Coordination Development

The CRITICAL aspects of training young athletes 6 – 13 years old!
Where Did We Go Wrong?

When it comes to youth fitness and sport development, we make a lot of mistakes.

We over coach technical skills and don’t create systems that involve progressive development which lead to proficient acquisition.

We react to youth obesity concerns with ‘Boot Camp’ mentality fitness regimes rather than taking proactive steps of adopting a sequential and lifelong approach to physical fitness and wellness.

In both general fitness and sport, we assume that adult-based prescription, exercise selection and coaching styles are suited just fine for youths.

We have been wrong.

Consider that last point.

Youth sport coaches often conduct ‘pro style’ training camps and practices. They create plays and drills that are suited to the specific sport they coach and prescribe conditioning exercises intended to improve physical fitness on an exclusive level.

Fitness Centers don’t create, provide or promote youth development curriculum, they instead take contemporary fitness models and apply them to kids – Kid Yoga, Child Spinning Classes, Aerobics for Youths etc.

In a reasonable and even commendable attempt to improve the physical fitness levels and sport-specific prowess of kids, we have lost sight of the larger and much more important picture...

The job of a youth coach, Youth Conditioning Specialist and this industry at large is to provide a developmental system through which children can grow, establish base skills and progress them to a point of mastery.

This developmental protocol is based on introducing a wide array of skills and attributes, which in turn creates a foundation on which to build.

The measure of a Youth Conditioning Specialist or youth coach is not how much success they bring to a youth athlete or participant in the short-term, rather how well their lessons and approach are adhered to in the long-term.

I myself am elated to see my young athletes advance on to higher levels of sporting success (college, professional), but am even more exhilarated to see young athletes I have worked with still using the skills, tools and programming I taught them, even though they are now adults and no longer participating in sport.

The ‘success now’ mentality has cloaked our vision and skewed our perception as it relates to the bigger purpose – sport and exercise with young people should be viewed as a vehicle that
promotes leadership, fair play, positive lifestyle adherence and global wellness. It is only when we look at talented young athletes or unfortunately obese young children as un-harvested lumps of clay in which we must make an immediate impact that we fail.

**Setting Your Standards Higher**

As a proactive coach and agent for change, this e-book will give you the tools necessary to make an immediate impact on the youngsters you teach. That impact will not come in the form of measurable gains in biomotor proficiency that will be evident now necessarily (although it very well could), instead, it will be in the foundational steps taken to ensure that your young athletes/participants are set up for future success... whatever that may be.

In the case of young athletes, establishing and mastering coordination habits will lead to an increased ability to learn and master more advanced sporting skills in the future. A baseball coach’s ability to teach advanced skills pertaining to that sport will be based on how much of a global athletic background a given group of athletes have. Studies have clearly shown that a multilateral approach to developing a young athlete is far superior to ultimate skill development and success once that athlete has reached the point of specialization (multilateral development refers to global exposure to a wide variety of athletic stimulus through several sports or proper training during the pre-adolescent years). Contrary to popular belief, immersing a young athlete into one selective sport at an early age is counterproductive to their eventual success. Along with concerns such as overuse injury (a youngster throwing a baseball 10 – 12 months of the year for example) and emotional burnout (the mental and emotional fallout that inevitably occurs when kids are only stimulated by one specific sport) young athletes who follow a sport-specialized lifestyle never gain the macro skills necessary to learn or master advanced levels of execution in that given sport.

In the case of youth fitness participants, establishing a base level of coordination skill will have a tremendous impact on their exercise adherence via improved confidence. One of the reasons the youth fitness industry has failed our kids is because A) it is not fun B) it does not promote or teach relevant skills that will enable kids to continue their pursuits of physical education. Youngsters who experience weight issues, lack coordination or are considered ‘clumsy’ have a built-in reason not to want to make physical activity part of their passion. They feel embarrassed and frustrated. More over, the current means of physical fitness for kids (as mentioned above) do little more than promote the very same evils that plague our adult population – aesthetic appeal.

