Youth Football Speed, Agility, and Quickness and Functional Conditioning Program

Goal: To develop Speed, Agility, and Quickness (SAQ) and functional football strength for young football players through a consistent and safe format. Initially we start with a Clinic format and then work into a pre-season, mid-season, and post-season program.

What is Speed Agility Quickness (SAQ)?:

**SAQ Training** is a system of progressive exercise and instruction aimed at developing fundamental motor abilities to enhance the capability of players and athletes to be more skilful at faster speeds and with greater precision.

**SPEED TRAINING** aims at improving maximum velocity of movement throughout each and every general as well as sports specific activity

**AGILITY TRAINING** aims at developing the ability to change movement patterns with speed and precision

**QUICKNESS TRAINING** aims at improving the ability to react and initiate movement. It also refers to the process of improving acceleration over both very short and longer distances as required by the specific nature of a specific sport.

Within the SAQ program we also work on improving the Core strength or Stability of the athlete as well.

What is Core Stability?:

What is core stability? Core stability is the ability to control the central body. This is essential for muscles and joints to perform in a safe and effective manner, in order to generate maximal power.

The core muscles comprise of both the abdominal and lower back muscles. The lower back muscles consist of the erector spinae, rectus abdominis, transverse abdominis and deep intrinsic muscles, all of which provide both voluntary movements and stability. The gluteus medius, minimus and hip flexors are also responsible for stabilization of the pelvic girdle.

How does improving the Core benefit a youth football player:

- Improves muscle power
- Increases muscle response time
- Improved kinesthetic awareness
- Improves agility
- Improves performance
- Allows one to do more with less effort
- Increases flexibility
- Improves ones dynamic balance
- Improves ones posture
- Reduces injuries
Core stability is a focus from the start of this program. The better their stability and posture the less problems they will have, the more effective they will be and the harder they can train.

**What is Functional Conditioning?:**

Functional conditioning teaches the athlete to take in the whole spectrum of performance conditioning components: balance, flexibility, stability, acceleration, and deceleration. It asks the athlete to respond to many different functional components during one exercise. It trains the athlete to become more athletic, forcing the body to physically adapt and react like on the field of play.

In this program we will incorporate all three of these techniques to maximize our young athlete’s abilities.

**What is the Correct Sprinting Form?:**

- Head and neck should be aligned with body, not forward.
- Arms should be relaxed and flexed to 90° at the elbow.
- Arm swing should come from the shoulder and should be linear, not crossing the body.
- Let the body lean, but do not bend. The body should have a slight forward tilt from the ground, not a bend at the hips.
- Run on the balls of the feet, not the toes.
- The foot should land directly underneath the sprinter. An over-stride results in the foot landing in front of the center of gravity, which causes braking. Under-striding causes a lot of fast movement and energy expenditure without covering enough ground.
- Keep the head and trunk still and the entire body relaxed.
- Part of good technique is to relax the trunk, arms, and antagonists of the stride movements. Energy is often wasted to keep accessory muscles contracted and the body rigid, and wasted energy equals decreased speed. Use relaxation to be as efficient as possible and recover as quickly as possible.

Taken from the [http://www.sportsspeedusa.com/Page.html](http://www.sportsspeedusa.com/Page.html).

**BALL OF THE FOOT - THE KEY TO UNLOCKING SPEED**

Whether your accelerating or running at top speed, foot contact should be with the ball of the foot.

When you land on the ball of the foot, the muscles and tendons of the foot arch undergo a quick forceful stretch and gain tension for initial shock absorption. They then undergo greater tension and, as a result, accumulate energy, which is then given back in the pushoff. This process generally takes less than 1/10th
of a second during sprinting. Half of this time is for the landing and half for takeoff.

Muscles and tendons are elastic in nature. When they are forcefully stretched, they return to their initial shape quickly and forcefully due to their resiliency.

Athletes that contact the ground with the heel first do not take advantage of the energy generated in the landing or the elastic nature of the muscles and tendons. They also spend more time on the ground and have a less forceful pushoff.

"Good Athletes Spend Very Little Time On The Ground"

PROPER ARM ACTION CONTRIBUTES FORCE TO INCREASE SPEED

Characteristics Of Good Arm Action During Sprinting

1. As the knee is driven forward, the arm on the opposite side of the body is also driven forward from a position behind the body.
2. The arm moves forward in front of the body until the hands are about shoulder high. (In addition, the elbow flexes to 90 degrees or less during the forward knee drive)
3. Most long distance runners maintain the arms at approximately a 90-degree angle from the elbows to economize energy, and the amount of opening and closing of the angle is fairly small.
4. In sprinting, the amount of opening and closing of the elbow is more significant. The arm flexes and moves forward until the elbow is alongside or just slightly in front of the body, there is approximately a 90-degree bend in the elbow, and the hand is about shoulder high. The arm then straightens as it moves back and down so that it is relatively straight. After the arm straightens, the elbow is then raised in the rear. This action bends the elbow slightly and prepares it for being driven forward in synchronization with the bent-leg forward knee drive.
5. The straightening of the arm during the downward whipping movement creates greater force, which allows the runner to push off the ground with more power.
6. Arm action should be in the direction of the run. The arms should not move excessively to the sides or across the body. Shoulders and hips should remain square (facing the direction of movement). Rotating the shoulders creates sideward-motion forces, which detract from the force needed to propel you directly forward as quickly and forcefully as possible.
7. The shoulders and neck should be relaxed even when you are striving to run faster. If these muscles become tense, effective arm movement is restricted.
As you monitor the athlete's technique look for:

- **Tall** action
  - This means erect, running on the ball of foot/toes (not heels) with full extension of the back, hips and legs as opposed to 'sitting down' when running

- **Relaxed** action
  - This means move easily, as opposed to tensing and 'working hard' to move. Let the movements of running flow. Keep the hands relaxed, the shoulders low and the arm swing rhythmically by the sides.

- **Smooth** action
  - This means float across the top of the ground. All motion should be forward, not up and down. Leg action should be efficient and rhythmic. The legs should move easily under the body like a wheel rolling smoothly along.

- **Drive**
  - This means push from an extended rear leg, rear elbow drive with a high forward knee drive followed by a strike and claw foot action just behind the body's center of gravity.

"Proper Sprinting Technique"

- Head and neck should be aligned with body, not forward.

- Arms should be relaxed and flexed to 90° at the elbow.

- Arm swing should come from the shoulder and should be linear, not crossing the body.

- Let the body lean, but do not bend. The body should have a slight forward tilt from the ground, not a bend at the hips.

- Run on the balls of the feet, not the toes.

- The foot should land directly underneath the sprinter. An over-stride results in the foot landing in front of the center of gravity, which causes braking. Under-striding causes a lot of fast movement and energy expenditure without covering enough ground.

- Keep the head and trunk still and the entire body relaxed.

These are extremely crucial biomechanical aspects of speed production and should be reinforced through fun games and exercises with kids. The key is to get young athletes to a point at which they no longer revert back to their old running styles when they are in 'game' situations (i.e., they have adopted this new style of running wholeheartedly)."

Remark made by Brian Grasso on http://www.y-coach.com
CLINIC:

6 Session Clinic Format

During the summer after school lets out and before pre-season is the best time to begin developing your players. This clinic format is set up using six sessions of one hour and thirty minutes each or a total of nine clinic-training hours. You can do this in two different formats; either a 2 week 3 day set up or a 3 week 2 day step; which ever is more convenient or appropriate.

Ensure all of your athletes have physical done and have properly hydrated themselves before the clinic sessions begin.

As you do warm ups and stretches begin to evaluate each player. Note the players that fall in the less agile, less athletic, less developed, and give them special attention. Slow things down with them and make sure the execute each exercise correctly. You might want to even put them into one group for the station drills so that you can work with them all one on one in a like atmosphere.

This format is based on 20 players between the age of 9 to 12.

Session 1

Knowledge Circle – (15 minutes) – Very Important

Discuss –
- Proper Hydration (see appendix) (players must bring a water jug.)
- Effects of Dehydration (see appendix)
- Proper Eating (see appendix)
- Proper Rest and Warm up (see appendix)
- Go over equipment required. (cleats, shorts, t-shirt, and sun screen applied)
- Proper Posture (see appendix)

Warm Ups – (Always warm up before you stretch.) (10 minutes)

Description – A field with a line (coned off) for 10 players (2 rows of 10). Facing a set of cones the same width 20 yards away. Each row will execute one repetition (there and back) of each warm up drill. Stress proper arm movement, body position, and footwork. Not fast but slow to moderate speed; working on warming up and technique.

1) Form Run (not sprint)
2) High Knees
3) Butt Kickers
4) Carioca
5) Shuffle
6) Fast Feet
7) Skipping
8) Form Run (not sprint)
Passive Stretching – (Stretching increases flexibility and increased flexibility will increase speed and decrease injuries.) (10 minutes)

Each stretch will be done for a slow count of 10. One coach will count off in front of the 2 rows and one or more coaches will monitor each row for proper execution of the stretch.

1) Standing Forward Fold (hamstrings, calves, back)
2) One Leg Standing Quadriceps Stretch (quadriceps)
3) Alternating Calf Stretch (Calf)
4) Alternating Lateral Side to Side Lunging (inner thigh, hamstrings)
5) Alternating Forward Lunging Stretch (lower body stretch)
6) Alternating Standing Torso Twist (mid section)
7) Lateral Side to Side (mid section)
8) Push up to a Child Pose (chest, back, mid section, shoulders)

Note: As the players are stretching have some coaches or parents set up the field on the other side of the cones.

Break For Water (5 minutes)

Station Drills (20 minutes)

Divide the players into 4 groups of five players.

Place the stations 20 to 30 yard away from each other. After the coaches divide the players have a coach at each station. Have each group sprint to their first station and as soon as they get there go into an IN PLACE FAST FEET until the station coach tells them to stop. We will also do this on every change of station as well (4). This will begin to teach the players and reinforce the fact that they need to stay on their toes while they run. It will also maintain a high heart rate for cardiovascular training.

Station 1) – Jumps in Place (basic plyometric training)

Have the group circle the coach with more than double arms interval between them.

In Place Jump Sequence – (develops elastic strength/ concentrate on how they jump vice how much they jump)
Pogo Jumps (20)
Squat Jumps (10)
Rocket Jumps (10)
Star Jumps (10)

Give them 20 seconds of rest between each sequence.

