral head migration occurs after a protocol designed to fatigue the rotator cuff: A radiographic analysis. JSES: Chopp 2010)*

A proper strategy to strengthen, activate, and train the rotator cuff muscles includes resistance band work that helps to train the proper movement patterns we want to see in the throwing athlete without driving them to fatigue. A good resistance band circuit gets bloodflow to the area about to be used, turns on the stabilizing muscles, and gets everything ready to fire properly when throwing a baseball!

External Rotations

External Rotations are done with the elbows up at shoulder height with the band anchored to a fence or a wall. Externally rotate the arm to 90 degrees and return it to the resting position in a controlled manner.

Internal Rotations

Internal Rotations are done with the elbows up at shoulder height with the band anchored to a fence or a wall. Internally rotate the arm to 90 degrees and return it to the resting position in a controlled manner.

Scap Pullbacks

Scap Pullbacks are done while facing a wall or fence where the bands are anchored. With the palms facing downwards (pronated), pull the bands toward you and the elbows behind the shoulder line.

Reverse Flys

Reverse Flys are done while facing a wall or fence where the bands are anchored. With the palms facing inwards and the thumb up (neutral), spread your arms away from your chest.

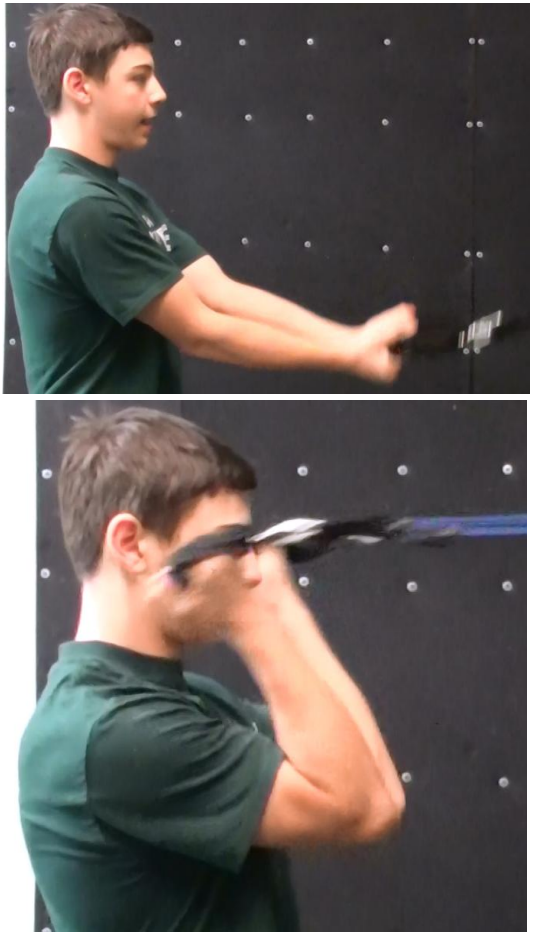
Forward Flys

Reverse Flys are done while facing away from a wall or fence where the bands are anchored. With the palms facing inwards and the thumb up (neutral), pull the bands out front while keeping the elbow locked in extension.

Reverse Scap Pullapart

Reverse Scap Pullaparts are done standing in a stationary position with the bands held in the hands over the head. Pull the band down and back across the top of your upper back. Think about driving the elbows down and tucking them back.

Bicep Curls



Bicep Curls are done with the arms up at shoulder height with the band anchored to a fence or a wall. With the elbow in full extension and facing the wall/fence, flex the elbow and curl the bands towards your face.

Tricep Extensions

Tricep Extensions are done with the elbows up at shoulder height with the band anchored to a fence or a wall. With the elbow in full flexion and facing away from the wall/fence, extend the elbow and drive the bands away from your face. Remember – have the palms facing inwards for maximum tricep recruitment.

Reverse Extensions

Reverse Extensions are done with the band anchored to a fence or wall. Grab the bands with the palms facing downwards (pronated) and your upper back in flexion (bending forward). Start the movement by extending your back (standing straight up and backwards) and pull the bands back and over your head.

Forward Extensions

Forward Extensions are done with the band anchored to a fence or wall at a point close to your shoulders. Grab the bands with the palms facing downwards (pronated) and your upper back in flexion (bending forward). Start the movement by flexing your trunk and pull the bands forward and over your head.

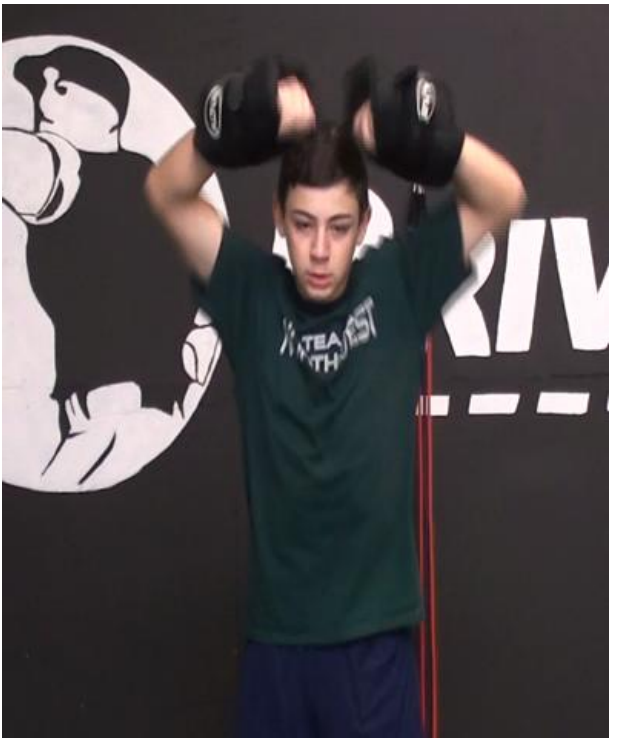
Chapter Four
Wrist Weight Exercises

Light dumbbells have been in use for baseball rehab and prehab for years. However, there are certain movements that simply cannot be performed adequately with dumbbells held in the hands of an athlete. The major disadvantages to using dumbbells when it comes to specific arm care exercises are:

- **Reduced blood flow**: The athlete must contract the muscles of the forearm to maintain the grip on the dumbbells. This constricts blood flow to the arm and makes the exercise less useful.
- **Improper mechanics:** Performing throwing-specific drills with dumbbells is not possible, as the forearm is contracted and does not allow for adequate forearm layback and the natural movement of the arm present when a baseball is thrown. As such, sport-specific carryover is highly limited.

Wrist weights solve both problems, since they are held loosely at the end of the fingers just like a baseball would be cradled, and they do not interfere with the natural mechanics of the arm when it comes

to partial movements like the ones we will be discussing.

