THE BASEBALL GUIDE TO BETTER BALANCE

Better Balance Equals Maximum Performance™

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Feet are the foundation to creating better balance in your game whether you are hitting, fielding, running or pitching. Poor foot biomechanics can affect the 5 tools of baseball. The foot is designed to be a mobile adapter upon contact with the ground and a ridged lever during propulsion, having abnormal foot biomechanics can throw off that design. There are 26 bones in each foot therefore close to half the bones in our body are found in the feet. So when the foot hits the ground everything changes from the ground up. Whatever skill set you are trying to improve, establishing a controlled weight transfer through your feet will help you achieve your goal. When your feet abnormally pronate meaning as your arch collapses towards the ground your feet become unstable and therefore your lower half will become less stable. This can result in losing power and efficiency in the lower half of your body whether you are hitting, fielding, running or pitching. As a hitter, the more stable your feet are in the batter's box, the better balanced you become. When you're fielding a ground ball you need to transfer your weight, plant your feet and throw. As a pitcher, balance is extremely important for accuracy and velocity. Speed is one of the 5 tools of the game and if your feet are not properly supported it could be the difference between being safe or out when stealing, running to 1st base, tracking down a grounder or catching a fly ball in the outfield. Vision is also an important part of being balanced. Tracking the ball effectively will help set your feet in the proper position therefore allowing you to transfer your weight more evenly and react.

HITTING STANCE

Whether you are hitting for average or power, a balanced hitter should be on the balls of their feet. Their knees should be bent and their feet should be slightly wider than their shoulders. As the pitcher releases the ball, the hitter is simultaneously winding and striding during the loading phase of their hitting cycle in preparation to hit the ball and getting their foot on the ground for bat impact. It is extremely important that your feet are stable and balanced to be able to transfer your body weight and energy through the lower half of the body. When your feet abnormally pronate, meaning as your arch collapses towards the ground and flattens out the bones and joints in your feet become unstable and therefore your lower half compensates becoming less stable. Without being able to control your body motion you will find yourself imbalanced, leaning

or falling forward or backward. This can result in lower half muscle imbalances resulting in loss of power and torque in your hips, weakness in your legs and inefficient transferring of weight in your feet when hitting. By stabilizing the foot, it becomes maintained in its neutral position allowing for greater foot and leg stability which helps create a stiff front leg and allows your hips to rotate better when hitting. This could be one of the differences between driving the ball hard and softly grounding or flying out.

FIELDING

This is a multi directional activity requiring your feet to quickly move forward, backward or side to side depending where the ball is hit. Standing flat footed instead of on the balls of your feet will slow down your reaction time to the ball. This occurs when the mid foot and rear foot joints in your feet are excessively pronated causing the arch to collapse. The muscles in the plantar aspect of the foot will fatigue more easily and become imbalanced which will reduce the reaction time to the ball. When your feet are supported properly, the balls of your feet will be on the ground and your weight will be evenly displaced. Being more balanced will help you get an edge. It will improve your ability have a stable lower half and better foot mechanics when fielding and throwing.

PITCHING

Foot balance is equally important when pitching; a foot that is searching for stability on the mound can throw off a pitcher's pitching mechanics. In order to throw hard, whether the pitcher is a right or left hander they must have all of their weight on the ball of the right or left foot while in the balanced or tucked position. The foot should be pointed toward the hitter after the ball is released and stable. A foot that is unstable or wobbles from side to side at foot impact to the ground is imbalanced. Ethan Katz, Varsity pitching coach for Harvard Westlake High School in Los Angeles Ca. states. "For a pitcher you don't want to have the distribution of weight on your heel. With the proper foot balance it puts you on the balls of your feet. This puts you in a better athletic position and helps pitchers get to their balance point better. This goes hand in hand with more strikes, consistent rhythm throughout mechanics which helps the arm to have a clean motion which could lead for a healthy arm. The better your body mechanics are the less you

have a chance of hurting your arm". When the pitcher's feet are balanced they can drive off the mound easier and with more confidence which will result in better positive outcomes.

SPEED

Speed is one of the 5 tools of baseball. The first step is the most important step you take either as a hitter coming out of the box or a fielder attempting to track a ball hit to your position. It is all about being able to transfer your weight quickly and have a stable foot platform to do so. Unstable foot biomechanics will slow you down because the foot is abnormally pronating. When the foot abnormal pronates you lose valuable seconds of reaction time. If you stabilize the foot with a orthotic device or an arch support, it will improve the player's ability to be more successful.