Station 2) – Core Training (strengthen the core to improve reaction speed and sprint speed)

Have the group circle the coach with more then double arms interval between them.
Core Sequence –
- On Back – Hip Lift (20 – 1 count pause with hips off ground)
- Crunches – alternating knee touch (20 – slow)
- Lying Back Extensions (knee/hands) – Alternate Leg/Arm Raise (10 – 1 count pause)
- Four Point (forarms/toes) – hold for count 30/20/10 seconds with a 5 second rest in between.

Station 3) – Functional Training (enhances agility and quickness along with developing football strength)

Have five rows of three cones that are 5 yards apart (10 yards total). Each player will get behind a row of cones.

Functional Sequence –
- Bear crawl to 2nd cone – Sprint to 3rd cone and execute 5 normal pushups (correctly and slowly at first) – sprint back and execute 5 normal pushups.
- Shuffle to 2nd cone – Bear crawl to 3rd cone – shuffle to 2nd cone – bear crawl to 1st cone.
- Sprint to 2nd cone stop and reset – Sprint to 3rd cone stop and reset – sprint to 2nd cone stop and reset – sprint to 1st cone stop and reset. (get offs)
- Back pedal to 3rd cone – sprint to 1st cone (reset and repeat for a set of 2) ( bent at the knees, drop the hips, chin over the toe for backpedal)

Station 4) – Sprinting Technique

Have five rows of three cones that are 10 yards apart (20 yards total). Each player will get behind a row of cones.

Sprint Technique Sequence (stress correct technique and not amount, slow things down if it is not being done correctly)
- Knees on Ground – Arm Pumping Action – 30 seconds
- Fast Feet – Arm Action – 30 seconds
- Takes offs – sprint to 2nd cone reset, sprint 3rd cone reset, sprint to 2nd cone reset, sprint 1st cone reset. (repeat)
- Skip and Sprint – Skip to 2nd cone – sprint to 3rd cone – skip to 2nd cone – sprint to 1st cone. (repeat)

Break for Water – (5 minutes)

Fun Time – (10 minutes)

Power Ball –

Need 2 x 30 gallon trashcans. Coned off 50 yard by 25 yard field with the trash cans on each end of the 50 yard field.
Split the group up into even teams (10 on each side). Use skins and shirts or some other means of identifying the two teams. Have two footballs and each team starts with one football at the beginning of the game.

The object is to score more points than the opposing team by placing the ball into the trashcan. The runner must not be touched with two hands by the opposing team while he has the ball or he must forfeit the ball to the opposing team. The opposing team must not pick (make physical contact) the runner. If that happens they forfeit a point and that player sits until a point is scored by either team. This reduces the chance of injury and forces players to touch (two hand). The ball can be thrown, tossed, or carried all the way upfield. The ball can be placed or thrown into the trash can for 1 point. The team with the most points at the end of time wins. After each score the opposing team gets the scoring ball. So if a team scores with both balls at the same time the opposing team gets the opportunity take both balls back down field. The more balls in play the more players are interacting and the less rest is occurring.

This game develops a lot of the needed football skills like reaction speed, sprint speed, agility, balance, ball handling skills, passing, receiving, avoiding an opponent, pursuing, and contacting another opponent.

Cool Down – Repeat Stretch Phase. (10 minutes)

**Session 2**

Warm ups (10 minutes)

Passive Stretching (10 minutes)

Break for Water (5 minutes)

Station Drills -

Station Drills (25 minutes)

Divide the players into 4 groups of 5 players.

Place the stations 20 to 30 yard away from each other. After the coaches divide the players have a coach at each station. Have each group sprint to their first station and as soon as they get there go into an IN PLACE FAST FEET until the station coach tells them to stop. We will also do this on every change of station as well (4). This will begin to teach the players and reinforce the fact that they need to stay on their toes while they run. It will also maintain a high heart rate for cardiovascular training.

Station 1) Jumping In Place (basic Plyometric drills)

Have the group circle the coach with more than double arms interval between them.

In Place Jump Sequence –

Pogo Jumps (20)
Squat Jumps (10)
Double Leg w/ Butt Kick Jump (10)  
Double Leg w/ Knee Tuck (10)  

Give them 20 seconds of rest between each sequence.

Station 2) – Core Training

Have the group circle the coach with more then double arms interval between them.

Core Sequence –
- On Back – Pelvic Lift (20 – 1 count pause with hips off ground)
- Crunches – alternating knee touch (30 – slow)
- Kneeling Back Extensions – Alternate Leg/Arm Raise (10 – 1 count pause)
- Four Point (forearms/toes) – hold for count 40/30/15 seconds with a 5 second rest in between.

Station 3) Functional Training

Functional Training Sequence – allow for a 20 second rest in between each exercise.

- Dynamic Cone Touch (opposite arm/opposite leg) 2 sets each
- Dynamic Pyramid Cone Sprint & Jump Ups (double leg) 2 sets to left/ 2 sets to right
- Dynamic Pyramid Cone Back Pedal & Jump Ups (double leg) 2 sets to left/ 2 sets to right
- Dynamic Pyramid Cone Shuffle and Jump Ups (double leg) 2 sets to left/ 2 sets to right

Station 4) Sprinting Technique

Have five rows of three cones that are 10 yards apart (20 yards total). Each player will get behind a row of cones.

Sprint Technique Sequence
- Fast Feet – Arm Action – 30 seconds
- Takes offs – sprint to 2nd cone reset, sprint 3rd cone reset, sprint to 2nd cone reset, sprint 1st cone reset. (repeat)
- Skip and Sprint – Skip to 2nd cone – sprint to 3rd cone – skip to 2nd cone – sprint to 1st cone. (repeat)
- Sprint to 3rd cone reset –Sprint to 1st cone. (repeat)

Break for Water (5 minutes)

Fun Time (15 minutes)

Break the players up into groups of 4. Try to make each group as balanced as possible.

Have as many columns of cones as you have groups. We are going to us 5 groups of 4 players as an example. Each column will have 4 cones (start cone, cone 1, cone 2, and
cone 3). They will be spaced 10 yards apart for total of 30 yards of distance for start cone to cone 3. This is Relay Race with a football as the baton. The players will get to the end and then come back and exchange the football until all four players are through. After each player has completed the relay they will take a knee behind the start cone to indicate they are finished. The group that finishes first wins and does not have to repeat the relay. The other groups repeat until there is only one group left. The reason for doing this is that the groups that finish first do not need as much work as the groups that finished behind them. Since each cycle has a winner that means the group that needs the most work will be last and will get the most reps. It also determines a 1st, 2nd, 3rd, and so on until you are left with one group (last).

Work on these routines until time is up.

1) Sprint to cone 1, Shuffle to cone 2 (facing west), Sprint to cone 3, Sprint to cone 2, Shuffle to cone 1 (facing west), sprint start cone.

2) Carioca to cone 1 (facing west), Sprint to cone 2, Carioca to cone 3 (facing west), Sprint to cone 2, Carioca to cone 1 (facing west), Sprint to start cone.

3) Sprint to cone 1, Three point bear crawl (with ball) to cone 2, sprint to cone 3, Three point bear crawl (with ball) to cone 2, sprint to cone 1, Three point bear crawl to start cone.

(If you get through the first two sequences this last sequence is tough but it teaches body control and balance while maintaining ball security.)

Cool Down – Repeat Stretch Phase. (10 minutes)

Session 3

Warm-up (10 minutes)
Passive Stretching (10 minutes)
Water Break (5 minutes)

Ladder Training: (have 5 columns with 4 players each) (35 minutes)

Each column has a start cone and 1 cone (5 yards), 2 cone (10 yards), and a 3 cone (15 yards out).

Each player will execute the assigned ladder drill correctly with good form and as quickly as possible.

Turn this into a competitive game and make it fun.

Sequence 1 (12 minutes)

1) Bear Crawl to 1 and back, Sprint to 2 and back, Bear Crawl to 1 and back.
2) Shuffle (west) to 1 and back, Sprint to 2 and back, Shuffle (west) to 1 and back.
3) Rocket Jump and Sprint to 1 and back, Rocket Jump and Sprint to 2 and back, Rocket Jump and Sprint to 1 and back.
4) Carioca (west) to 1 and back, Sprint to 2 and back, Carioca (west) to 1 and back.
5) Squat Jump to 1 and back, Sprint to 2 and back, Squat Jump to 1 and back.

Water Break (3 minutes)

Sequence 2 (12 minutes)

1) Horizontal One Legged hops (left) to 1 and back (right), Sprint to 2 and back, Horizontal One Legged hops (left) to 1 and back.
2) Bear Crawl to 1 and back, Carioca to 2 and back, Bear Crawl to 1 and back.
3) Star Jump and Sprint to 1 and back, Star Jump and Sprint to 2 and back, Star Jump and Sprint to 1 and back.
4) Sprint to 1 and backpedal back, Sprint to 2 and backpedal back, Sprint to 1 and backpedal back.
5) Sprint to 1 and back, Alternating Lunge Jumps to 2 and back, Sprint to 1 and back.

Sequence 3 (5 minutes)

Using all of the cones – Start cone, cone 1 (5 yds), cone 2 (10 yds), cone 3 (15 yards).

1) sprint to cone 1 and back, sprint to cone 2 and back, sprint to cone 3 and back.
2) Sprint to cone 1 and do 3 plyometric pushups and back, sprint cone 2 and do 3 plyometric pushups and back, sprint to cone 3 and do 3 plyometric pushups and back.
3) Sprint to cone 1 and back, sprint to cone 2 and back, sprint to cone 3 and back.

Fun Time: (20 minutes)

Power Ball as 1st Session

Cool Down: (10 minutes)

**Session 4**

Warm-up (10 minutes)
Passive Stretching (10 minutes)
Water Break (5 minutes)

Station Drills (35 minutes)

Divide the players into 4 groups of five players.

Place the stations 20 to 30 yard away from each other. After the coaches divide the players have a coach at each station. Have each group sprint to their first station and as soon as they get there go into an IN PLACE FAST FEET until the station coach tells them to stop. We will also do this on every change of station as well (4). This will begin to teach the players and reinforce the fact that they need to stay on their toes while they run. It will also maintain a high heart rate for cardiovascular training.
Station 1) – Jumps in Place (basic plyometric training)

Have the group circle the coach with more than double arms interval between them.

In Place Jump Sequence – (develops elastic strength)
Pogo Jumps (20)
Squat Jumps (15)
Rocket Jumps (15)
Star Jumps (15)

Give them 20 seconds of rest between each sequence.