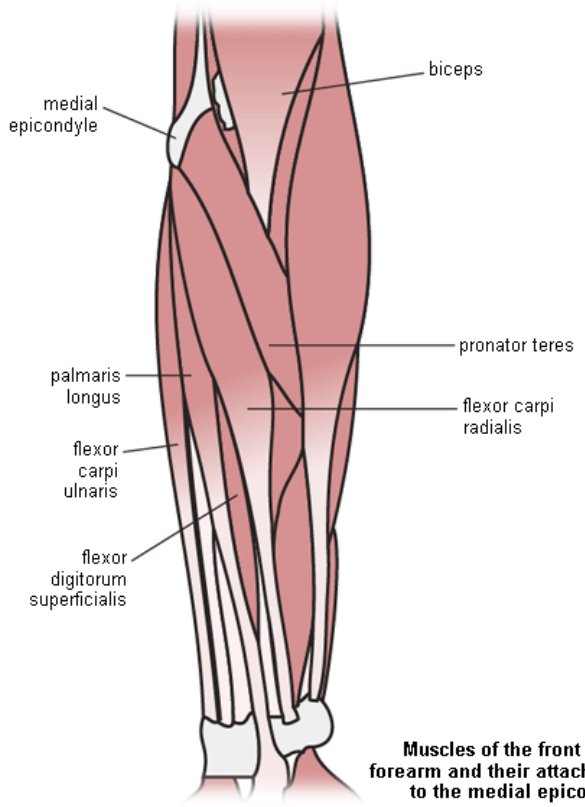


Proper fit – over the hands, hanging from fingers

With the wrist weights, we are primarily targeting the use of the **pronator-flexor mass** in the forearm of the throwing arm. Research suggests that increased muscle activation and fitness of the pronator-flexor mass will help reduce the chance of elbow injury by reducing the amount of elbow valgus stress during the delivery. (*Biomechanics of the elbow during baseball pitching. JOSPT: Werner 1993; Dynamic*

contributions of the flexor-pronator mass to elbow valgus stability JBJSA: Park 2004)

We'll take this opportunity to talk a little bit about pronation as well as the specific anatomy of the forearm and elbow as it pertains to throwing a baseball. **Pronation** is simply the action of rotating the forearm towards the body – in layman's terms; you are giving someone a thumbs-down when you are pronating your forearm. The major muscles of the pronator-flexor mass can be seen below:



Muscles of the front of the forearm and their attachment to the medial epicondyle

The primary muscles we care about are the **pronator teres** and the **pronator quadratus** (much smaller, not pictured).

It has been said by many baseball coaches that "pronation is natural" and that it's not something that needs to be taught. However, while pronation can be organized into a delivery, it is not something that many novice pitchers do naturally. Simply watch any tee-ball game and you will see many young throwers spiral the baseball and **supinate** through release, throwing accidental sliders and cutters to their targets. The common teach for this is to have the "fingers on top of the ball," which does help in extreme cases.

The pronator teres and pronator quadratus act as primary decelerators in the baseball pitching motion and help the elbow from hyperextending. Without adequate pronation, the ulna bone can collide with the bones in the back of the pitching elbow, which can cause irritation, reduced flexion/extension range of motion, fractures, and permanent disfigurement of the elbow – especially in youth pitchers.

Our stance on pronation is that while it is certainly not natural, neither is it something that should be forced. By forcing pronation through release, ball velocity can be significantly reduced, and control will certainly suffer. However, by ingraining the proper movement patterns through wrist weight training (and sand-filled ball throwing, to a lesser extent), athletes will develop that "natural" pronation that everyone

seems to believe in. Additionally, athletes will develop significantly increased strength, endurance, and fitness of the muscles of the anterior forearm, which will help reduce the chance of injury and will increase durability of the arm.

Elbow Flexion at Ball Release

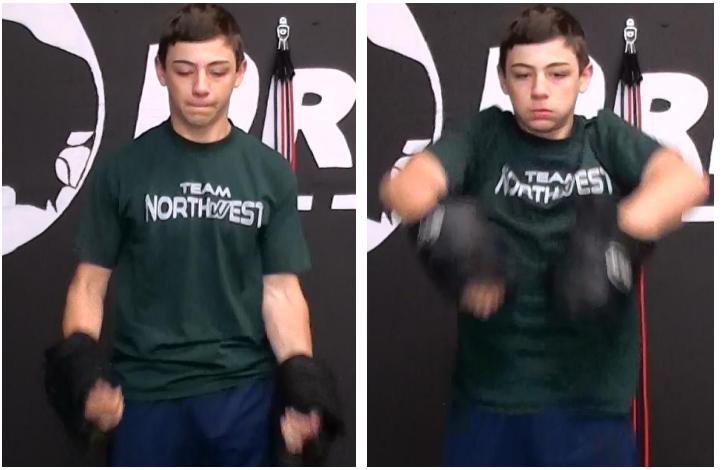
Our research shows that slight elbow flexion near the time of ball release helps protect the musculoskeletal system of the elbow, and also increases spin rate of breaking balls. **Avoiding** hyperextension or full extension of the elbow at release is highly desirable.

Brandon Morrow, nearly hyperextended

Trevor Bauer, pivot pickoff throws w/ elbow flexion

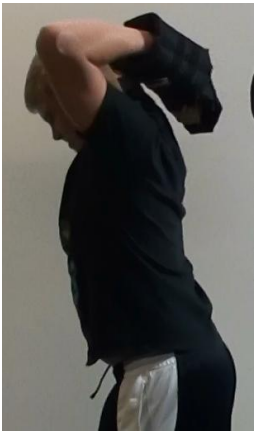
As such, the following exercises were designed to gently reorganize the throwing mechanics with a strong focus on the movement from the elbow to the fingertips.

Pronation Swings



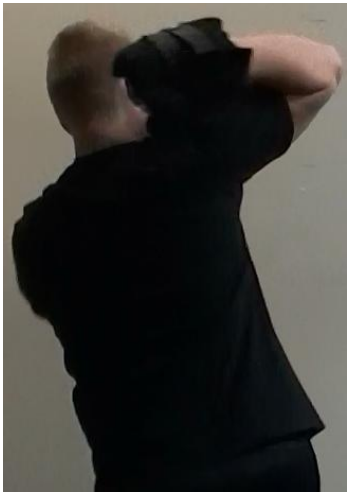
Pronation Swings are done with the forearm in full supination – the thumbs will be pointing away from the body and the palm will be facing up – while the arms are resting at the sides of the body. Flex the shoulders (raise the arms straight in front of you) with the palms still facing up and the elbow in full extension. Once you reach shoulder height, turn your thumbs inwards quickly (pronate the forearm) and let gravity bring the arms downwards. Use the momentum at the bottom of the swing to repeat the motion.

Two-Arm Throws



Two-Arm Throws are done with the hands close to the head, shoulders flexed, elbows facing forwards, and forearm in full supination. (Think about covering your ears with your hands with the elbows up, but turn the thumbs outwards.) The movement is initiated by extending at the elbow (contract the triceps) while simultaneously turning your thumb down (pronate the forearm) with both arms. Let the arms hang down to your sides, then raise them to the starting position for another repetition. Think about driving the arms in a straight line to the target in front of you – do not "loop" the forearm.

Pivot Pickoff Throws




Pivot Pickoff Throws are done with the throwing arm in the "goalpost position" or "high-cocked position" and the other arm extended straight out in front. Turn to the right if you are a right-handed thrower and turn to the left if you are a left-handed thrower, then pull the glove arm back while simultaneously driving the throwing arm forward and turning the thumb down (pronate the forearm). Shoulder rotation should be heavily emphasized here. Done correctly, the athlete will pronate the forearm and learn to hit his right hip with his right hand (if he throws with his right hand). The idea is NOT to follow-through across the body, but rather drive the upper arm in a straight line and pronate the forearm.

