**PRE MOTION (PM)**

An optimal Pre Motion has several commonalities. First, the pitcher should be in an attacking posture with weight on the balls of her feet and her knees bent. Next, the arm swing must be helpful in building momentum. And finally, the pitcher needs to use the energy from the ground to drive into a positive move.

Let’s take a look at our Pro Models, Jennie Finch and Lisa Fernandez. Jennie Finch assumes a narrow stance in her Set Position. She chooses a split arm back swing as she sets an attacking posture with an upper body lean. Jennie then uses the ground with a strong negative move and begins the forward drive with her arms and body.

Lisa Fernandez takes on a wider approach by straddling the pitching rubber. She chooses an arm swing that sets momentum on her throwing side. As she creates an aggressive upper body attacking posture, she slides her throwing foot to the center of the mound and begins to open her hips. This slide step is important for realigning onto the direct path of force to the target. She has bend in her knees and weight on the balls of her feet as she begins the positive move.

Deviations in the Pre Motion happen for several reasons. Let’s examine these reasons by asking assessment questions about your pitcher’s motion. And then our youth models will demonstrate the common problems and provide a working set of drills to help you find solutions.

**The first question to ask will be “Is the pitcher is in an attacking posture with weight on balls of her feet and her knees bent?”**

If the answer is no, the pitcher may be in an upright posture. Here our pitcher remains at the same height as her initial stance. Standing tall during this phase will prevent the pitcher from creating that attacking line along her spine.

If the answer is no, the pitcher’s center of body weight might be too far behind the mound. Here the pitcher will dump a large portion of her body weight behind the mound making it a challenge to start the positive move.

And if the answer is no, the pitcher may have stiff legs. In this example, the pitcher has straight legs which are preventing the knees from bending. This will limit the amount of energy that a pitcher can generate from driving from the ground.

**The next question to ask will be “Is the arm swing helpful in building momentum?”**

If the answer is no, the pitcher’s arms might be too tight. Here the pitcher’s arm swing is guarded and locked. It is not producing the free and independent swing needed to create momentum.

And if the answer is no, the pitcher’s throwing arm might not extended below the throwing shoulder. The pitcher may have an off-line backswing. In this example, the student has twisted her backswing behind her back. This will prohibit a freely swinging entry as the muscles in the arm will need to engage to pull it back into alignment.

**And the final question to ask will be “Is the pitcher is using ground energy to drive a positive move out and away?”**

If the answer is no, the pitcher might be driving force into the throwing leg too early. In this example, the pitcher is using her legs to engage her backswing. When it’s time to empower the upswing and the drive forward, her leg energy will have already been expired into the ground.

If the answer is no, the pitcher may be missing a negative move. Here our student pitcher is not taking that extra moment of time to invest in the resources from the ground. She is immediately moving forward to the target without bending and gathering the energy that is under her push foot.

And if the answer is no, the pitcher may need to improve her athletic strength and awareness. Pitchers should be encouraged to train explosive movements and carry those tools into the Pre Motion. In this example, we see a young athlete who has a very solid motion but now needs to add drive and explosion to it.

Variations are acceptable in the Pre Motion. While Jennie and Lisa customize their Pre Motion movements differently, they share successful commonalities. They both have attacking postures with arm swings that build momentum and they both have used the ground to drive their weight onto the balls of their feet to gain a strong positive move to the target.

If you discover that your pitching movements deviate from the fundamentals of our pro models, please refer to following Pre Motion drills.

**?**

**Is pitcher in an attacking posture with weight on balls of feet and knees bent?**

**Common Problem PM-1: Upright posture**

**Solution PM-1a: Sprint Start**

***Set pitcher in an attacking posture like a sprinter forcing power and efficiency at start of pitch.***

*The main purpose of the sprint start is place the pitcher into an attacking posture that will force a very rapid acceleration from ground. To be successful at the drill, the pitcher must eliminate any unnecessary movements and rely upon the power and strength of the legs to start the motion. Please note that to make this drill pitching appropriate, the pitcher must center body weight onto the glove hand and set with a free throwing arm, two knees bent and two heels up.*