Station 2) – Core Training (strengthen the core to improve reaction speed and sprint speed)

Have the group circle the coach with more then double arms interval between them.

Core Sequence –
- On Back – Hip Lift (20 – 1 count pause with hips off ground)
- Crunches – alternating knee touch (30 – slow)
- Kneeling Back Extensions (knee/hands) – Alternate Leg/Arm Raise (10 – 1 count pause)
- Four Point (forarms/toes) – hold for count 40/30/20 seconds with a 5 second rest in between.

Station 3) – Functional Training (enhances agility and quickness along with developing football strength)

Have five rows of three cones that are 5 yards apart (10 yards total). Each player will get behind a row of cones.

Functional Sequence –
- Bear crawl to 2nd cone – Sprint to 3rd cone and execute 5 plyometric pushups – sprint back and execute 5 plyometric pushups.
- Shuffle to 2nd cone – Bear crawl to 3rd cone – shuffle to 2nd cone – bear crawl to 1st cone.
- Sprint to 2nd cone stop and reset – Sprint to 3rd cone stop and reset – sprint to 2nd cone stop and reset – sprint to 1st cone stop and reset. (get offs)
- Back pedal to 3rd cone – sprint to 1st cone (reset and repeat for a set of 2)

Station 4) – Sprinting Technique

Have five rows of three cones that are 10 yards apart (20 yards total). Each player will get behind a row of cones.

Sprint Technique Sequence
- Fast Feet – Arm Action – 30 seconds
• Takes offs – sprint to 2nd cone reset, sprint 3rd cone reset, sprint to 2nd cone reset, sprint 1st cone reset. (repeat)
• Skip and Sprint – Skip to 2nd cone – sprint to 3rd cone – skip to 2nd cone – sprint to 1st cone. (repeat)
• Sprint to 3rd cone and back (repeat)

Break for Water – (5 minutes)

Fun Time – (15 minutes)

Deer Hunter – need four to five nerf footballs or round balls.

Need a field that is 50 yards by 50 yards are big enough to accommodate your group of players so that they can run around and spread out easily.

Pick out a number of hunters that you have balls and they will be hunters.

Rules –

The hunters must tag (throw or touch) all the deer (rest of the players). Once a deer is tagged they go and sit until all the deer are tagged.

Deer cannot touch the balls at all unless they catch or intercept a ball thrown at them or another deer then that hunter becomes a deer and they become a hunter. If they touch a ball on the ground they are tagged.

Once all the deer are tagged the last (number of nerf balls) standing become the new hunters.

Cool Down (10 minutes)

Session 5

Warm-up (10 minutes)
Passive Stretching (10 minutes)
Water Break (5 minutes)

Station Drills -

Station Drills (35 minutes)

Divide the players into 4 groups of 5 players.

Place the stations 20 to 30 yard away from each other. After the coaches divide the players have a coach at each station. Have each group sprint to their first station and as soon as they get there go into an IN PLACE FAST FEET until the station coach tells them to stop. We will also do this on every change of station as well (4). This will begin to teach the players and reinforce the fact that they need to stay on their toes while they run. It will also maintain a high heart rate for cardiovascular training.
Station 1) Jumping In Place (basic Plyometric drills)

Have the group circle the coach with more than double arms interval between them.

In Place Jump Sequence –
Pogo Jumps (20)
Squat Jumps (15)
Double Leg w/ Butt Kick Jump (15)
Double Leg w/ Knee Tuck (15)

Give them 20 seconds of rest between each sequence.

Station 2) – Core Training

Have the group circle the coach with more then double arms interval between them.

Core Sequence –
  • On Back – Pelvic Lift –w/Heel lift (20 – 1 count pause with hips off ground and left heel off the ground then drop that heel and lift the right heel off the ground for 1 count pause then down and repeat)
  • Crunches – alternating knee touch (30 – slow)
  • Kneeling Back Extensions – Alternate Leg/Arm Raise (15 – 1 count pause)
  • Four Point (forearms/toes) – hold for count 40/30/15 seconds with a 5 second rest in between.

Station 3) Functional Training

Functional Training Sequence – allow for a 20 second rest in between each exercise.

  • Dynamic Cone Touch (opposite arm/opposite leg) 2 sets each leg
  • Dynamic Pyramid Cone Sprint & Jump Ups (double leg) 2 sets to left/ 2 sets to right
  • Dynamic Pyramid Cone Back Pedal & Jump Ups (double leg) 2 sets to left/ 2 sets to right
  • Dynamic Pyramid Cone Shuffle and Jump Ups (double leg) 2 sets to left/ 2 sets to right

Station 4) Sprinting Technique

Have five rows of three cones that are 10 yards apart (20 yards total). Each player will get behind a row of cones.

Sprint Technique Sequence
  • Fast Feet – Arm Action – 30 seconds
  • Takes offs – sprint to 2nd cone reset, sprint 3rd cone reset, sprint to 2nd cone reset, sprint 1st cone reset. (repeatx3)
  • Skip and Sprint – Skip to 2nd cone – sprint to 3rd cone – skip to 2nd cone – sprint to 1st cone. (repeatx3)
  • Sprint to 3rd cone reset –Sprint to 1st cone. (repeatx3)
Break for Water (5 minutes)

Fun Time (15 minutes)

Break the players up into groups of 4. Try to make each group as balanced as possible.

Have as many columns of cones as you have groups. We are going to use 5 groups of 4 players as an example. Each column will have 4 cones (start cone, cone 1, cone 2, and cone 3). They will be spaced 10 yards apart for a total of 30 yards of distance for start cone to cone 3. This is Relay Race with a football as the baton. The players will get to the end and then come back and exchange the football until all four players are through. After each player has completed the relay they will take a knee behind the start cone to indicate they are finished. The group that finishes first wins and does not have to repeat the relay. The other groups repeat until there is only one group left. The reason for doing this is that the groups that finish first do not need as much work as the groups that finished behind them. Since each cycle has a winner that means the group that needs the most work will be last and will get the most reps. It also determines a 1st, 2nd, 3rd, and so on until you are left with one group (last).

Work on these routines until time is up.

4) Sprint to cone 1, Shuffle to cone 2 (facing west), Sprint to cone 3, Sprint to cone 2, Shuffle to cone 1 (facing west), sprint start cone.

5) Carioca to cone 1 (facing west), Sprint to cone 2, Carioca to cone 3 (facing west), Sprint to cone 2, Carioca to cone 1 (facing west), Sprint to start cone.

6) Sprint to cone 1, Three point bear crawl (with ball) to cone 2, sprint to cone 3, Three point bear crawl (with ball) to cone 2, sprint to cone 1, Three point bear crawl to start cone.

(If you get through the first two sequences this last sequence is tough but it teaches body control and balance while maintaining ball security.)

Cool Down (10 minutes)

Session 6

Warm-up (10 minutes)
Passive Stretching (10 minutes)
Water Break (5 minutes)

Ladder Training: (have 5 columns with 4 players each) (35 minutes)

Each column has a start cone and 1 cone (5 yards), 2 cone (10 yards), and a 3 cone (15 yards out).
Each player will execute the assigned ladder drill correctly with good form and as quickly as possible.

Turn this into a competitive game and make it fun.

Sequence 1 (12 minutes)

6) Bear Crawl to 1 and back, Sprint to 2 and back, Bear Crawl to 1 and back.
7) Shuffle (west) to 1 and back, Sprint to 2 and back, Shuffle (west) to 1 and back.
8) Rocket Jump and Sprint to 1 and back, Rocket Jump and Sprint to 2 and back, Rocket Jump and Sprint to 1 and back.
9) Carioca (west) to 1 and back, Sprint to 2 and back, Carioca (west) to 1 and back.
10) Squat Jump to 1 and back, Sprint to 2 and back, Squat Jump to 1 and back.

Water Break (3 minutes)

Sequence 2 (12 minutes)

6) Horizontal One Legged hops (left) to 1 and back (right), Sprint to 2 and back, Horizontal One Legged hops (left) to 1 and back.
7) Bear Crawl to 1 and back, Carioca to 2 and back, Bear Crawl to 1 and back.
8) Star Jump and Sprint to 1 and back, Star Jump and Sprint to 2 and back, Star Jump and Sprint to 1 and back.
9) Sprint to 1 and backpedal back, Sprint to 2 and backpedal back, Sprint to 1 and backpedal back.
10) Sprint to 1 and back, Alternating Lunge Jumps to 2 and back, Sprint to 1 and back.

Sequence 3 (5 minutes)

Using all of the cones – Start cone, cone 1 (5 yds), cone 2 (10 yds), cone 3 (15 yards).

4) sprint to cone 1 and back, sprint to cone 2 and back, sprint to cone 3 and back.
5) Sprint to cone 1 and do 4 plyometric pushups and back, sprint cone 2 and do 4 plyometric push ups and back, sprint to cone 3 and do 4 plyometric pushups and back.
6) Sprint to cone 1 and back, sprint to cone 2 and back, sprint to cone 3 and back.

Fun Time: (20 minutes)

Power Ball as 1st Session

Cool Down: (10 minutes)

This concludes the 6-session Clinic. By the end of this clinic each player should have developed are enhanced a lot of needed abilities and skills for the football season and increased their conditioning levels.
Individual Improvement Skills

This sheet is to be given out to all of the players that attend the camp.

It is essential as football players that you begin working on improving your skills as an athlete right now for the start of the season. The more IMPROVED you are the more IMPROVED the team is and the better the chance we have at succeeding in completing our goals as a team. I also want to stress that the more you put into your improvement the more likely you will earn a starting position and play a more important role on the team.

Each day at some point you should do these drills. Put a small amount of time away each day to do these drills.

Warm up
10 Jumping Jacks
10 Pogo Jumps
10 Normal Push Ups (do them right – back, neck, head, and legs are straight.)

When you do any type of running or sprinting concentrate on these things:

- **Tall** action
  - This means erect, running on the ball of foot/toes (not heels) with full extension of the back, hips and legs as opposed to 'sitting down' when running. Run with a slight lean in the body.

- **Relaxed** action
  - This means move easily, as opposed to tensing and ‘working hard’ to move. Let the movements of running flow. Keep the hands relaxed, the shoulders low and the arm swing rhythmically by the sides.

- **Smooth** action
  - This means float across the top of the ground. All motion should be forward, not up and down. Leg action should be efficient and rhythmic. The legs should move easily under the body like a wheel rolling smoothly along.