Cuban Presses


Cuban Presses are done with the arms in the "inverted goalpost" position or the "Flex-T" position where the hands hang down with the palms facing inwards while the elbows are at shoulder height. Rotate the lower arms to the "high-cocked position" (externally rotate the shoulders), then press the wrist weights overhead. Slowly bring the arms down to the high-cocked position, then back to the "inverted goalpost" position by rotating them downwards (internally rotate the shoulders).

Chapter Five
Sand-Filled Ball Exercises

Sand-filled balls are an excellent training tool to help increase arm durability, arm strength, and to help improve the mechanical throwing pattern of an athlete. Generic medicine ball training has been in use for decades for both linear and rotational purposes, but sport-specific movements are tough to replicate using them due to their size and weight. The sand-filled balls are appropriately-sized, durable, and have great balance to them, allowing athletes to use them for a wide variety of applications.

These sand-filled balls differ from standard "weighted baseballs" in many ways – namely, the fact that the sand-filled balls are safer to throw against harder surfaces without fear of damaging them! Additionally, the sand-filled balls are generally heavier than the standard weighted baseballs you'll find (such as the **Driveline Baseball Elite Weighted Baseball Set**), which is counter intuitively quite a bit safer on the arm. How can this be?

A significant amount of injuries to the pitching arm occur due to the massive stress immediately after maximum arm acceleration and ball release:

Vinnie Pestano, right after release

To throw a baseball 90 MPH, the arm must be accelerated over time to 90 MPH. Not too hard to understand, right? However, consider that the arm is also **decelerated** from 90 MPH to 0 MPH in a very short period of time – often shorter than the time it took to accelerate the arm to 90 MPH!

When the ball separates from the pitching hand, the hand is still moving close to the same velocity as the ball is. Using underloaded weighted baseballs (for example, a 3 oz. underload ball – a regular ball weighs 5 oz.) will usually result in a higher velocity throw, but the distance and time over which the arm decelerates is identical!

109 MPH throw with a 2 oz. ball (Julian)

The reverse is true: The heavier balls are accelerated at a much slower rate and have a much lower final velocity. As a result, the deceleration stress is vastly reduced.

Additionally, the heavier the object, the more muscle can be recruited to help move the object. When muscles contract, connective tissue is better protected.

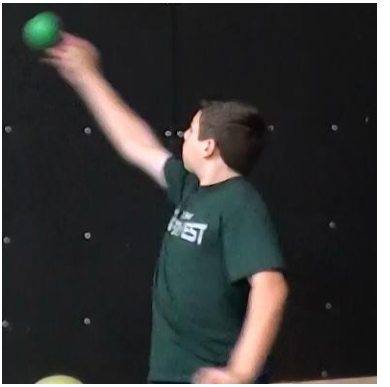
Understanding Forward Rotation

Developing forward rotation is critical for improving both perceived and real velocity. By releasing the ball closer to the target, you give the batter much less time to react to a pitch's velocity and location. Additionally, by increasing the distance over which the ball is accelerated, you can improve real velocity as well. And last, but certainly not least, when properly done, releasing the ball out front via forward rotation helps protect the elbow and shoulder from undue stress.

Roger Clemens releasing the ball out front

The exercises listed in this chapter are meant to help build arm durability, arm strength, and also to help the athlete understand a more efficient throwing pattern to cut down on deceleration stress as well as flaws during the arm acceleration phase of the pitching delivery.

Reverse Throws



Reverse Throws are done with the athlete in a traditional kneeling position with the glove leg out front and the throwing leg tucked behind the body. The athlete puts the weighted ball in his pitching hand and assumes the maximum deceleration recovery position – or what he looks like after he is done throwing a ball. The movement is initiated by bracing against the front knee and rotating around the thoracic (upper) spine. The ball is thrown forcefully behind the athlete into a sturdy wall, fence, or simply to a partner standing some distance away. This movement helps to build strength in the posterior shoulder and helps recruit rotational velocity in a backwards chaining way.

Pivot Pickoff Throws

Pivot Pickoff Throws are done by standing 90 degrees away from a sturdy wall, fence, or someone standing adequate distance away. If you are a right-handed thrower, you will face the wall and then turn 90 degrees to the left so your right arm is the closest body part to the wall. The athlete then turns his torso, leaving his legs pointing forward, points his glove arm out, and puts the weighted ball in the high guard ("loaded") position. The movement is initiated by turning around the upper spine and pulling the glove

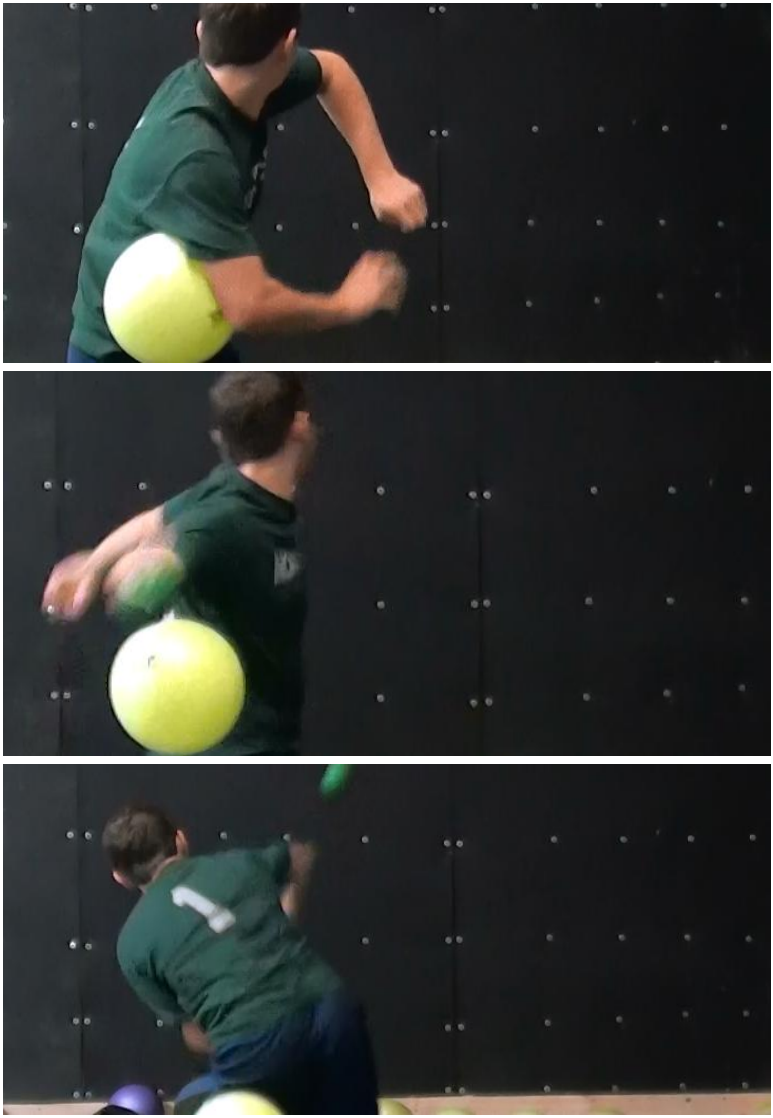
arm back and ends with the athlete pronating through release (turning the thumb down) and driving the ball against the target. Done properly, the athlete will often hit his throwing hand against his same-side pocket without wrapping his arm across his body – so for right-handed throwers, the hand will hit the right pants pocket. This movement helps train pronation, gives them a feeling for isolating the upper trunk, and strengthens the muscles in the forearm which are critical to protecting the elbow ligaments.