**Common Problem PM-2: Center of body weight behind mound**

**Solution PM-2a: Vertical Line Check**

***Provides a visual cue for the pitcher to assess body posture and the positive move.***

*To make the pre motion more productive, a pitcher must collect all of the potential force from the center of the body and take it into the positive move on time. A common problem in this pre motion phase is that pitchers lose some of this potential force because their center of mass shifts too far behind the mound. Getting stuck in this negative territory often happens when the legs lock and there is excessive bend at the waist. It could also happen because the backswing of the arms overpowers the ability to engage the legs into a forward movement. The vertical line check gives a visual reference point where pitchers can assess their posture and ask: “Have I moved too far behind the mound on my start? Is my center of mass behind this vertical line? Or am I attacking effectively because I have a good, strong attacking posture as I start my positive move?”*

**Solution PM-2b: Coach Push**

***Provides a physical cue from coach that pushes the pitcher into an attacking posture and more forceful positive move.***

*The Coach Push gives a physical cue for the pitcher to start the leg drive. It also demonstrates how intense and powerful that drive can be. The coach provides a manual adjustment that sets body into an attacking posture and with a good push, sends that energy off of the mound. And for those pitchers who have a great deal of extraneous movement in their pre motion, they will feel the leg drive occurring sooner and stronger than they are accustomed. But with drill repetition, the pitcher will begin to create that attacking posture on her own as she anticipates the push and therefore, the coach’s role will diminish over time. Please note that the coach will stand behind the pitcher with his/her feet staggered as this will allow for a longer continuation on plane of the coach push.*

**Common Problem PM-3: Locked legs**

**Solution PM-3a: Starting Blocks**

***Angles of the foot pedals place both legs in a bent and physically engaged position.***

*The Starting Block Drill shares some of the merits of the Sprint Start but here the pitcher is in a legal pre motion stance. The main purpose of the Starting Blocks is to place the pitcher into an attacking posture that will promote a strong positive move from the ground. Using any tool that resembles track starting blocks (in this example we are using two Softball Power Drives) the pitcher will place her feet on a downward angle. By virtue of the angles of the pedals, both legs will drop into a bent and fully engaged position. And from this position, the pitcher can sprint and can pitch.*

**Solution PM-3b: Resisted Sprint – Attack to Upright**

***Using a resistance harness to increase force production with strong and engaged legs.***

*If resistance is applied to a pitcher in motion, power from the legs must be used to win the forward battle. The Resisted Sprint Drill attaches a harness around the pitcher’s waist and from behind, resistance is applied through a bungee cord. The cord is affixed to the throwing side of the waist and held by the coach or can also be attached to a wall or pole. This harness and resistance is used to increase force production in the stride because to be successful, the pitcher must choose strong and athletic legs over locked legs.*

**?**

**Is the arm swing helpful in building momentum?**

**Common Problem PM-4: Tight and dependent arms**

**Solution PM-4a: Core Stabilizer**

***Removing variability in the core to allow for the arm to function long, loose and free.***

*The Core Stabilizer promotes a healthy and free-swinging arm circle by isolating the core to remove any of the variability it may cause. By supporting the core and preventing it from moving, the pitcher can feel the independence necessary to achieve a circle that accelerates through the motion and is able to sequence the whipping action through the finish. In other words, the core becomes a constant so that the arm can be the variable that produces whip and spin. Problems occur when the body is variable the arm deems it necessary to be the constant that tightens to gain control of the pitch. To execute this drill, the coach will stand behind the pitcher who is kneeling on her throwing leg. The coach’s leg will form a support line along the pitcher’s back. The coach will support the shoulders with one hand and if necessary, the top of the head with the other.*

**Solution PM-4b: Three Circle Drill**

***Three arm circles working seamlessly, independently and progressively accelerating.***

*We see progressive acceleration with each pass of the arm in the Three Circle Drill. It highlights a seamless flow of building energy so that upon completion of the third circle, the arm is at full speed whip. The Three Circle Drill holds back body weight transfer until the third circle to teach the arm how to circle independently. So when the body is added back into the pitch on the third circle, the arm should feel a greater freedom and whip through the positive move.*