- **Drive**
  - This means push from an extended rear leg, rear elbow drive with a high forward knee drive followed by a strike and claw foot action just behind the body's center of gravity. When you first take off concentrate on an area three yards in front of you. You want to be low out of the gate as you start and then the body begins rises to the “Tall” action as your speed increases. By concentrating on an area in front of you that will force your body to initially stay low as soon as begin to increase speed look to your finish point.

Stretch –
1) Standing Forward Fold (hamstrings, calves, back)
2) One Leg Standing Quadriceps Stretch (quadriceps)
3) Alternating Calf Stretch (Calf)
4) Alternating Lateral Side to Side Lunging (inner thigh, hamstrings)
5) Alternating Forward Lunging Stretch (lower body stretch)
6) Alternating Standing Torso Twist (mid section)
7) Lateral Side to Side (mid section)
8) Push up to a Child Pose (chest, back, mid section, shoulders)

Work out – place two markers 10 yards apart and do each of the below exercises concentrating on FORM.

1) Form Run (not sprint)
2) High Knees
3) Butt Kickers
4) Carioca
5) Shuffle
6) Fast Feet
7) Skipping
8) Form Run (not sprint)

Work on getting up to 15 Plyometric push ups. Start at 5 and go from there. Remember good form.

Do 10 Rocket Jumps and 10 Star Jumps.

Finish with 10 jumping jacks going at good slow pace.

You are finished! Now drink a big glass of water.

MAKE SURE YOU SPEND AT LEAST AN HOUR OUTSIDE EVERY DAY WHEN WEATHER PERMITS SO THAT YOU GET CONDITIONED TO THE WEATHER!
SAQ and Functional Development – IN SEASON.

This is based on a football team having three to four practices a week at 1.5 to 2 hours a night.

The key to increasing speed in prepubescent athletes is first developing proper sprinting form and technique. Coordination is essential to speed in this period of an athlete's career. Secondly this is the time period (10 to 14) that a kid reaches puberty. Once a child reaches puberty muscle strength becomes a major factor in speed. That is why a child that is in puberty and coordinated is normally a stud football player when compared to is counter parts that have not reached puberty.

Every day

Warm ups - split the team into two rows (1 row lined up behind the other) facing a distance of 15 yards. They will go there reset and back.

1) Form Run
2) High Knees
3) Butt Kickers
4) Fast Feet
5) Shuffle
6) Carioca
7) Bear Crawl
8) Pogo Jumps
9) Sprint
10) Form Run

Stretch –

1) Standing Forward Fold (hamstrings, calves, back)
2) One Leg Standing Quadriceps Stretch (quadriceps)
3) Alternating Calf Stretch (Calf)
4) Alternating Lateral Side to Side Lunging (inner thigh, hamstrings)
5) Alternating Forward Lunging Stretch (lower body stretch)
6) Alternating Standing Torso Twist (mid section)
7) Lateral Side to Side (mid section)
8) Push up to a Child Pose (chest, back, mid section, shoulders)
9) Neck Rolls (5 left/ 5 right) slowly
10) Body Twists (10) slowly

Break for water. This is the Warm up and Stretch routine that we use. Whatever you decide to use remember that you WARM UP FIRST and STRETCH second otherwise you are not lengthening muscles but tearing them. The above warm up stresses form as well as warm ups.
Workout

At the end of practice is the best time to perform this routine. It takes no more then 10 minutes to execute in its entirety and will pay off in big dividends with in a three to five weeks time. Faster if the Clinic and Preseason systems are used.

Have the team split into two rows (one right behind the other) and facing a set of 4 cones (1 cone 5 yards, 2 cone 10 yards, 3 cone 15 yards, 4 cone 20 yards).

Sequence (correct bad form on everything)
1) 5 Plyometric Pushups and sprint to 4 cone touch the line and sprint back.
2) Pogo Jump to 1 cone, Squat Jump to 2 cone, Rocket Jump to 3 cone, Star Jump to 4 cone. Sprint back.
3) Bear crawl to 1 cone, Sprint to 2 cone, Bear crawl to 3 cone, Sprint 4 cone. Sprint back.
4) Four Point for 30 second (you count it), sprint reset to all cones and back.
5) Skip to 1 cone, fast feet to 2 cone, skip to 3 cone, fast feet to 4 cone, sprint back.
6) 5 Plyometric Push ups and sprint to 4 cone touch line and sprint back.
7) Sprint to each cone rocket jump and sprint next there and back.
8) Back pedal to 1 cone, sprint to 2 cone, back pedal to 3 cone, sprint to 4 cone, sprint back.
9) Four Point for 30 seconds, sprint reset to all cones and back.
10) Shuffle to 1 cone, Carioca to 2 cone, Shuffle to 3 cone, Carioca to 4 cone, sprint back.

This simple sequence works on Core strengthening, Functional training, and SAQ development.

Once the team gets good at this sequence change it with the below.

Sequence (correct bad form on everything)
1) 7 Plyometric Pushups and sprint to 4 cone touch the line and sprint back.
2) Pogo Jump to 1 cone, Squat Jump to 2 cone, One Legged Hop(Left) to 3 cone, One Legged Hop (Right) to 4 cone. Sprint back.
3) Crab Walks to 1 cone, Sprint to 2 cone, Crab Walks to 3 cone, Sprint 4 cone. Sprint back.
4) Four Point for 40 second (you count it), sprint reset to all cones and back.
5) Skip to 1 cone, fast feet to 2 cone, skip to 3 cone, fast feet to 4 cone, sprint back.
6) 7 Plyometric Push ups and sprint to 4 cone touch line and sprint back.
7) Sprint to 1 cone, Horizontal One legged Hop (Left) to 2 cone, Sprint to 3 cone, Horizontal One Legged Hop (Right) to 4 cone, sprint back.
8) Back pedal to 1 cone and rocket jump with twist to face 2 cone, sprint to 2 cone rocket jump w/ twist, back pedal to 3 cone rocket jump w/twist, sprint to 4 cone rocket jump w/twist, sprint back.
9) Four Point for 40 seconds, sprint reset to all cones and back.
10) Shuffle to 1 cone and squat jump, Carioca to 2 cone and squat jump, Shuffle to 3 cone and squat jump, Carioca to 4 cone and squat jump, sprint back.
If you have any time left during your practice or a 10 minute period of time I highly recommend using the below Core training Sequence. Strong core allows a player to become faster.

Split the team into two rows that face each other. Any odd man out pair him up with a parent.

1) Alternating Row Crunches – (Left row/Right row) – Left row will hold the right rows feet. On go the right row will execute as many crunches (correctly). Knees bent, arms crossed on the chest. Lift off the ground and elbows touch the knees and back down. This forces the shoulder blades to come off the ground. Make sure the arms stay on the chest. Once the right is complete quickly swap assignments and repeat.

Go for 1 minute, 45 second, 30 seconds (4:30 minutes)

2) Four Point - both rows lay down on their bellies facing away from each other. Count for 30 seconds.

3) Kneeling Back Extensions – both rows first the Left Arm/Right Leg then the Right Arm/Left Leg for 15 seconds each.

Finished. (total time 5:30 minutes and about 8 minute total for exchanging out and prepping).
Appendix 1

Brian Grasso’s course on Youth Development. Go to Developingathletics.com for more information.

**Youth Athlete Development - Course One**

**POSTURE**

Were we raised to have bad posture?

If we were given a dime for each time we have instructed a young athlete to stand up straight, lift the chest, tighten the abs and pull back the shoulders, we would all be able to retire by years end. Even with athletes we have been seeing for a number of years, posture is one of the components of a training program that we often have to address on an ongoing basis. Despite our differences in training philosophies and methodologies, we can all agree that healthy posture is important to every movement pattern that we perform both in and out of the gym. However, how many of us can truly explain why neutral posture is so vital to our athletes' musculoskeletal health? And although we spend virtually every session correcting and coaching proper posture, how many of us really know what is contained within the parameters of good posture? One of the biggest areas of concern when I observe conditioning coaches and their interactions with their clients is the lack of a proper postural assessment. Often after the initial intake form is completed, the workout begins with little concern with what is happening with their client. Paul Chek summed it up nicely when he said "If you are not assessing, you are guessing." This section of the Developing Athletics course will address some of these components from a chronological, developmental perspective and how they affect the posture in many of our athletes.

**Why have good posture?**

Posture is the positioning, listing or orientation of the body. Normal resting posture requires little muscular contraction or energy and thus is regarded as physiologically efficient. Physiologically efficient posture refers to the minimal amount of activation that is needed from both the active (musculotendinous) and passive (neurological, osseous, ligamentous and facial) systems of the body in order to maintain optimal length tension relationships in muscles. Proper length tension relationship is the length at which our muscles can develop maximum tension due to the optimal cross bridging of the actin and myosin filaments. When muscles perform with the correct tension and at precisely the right moment (motor control), we attain a position of the joints that allows an ideal point of rotation. That optimal point of rotation allows for the maintenance of an instantaneous axis of rotation or path of motion that is ideally suited for the associated joint
shape and structure. If this relationship is not maintained, altered movement patterns will develop, compensatory patterns are set in motion and biomechanical breakdown of the soft tissue structures and/or joints is inevitable. Conceptually, this is analogous to the alignment of your car. If the front end of the car (bones) is aligned properly, the tires (discs and joint structures) wear evenly and within the range of their specs. However, if the alignment is altered secondary to running over too many potholes (overuse, trauma, altered movement patterns) the tires will wear unevenly (degeneration). Although this is a rather simplistic comparison, I think it illustrates the point of the effects of improper posture on the human body.

The body attempts to create the aforementioned optimal efficiency of positioning by maintaining proper posture. This posture is maintained by receiving sensory and motor information from the neuro-proprioceptive system which includes contributions from the vestibular system, ocular system, and proprioceptive input from muscles, ligaments, articular (joint) structures and skin. Before we get into the specific components, I feel it is important to look at the development of the adolescent and adult posture since often times it is in this development phase that creates many of the dysfunctions that we see in our athletes.

**Postural Development**

Adolescent and adult posture develops as a result of adaptations of the musculoskeletal system to the stresses that are placed upon it. The first curve present in the spine is a "C" shaped curve and is termed the primary curve. This curve remains through our development and makes up the kyphotic curvature of the thoracic spine and sacrum. The secondary curves develop as the child begins to move its body against gravity. Initially, the weight of the head is heavy in comparison to the strength of the cervical musculature. As the infant struggles against this load, the muscles eventually strengthen and a lordotic cervical curve develops. This usually occurs around 3 months of age. Another important development that occurs during this time is the righting reflex. The righting reflex allows us to maintain the eyes level with the horizon and is the result of responses from the vestibular (inner ear) and ocular systems (eyes).