By creating and implementing developmentally and individually appropriate coordination-based stimulus into the lives of youngsters, you will see a change in their long-term sporting success and positive lifestyle adherence.
**Coordination... How Does it Work?**

The first thing that must be understood about coordination is that it is not a self-contained system. Coordination is comprised of several physical elements each of which can be isolated and developed separately (although a great deal of overlap does exist) –

- Balance
- Rhythm
- Spatial Awareness
- Kinesthetic Differentiation
- Movement Adequacy
- Reactivity to Visual & Acoustical Signals

Each of these items work synergistically and in combination, promoting quality coordination ability. In fact, when these elements are not developed to an optimal level, natural training deficits can and very often do occur later in life. Simply stated, without good coordination, complete motor aptitude of a given athlete will never be fully fulfilled – when we fixate on conditioning elements pertaining to a particular sport or consider only basic measures of physical fitness with children, we are handicapping their future potential to understand and acquire more complex motor-based skills later in life.

Jozef Drabik, in his book ‘Children & Sports Training’, defines coordination as follows:

> **The physiological basis of coordination lies in a synchronization of neurological processes in such a way that an excitation of one motor center, directing movements of one part of the body, does not spill over to other motor centers directing other parts of the body**

This definition is a perfect example of how we often misunderstand coordination ability and its function. Displaying good coordination is not simply an agility factor – when we see a young athlete able to dart through a cone drill with adequate ability, we often suggest that they have good coordination. However, if we were to add a ball (or other dexterity-based distraction), teammates or opponents (external environmental diversions) would that same young athlete be as ‘in control’? True coordination lies in the ability of the mind to direct the body through specific movements that will allow it to successfully overcome a given task – regardless of the distractions.

**Factors Affecting Coordination Development**

The ability of a young athlete or child to develop coordination skills is influenced by several issues:

1. **Intelligence** – Generally speaking, more cognitive youngsters will be able to solve motor tasks quicker. This is not necessarily a comment on a child’s intellect however. In modern day youth sports, we confuse the concept of *skill versus drill*. Far too many Coaches and Trainers create *drills* for their young athletes to work through. Both simplified and complex drills are created that are intended to increase or improve agility, strength and other biomotor features. We spend almost no time teaching the specific movement sequences or nuisances of how to perform these drills well,
however. We drill young athletes. A ‘skill-minded’ method of teaching would be to create a drill while teaching and instilling the particular motor abilities required to perform that drill with adequacy. When this style of training and coaching is employed, the young athletes’ understanding of the drill is improved and various environmental diversions can be added over time to make the skill set more functional. You will have effectively empowered the young athlete and increased their intelligence as it relates to this particular skill.

2. **Motor Erudition or Learning** – Yet another reason to trumpet the need for multilateral development versus early specialization. The ability to learn and comprehend new and complex motor skills is in direct correlation to a young athlete’s ‘warehouse’ or prior experience. The more finite or one-dimensional the athletic history is for a given athlete, the more difficult it will be for them to acquire complex skills to a functional level. This factor is also influenced by the law of plasticity. The very young central nervous system (CNS) is plastic by nature – it is able to understand, comprehend and reproduce almost at will. As we age, the plasticity of the CNS begins to decline and adding new, complex skills becomes more difficult. One of the only means by which an adolescent athlete (or person) can competently add new skills into their physical vocabulary is if prior exposure to that skill has occurred. This is one of the primary dangers of early specialization in sport and principal concerns of offering only basic physical fitness programming to young non-athletes. The pre-adolescent years are when you sow the seeds for the future in terms of lifelong physical ability – one-dimensional specialized approaches will not illicit the return you are looking for later in life.