Note: Youth athletes will often wrap their arm past the mid-section of their body, which isn't desirable. However, this is not necessarily due to poor technique, but rather unacquired posterior shoulder strength. With more reps, strength (and technique) will improve. This is the position we are trying to avoid:

Walking Wind-Ups

Walking Wind-Ups are done with the athlete facing his target and a weighted ball in his throwing hand. The athlete then takes a step forward with his throwing leg in the same position he would be if he was throwing a pitch off a mound, then brings his glove leg up, strides out, and throws the ball. This movement is meant to train the load to unload mechanism that is responsible for a high percentage of fastball velocity in the baseball pitch, and teaches the athlete to use momentum in the delivery.

Connection Ball Throws



Connection Ball Throws are done with the athlete tucking a TAP connection ball under their throwing arm (in their armpit) and standing in a side-shuffle pose. The athlete then shuffles sideways as if he was throwing a ball from third base to first base and simply throws the sand-filled ball, allowing the connection ball to drop. Ideally the connection ball will drop straight back (though it may be kicked around or otherwise jostled). This drill helps to keep the arm tucked and reduces casting of the pitching arm, which can lead to serious mechanical flaws.

Lawnmowers / Rocker Momentum Throws

Lawnmowers are done by starting with the glove leg out at approximate position of foot strike when throwing a baseball pitch and a weighted ball in the throwing hand. The athlete assumes a position where his throwing arm is close to his glove shin, and the

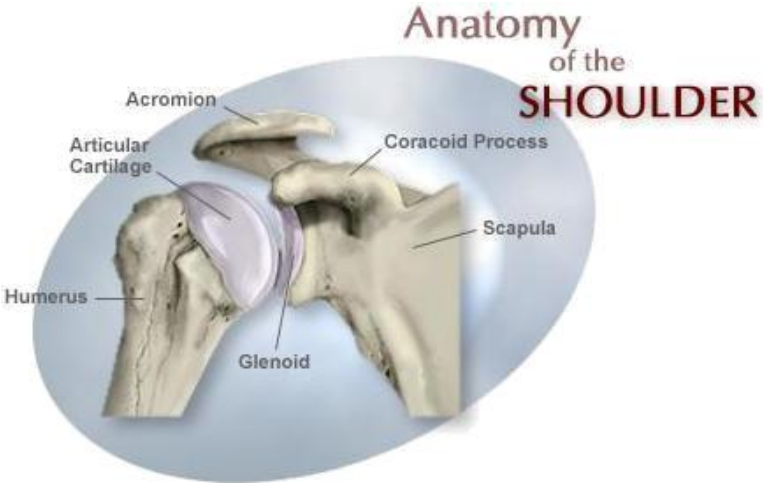
movement starts by the athlete bringing the throwing arm back, rocking back on the back leg, then immediately reversing position and throwing the weighted ball at a sturdy wall, fence, or person an adequate distance away. This movement helps to train explosiveness and to train the stretch reflex mechanism in the body.

Chapter Six
Elbow Buddy / Shoulder Tube / Total Bar Series

The Oates' Specialties Shoulder Tube and/or Elbow Buddy are the best tools on the market for developing rhythmic stabilization and dynamic stability in the pitching shoulder and elbow. While these crazy looking long black rods with weights on the end definitely catch the eye, I promise you that they have a lot of scientific backing behind them!

An alternative is the Fitryo Total Bar, which is significantly cheaper than either the Elbow Buddy or the Shoulder Tube, but slightly smaller and quite a bit stiffer. To make things simple, we'll be referring to all three as the "Shoulder Tube" for the rest of the chapter.

A major reason shoulder injuries occur is due to poor stability in the shoulder – while we want the shoulder joint to be flexible and loose, the ball of the upper arm (humerus) must track properly to avoid connective tissue injuries. Dynamic stabilization methods help to train proper tracking and stability through unpredictable forces through various ranges of motion.

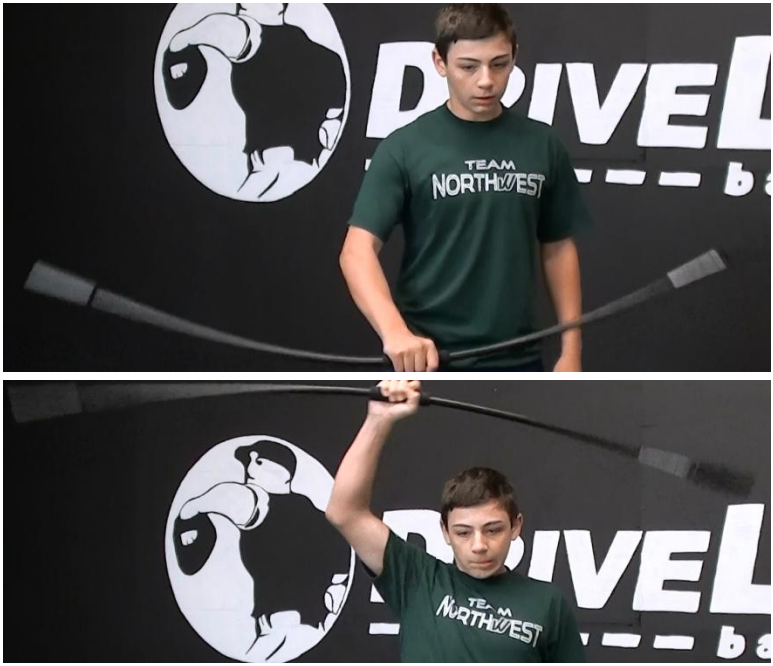


There are many different ways to achieve dynamic stability, so if you don't own a Shoulder Tube, you can mimic these movements with a resistance band attached to an anchor and go through some of the movements.

Anchoring an EliteFTS band for stability

By doing these movements, you'll help prepare the shoulder and elbow joint for maximum throwing intensity. You'll find that your athletes won't want to leave home without the Shoulder Tube before throwing!

Shoulder Flexion in Front



Shoulder Flexion in Front ("Front Raises") are done with the athlete standing square with feet shoulder-width apart and the throwing hand holding the Shoulder Tube palm down in front of him. The athlete starts bouncing the implement up and down by shaking his arm towards the sky and the ground in rhythmic strokes. He then brings the arm slowly up over his head while still bouncing the implement and brings it down to the resting position. It should take 4-5 seconds to go up and 4-5 seconds to go down.

Shoulder Abduction on Side

Shoulder Abduction on Side ("Side Raises") are done with the athlete standing square with feet shoulder-width apart and the throwing hand holding the Shoulder Tube palm down on the side of him. The athlete starts bouncing the implement up and down by shaking his arm towards the sky and the ground in rhythmic strokes. He then brings the arm slowly up over his head while still bouncing the implement and brings it down to the resting position. It should take 4-5 seconds to go up and 4-5 seconds to go down.

External/Internal Rotations in Close

ER/IRs in Close ("Side to Sides") are done with the athlete standing square with feet shoulder-width apart and the throwing hand holding the Shoulder Tube thumb up (supinated) in front of him with the elbow close to his rib cage. The athlete starts bouncing the implement side to side by shaking his arm towards the left and right in rhythmic strokes. He then moves the arm slowly to one side while still bouncing the implement and brings back to the other side as far as he can go. It should take 4-5 seconds to go to each side.