**Common Problem PM-5: Twisted or off-line backswing**

**Solution PM-5a: Circle Launch Pad**

***Align the arm path by holding then launching the backswing of arms from a neutral position.***

*The origin of the path that takes the pitcher from the peak of the backswing to circle start is an important area to evaluate. If the body is twisted or the backswing off-line, the descent to the circle start position will not be in a direct line to the catcher. This misalignment disrupts the integrity and efficiency of the arm circle because the pitcher will need to stop the natural pendulum of the swing and physically manipulate the arm to realign itself. The Circle Launch Pad helps to properly align the arm path before it enters the circle. It is a “feel” drill because it places the glove and throwing arms of the pitcher behind into a balanced set of coaching hands. The arm swing can now launch off of the coaches hands into the positive move. The pitcher will quickly feel areas of that they fall into misalignment because the hands will slip off of the launch pad. With correction and straight launch, the circle will now receive positive repetition in a corrected path.*

**Solution PM-5b: Flapper – Arm Swing Alignment**

***Provides an audio and physical tool to check for an aligned arm swing.***

*Using both audio and physical cues, the Flapper creates awareness of the timing and path of arm’s backswing and upswing. Cut a piece of duct tape approximately 18” long. Pinch the middle of the tape into a 3” section. Affix the two remaining adhesive ends to the bottom of the pitcher’s shorts, or on pants, to the middle of the thigh. When freely swinging the arm straight back and forth the pitcher should feel the “hit” against the tape as well as hear the associated sound. Begin a well-timed back and upswing sequence sounding like “Hit, Hit, Pitch” or to the beat of “1,2,3” creating a natural rhythm (or metronome) for the motion. To hit the flapper more consistently, the pitcher may need to adjust any deviations in the arm path.*

***In this specific Flapper drill, the “1” and “2” counts of the backswing and upswing must be long and most importantly on the line of force. Hitting the flapper twice in this zone will give the pitcher tangible check points for the alignment of the start of the arm swing.***

**Solution PM-5c: Arm Path Check - Backswing**

***Provides a physical cue if the arm backswing is off-line or twisted.***

*A foam noodle can give safe and instant feedback for arm swing alignment. A coach can hold the foam noodle or it can be placed on a plunger to stand alone if coaching assistance is not available.*

*To test if the backswing is twisting behind the pitcher’s back, place the noodle behind the pitcher and at the center of the mound. If she swings her throwing arm out of line, she will make contact with the noodle. To test if the backswing is too far to the exterior side of the pitcher’s body, place the noodle behind the pitcher and approximately one foot away from the ideal path of the throwing arm’s backswing. Again, if contact is made, the pitcher receives safe and instant feedback about her backswing path.*

**?**

**Is the pitcher using ground energy to drive a positive move out and away?**

**Common Problem PM-6: Driving force into leg too early**

**Solution PM-6a: Click to Positive on Softball Power Drive**

***Hear the timing and feel the posturing of a strong attacking move from them mound.***

*The Softball Power Drive provides multisensory feedback (hear and feel) about the timing and posturing needed to use the ground effectively at the start (otherwise known as the negative move). In an on time and maximized start, the pitcher will feel an attack from the legs and hear the click into positive. If done incorrectly, pitchers will hear the plate click too early. If you hear or feel the plate click while your weight is moving in the wrong direction, your leg drive timing will be off. There are many possible methods to effectively use the ground, just be sure choose a negative move that is comfortable, repeatable and is setting you up to attack forward!*

**Solution PM-6b: 1,2,3 4! 5!! Pitch**

***Unlock a tight and untimely start with an in motion beat.***

*The ideal pitch should feel free, rhythmic and in motion. The 1,2,3,4,5 Pitch drill set to music will help a pitcher experience this feeling. Take three loose up/down jumps to set the rhythm and energy (1, 2, 3), jab back on the stride foot (4), attack onto the drive leg (5), then PITCH! Being free, starting already in motion and keeping the set beat, the “4-5-Pitch” unlocks a tight and untimely start.*

**Common Problem PM-7: Missing a negative move**

**Solution PM-7a: Coil Start**

***Remove the backswing of arms to place the responsibility of generating start power onto the legs.***

*From a split two arm to a side one arm swing, the backswing takes on many acceptable looks. The approach however must be one which gathers energy that can be added to the leg drive, not one that distracts from good timing and posture. The Coil Start removes the variability and potential deviation that the arms might be producing and forces the burden of the start onto the legs. In turn, the legs become the catalyst for the start of the motion. Simply start with both hands together on the drive leg and explode forward to the catcher. To start the positive move without the arm swing, the legs and body must commit to a negative move into the ground energy to generate a stronger positive move out and away.*