The lumbar curve develops at approximately 6 months of age as the child begins to sit up and crawl. This curve results from the downward pull of gravity against the weight of the trunk. This is important in the development of the abdominal and stabilization musculature as they resist this downward pull. While it is beyond the scope of this article, crawling is also important in the development of the neuromuscular
system as it helps develop the neurological connections between the two halves of our brain and aids in the establishment of proper neural networking. Additionally, crawling helps strengthen the flexor and extensor patterns that will be needed when the child gets to an upright position.

The center of gravity, initially located at the 12th thoracic vertebral level eventually shifts to the level of S2 as the child develops. As the child begins to stand and walk, the feet are wide apart and the knees are in a varus (tibias positioned towards midline resembling a bow-legged posture) position in order to maintain balance. As the child grows, the legs become more valgus (tibias pointed away from midline resembling a knock-kneed posture) in position and then tend to straighten. The child's arches tend to be flat secondary to the large fat pads and underdeveloped intrinsic foot musculature. As the muscles develop and the fat pads diminish in size, the arches begin to appear. There is also an increase in the lumbar lordosis due to the weakness in the abdominal muscles, a relatively small pelvis and the weight of the abdominal organs. This posture should improve as a child increases in neuromuscular strength and begin to resemble the lordotic-kypohotic-lordotic posture seen in adolescents and adults.

**Conclusion**

I hope this section of your course helped clarify some points regarding posture and its affect on everything an athlete does not only in the gym, but more importantly, outside of the gym. While we addressed postural alterations as they relate to development, we cannot overlook other common causes such as repetitive trauma, acute trauma, occupational causes and sleeping habits just to name a few. Regardless of the cause, one of our primary goals as a conditioning coach is to help educate our athletes and give them tools in which they can make the necessary changes to their own unique situations. Every athlete should be evaluated statically (static postural assessment) and dynamically (movement patterns) prior to beginning a workout program. Not performing this preliminary assessment is like a surgeon not doing any evaluation before you go into surgery. He may be a knee surgeon and start working on your knee when you actually have a shoulder dysfunction. He would have realized that had he taken the time to do a thorough evaluation and assessment beforehand. As coaches, we need to hold ourselves to the same high standards as others in the health field because our young athletes deserve it and need it. After all, if we don't educate our clients on posture and musculoskeletal health, who will?

Dr. Evan Osar
Medical Consultant - Developing Athletics
Youth Athlete Development – Course Two
Sport Diversity – The Application Behind The Theory

Multilateral development is a theory which urges young athletes to participate in several sports over their childhood and adolescent periods prior to specializing in one. The basis is that varied athletic stimulus will serve to broaden the youngsters' 'warehouse' or 'portfolio' of general athletic ability and develop a thorough and expansive base on which to build and eventually specialize. While the concepts are well known and the research citing success far reaching, it is still not an embraced reality within North American youth sports.

By examining elite athletics, you can most certainly see the impact that multilateral development can have -

- Michael Jordan - played baseball and football as a youth
- Dave Winfield - a multi-sport phenomenon drafted by the NBA in addition to MLB
- Gary Roberts - an esteemed NHL veteran, played lacrosse at a high level as a youth
- Kurt Browning - 4-time world figure skating champion was an avid hockey and baseball player

While these are just a few examples, the reality is that elite athletics is dominated by individuals who participated in more than one sport as kids. By no means am I suggesting that excelling in more than one sport is important, but actively participating in a variety of athletic endeavors as you grow physiologically and psychologically is key. These realities extend beyond just developing good athletic ability. In fact, one of the problems I’ve encountered and often explained to parents and coaches in youth training seminars is that there is more than just a physical burn-out associated with specialized sporting endeavors.

The obvious key is that specialization will result in a decreased amount of overall athletic ability, which will inevitably become a hindrance as young athletes mature. In my experience, the athletes with the most diverse athletic history are often better equipped to learn and develop skills at the higher ends of a given sport once specialization has been determined. Above and beyond that however, there is also a mental stimulation component to athletic development. If baseball is a 12 month sport, for example, at what point does a 9 year old begin to lose interest? To answer that question, just think about the average 9 year old’s attention span in general. That's not to say that your 9 year old isn't truly enjoying every second of playing baseball throughout the year, but inevitably, he will be 'enjoying' the game and 'focusing' on it more at certain points and less at others - that's the nature of being a kid. It's in these down times that bad and lazy habits can be
developed. Keeping a youngster truly energized and excited about playing and learning new skills is a key component to athletic development that is very often overlooked. Another overlooked feature of why multilateral development remains the best option for young people is the tactical aspects associated with sport. Even if your son engages in numerous other informal modes of athletic stimulus, he is only being truly challenged with the tactics and game speed of baseball. Baseball is a notoriously slow game, especially at the youth level. Developing optimal 'quick-wittedness' and 'game smarts' may best be done via participation is several sports. My point here is that the arguments either for or against multilateral development are typically waged on the physical spectrum. In reality, the successful development of a young athlete is also heavily influenced by items such as mental and emotional perspicacity and tactical (sporting) smarts.

While the multilateral development versus early specialization debate tends to wage endlessly in North America, other nations have adopted the concepts and applied the principals of multilateral development, due to both practical success as well as scientific research. Dr. Michael Yessis in his wonderful book, "Secrets of Soviet Sports & Fitness Training", offers this input - "Sport scientists. have found that athletes benefit from participating in sports other than the one in which they specialize. By doing so, the can tap a broader array of physiological skill, as well as take advantage of a psychological relaxing diversion. It's common for (Soviet trained athletes), for example, to play twenty minutes of basketball as part of a warm-up of their day-to-day training sessions, (even if they are wrestlers). (In the west), the tendency is to believe that the way to become a good runner, for instance, is to run, run and run some more. The Soviets, however, know that during certain periods of the training program, there are other sports that can be used to help make a runner quicker and more flexible, thus developing the all- around physical qualities needed to be a champion".

The former Soviet Union and other members of the Eastern Bloc are not the only nations that adhere to developmental principals. Australia is perhaps the best current day example of the power of a strong, national development system. Guided by the Australian Institute of Sport (AIS), a National Talent Identification and Development program has been institute country-wide and in conjunction with state and territory governments. The Talent Search, as it is referred to, is a coordinated effort to search for the sporting talent in Australia's young people. The program is designed to help sports identify talented athletes (ranging in age from 11 - 20) and assist in preparing them for domestic, national and international competition. Young athletes are guided through developmental programs which facilitate giving them the best opportunity to realize their sporting potential.
In the 2000 Sydney Olympic Games, the United States lead all nations in total medals won with 199. In fourth place, Australia's athletes collected 115 medals.

With a population of 19,546,792 people, Australia has 271,280,551 (spacing) fewer people than the United States. With 14 times fewer people, they won only 84 medals less than the United States. Developmental strategies work.

Pursuant to all of this, there is also a scientific factor which validates the concept of multilateral development: Plasticity. Plasticity refers to the ability of an organism to change or adapt. The brain and spinal cord comprise the Central Nervous System (CNS), which is directly responsible for motor coordination and movement. As youngsters, our CNS carries a great deal of plasticity. Simply put, the introduction of new tasks and stimulus (athletic or otherwise) is met with favorable results - we become better and more skilled at accomplishing the new task. Plasticity does have a cap, however. Eventually, and at a very young age, our CNS's ability to 'pick-up' new tasks OPTIMALLY declines. The conclusion is that if you are not exposed to a particular athletic stimulus during your growing and formative years, you will never be able to pick it up on an optimal level.

Get kids involved early. Get kids involved in a lot. Get kids loving the element of sport and fitness in their lives.

Brian Grasso
President - Developing Athletics

**Youth Athlete Development - Course Three**

**SPEED PROGRAM**

All athletes require speed, even if their sport is not dependent upon running or sprinting. Athletes must also be powerful. Power combines strength and quickness with speed and endurance; you must have good speed to have good power.

Speed has three components: reaction time, which is the motor reaction to a signal; movement time, which is the ability to move a limb quickly; speed of running, which incorporates the frequency of arm and leg movements. Different sports require more of certain elements of speed than others. For example, tennis requires good reaction time and speed of running in different directions to get to the ball, whereas boxing utilizes movement and reaction time to deliver a quick blow and dodge or block an opponent's punch. It is important to understand and train each of these different elements.

There are many factors that affect speed. Genetics influence but do not completely determine speed potential. A higher proportion of fast-twitch to slow-twitch muscle fibers results in greater speed, but speed can be developed through proper training. Speed is also affected by
the ability of muscles to forcefully contract, which indicates that strength training is essential to speed training. Speed increases during puberty and post-puberty are mostly attributable to strength development, however natural adaptation allows for speed improvements during pre-puberty. Speed and quickness activities allow the muscles to learn to work together and be more effective, therefore pre-puberty speed development is because of neuromuscular adaptation, not forceful muscle contractions.

Speed gains are attributable to different factors during different stages of development, therefore speed training protocol is partially dictated by an athlete's age or phase of development. Skills, technique, and mechanics are always important, but during certain phases of maturity it is more important to focus on muscle strength than coordination or vice versa. It is important to understand how the body develops and changes throughout childhood to most effectively train young athletes.

Prior to puberty, most speed gains are due to nervous system adaptation and better muscle coordination in addition to sprinting skills and technique. Children's ability to be faster will in crease as their neuromuscular control increases, therefore speed training for prepubescent athletes should focus on nervous system adaptation to a variety of movements.

Coordination is the determining factor of speed in prepubescent children. For example, during sprinting lack of arm and shoulder coordination decreases arm swing and arm speed, which then decreases leg speed which in turn decreases running speed. Speed improves because the nervous system adapts to perform what is being asked of it; games and exercises teach the body how to coordinate arm and leg movements to be more effective. The greater the variety of stimulus, the greater the motor experience. Throwing games increase arm coordination, which as we know increases speed. Walking backwards or sideways increases leg coordination, which also increases speed. As arm and leg coordination improve, children can participate more in simple speed drills, especially as they approach puberty.

Program Recommendations for Prepubescent Athletes

- No long durations or distances. Games or activities should be 30 minutes or less with adequate rest periods between sets. Bored or exhausted children is never a good sign.
- Children should experience NO discomfort.
- Games and activities should involve the entire body and work to increase running speed and movement time for the arms and legs.
Relays can include tennis balls, medicine balls or baseballs to throw or carry to incorporate the upper body.
Combine different elements of speed. For example, run then throw or kick something (perform some task) to improve running speed and movement times.