Bicep Curl to Face

Bicep Curls to Face ("Curls") are done with the athlete standing square with feet shoulder-width apart and the throwing hand holding the Shoulder Tube palm up in front of him. The athlete starts bouncing the implement up and down by curling the implement towards and away from his face. He then curls the arm slowly to his face while still bouncing the implement and brings it down to the resting position. It should take 4-5 seconds to go up and 4-5 seconds to go down.

Behind the Back Shrugs

Behind the Back Shrugs ("Shrugs") are done with the athlete standing square with feet shoulder-width apart and the throwing hand holding the Shoulder Tube palm up behind his back. The athlete starts bouncing the implement up and down by shrugging the shoulders up and down. Repeat this action for 8-10 seconds.

Lay Back in ER to Forward Recovery Pose

Lay Back in ER to Forward Recovery Poses ("Pitching Poses") are done with the athlete standing with a split grip – glove foot forward like he is at foot strike in the pitching delivery – and the throwing hand holding the Shoulder Tube palm up in the arm cocking phase. The athlete starts bouncing the implement back and forth by moving the implement back and forth. He then slowly leans the upper body forward while still shaking the implement, finishing out front in a mock release position. Return to the high cocked position while still moving the implement; the entire movement should take 10-15 seconds.

Pronation / Supination Twirls

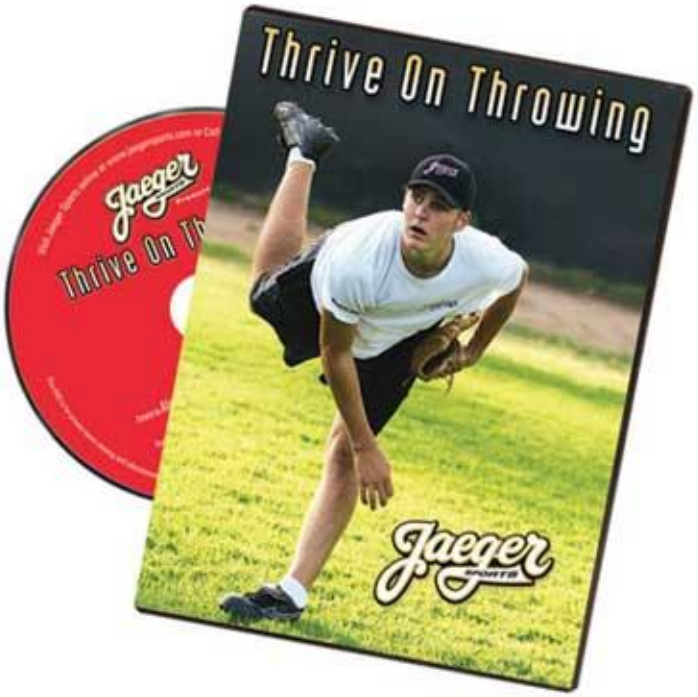
Pronation / Supination Twirls ("Twirls") are done with the athlete standing square with feet shoulder-width apart and the throwing hand holding the Shoulder Tube palm up in front of his body. The athlete starts shaking the implement in and out by moving the arm in/out. Pronate and supinate the forearm by turning the thumb down and up while still shaking the implement. Repeat this action for 8-10 seconds.

Chapter Seven
Throwing Program

Perhaps one of the best quotes about pitching comes from Paul Nyman: "You can throw a ball without pitching it, but you can't pitch a ball without throwing it." Mastering the ability to simply play catch and warm-up properly goes a long, long way! Even Ken Knutson – pitching coach for Arizona State University – spends a month teaching his pitchers how to simply warm-up and play catch. And these guys are scholarship athletes at a major Division-I college!

Coach Knutson at the University of Washington

Our throwing program for youth pitchers is a modified version of long toss, popularized by Alan Jaeger. We believe the long toss method is the best way to train a throwing arm for increased durability, strength, and also works very well in a team practice setting.



Alan's throwing program – well worth checking out!

Long toss is comprised of two distinct phases: **The Going Out Phase** (or stretch phase) and **The Coming In Phase** (or compression phase). Both are vitally important; yet serve two totally different functions.

The Going Out Phase

The going out phase should be considered the "warm-up" phase of the throwing program. While athletes should go through a full dynamic warm-up with resistance bands and wrist weights before touching a baseball, the body is still not ready to jump directly into a high intensity throwing program without allowing the arm to wake up in a slow, controlled manner.

Athletes should stand close to each other where they can throw the ball on a lot of arc. The proper amount of intensity when it comes to starting the going out phase is **none**! It should feel like you are playing catch with a 4 year old, or that you're throwing with your off-hand. In other words – get lots of air under the ball with very little velocity.

The going out phase consists of the following steps:

1. Ten (10) Pivot Pickoff Throws from 30 feet
2. Six (6) Lawnmower/Rocker Throws from 30 feet
3. Six (6) Lawnmower/Rocker Throws from 40 feet
4. Two (2) Step-Behind / Shuffle Throws from 50 feet
5. Repeat step 4, backing up 10 feet each time – two (2) throws each time the distance is increased

(All of the throwing drills above will be explained later in this chapter.)

The going out phase is complete when the athletes have reached their maximum distance. Over greater distances, more effort will be required, but the first 20 throws should be very easy and should only gradually increase in intensity. You're at your maximum distance when you are grunting or when your mechanics drastically change in an attempt to get the ball to new record-setting distances. Remember, the going out phase is simply there to stretch the arm out nice and easy – the real effort comes next!

The Coming-In Phase

The coming in phase begins when the going out phase has concluded. With the arm fully stretched out and warm, we can start reducing the distances to teach the athlete to "compress" their maximum distance throw into a 60 foot 6 inch bullet for maximum velocity. Elite pitchers can throw baseballs well over 300 feet during the going out phase – the trick is to help a pitcher develop that kind of force on the mound or across the diamond, and that's where the coming in phase plays a huge role.

With the going out phase complete and the athletes at their maximum distances, the coming in phase consists of the following steps:

1. Two (2) Step-Behind / Shuffle Throws from Max Distance
2. Repeat step 1, closing in 10 feet each time – two (2) throws each time the distance is reduced. When the pitchers are approximately 60 feet away from each other, they should move on to step 3.
3. Two (2) Step-Behind / Shuffle Throws from 60 feet
4. Four (4) Lawnmower/Rocker Throws from 40 feet
5. Five (5) Pivot Pickoff Throws from 30 feet

Remember, all of the throws should be done at **maximum intensity**. That is the whole point of the coming in phase – to develop the strong intent to throw the ball hard. We end the coming in phase with some mechanical drills at maximum intensity to help ingrain some good throwing patterns.

The reason this style of throwing program is so successful is because it is highly generalized but also very individual at the same time. While it only takes a few sessions to fully grasp how to perform the throwing program, it's a program that scales automatically with ability over time. Pitchers throwing the ball 90 feet can benefit from this kind of program just as much as pitchers who throw the ball 400 feet!