VISION

Vision is also important in achieving better balance. In order to react to the ball whether hitting or fielding you have to see it and be able to read it. Recognition will allow anticipation and reaction. When your feet are balanced and you're tracking the ball your lower half will be able to react within seconds resulting in more positive outcomes. According to Benny Craig, the hitting coach for the Orleans Firebirds of the Cape Code League, "Good balance = good vision. Scouts evaluate every potential prospect's vision for it is rapidly becoming known as one of the "six tools" of baseball. Therefore, balance is not optional, it's a vital requirement".

COMMON LOWER EXTREMITY INJURIES IN BASEBALL

Injuries can be classified into 2 categories, acute or accumulation / overuse. Acute types of injuries are ones that occur with rapid onset; running down to first base and pulling a hamstring or fouling a ball off on the instep of your foot and causing a soft tissue injury, bone bruise or bone fracture. An accumulation or overuse injury is due to continual repetitive activity of movements over a prolonged period of time. It can show up anywhere, arms, legs and feet are the usual suspects. Shin splints, plantar fasciitis are a few examples.

Shin Splints

Shin splints are a common lower leg inflammatory problem found in the muscles of the lower leg. It is an accumulation or overuse type injury. It involves the tibialis anterior muscle in the anterior compartment in the lower leg or muscles in the posterior compartment; the soleus muscle. Poor training habits (too much, too soon, too quickly), worn out shoes and bad training surfaces are contributing factors to this leg problem. Other important factors are biomechanical imbalances in the foot which occurs because of abnormal foot pronation. This causes instability in the joints of the feet causing the arch to collapse. This will in turn affect the muscles in the lower leg, causing them to fatigue. The lower leg muscles fatigue and become inflamed over a long period of time and there is pain and tenderness along the lower 1/3 of the inner aspect of the shin bone (tibia). If the problem is not identified early on, it can lead to a stress fracture in the tibia bone or a compartment syndrome. A compartment syndrome is not very common in the lower leg and only occurs when there is a significant amount of increased pressure in one of the muscle compartments in the lower leg.

CONTUSIONS

Contusions or soft tissue bruising occur when a baseball is either pitched, fouled or hit with significant force and finds its way to a players arm, hand, leg, foot or ankle without breaking the skin. They are crush injuries to muscle fibers and connective tissue which can bruise a bone or muscle beneath the skin. Most of these injuries are not serious enough to remove a player from a game. If the contusion is severe it can cause deep tissue bleeding called a hematoma in the injured area. To treat these types of soft tissue injuries at home, ice, rest, compression, topical homeopathic creams with arnica, over the counter anti -inflammatory medications are the first line of defense. If the injury is still painful and has not resolved consult your physician for further evaluation.

Strains and Sprains

Strain equals a tear in the muscle where as a pulled muscle is due to a traumatic event to a portion of the musculotendinous junction of the muscle or where the muscle and the tendon meet as the tendon attaches the muscle to a bone. This type of problem is commonly seen in

the hamstring muscle group in the back of the upper leg. Quick bursts when your muscles are not properly warmed up could cause this type of problem.

Sprains, refers to a tear in a ligament. Ligaments are non elastic tissues which connects bones to bones. Ankles are the most commonly sprained joints in the foot and are usually caused by an inversion injury, where the foot plantarflexes and inverts to the ground which in turn stresses the ligaments of the ankle joint. The anterior talofibular ligament is usually the first to be injured and depending on the severity of the sprain the calcaneofibular, posterior talofibular and the tibiofibibular ligaments will tear next in that order. This can happen by hitting a base funny making your turn, pivoting to make a play or sliding incorrectly into 2nd or 3rd base.

Plantar Fasciitis / Heel Spur

Plantar fasciitis is an overuse injury which causes inflammation along the long plantar ligament or plantar fascia located in the bottom of the foot. The plantar fascia is a thick firm band of connective tissue that runs from the heel bone to the ball of the foot. It is most often caused by excessive abnormal pronation of the foot where the joints in the mid-foot are not stable. The medial longitudinal arch (inner arch) of the foot repeatedly collapses during running activities. The player will experience symptoms of pain during or after playing as well as after resting; first few steps after you start to walk in the morning or sitting in the dugout after a long inning. The arch / heel area becomes stiff and pain is usually located at or near the insertion of the fascia to the heel bone. It is sharp in nature and can radiate throughout the plantar or bottom surface of the heel bone. It is important that an x-ray of the heel bone is performed to rule out the formation of a heel spur that can form in that specific area of the foot. A heel spur can form long the inner portion of the heel bone because of excessive pronation and the fascial tissue is pulled away from its attachment to the heel bone. As the fascial tissue is pulled away from the heel bone a spur will begin to develop over time in that specific area. There may also be an inflammation of a bursa which can form due to excessive pressure in that area over a long period of time and found directly underneath the heel bone or nerve involvement, where the medial calcaneal plantar nerve becomes entrapped because of chronic inflammation.