**Solution PM-7b: One Leg Squat Attacks**

***Balance and strength training for the glutes, hip and core that mirrors the negative move***

*This is a stability exercise that engages balance and strength of the glutes, the hips and the core, which are the key group of power generating muscles in the pre motion of the pitch. On a flat or angled surface (in this case the Softball Power Drive was used), balance on the throwing foot and raise the stride foot while keeping it behind the mound. Slowly bend the right knee and lower the torso (without bending at the waist). Be sure that the throwing foot knee is over the throwing foot toes. Place arms in either a running position or into a split swing diving position. Repeat the exercise 5-10 times maintaining a slow and controlled movement that imitates the negative move from the mound. After successful repetition, integrate the pitch from dry runs to an actual throw. When pitching, be sure to build in a strong negative move to start the motion that integrates the principles of the one leg squats.*

**Solution PM-7c: Chest Down/Hands Back**

***Increase the push off and flight time with a strong negative move.***

*The push off of the mound and the flight period that follows is critical in the preparation phase of the pitch. It creates the distance and time necessary to set for a strong throwing position. To train this push and flight period, we must add value to the negative move as it generates the energy that fuels the positive drive. We must also be certain to create the necessary angles in the legs that will move the energy up and away. To execute the Chest Down/Hands Back drill , from the mound the pitcher should extend the stride foot back far enough to be able to place the chest and core directly onto the quadricep of the throwing leg. The pitcher’s chin should be just in front of the throwing leg knee, and the knee in front of the push foot. This will create an angle in the throwing leg from the knee to the push foot. On a “Ready-Go” command, the pitcher will slightly raise the core and then come down and bounce the core off of the throwing leg to produce the negative move that helps to attack the pitch. During this time the arms will respond by finishing the remainder of a free backswing and then convert into the positive upswing. This is a physically challenging drill that will require breathing and build strength and endurance.*

**Common Problem PM-8: Athletic strength and awareness needs improvement**

**Solution PM-8a: Standing Broad Jump**

***Build the strength and awareness of the explosion up and out with the legs as the arms swing forward.***

*Becoming proficient at a Standing Broad Jump will not only increase strength and explosive capabilities, but will also create awareness to the possible power that could be found in the pre motion if the principles of the jump were integrated. To practice, set up in an athletic stance with feet approximately shoulder width apart and arms in front of body. In preparation to jump, swing the arms back and negative move into the ground with the legs. Then explode up and out with legs as the arms swing forward. Once accomplished in the Standing Broad Jump, begin alternating the jump with a pitch, first in dry run and then add the ball. Compare and contrast the power and athleticism between the two.*

**Solution PM-8b: Plyometric One Leg Jumps**

***Increase stride length by an aggressive drive with the throwing leg and a forceful swing of the stride leg.***

*Achieving a long stride in the motion is an excellent goal. A pitcher can attempt to get to a certain stride length by either driving from the throwing leg or by reaching with the stride leg. While both methods can produce long stride lengths, to maximize the available energy from the ground, the pitcher must start the drive with the throwing leg and add to the drive with the stride leg. Plyometric One Leg Jumps help to build this strength and awareness. To practice, stand on the throwing leg with arms in a running position. Push off with the throwing leg and jump forward, landing on the same leg. To increase the length of the jump, use a forceful swing of the opposite leg. The pitcher should land on the ball of the foot allowing energy to be stored by the leg muscles.*

*Repeat with a multiple jump series wearing a glove and holding the ball. Making certain that the pitcher is still at a safe distance from the catcher, repeat the negative move necessary to fuel the 1 Leg Jump, but this time throw the full pitch. Compare and contrast the power and athleticism between that pitch and those thrown without this drill.*

**?**

**Is pitcher in an attacking posture with weight on balls of feet and knees bent?**

**Common Problem PM-1: Upright posture**

**Solution PM-1a: Sprint Start**

***Set pitcher in an attacking posture like a sprinter forcing power and efficiency at start of pitch.***

*The main purpose of the sprint start is place the pitcher into an attacking posture that will force a very rapid acceleration from ground. To be successful at the drill, the pitcher must eliminate any unnecessary movements and rely upon the power and strength of the legs to start the motion. Please note that to make this drill pitching appropriate, the pitcher must center body weight onto the glove hand and set with a free throwing arm, two knees bent and two heels up.*