Pivot Pickoff Throws (repeat)

Pivot Pickoff Throws are done by standing 90 degrees away from a sturdy wall, fence, or someone standing adequate distance away. If you are a right-handed thrower, you will face the wall and then turn 90 degrees to the left so your right arm is the closest body part to the wall. The athlete then turns his torso, leaving his legs pointing forward, points his glove arm out, and puts the baseball in the high guard ("loaded") position. The movement is initiated by turning around the upper spine and pulling the glove

arm back and ends with the athlete pronating through release (turning the thumb down) and driving the ball to the target. Done properly, the athlete will often hit his throwing hand against his same-side pocket without wrapping his arm across his body – so for right-handed throwers, the hand will hit the right pants pocket. This movement helps train pronation, gives them a feeling for isolating the upper trunk, and strengthens the muscles in the forearm which are critical to protecting the elbow ligaments.

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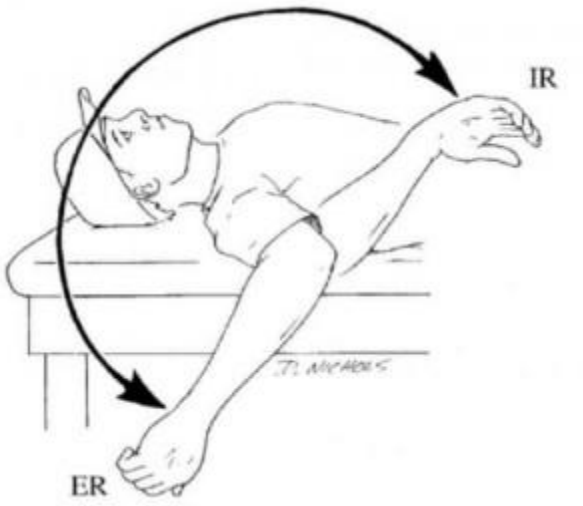
Chapter Eight
Post-Throwing Recovery

After a pitcher is done throwing anything – including long toss, bullpens, or weighted baseballs, he should complete a full post-throwing recovery workout. The recovery program we have outlined here is ideal to use at the end of a practice session by the whole team – by dividing the exercises into stations, you can get high turnover pretty quickly with experience!

The primary reason to perform a recovery workout after a long day of throwing is to help reduce stiffness, soreness, and retain flexibility/mobility that is often lost as a result of overhead throwing activities. Dr. David Lintner developed one of the first programs designed to increase internal rotation of the shoulder to help aid in recovery and reduce injury potential of pitchers in the Houston Astros system, and similar systems have spawned as a result of his findings.

Dr. Lintner examining a patient's external rotation

Glenohumeral Internal Rotation Deficit (GIRD) is a phenomenon where pitchers gain passive external rotation (arm outwardly rotates or lays back) due to the inertial mass of the baseball pushing the forearm backwards in the late-cocking phase of the pitching delivery. This increased external rotation is linked with higher ball velocity, however, a decrease in internal rotation of the shoulder is usually also found. Studies show that a decrease in internal rotation is correlated with throwing shoulder and elbow injuries, and that total motion deficits between the glove and throwing arm shoulders is also a potential problem.



While throwing athletes will never have the same external or internal rotation on each shoulder (because they throw with only one hand – usually, anyway!), we should seek to have similar total motion in each throwing shoulder. Current thinking on this topic supports stretching the throwing arm into internal rotation and maintaining good blood flow to the area to rush nutrients to damaged tissue immediately after throwing, as well as flushing the lymphatic system to aid in recovery. The exercises listed in this chapter are designed to tackle all of these issues in a concise manner that is simple to integrate into a throwing program or team practice, and is highly recommended for all baseball players – pitchers and position players alike.

Perform the following exercises after any throwing is done – it's a great way to cool down and relax a bit.

Resistance Bands: External Rotations (10 reps)

External Rotations are done with the elbows up at shoulder height with the band anchored to a fence or a wall. Externally rotate the arm to 90 degrees and return it to the resting position in a controlled manner.

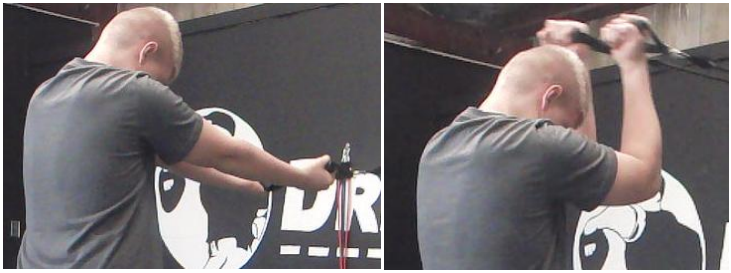
Resistance Bands: Internal Rotations (10 reps)

Internal Rotations are done with the elbows up at shoulder height with the band anchored to a fence or a wall. Internally rotate the arm to 90 degrees and return it to the resting position in a controlled manner.

Resistance Bands: Reverse Scap Pullapart (10 reps)

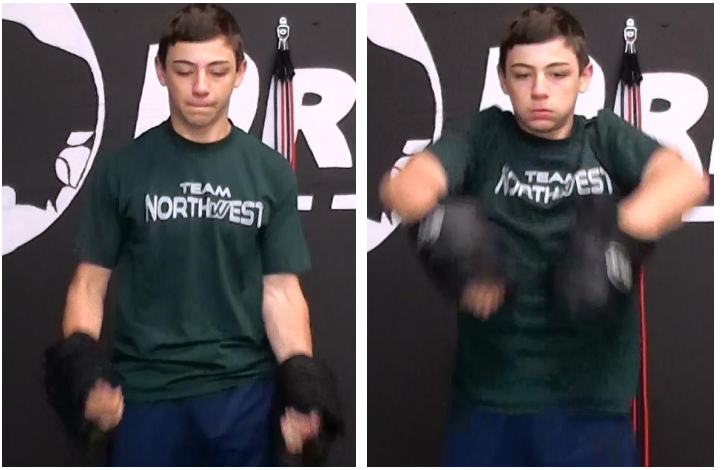
Reverse Scap Pullaparts are done standing in a stationary position with the bands held in the hands over the head. Pull the band down and back across the top of your upper back. Think about driving the elbows down and tucking them back. Return the bands to the resting position in a slow and controlled manner.

Resistance Bands: Bicep Curls (10 reps)



Bicep Curls are done with the arms up at shoulder height with the band anchored to a fence or a wall. With the elbow in full extension and facing the wall/fence, flex the elbow and curl the bands towards your face. Return the bands to the resting position in a controlled manner.

Wrist Weights: Pronation Swings (15 reps)



Pronation Swings are done with the forearm in full supination – the thumbs will be pointing away from the body and the palm will be facing up – while the arms are resting at the sides of the body. Flex the shoulders (raise the arms straight in front of you) with the palms still facing up and the elbow in full extension. Once you reach shoulder height, turn your thumbs inwards quickly (pronate the forearm) and let gravity bring the arms downwards. Use the momentum at the bottom of the swing to repeat the motion.

Static Stretch: Forearm Flexor Stretch (5 reps of 8 seconds)

The Forearm Flexor Stretch is done while standing stationary. Raise the arm level with the shoulders with the palm facing skyward. With the other arm, pull the fingers downwards and the elbow into extension. Hold the end range of motion position.

Static Stretch: Sleeper Stretch (5 reps of 10 seconds)

The Sleeper Stretch is done while lying on the side with the throwing arm on the ground. The upper arm should be at 90 degrees with the shoulder line with the scapula jammed back (think "shoulders back") and the forearm pointing straight up. With the non-throwing hand, push the throwing hand down to the ground in shoulder internal rotation. Done properly, the forearm won't move too much but there will be a stretch in the posterior shoulder. Hold the end range of motion position. *Note: There is some controversy on whether or not the sleeper stretch is an effective way to increase internal rotation. While we use this stretch*

at Driveline Baseball quite effectively, an alternative is the cross-body stretch – both the standing and lying variations.