ACHILLES TENDONITIES

A tendonitis is an inflammation of the tendon or the tissue covering the tendon. Tendons are elastic tissues which connect muscles to bones. The Achilles tendon is a large tendon that attaches to the back of the heel bone (calaneous). The area that becomes inflamed is along the narrowest portion of the tendon about 1-2 cm above the insertion of the tendon to the back of the heel bone. Common symptoms are pain, swelling, decreased motion and stiffness with flexion and extension of the ankle. Abnormal foot biomechanics is a major reason why this problem develops.

Sever's Disease

Sever's disease is a very common heel problem which occurs in kids ranging from age 8 to 13 and known as calcaneal apophysitis. It affects the back of the heel bone and one of the reasons it develops is because of abnormal pull on the heel bone from both the Achilles tendon and the plantar fascia. This is an inflammation of the growth plate of the heel bone as the bone is beginning to fuse. It is caused by repetitive impact during running and jumping activities in sports especially if the foot is not properly balanced. Pain is sharp in nature and can be diagnosed with compression of the heel bone. Ice, over the counter anti-inflammatory medication, a cushioned insole, orthotics and avoid jumping until the heel pain calms down are ways to treat this problem.

Turf Toe

Turf toe is a sprain of the ligaments or capsule of the great toe joint (first metatarsophalangeal joint) or of the lesser metatarsal phalengel joints in the foot because of a hyperextension injury. It is commonly found in the great toe joint but can also be associated with the 2nd through 5th metatarsal phalangeal joints in the foot. The term turf toe has been expanded to include joint subluxation or dislocation, sesamoiditis or fractures of the sesamoid bones. Sesamoid bones are 2 tiny bones found in feet located underneath the head of the first metatarsal bone. This problem is caused by hyperextension or an upward twisting of the great toe during sports. Most commonly occurs on baseball surfaces that use artificial turf. The problem causes pain, tenderness and swelling in the metatarsalphalangeal joint of the great toe. There is pain weight bearing, walking and running.

TOE NAIL PROBLEMS

These are common problems that often affect the nail plate of the great toe. They can become ingrown on either side of the nail border or traumatized and form a hematoma or blood blister under the nail plate. Tight fitting baseball shoes can cause these problems during running injuring the top or sides of the nail plate. Keeping your nails short and wearing the proper size shoes will help eliminate these common problems. Cut your nails straight across and round the edge f the nails with a nail file.

The Thumbs Rule: There should always be a thumbs width between the longest toe and the tip of the shoe.

BLISTERS

Blisters can occur in your feet due to friction or shearing forces from poorly fitting shoes which can be either too loose or too tight. They can form anywhere on the foot, toes, the back of the heel or the arch. Properly fitting shoes are paramount in preventing blister formation also over the counter insoles which have friction decreasing properties are helpful. Arch supports are also helpful when the arch is affected.

NERVE PROBLEMS

Morton's neuroma is a very common nerve problem often found in the 3rd inter-space of the foot. It can be associated with mechanical foot imbalances. Friction , trauma or abnormal foot biomechanics will cause a thickening of the covering around the nerve resulting in scar tissue formation and needle-like shooting, electric pain or tingling which radiates into the 3rd and 4th toes. The nerve that travels in between the 3rd and 4th metatarsal bones becomes inflamed and swollen. This causes nerve pain. They can also be found in other areas of the foot; the heel and other metatarsal inter-spaces. Tightly fitting shoes can cause compression of the nerve tissue which will exacerbate the problem. It can be treated conservatively with custom orthotics, wearing wider shoes, oral nonsteroidal anti-inflammatory drugs, cortisone injection therapy and

surgical removal. Baseball shoes that are tight or too narrow at the ball of the foot and places compression in that area should be avoided or discarded.

Neuropraxia or a compression neuropathy is another common problem found in the foot. It can occur when the shoe lace in the baseball shoe is tied to tight and compresses the superficial nerves on the top of the foot. This causes a numb or an electric tingling feeling on the top of the foot which can radiate into the toes. It could also occur if there has been direct trauma to the top of the foot. An example of that could be fouling off a pitch and it hits the top of the foot. Those individuals who have a bone spur or a prominent boney area on the top of their foot are also susceptible to this problem. This problem can be resolved by adjusting the shoe laces in order to take the pressure off the top of the foot. Custom orthotics and cortisone injections can also help reduce the problem.