**Common Problem PM-2: Center of body weight behind mound**

**Solution PM-2a: Vertical Line Check**

***Provides a visual cue for the pitcher to assess body posture and the positive move.***

*To make the pre motion more productive, a pitcher must collect all of the potential force from the center of the body and take it into the positive move on time. A common problem in this pre motion phase is that pitchers lose some of this potential force because their center of mass shifts too far behind the mound. Getting stuck in this negative territory often happens when the legs lock and there is excessive bend at the waist. It could also happen because the backswing of the arms overpowers the ability to engage the legs into a forward movement. The vertical line check gives a visual reference point where pitchers can assess their posture and ask: “Have I moved too far behind the mound on my start? Is my center of mass behind this vertical line? Or am I attacking effectively because I have a good, strong attacking posture as I start my positive move?”*

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***Provides a physical cue from coach that pushes the pitcher into an attacking posture and more forceful positive move.***

*The Coach Push gives a physical cue for the pitcher to start the leg drive. It also demonstrates how intense and powerful that drive can be. The coach provides a manual adjustment that sets body into an attacking posture and with a good push, sends that energy off of the mound. And for those pitchers who have a great deal of extraneous movement in their pre motion, they will feel the leg drive occurring sooner and stronger than they are accustomed. But with drill repetition, the pitcher will begin to create that attacking posture on her own as she anticipates the push and therefore, the coach’s role will diminish over time. Please note that the coach will stand behind the pitcher with his/her feet staggered as this will allow for a longer continuation on plane of the coach push.*

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**Solution PM-3b: Resisted Sprint – Attack to Upright**

***Using a resistance harness to increase force production with strong and engaged legs.***

*If resistance is applied to a pitcher in motion, power from the legs must be used to win the forward battle. The Resisted Sprint Drill attaches a harness around the pitcher’s waist and from behind, resistance is applied through a bungee cord. The cord is affixed to the throwing side of the waist and held by the coach or can also be attached to a wall or pole. This harness and resistance is used to increase force production in the stride because to be successful, the pitcher must choose strong and athletic legs over locked legs.*

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**Is the arm swing helpful in building momentum?**

**Common Problem PM-4: Tight and dependent arms**

**Solution PM-4a: Core Stabilizer**

***Removing variability in the core to allow for the arm to function long, loose and free.***

*The Core Stabilizer promotes a healthy and free-swinging arm circle by isolating the core to remove any of the variability it may cause. By supporting the core and preventing it from moving, the pitcher can feel the independence necessary to achieve a circle that accelerates through the motion and is able to sequence the whipping action through the finish. In other words, the core becomes a constant so that the arm can be the variable that produces whip and spin. Problems occur when the body is variable the arm deems it necessary to be the constant that tightens to gain control of the pitch. To execute this drill, the coach will stand behind the pitcher who is kneeling on her throwing leg. The coach’s leg will form a support line along the pitcher’s back. The coach will support the shoulders with one hand and if necessary, the top of the head with the other.*

**Solution PM-4b: Three Circle Drill**

***Three arm circles working seamlessly, independently and progressively accelerating.***

*We see progressive acceleration with each pass of the arm in the Three Circle Drill. It highlights a seamless flow of building energy so that upon completion of the third circle, the arm is at full speed whip. The Three Circle Drill holds back body weight transfer until the third circle to teach the arm how to circle independently. So when the body is added back into the pitch on the third circle, the arm should feel a greater freedom and whip through the positive move.*

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**Solution PM-5a: Circle Launch Pad**

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**Solution PM-5b: Flapper – Arm Swing Alignment**

***Provides an audio and physical tool to check for an aligned arm swing.***

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***In this specific Flapper drill, the “1” and “2” counts of the backswing and upswing must be long and most importantly on the line of force. Hitting the flapper twice in this zone will give the pitcher tangible check points for the alignment of the start of the arm swing.***

**Solution PM-5c: Arm Path Check - Backswing**

***Provides a physical cue if the arm backswing is off-line or twisted.***

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**Is the pitcher using ground energy to drive a positive move out and away?**