Chapter Nine
Command, Control, and Pitch Types

"Just throw strikes!" –every pitcher's dad at one point

Ah, if it were only that easy. Unfortunately, as anyone who has picked up a baseball can tell you, throwing strikes is not always a matter of willpower. Actually, most of the myths out there have no basis in research, such as:

- "Finish with the back flat to get the ball down!" (actually drives the pitching arm up and the ball is more likely to finish up)
- "Keep your eyes on the target!" (gaze tracking studies do not support this theory, and it leads to a linear push-based delivery, killing velocity)
- "Point your glove at the target!" (leads to a very checkpoint-based and unathletic delivery)
- "Show the ball to second base!" (early pronation of the forearm often causes a pitcher to spiral the ball through release due to supination bringing the forearm back in line, which can cause elbow issues)

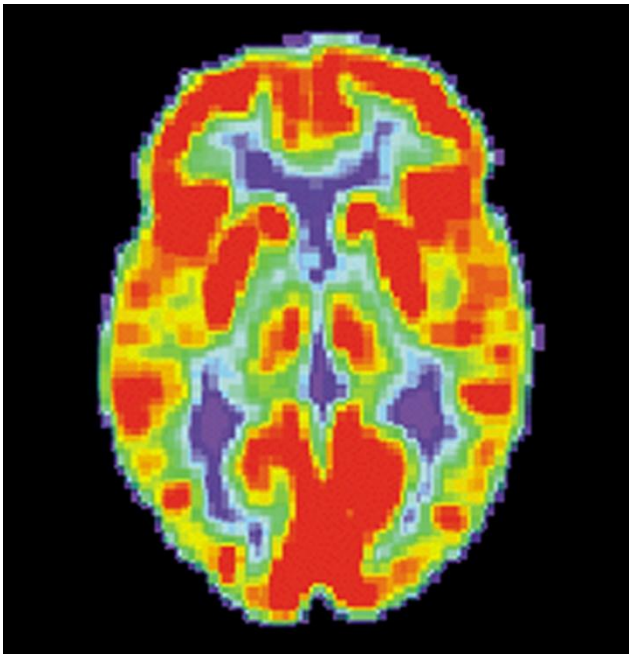
- "Get your arm up!" (arm slot is purely a function of shoulder tilt)

No, throwing strikes is quite a bit more difficult that all of that, I'm afraid.

Corran throwing in the Driveline Baseball facility to a target

This chapter won't give you concrete answers on how to coach pitchers on how to throw strikes, precisely because there is **no way to do that.** Increased strike percentage is based entirely on improving what we call **kinesthetic ability**. Kinesthetic ability is simply understanding what the body is doing without conscious thought – studies show that elite athletes who have the best "control" in their ballistic sport of choice (be it baseball, football, tennis, darts, whatever) have reduced activity in areas of the brain

that are correlated with active conscious thought. So it's true, you really **can** outthink yourself sometimes!



Stop thinking so much!

The way to improve kinesthetic ability is groundbreaking, and I'm going to share it with you all today:

THROW A LOT MORE!

Yup, it's that simple. Kinesthetic ability improves with deliberate practice over time – so that means simply screwing around when throwing baseballs barely improves your skill (if at all, and can make it

worse), while focusing on every single throw you make with a defined outcome improves it. By throwing long toss with a specific target picked out on a partner's chest, an athlete gets better at "missing small." By throwing sand-filled balls, an athlete better understands how overload training creates a **proprioceptive map** of how to throw a baseball. By using wrist weights, the athlete grasps how to drive the hand over the elbow and how to forwardly rotate the shoulders for a maximally efficient pitching delivery.

Yet you can do all the throwing in the world, but until you get on a mound and hammer a target over and over again, you won't see much improvement. Deliberate practice must also be very specific. At the Driveline Baseball facility, we use the Oates' Specialty Advanced Command Trainer to get in a ton of reps for all of our pitchers – youth athletes to pro athletes; they all work on hitting this target over and over again:

The Oates' Specialties Advanced Command Trainer

We absolutely love this item. While I was initially skeptical at first, the Advanced Command Trainer is completely different than catch nets, tarps, or anything else we've tried (and hated). It's binary – either you hit it or you don't, no fudging it with drawn-on lines or catchers who are biased – so you know how to track results specifically.

Of course, we don't just stand up there and hammer the thing with all of our pitches for the heck of it. We design our command and control programs in a way that mimics the video game industries greatest invention: Leveling up! All athletes start at Level 1 and need to meet the criteria to move up the

ladder, where they can work on new and exciting things.

Level 1: Rookie

- Throw pitches in sets of five (5).
- Six sets (30 pitches) at Level 1.
- **Pitch Selection:** Four-seam fastballs for all sets.
- **Passing Grade:** Must hit target 3/5 times in 4/6 sets in two consecutive sessions.

Level 2: Little Leaguer

- Throw pitches in sets of five (5).
- Six sets (30 pitches) at Level 2.
- **Pitch Selection:** Four-seam fastballs (three sets), two-seam fastballs (three sets).
- **Passing Grade:** Must hit target 3/5 times in 2/3 four-seam fastball sets AND must hit target 3/5 times in 2/3 two-seam fastball sets in two consecutive sessions.
- **Failing Grade:** If athlete gets 0/3 sets in any one session, he moves back to **Rookie**.

Level 3: Junior High

- Throw pitches in sets of five (5).
- Six sets (30 pitches) at Level 3.

- **Pitch Selection:** Alternate four-seam / two-seam fastballs (three sets), change-ups (three sets)
- **Passing Grade:** Must hit target 3/5 times in 2/3 alternating fastball sets AND must hit target 3/5 times in 2/3 change-up sets in two consecutive sessions.
- **Failing Grade:** If athlete gets 0/3 sets in any one session, he moves back to **Little Leaguer**.

Level 4: High School

- Throw pitches in sets of five (5).
- Six sets (30 pitches) at Level 4.
- **Pitch Selection:**
    - Mix 1: Four-seam fastball, two-seam fastball, change-up, four-seam fastball, change-up (three sets)
    - Mix 2: Change-up, four-seam fastball, change-up, two-seam fastball, change-up (three sets)
- **Passing Grade:** Must hit target 3/5 times in 2/3 sets of Mix 1 AND must hit target 3/5 times in 2/3 Mix 2 sets in two consecutive sessions.
- **Failing Grade:** If athlete gets 0/3 sets in any one session, he moves back to **Junior High**.

Level 5: College

- Throw pitches in sets of five (5).

- Six sets (30 pitches) at Level 5.
- **Pitch Selection:**
    - Mix 1: Four-seam fastball, breaking ball, four-seam fastball, breaking ball, two-seam fastball (three sets).
    - Mix 2: Four-seam fastball, breaking ball, four-seam fastball, change-up, breaking ball (three sets).
- **Passing Grade:** Must hit target 3/5 times in 2/3 sets of Mix 1 AND must hit target 3/5 times in 2/3 Mix 2 sets in two consecutive sessions.
- **Failing Grade:** If athlete gets 0/3 sets in any one session, he moves back to **High School**.