LISFRANC'S JOINT INJURIES

These are injuries to the joints in the mid-foot or tarsometatarsal joints in the foot. The joint can either dislocate or be severely sprained. Acute in nature because of a traumatic incident to the foot causing a ligamentous sprain (grade 1), a partial tear (grade 2.), or a total ligamentous disruption (grade 3) It can also be described as a "turf joint" injury, due to injuring the first metatarsal-cuneiform joint on artificial turf. The injury presents as pain and swelling in the mid-foot. There is also pain associated with plantarflexion and dorsiflexion of the joints in the mid-foot as well as bearing weight or pushing off on the affected foot. It can occur by just running the bases and hitting the bag the wrong way. These types of injuries can often requiring 6-10 weeks of recovery time. They may even require surgical intervention.

BASEBALL CLEATS / SHOES

Baseball shoes are designed to protect the foot and give the player better shock absorption, traction and stability when running / stealing, fielding or hitting. The shoe consists of many different parts with specific functions. They are not designed to biomechanical support the foot or prevent abnormal foot pronation. Orthotic foot supports should be placed in the shoes to provide the proper balance the foot needs to achieve better biomechanical balance and stability.

There are 3 styles, high – tops above the ankle, mid-cut, mid ankle and low – cut, below the ankle. They have spikes ½ inch long that are attached in the front and back part of the outer sole of the shoe for enhancing foot speed, traction, stability and control. The spikes / cleats are made out of metal or plastic and allow you to dig into the playing surface to achieve better traction which helps pitchers on the mound as well as a fielder getting a quick jump on the ball, and a hitter making precise turns running the base paths. The outer sole is made out of either a molded durable hard rubber or molded fiberglass material and provides stability to the sole of the shoe. The materials are light weight so the foot does not fatigue during performance. The midsole of the shoe is made of a light weight molded EVA foam material that helps absorb the impact load and shock that the foot will experience when playing. The inner sole or foot bed liner is removable and provides a layer of cushioning material usually made out of foam which aides in supporting the foot. Full length orthotics or any supportive device can be placed on top of these foot bed liners without a problem. The top of the foot is protected by the upper part of the shoe. The upper is made out of light weight materials and provides ventilation for the foot during the game. The Heel counter of the shoe provides stability to the heel and limits heel rotation during movement. The toe box is located in the front of the shoe and should be deep enough so the toes have enough room to move around. A tight or narrow toe box could cause cramping or overlapping of the toes in the shoe which could cause skin irritation forming painful corns on the top of the toes.

SHOE FITTING

To properly choose the right size shoe to wear, there should be at least a thumbs width between the longest toe and the end of shoe. That will allow the foot to elongate when weight bearing without the toes jamming at the end of the shoe. .

SOLUTIONS TO FIX THE PROBLEMS

Poor foot biomechanics cause muscle imbalances which can lead to many types of soft tissue injuries that can affect the foot while playing baseball. The injured areas become inflamed causing pain and swelling which can keep you off the field. The treatment solution for these problems can be divided into two categories, biomechanical and soft tissue/fractures.

First and foremost, controlling the abnormal foot biomechanics which causes the foot to excessively pronate resulting in foot and lower leg muscle imbalances is very important. This can often lead to soft tissue type injuries and sometimes bone fractures. Custom made orthotics made by a podiatrist or over the counter arch supports are the best ways to control abnormal foot pronation and improve foot biomechanics. Depending on how rigid the material the orthotic device is made of, it will determine how much support the foot will receive. The more rigid the materials used to make the orthotic device the more stable the foot will be in the baseball shoe. Orthotics can be made out of high density foams and plastics and graphite materials. Orthotics stabilizes and aligns the joints in the foot below the ankle. They create better muscle balance and allow the ball of the foot to be firmly placed on the ground. These types of devices can reduce the risk of injury.

Secondly, if your problem is a soft tissue injury and has not progressively gotten better in 7-10 days after using over the counter nonsteroidial anti-inflammatory medications such as Advil or if necessary a prescription anti-inflammatory medication written by your physician. X-rays or an MRI may also be required to diagnose the problem correctly. Other treatment options that can be very helpful and used in conjunction with oral anti-inflammatory medications are topical homeopathic over the counter remedies such as Arnica products. These are topical homeopathic creams, gels, tablets or liquids that reduce soft tissue inflammation and are extremely helpful in reducing soft tissue pain and swelling. Stretching sore muscles, rest, ice, compression, elevation and changing worn out training shoes should also help speed up recovery process. When in doubt, always consult with a medical specialist. Contact your podiatrist or orthopedist to help resolve these problems.

So, never wish an injury to get better, be proactive to avoid developing chronic problems which in turn could shorten your career. “Better balance does equal maximum performance”.

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