Once children reach puberty, muscle strength (the ability to produce a forceful contraction) becomes a major factor in speed. During puberty, speed development increases in both boys and girls. This is due to many factors: increased body and muscle size, improved nervous system coordination of muscles involved in quick actions, and strength development. Increased strength leads to quicker movement time, which results in improved quickness and running speed. As their legs grow stronger, children are able to drive their bodies forward faster by pushing harder against the ground. Therefore, strength training becomes an essential element of speed training during puberty.
Unlike pre-puberty, when there is no visible developmental difference between boys and girls, the genders are obviously developmentally different during puberty. Due to differences in hormone levels, body composition, etc, boys tend to improve throughout puberty, whereas girls tend to plateau in their rate of speed development.

Program Recommendations for Pubescent Athletes

- As children get older, time spent training can increase.
- Speed training should be more specific but still include fun and variety. Incorporate turns, cones, changes in direction, carrying and throwing medicine balls, and jumping over low hurdles into the programs.
- Work to improve reaction time. Have children start a task on an auditory or visual cue, then as the improve, start on sound only.
- Incorporate simple power exercises bilaterally, such as medicine ball throws or jumps onto, off of, or over equipment.
- As children approach post puberty, they can progressively increase to maximum intensity (speed) and power of exercises to improve neuromuscular coordination.
- Rest intervals between sets are very important.

As we know, speed improves with age. Girls improve the most during late puberty and early post puberty, then plateau unless they use a speed training program. Boys maintain speed development through post-puberty. They become faster and stronger than girls, especially in upper body strength. But speed gains in mature athletes are not only due to strength but also better muscle and limb coordination. Older athletes learn to use and coordinate muscles for best efficiency. Their nervous systems are also better at knowing how to react to an athletic
situation; that is, it quickly activates the proper contractions and movements.
In addition to contracting the appropriate muscles, the body must also
learn to relax the antagonist muscle. It is essential to train the athlete
to perform smooth, flowing, well-coordinated movements, which
cannot be achieved without the necessary relaxation. Work to increase
velocity while maintaining relaxation. This could take years, but it is
worth it for the amount of efficiency gained and potentially wasted
energy saved.
People do not achieve top speed until about 30-40 yards into a run,
typically speaking. Often training does not incorporate this distance, so
top speed is never improved or conditioned. Post-pubescent athletes
can train at maximum intensity and therefore should work at top
speed. Simply practicing running at top speed will cause an athlete to
get faster over time. After a thorough warm-up of some movement
patterns and 2-3 sprints of 20, 30, 40, and 50 yards per, have the
athlete sprint 80-100 yards as fast as possible, then WALK back to the
start line. Perform 3-5 reps, ensuring that the athlete rests to almost
full recovery between sprints.

Program Recommendations for Post-pubescent Athletes

- Training should be specific and relate to the needs of the sport
- Exercises should be dynamic and done with high intensity. This
  will constantly stimulate the nervous system and result in higher
  leg frequency and velocity.
- Training should reflect the three phases of the competition
  season.
- Include daily flexibility training, especially of the calf and thigh,
  to improve muscle elasticity and joint flexibility.

Now that we have discussed appropriate training for the different
phases of development, let's move on to the other determining factor
of speed: technique. Proper form can make an athlete much faster,
decreases injury potential and maximizes muscle and energy
efficiency. As Gray Cook states, "don't tell your body to move fast; let
your body move fast." Always make good technique and movement
patterns your top priority. Start slowly with dimple activities and
progressively increase speed while maintaining proper mechanics. Poor
technique decreases efficiency which leads to wasted energy and
decreased speed.

Proper Sprinting Technique

- Head and neck should be aligned with body, not forward.
- Arms should be relaxed and flexed to 90° at the elbow.
- Arm swing should come from the shoulder and should be linear,
  not crossing the body.
• Let the body lean, but do not bend. The body should have a slight forward tilt from the ground, not a bend at the hips.
• Run on the balls of the feet, not the toes.
• The foot should land directly underneath the sprinter. An over-stride results in the foot landing in front of the center of gravity, which causes braking. Under-striding causes a lot of fast movement and energy expenditure without covering enough ground.
• Keep the head and trunk still and the entire body relaxed.

In addition to or in conjunction with proper form, it is essential to stay relaxed while running. Rest and relaxation are vital to efficiency and can make or break running speed. Part of good technique is to relax the trunk, arms, and antagonists of the stride movements. Energy is often wasted to keep accessory muscles contracted and the body rigid, and wasted energy equals decreased speed. Use relaxation to be as efficient as possible and recover as quickly as possible.

Appropriate and sufficient rest intervals are essential for properly training speed. Gray Cook describes endurance as the ability to explode, react, recover and maintain skill at all times. Without appropriate rest, recovery is not possible. When recovery doesn't happen, technique and skill suffer and the overall product is affected. Repetition of high quality exercises requires a fresh neuromuscular system, therefore it is important to rest to almost full recovery.

Now you know how to effectively and appropriately develop and train speed in athletes of all ages. Keeping in mind the different stages of development, various aspects of speed itself, proper technique and importance of rest and relaxation, it should not be difficult to put together a speed program that is safe, appropriate and beneficial for any young athlete.

Sara Beth Nylander
Clinical Therapist - Developing Athletics
Appendix 2

Taken from the [http://www.sportsspeedusa.com/Page.html](http://www.sportsspeedusa.com/Page.html).

**NUTRITION BEFORE, DURING AND AFTER EXERCISE**

Teaching young athletes how to fuel themselves for top performance is an important part of a sports program. Yet, some active families pay too little attention to what they eat and drink. A good sports diet delays or prevents fatigue and allows your child to maintain a high energy level during competition and training.

**Pre-Game Meal Equals Game-Time Energy**

What you eat before you train or compete can make a big difference in your level of performance. Fueling the body properly before a game is very important for your child -- and for the whole team. After all, one player who runs out of energy can ruin the game for everyone else. By eating wisely and well before a game, your child will notice the benefits of being properly fueled: energy, endurance, and the ability to concentrate. If the whole team follows the same plan, they will increase their chances of beating the opponent, hands down! Choices of what to eat before exercising vary from person to person and from sport to sport, with no single right or wrong choice. Each athlete has to learn though trial and error during training and competition what works best for his or her body -- and what does not work. Some athletes can eat almost anything, others want special foods, and then there are abstainers who have absolutely no desire to eat anything.

The following serve as general guidelines for young athletes.

**Dinner The Night Before The Game**

The night before the game, every player should eat a carbohydrate-rich dinner. Spaghetti is a popular choice, but any meal based on rice, potatoes, breads, noodles, vegetables, and fruit will do the job. These carbohydrate-rich foods are stored in the muscles as muscle glycogen and provide the energy needed for endurance. Be careful, though. Sometimes, athletes think they are "carbo-loading" when they actually are "fat-loading". For example, one soccer player raved about his pre-game pepperoni pizza with double cheese; another named lasagna as his favorite pre-game dinner. Both choices offer more fat and protein than carbohydrates. The fat fills the stomach, but leaves the muscles poorly fueled. Better pre-game meal choices would be pizza with a thick crust and single cheese (and veggie toppings), or spaghetti with tomato sauce and a few meatballs. Carbohydrate-rich desserts include lowfat frozen yogurt (instead of ice cream)
Fig Newtons or Animal Crackers (instead of butter-laden cookies) juice pops.

**Pre-Game Breakfast**
When your child wakes up on the morning of a big game, the last thing on his or her mind is eating a balanced breakfast. That's not good. In the morning, after 12 or more hours without eating, a child's blood sugar level is low. That means he or she doesn't have the energy to perform at his or her best. But even the most reluctant breakfast eaters can be converted when they learn that a nutritious breakfast will help them perform better in sports. Your mission is to find the right way to stress the importance of eating properly. Kids don't like parental lectures, so try telling them what the experts say. "Playing without breakfast is like running on an empty fuel tank," says Dr. Suzanne Tanner, a sports medicine physician at the University of Colorado. Barbara Dixon, a dietician and children's nutrition expert, shows kids a wilting plant and explains that, like plants, their bodies need sustenance to be healthy and strong. She tells parents to clip articles that discuss the eating habits of pro athletes. Your child should eat breakfast on the morning of the game. Despite popular belief, the food eaten even five minutes before exercise can actually help, and not hurt, athletic performance. Breakfast helps maintain a normal blood sugar; this enhances energy, feeds the brain, and helps the athlete stay focused. Your child should not eat too much -- nor too little -- of "tried-and-true" carbohydrate-based foods that settle well (The day of a big game is not the time to try some new or exotic foods). Portions will vary according to time allotted for digestion and an individual's capacity to tolerate pre-exercise food. Generally speaking, about 300 calories is appropriate within the hour before the game, or 400 to 700 calories eaten earlier in the morning.

Some popular breakfast choices include: cereal with milk and a banana; a bagel and yogurt; two to three slices of toast, with just a little margarine or light cream cheese and low-fat milk or juice; pancakes, waffles, or French toast (Caution: Too big of a portion may feel heavy in the stomach during exercise.) oatmeal with raisins and low-fat milk. Extra morning fluids, such as water and juice, are important to help your child start off adequately hydrated. Because the body needs about 45 to 90 minutes to process liquids, the extra fluids should be consumed well before game time. But fluids at any time are better than no fluids at all. For example, sipping juice in the car on the way to the game is better than drinking nothing.

**Running Late?**
Athletes who sleep until the last minute, roll out of bed, jump into the car, and arrive at the game without fuel or water will put their team at
a disadvantage. The best- fueled team has the best chances of winning. "No time" is no excuse!!! If your child is short on time, he or she might actually prefer a liquid breakfast. A glass of OJ followed by one or two glasses of low-fat milk can provide wholesome energy as well as fluids -- with little time needed for preparation or consumption. Or the night before the game, you or your child can prepare one or two packets of Carnation Instant Breakfast, so it will be ready and waiting for that morning "rush hour."

**During The Game**
During the game, your child needs to continue fueling his or her body. Prevent dehydration, by drinking 6 to 8 ounces of fluid (water, sports drink) every 15 to 20 minutes. Your child should take their own 16-ounce water bottle to the game so that he or she can monitor how much fluid they actually consume (assuming they don't squirt half the contents on a team mate). Prevent blood sugar from dropping by consuming carbohydrates. The simplest way to maintain high energy is to drink a sports drink; it supplies water and carbs. Alternatives are banana chunks and water, orange sections, and energy bars plus water.