Level 6: Minor Leagues

- Throw pitches in sets of five (5).
- Six sets (30 pitches) at Level 6.
- **Pitch Selection:**
    - Mix 1: Breaking ball, four-seam fastball, change-up, change-up, two-seam fastball (six sets).
- **Passing Grade:** Must hit target 3/5 times in 4/6 sets of Mix 1 in two consecutive sessions.
- **Failing Grade:** If athlete gets 2/6 sets in any one session, he moves back to **College**.

Level 7: Major Leagues

- Throw pitches in sets of five (5).

- Eight sets (40 pitches) at Level 3.
- **Pitch Selection:**
    - Mix 1: Breaking ball, four-seam fastball, change-up, change-up, breaking ball (four sets).
    - Mix 2: Four-seam fastball, change-up, four-seam fastball, four-seam fastball, four-seam fastball (four sets).
- **Passing Grade:** Must hit target 3/5 times in 3/4 sets of Mix 1 AND must hit target 3/5 times in 3/4 Mix 2 sets in two consecutive sessions.
- **Failing Grade:** If athlete gets 1/4 sets in any one session, he moves back to **Minor Leagues**.

That's how we structure our command bullpens because it gives a clear progression and regression plan for our athletes. Of course, we give them individual attention as well if they're struggling with certain pitches, but we always want to make it competitive and track results.

You will note that at no point do we work on "hitting spots," such as low/away or up/in – we're just focused on filling the strike zone with our best stuff. If an athlete can pound the strike zone with all of his pitches, **his kinesthetic ability will allow him to make adjustments to place pitches in the strike zone where he wants**. It isn't about being extremely fine with the command and control but rather getting a better feel of what the body is doing when the athlete is throwing the ball!

Other concepts you can play around with include:

- Setting up the Advanced Command Trainer (or catcher) in a spot where it is an obvious ball, way off the plate (not a pitcher's pitch). By figuring out what it feels like to throw a ball a foot off the plate or bouncing a curve ball in the dirt on purpose, it may make it easier to make adjustments on the mound when things seem to be falling apart.
- Putting a wood construct of a batter in the batter's box to help visualize the hitter at the plate.

You will also note the command templates talk about breaking balls and change-ups without going into specifics. Breaking ball use amongst youth pitchers is a hot button issue, but all the research out there is inconclusive on whether or not it is truly more dangerous to youth arms. Our research is not yet complete on this subject, but we know youth pitchers will eventually want to learn how to throw breaking balls and that overuse on the mound is the real problem. Simply limit use on the mound (no frequent appearances in tournaments or other meaningless games; college and pro pitchers are not built at these glorified gladiator events) and teach them to love

throwing and you'll be doing better than 99.99% of coaches and parents out there.

As far as change-up grip, use whatever is comfortable. Examples of all grips follow:

Four-seam fastball – typical go-to fastball

Two-seam fastball held across seams (more sink)

Two-seam fastball held with seams (more run)

Change-up, two-seam grip (middle finger on inside seam)

Change-up, four-seam grip

Breaking ball, two-seam grip

Breaking ball, four-seam grip

Chapter Ten
Program Design

Now that you have all the information, the important question remains – what the heck do we do with it all? A bunch of good training exercises and ideas isn't much help without a blueprint to lay it all out. Here's how we structure this chapter as well as the accompanying handbook of sample workout templates for youth pitchers:

- We believe that the best programs offer a lot of structure and design in the beginning stages to give the athlete the best chance to succeed, enjoy the training, and continue with it going forward
- We also believe that there must be a sharp divide between in-season and off-season training programs, broken down from a yearly calendar standpoint as well as a month-to-month programming outlook
- We also believe that as general programs are executed by athletes that their individual desires, needs, and deficiencies start to shine through. At this point, there needs to be a transitioning period that allows for greater individualization of the

program where the athlete makes more and more of his own choices that are structured around the skeleton of the original program.

The last point is extremely important for all coaches out there. One size does not fit all or even one athlete for very long. While an initial generalized program will be inefficient, it will offer a high amount of structure that is needed to jumpstart interest and training. However, over time, the inefficiency of a non-specific program becomes more and more of a problem and the high structure of a program loses value quickly. It is important as a coach to measure progress as often as possible and to understand where an athlete is lacking in his program.

Measuring Results

"If you cannot measure it, you cannot improve it." – Lord Kelvin

There are a lot of factors that should be measured and tracked in any successful program. They include, but are not limited to:

- Enthusiasm for completing workouts
- Compliance with workouts
- Fastball velocity
- Strength levels

- Days lost to injuries
- Actual pitching statistics
- Scout measurables (60 yard dash, pop time, etc)

Yes, even we use the dreaded radar gun!

The point of measuring something isn't to set a high record right off the bat, but to track progress. This seems simple, but far too many athletes get discouraged where they start, when it is where you finish that matters most. Case in point: We had a slow, unathletic 15 year old pitcher in the program who topped out at **70-71 MPH** after his on-ramping series. He wasn't embarrassed by this velocity, but rather used it as motivation to outwork everyone else. With natural growth and 10 months of hard training, this athlete touched **91 MPH** as a 16 year old!

It's not where you start – it's where you finish that matters.

Program Design

Good training plans will be arranged around competitive levels of play, and The Dynamic Pitcher is no exception. While The Dynamic Pitcher Workout Guide has specific sections on templating, at some point you'll be designing your own individual programs, so let's talk a little bit about how they should be structured.

The off-season is the primary time to prioritize ability over skill. Ability is simply raw ingredients that go into the mixture, like arm speed, arm strength, flexibility, mobility, strength, agility, etc. Building the bigger engine in the car instead of focusing on rev matching and precision cornering, so to speak! That means the bulk of your "stressful" training methods – like sand-filled ball throws and maximum distance long toss – should be programmed heavily into the off-season, while the skill-based methods should be saved for closer to in-season work, like throwing bullpens or change-up practice.

In-season is tricky, since you want to conserve ability and build skill without losing either. For professional athletes, most are happy to lose a very small amount of ability while they maintain or improve their skill over time – but for youth/novice athletes, they can easily improve both since they are starting

at a much lower base level of ability. Still, you should prioritize bullpens, pitching practice, fielding-specific drills, and command drills over raw arm strength and fastball velocity as you get closer to the competitive season.

If you are unlucky enough to live in a warm-weather state where baseball is played year round, I highly recommend taking 3-4 months off from competitive playing per year with 2-4 weeks off of throwing for youth pitchers. Research shows that competitively pitching year-round is extremely taxing on the arm and is correlated with arm injury. For 2-3 months out of the year, focusing on building arm strength up and simply throwing for fun should be a big focus – or let the kids play other sports! In our opinion, specialization shouldn't occur until well into high school. Cross-training often brings out some unexpected benefits and also keeps a kid away from burning out.

For more specific information on workout templates and programs, refer to The Dynamic Pitcher Workout Guide that was included with this set!

Chapter Eleven
Attributions

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Post-Script

Thanks for purchasing The Dynamic Pitcher. We hope that it puts you and your athletes on the right track for success. Remember, the ultimate goal of any good pitching coach (or writer!) is to make himself obsolete.

Do not hesitate to ask questions or direct all comments to kyle@drivelinebaseball.com, and visit www.drivelinebaseball.com to keep up on current research and training methods being constantly developed in our Washington baseball facility.

Kyle Boddy
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