**Common Problem PM-6: Driving force into leg too early**

**Solution PM-6a: Click to Positive on Softball Power Drive**

***Hear the timing and feel the posturing of a strong attacking move from them mound.***

*The Softball Power Drive provides multisensory feedback (hear and feel) about the timing and posturing needed to use the ground effectively at the start (otherwise known as the negative move). In an on time and maximized start, the pitcher will feel an attack from the legs and hear the click into positive. If done incorrectly, pitchers will hear the plate click too early. If you hear or feel the plate click while your weight is moving in the wrong direction, your leg drive timing will be off. There are many possible methods to effectively use the ground, just be sure choose a negative move that is comfortable, repeatable and is setting you up to attack forward!*

**Solution PM-6b: 1,2,3 4! 5!! Pitch**

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**Common Problem PM-7: Missing a negative move**

**Solution PM-7a: Coil Start**

***Remove the backswing of arms to place the responsibility of generating start power onto the legs.***

*From a split two arm to a side one arm swing, the backswing takes on many acceptable looks. The approach however must be one which gathers energy that can be added to the leg drive, not one that distracts from good timing and posture. The Coil Start removes the variability and potential deviation that the arms might be producing and forces the burden of the start onto the legs. In turn, the legs become the catalyst for the start of the motion. Simply start with both hands together on the drive leg and explode forward to the catcher. To start the positive move without the arm swing, the legs and body must commit to a negative move into the ground energy to generate a stronger positive move out and away.*

**Solution PM-7b: One Leg Squat Attacks**

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**Solution PM-7c: Chest Down/Hands Back**

***Increase the push off and flight time with a strong negative move.***

*The push off of the mound and the flight period that follows is critical in the preparation phase of the pitch. It creates the distance and time necessary to set for a strong throwing position. To train this push and flight period, we must add value to the negative move as it generates the energy that fuels the positive drive. We must also be certain to create the necessary angles in the legs that will move the energy up and away. To execute the Chest Down/Hands Back drill , from the mound the pitcher should extend the stride foot back far enough to be able to place the chest and core directly onto the quadricep of the throwing leg. The pitcher’s chin should be just in front of the throwing leg knee, and the knee in front of the push foot. This will create an angle in the throwing leg from the knee to the push foot. On a “Ready-Go” command, the pitcher will slightly raise the core and then come down and bounce the core off of the throwing leg to produce the negative move that helps to attack the pitch. During this time the arms will respond by finishing the remainder of a free backswing and then convert into the positive upswing. This is a physically challenging drill that will require breathing and build strength and endurance.*

**Common Problem PM-8: Athletic strength and awareness needs improvement**

**Solution PM-8a: Standing Broad Jump**

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*Becoming proficient at a Standing Broad Jump will not only increase strength and explosive capabilities, but will also create awareness to the possible power that could be found in the pre motion if the principles of the jump were integrated. To practice, set up in an athletic stance with feet approximately shoulder width apart and arms in front of body. In preparation to jump, swing the arms back and negative move into the ground with the legs. Then explode up and out with legs as the arms swing forward. Once accomplished in the Standing Broad Jump, begin alternating the jump with a pitch, first in dry run and then add the ball. Compare and contrast the power and athleticism between the two.*

**Solution PM-8b: Plyometric One Leg Jumps**

***Increase stride length by an aggressive drive with the throwing leg and a forceful swing of the stride leg.***

*Achieving a long stride in the motion is an excellent goal. A pitcher can attempt to get to a certain stride length by either driving from the throwing leg or by reaching with the stride leg. While both methods can produce long stride lengths, to maximize the available energy from the ground, the pitcher must start the drive with the throwing leg and add to the drive with the stride leg. Plyometric One Leg Jumps help to build this strength and awareness. To practice, stand on the throwing leg with arms in a running position. Push off with the throwing leg and jump forward, landing on the same leg. To increase the length of the jump, use a forceful swing of the opposite leg. The pitcher should land on the ball of the foot allowing energy to be stored by the leg muscles.*

*Repeat with a multiple jump series wearing a glove and holding the ball. Making certain that the pitcher is still at a safe distance from the catcher, repeat the negative move necessary to fuel the 1 Leg Jump, but this time throw the full pitch. Compare and contrast the power and athleticism between that pitch and those thrown without this drill.*