If your child has consumed too little breakfast, the during-game carbohydrates will provide a welcome energy boost. If he or she has eaten an appropriate breakfast, your child may have adequate energy to last the hour without any supplements during the game.

**After The Game**
After the game, your child needs to refuel his or her muscles and start the preparation for the next practice or game. Muscles are most receptive to refueling within the first two hours after the game. Some studies indicate that the first 15 minutes following exercise is the prime time to start to refuel your muscles. So, for rapid recovery, muscles need to be offered carbohydrate-rich foods and fluids immediately following exercise. Proper refueling is particularly important if your child is playing multiple games in the same day. For your child to refuel properly, you may need to pack groceries with you: yogurt, bagels, bananas, apples, raisins, and juice boxes. Or if you are picking up something to eat at a fast-food place after the game, choose the places that offer wholesome carbs: Bean burritos from Taco Bell are a good choice, as is thick-crust pizza, and submarine sandwiches.
FLUID REPLACEMENT AND PERFORMANCE

Fluids Are Probably The Most Neglected Aspect Of The Athlete's Diet
Adequate fluid intake for athletes, even the recreational kind, is essential to comfort, performance and even safety. The longer and more intensely you exercise, the more important it is to drink plenty of fluids. Inadequate water consumption can be physically harmful. Dehydration resulting in the loss of as little as 2% of the body mass can adversely affect a variety of physiological functions and lead to performance decrements. Athletes who are dehydrated will fatigue earlier and lose coordination skills. To prevent this from happening, athletes must drink plenty of fluids before, during and after a workout. Relying on thirst as an indicator of how much fluid is lost is not an accurate method. If you relied on thirst, you would only put back 50 to 75 percent of the fluid you had lost, and would start your next workout already in a state of dehydration. Don't wait until you're thirsty to drink, and don't stop drinking once your thirst has been quenched. Most people have no idea how much fluid they need, let alone how much they have lost during exercise.

How Much Is Enough?
To get an idea of just how much you need to drink, you should start weighing yourself before and after your workouts. Any weight decrease is probably due to water loss (sorry, but you didn't just lose 2 pounds of body fat). If you have lost 2 or more pounds during your workout you should drink 24 ounces of water for each pound lost. Another way to determine your state of hydration is by monitoring your morning and pre-exercise heart rate. Over the course of a few weeks, you will see a pattern. This information can be extremely helpful in determining your state of recovery. Days when your heart rate is elevated above your norm may indicate a lack of complete recovery, possibly due to dehydration.

Guidelines For Fluid Replacement
Dehydration is a major cause of fatigue, poor performance, decreased coordination and muscle cramping. To avoid the above, the American College Of Sports Medicine suggests the following:

ACSM Position Stand - Exercise and fluid replacement

1. Eat a high carbohydrate, low fat diet & drink plenty of fluids between exercise sessions. (Plain water or
fluids WITHOUT sugar, caffeine or alcohol are the best).
2. Drink 17 oz (2+ Cups) of fluid 2 hours before exercise.
3. Drink every 15 minutes during exercise.
4. Keep drinks cooler than air temperature & close at hand (a water bottle is ideal).
5. If you exercise for more than 60 minutes, you may benefit from a sports drink containing carbohydrate (not greater than 8% concentration, though).
6. Take 30-60 grams of carbohydrate per hour to delay fatigue & fuel muscle contractions.
7. Inclusion of sodium (0.5-0.7 g.1(-1) of water) ingested during exercise lasting longer than an hour may enhance palatability, and therefore encourage athletes to drink enough.

Although athletes are more prone to suffer symptoms of dehydration, all exercisers can increase performance & delay fatigue or muscle pain by staying properly hydrated.

**What About Sports Drinks?**
Sports drinks can be helpful to athletes who are exercising at a high intensity for 60 minutes or more, fluids supplying 60 to 100 calories per 8 ounces helps to supply the needed calories required for continuous performance. It's really not necessary to replace losses of sodium, potassium and other electrolytes during exercise since you're unlikely to deplete your body's stores of these minerals during normal training. If, however, you find yourself exercising in extreme conditions over 5 or 6 hours (an Ironman or ultramarathon, for example) you will want to add a complex sports drink with electrolytes. Athletes who don't consume electrolytes under these conditions risk overhydration, believe it or not. The most likely occurrence is found in the longer events (five hours or more) when athletes drink excessive amounts of electrolyte free water, and develop hyponatremia (low blood sodium concentration).

**What About Caffeine?**
While caffeine may have some ergogenic properties, remember that it acts as a diuretic causing your body to excrete fluid instead of retaining it, so it is not the wisest choice when trying to hydrate. You're better off with plain water or fruit juice until your weight reaches that of your pre-exercise state.

**Exercisers Need More Fluids**
The more calories you burn, the more fluids you need. The popular rule of thumb "drink 8 glasses of water per day" is appropriate for the
person who expends about 2,000 calories per day. Exercisers need more fluids.

**Proper Hydration Can Give You The Winning Edge**
When it comes to preventing dehydration, you have undoubtedly heard the nagging advice "Be sure to drink enough fluids!" But how much does adequate hydration really matter, you may wonder, especially if you're working out for only an hour? The answer: a significant amount! In a study with cyclists who biked hard for 50 minutes and then sprinted as hard as they could for 10 minutes (similar to the end of many competitive basketball, soccer and cycling events), the cyclists performed 6% better (compared to when they drank nothing) in the final 10 minutes when they drank enough water to match their sweat rate. Given that many athletic events are won or lost by 1 point or 1 second, a 6% improvement can give you the winning edge.

**FOCUS ON CHILDREN**
**Adults Must Monitor Them**
Young people may not realize the risk, the experts say. Children's heat-shedding systems are not as efficient as those of adults, so adults must monitor them -- and make sure they are drinking plenty of water.

Kids playing outdoors in the summer can become so engrossed in what they're doing, they don't realize they're getting overheated. That's why it's important that parents recognize heat exhaustion and know what to do.

**Signs of Heat Exhaustion**
Fatigue, nausea, dizziness, profuse sweating and thirst; temperature is normal or slightly elevated

**What to Check**
Take the child's temperature. If it's very high (102 to 106 degrees Fahrenheit) and the child is not sweating, he or she may have heat stroke, a serious condition that requires emergency assistance.

You should also call a doctor if the child's temperature is above 101 degrees Fahrenheit, or if symptoms last longer than an hour or two, or worsen.

**First Aid for Heat Exhaustion**
1. Remove the child from sunlight and have him or her lie down in a cool place.
2. Unless there is vomiting, have the child sip water or juices every 10 or 15 minutes.
3. Apply cool, wet clothes to the child's skin and fan him or her.
Preventing Body Heat Problems

Your body has three ways to shed excess heat: radiation, convection, and evaporation.

**Radiation** – an increase in body temperature causes the blood vessels in the skin to dilate. This pooling of blood is the reason your skin turns red when you exercise. Large quantities of blood rise to the skin surface, where heat can be radiated to the outside to cool off the body. The problem with this form of heat exchange is that the harder you exercise the more blood is required by the body for oxygen supplies, which reduces the amount of blood for radiation.

**Convection** – this relies on the difference between the body’s temperature and the air temperature to transfer heat from the body. The closer the air temperature is to 98.6 degrees F. (normal body temperature), the less heat is drawn off the body. So has the weather temperature increases this form of heat exchange becomes less efficient.

**Evaporation** – We depend mainly on this form of heat exchange to cool the body. As sweat evaporates, it cools the skin. In hotter weather you sweat more, so this system works well in high temperatures. But if the humidity is high, there is more water in the air, and less sweat is absorbed from the skin through evaporation. With no evaporation there is no cooling. **SO EXERCISING IN HIGH HUMIDITY IS DANGEROUS.**

Three forms of heat sickness we need to be aware of at all times in all sorts of weather.

1. **Dehydrated** (mild loss of water) – Feel thirsty, dry mouth – Drink water or sports drink often.
2. **Heat exhaustion** (due to dehydration and loss of electrolytes) – Feel light headed and dizzy, even to the point of fainting. Cooling mechanisms are working overtime so that you are sweaty, and your skin is cool and clammy. You might also have muscle cramps due to a loss of electrolytes – STOP WHAT YOU ARE DOING AND REPORT TO A COACH, TEAM ASSISTANT, or TEAM MEDICAL AIDE IMMEDIATELY. Rest in a cool place, and replace fluids with water or an electrolyte drink (sports drink) immediately, also use wet cloths around the head and neck to assist cooling.
3. **Heat stoke** (MEDICAL EMERGENCY – all heat mechanisms have failed) – Temperature has risen to point where the brain’s control mechanism has been knocked out. Body temperature may go as high as 107 to 109 degrees F. The symptoms of heat stroke are red, hot skin; lack of sweating; and usually, loss of consciousness. This person needs to brought to an emergency room immediately. **This is life threatening.**
Appendix 4

Explanations of exercises

**Examples of Core Stability Exercises**
Key to all core stabilization is not the exercise but the technique.

*Regular Crunch:* The individual should lie on their back with their knees bent and feet flat on the floor. Their arms should be placed either across the chest or by the head. Keep the upper back as straight as possible; the individual should lift their head, neck and chest about two inches off the ground. The exercise should be repeated as many times as possible.

*Crunch w/Alternating Knees:* The individual should lie on their back with their knees bent and feet flat on the floor. Their arms should be placed either across the chest or by the head. Keep the upper back as straight as possible; the individual should lift their head, neck and chest about two inches off the ground. Has he comes off the ground he should raise one knee to the chest and then back down and alternate which knee comes off the ground with each lift. The exercise should be repeated as many times as possible.

*Bottoms Up:* The individual should lie on their back with their legs straight up with their toes pointing at the ceiling. The arms should be placed by the side for balance. While contracting the abdominal muscles, he/she should lift their glutes up about 2-3 inches off the ground. The exercise should be repeated as many times as possible.

*Pelvic Lift:* Lie on your back with your knees bent, feet flat on floor and hands at your side. Shoulder blades flat on the ground. Tighten your abs and arch your back so that your pelvis and hips come off the ground. Hold it for a count of one and back done.

*Pelvic Lift w/alternating heel lift:* Lie on your back with your knees bent, feet flat on floor and hands at your side. Shoulder blades flat on the ground. Tighten your abs and arch your back so that your pelvis and hips come off the ground. As you complete the lift complete the rep by lifting one heel off the ground (alternate which one comes off each rep). Hold it for a count of one and back done. This requires additional balance and core stability.

*Pelvic Lift w/alternating leg lift:* This individual should lie on their back. The pelvis should be lifted while keeping the shoulder blades flat on the floor. One leg is lifted at a time. This is the same as the pelvic lift w/alternating heel lift but adds more intensity and stability.

*Pelvic tilts:* Lie on your back with your knees bent, feet flat on floor and hands at your side. Arch your back *slightly* so that lower back is about an inch off the floor. Flatten your back against the floor, imagining you are crushing an ant, and hold for a few seconds. Repeat 100 times.
Bent leg raises: Lie on your back with your knees bent about 90 degrees and feet flat on the floor. Tighten your abs and back muscles so your back is flat against the floor (a pelvic tilt). While holding your back flat, slowly raise your right foot off the floor about 6", and lower without moving your back. Three sets of 10 reps with each foot.

Straight leg raises: Lie on your back with your left knee bent about 90 degrees and foot flat on the floor. Extend your right leg along the floor, toes pointed at the ceiling. Tighten your abs and back muscles so your back is flat against the floor (a pelvic tilt). Slowly raise your right foot off the floor about 6", and lower without moving your back. Three sets of 10 reps with each foot.

Balance/Strength Work: This is performed when the individual is on all fours. The individual then lifts the opposite arm and leg off the floor and holds it for about 2-3 seconds. This exercise is designed to strengthen the abs, lower back, hamstrings, and glutes.

Similarly, master the lying back extensions before progressing to the kneeling back extensions.
**Lying back extensions:** Start by lying on your stomach on the floor, arms extended along the floor above your head. Tighten your abs and back, so that your pelvis is in neutral and doesn't move. Raise right arm and left leg until slightly off the floor, hold 3-5 seconds and lower. Raise your left arm and right leg, hold, and lower. Three sets of 12 to 20 reps.

![Lying back extensions image]

**Kneeling back extensions:** Start with your hands and knees on the floor. Tighten your abs and back, so that your pelvis is in neutral and doesn't move. Raise right arm and left leg until almost parallel with the floor, hold 3-5 seconds and lower. Raise your left arm and right leg, hold, and lower. Three sets of 12 to 20 reps.

![Kneeling back extensions image]

**Four Point:** Start with your forearms on the ground and your toes on the ground with your back, legs, neck, and head in a straight line. Tighten the abs and keep the all the above in straight line for 10 to 30 second count. Repeat for 2 to 10 reps.

![Four Point image]

What is the core? How do you correctly train the core? And, why is core training important to athletic performance? The following article will attempt to answer these and many other questions on the core.

The core is where the body's center of gravity is located, and it is where movement begins. In standing, the body's center of gravity is located approximately two inches below the navel. Because all movement begins at the core and then progresses out to the arms and legs, core strength is essential. This is why coaches emphasize watching your opponent's navel while playing defense.

Many of the major muscles of your shoulders, arms and legs are attached to the pelvic bones and/or the spine, the **core**. Greater core strength increases the stability of the pelvis and spine and improves body control or balance during athletic movements. This helps the athlete generate greater power, not only from the core muscles, but also from the shoulder, arm and leg muscles because they are anchored to the core. If your core muscles are well conditioned, you will enjoy optimal transfer of energy from large muscles to small muscles when you run, jump, twist, lift, throw, and perform other movements in your sport. Based on this it is essential to develop core strength before arm and leg strength.
Anatomically, the core consists of the muscles of the hips, abdomen, and low back. These trunk muscles can be further divided into two categories: (1) Global muscle system and (2) Local muscle system. The global muscle system is the large, force producing muscles (rectus abdominis, internal and external obliques and back extensors). These are the muscles we usually train during exercise programs. The local muscle system is the deep small muscles (transverse abdominis and the multifidus).

The transverse abdominis and the multifidus have a unique function because they are the first to activate in the core, even before movement occurs. For this reason core training must begin with these muscles. Precise contraction of the transverse abdominis and multifidus must be gained independent of the global core muscles.

Functional Development Exercises

**Dynamic Cone Touch**

The Dynamic Cone Touch can be performed with three cones placed in front of you. Stand back at a distance where it is challenging for you to touch the cone. In an opposite arm/opposite leg position, keep only one foot on the ground at all time as your body is going to fight to stabilize and balance itself. From an upright, standing position, reach with your opposite arm and touch cone #1, then return to an upright position, the repeat for cone #2, cone #3. Attempt to get into a one leg squat position to be able to touch the cone. Complete six touches on one leg, then switch to the other leg for a total of three sets per leg.

**Variations**
- Opposite Arm/Opposite Leg
- Same arm/Same Leg
- Place Stability Disc or Wobble Board under foot
- Increase the speed of the movement

**Dynamic Pyramid Cone**

This is a multipurpose functional exercise. It is designed to require rapid movements either forward, backwards, or sideways while maintaining balance and creating explosive movements. It is designed to require an athlete to move quickly while maintaining full body control throughout each movement. A lot of football movements require an athlete to do them while off balance our not under full control we are trying to simulate that in these drills to teach the player body control.

Take 3 cones and place them in a triangle 5 yards apart. You can adjust the length to 3 yard to 7 yards to decrease or increase the intensities. The player will start out on the right cone (cone 1) and go the cone 2 and then cone 3 and back on the same track.
Exercises: (must be fast and immediate)

Jumps (good for defenders)

- Sprint & Jump Ups (double leg) 2 sets to left/ 2 sets to right. (increase difficulty by going single leg (1 set left/1 set right each direction)
- Back Pedal & Jump Ups (double leg) 2sets to left/2 sets to right. (increase difficulty by going single leg (1 set left/1 set right each direction)
- Shuffle (facing inside) & Jump Ups (double leg) 2 sets to left/ 2 sets to right. (increase difficulty by going single leg (1 set left/1 set right each direction)

Hands Up (receiving drill for fast hands and body control)

- Sprint and Turn (turn inside to the cone) (increase difficulty by giving a signal if it is above the waist (pinkies together) or below the waist (thumbs together).
- Shuffle (outside) and Turn (increase difficulty by giving a signal if it is above the waist (pinkies together) or below the waist (thumbs together)
- Sprint and Turn and Jump (increase difficulty by going one leg landing and alternate which leg they land on. (high ball)
- Sprint and Turn and Drop (low ball) (drop hips and get under)
  (you can add a ball by into the workout as they improve their reaction time)

Bear Crawls (upper body and body control)

- Bear Crawl and Jump (increase difficulty by jumping and landing on one leg)
- Bear Crawl and Plyometric Pushup

Dynamic T Cone

This is a multipurpose functional exercise. It is designed to require rapid movements either forward, backwards, or sideways while maintaining balance and creating explosive movements. It is designed to require an athlete to move quickly over a distance while maintaining full body control throughout each movement. A lot of football movements require an athlete to do them while off balance our not under full control we are trying to simulate that in these drills to teach the player body control.
Take 4 cones, a start cone and cone 1, 2, and 3. Cones 1 thru 3 are spaced 2 yards apart and the start cone is 10 yards from cone 2. You can lengthen or short the start cone to intensify the exercise.

The coach stands in front of the cones and shouts GO and then signal with hand (1,2,3) for cone to go to. Work at first signaling at the third step and then increasing to the fourth, and so on till the player is forced to react while almost on top of the cones.

Exercises:

Sprint and Touch Cone and Sprint Back (use near hand or far hand)
Sprint, Jump, and Touch Cone and Sprint Back (jump on signal/near or far hand)
Bear Crawl and Touch Cone and Sprint Back (use near hand and far hand)
Bear Crawl, Jump, and Touch Cone and Sprint Back (jump on signal/near and far hand)
(all the above but back pedal back)

Upper Body Strength

Standard Pushup = back, legs, hips, neck, and head in a straight line. Hands flat on ground just wider than shoulder width (can adjust in or out to vary workout). Push up while maintaining a “straight body” and back down with the chest just above the ground but not touching. 3 sets of 5 to 20.

Plyometric Pushup = start in a traditional pushup (as above) and pictured below in the first frame. Explode upward until the hands come off the ground and then drop until the chest almost touches the ground and reset and repeat. 3 sets of 3 to 10.

Plyometric Pushup w/clap = as above but clap hands as you come off the ground. 3 sets of 3 to 10.

**Dynamic Push Up**
The dynamic push is performed from a traditional push up position. Push from the ground while one arm rotates the torso into a T position (see above photo). Stabilize, while holding for four seconds then return to a traditional push up position the repeat on the opposite side. The single arm stabilization is great for the muscles of the shoulder. Complete five repetitions on each side for a total of three sets.

Variations
Balance feet with only one leg (raise other leg in the air)
Place a stability disc under the stabilizing hand
Increase the speed of the movement

Functional training can be of great benefit to all athletes of all ages. By training functionally the athlete can reduce the chance of injury by preparing the body for the movements of sport, while increasing performance by training the body at functional, sport specific angles. Integrate these exercises into your traditional training program to elevate your on-field performance.

Resistance Push Drill

This drill offers increasing resistance to an athlete over a distance as momentum increases. It helps to strengthen the core and legs while developing a good drive technique. Correct technique at all times.

This require 4 to 6 players. Three to five players will act as resistance and the first player will have a small shield for padding. The player will be in a good line stance 1 yard away (we use a balanced two point) and on “GO” will fire off into the pad and drive the resistor straight down the field (all resistors will only resist using body weight and will not offer any other resistance). Each additional resistor will be 3 to 1 yards back. The closer together the less momentum is gained before additional resistance is offered. The last resistor will shout STOP after he takes six steps back (5 yards) (. They will reset and the last resistor will rotate to the front and be the driver. Teach the driver to fire off into the pad with his hands and forearms, get his body low by dropping his hips and get his head...
to the side. Get his feet under the pad and keep them moving at all times. If he has lazy feet or his not driving it will show up as additional resistance is added along the line. This is not a full contact drill the pad is only used as a buffer. The resistor’s behind the first man should have their hands out to act as a buffer between them. They are not offering any resistance other than their body weight. Should repeat 2 to 4 times.

This is a FREE ITEM AND IS NOT TO BE SOLD IN ANY FORM.

If you have any questions please contact Jack Gregory at jack.Gregory@globalcrossing.com.