3. **Other Biomotor Abilities** – In youth, all biomotor abilities relate to and influence each other. Increases in flexibility for example, will cause increases in strength and vice-versa. Elements of coordination are influenced by and have influences on other biomotor factors. For a young person to develop optimally, the interrelating sequences of these elements must be understood. For instance, speed of reaction is limited to the strength a young person possesses. Complex measures of balance can be limited by both strength and flexibility. Conversely, unilateral and bilateral strength exercises may or may not be effective given the young athletes’ balance capabilities. In order to most optimally develop ability, all of the appropriate biomotor skills must be trained. In the training portion of the youth industry for example, we program only for strength, flexibility and cardiovascular improvements more often than not. Not only is this shortsighted and incongruous with ultimate development, but these three factors cannot possibly be increased to an optimal level without engaging in coordination-based training. Many Trainers pontificate about how critical it is to improve strength through a sequential order of bodyweight exercises first followed by unilateral versions of the same and then progress onto implement-based activities third. Not only do I wholeheartedly disagree with this notion, but I also wonder why Trainers don’t realize that unilateral efforts of strength training will be limited entirely to the degree of balance skill a young person has – increase the balance skill and your ability to program unilateral elements of strength training will increase exponentially.
Types of Coordination

There are two relative types of coordination training; General and Specific.

**General** – This is the basic level of coordination and is based on versatility. In early pre-adolescents, spend a great deal of time creating fun exercises and games that establish a base level of coordination through exposure to all of its elements. Future sporting success and functionality in life will be dependant on developing a global foundation of general coordination.

**Specific** – Specific coordination is a means by which to improve or increase the ability within a given task or sport. By improving the basic elements of coordination that apply to a particular skill, you can increase the proficiency of that skill. Here are some examples:

a. **Unusual Positions** – Throwing a baseball or shooting a basketball for example. In the early years of training, always teach unilateral skills using both sides of the body. Breakdown throwing and shooting motions into finite skill progressions and spend time teaching them with the non-dominant hand, foot or side of the body. This practice of non-dominance will serve to increase the kinesthetic understanding of the skill and improve the athletes’ ability to perform it with the dominant side and lead to an increased ambidextrous ability, which is very advantageous in sport. Another example of this would be to teach how to swing a bat from both sides of the plate in baseball.

b. **Altered Speeds** – Change the speed of movements to increase an athlete's understanding and control. Teach somersaults and jumping rotations to a competent level. After that, start developing exercises that ask for the young athlete to increase or decrease the speed of the turns. This control of speed variance will increase the ability of the young athlete to understand the complexity of the skill and be able to reproduce it with more precise detail and aptitude.

c. **Added Movements** – Add movements in the form of rotations, jumps and level changes (i.e. starting from one knee and then progressing into the skill) leading up to or following a standard sporting skill. Again, as with the other two examples, this increased sense of body control and awareness will improve the young athletes ability to perform the specific skill in question. For example, have a young baseball player perform a 360-degree turn with bat in hand before hitting a baseball off a tee. Have a young basketball players dribble a ball towards a basket and perform a jumping 360-degree turn before making a lay-up. Have a young soccer player perform a somersault and then a tuck jump in proper and seamless sequence before performing a corner kick. These elements can also be included in youth training programs. Have young athletes perform a forward roll or 180-degree jump before demonstrating a sprint start sequence.
Exercise Examples & Definitions

**Balance** – Balance exercises should progress from ground-based to standing static to dynamic in nature.

**Four Point Kneeling with Contralateral Arm/Leg Rotation**

Have the athlete perform clockwise and counterclockwise rotations contralateral limbs.

**Backwards Tuck Jumps**

From a standing position

Athlete performs a backward knee tuck jump

Lands in good athletic stance while maintaining balance
Spiral/Unilateral Balance

Athlete walks along a curb

Performs a standing ‘spiral’

Athlete walks along a curb

Performs a single leg touch/squat
**Partner Pass**

On a narrow balance beam, curb of piece of tape – 1 partner follows the other

The first partner stops and turns sideways

Second partner tries to ‘pass’ the first while both try to maintain balance

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**Scramble to Balance**

Athlete lies face down with eyes closed

On command, they scramble up quickly, while there eyes stay closed
Hurdle Jumps

Start on one foot, perpendicular to a low hurdle

Perform single leg jump sideways over hurdle

Land on ‘jumping’ leg and maintain balance

Add to difficulty by including a single leg reach after balance is maintained

Finish by standing on one foot with eyes closed
**Toe & Heel Walking**

Toe walking on ground, curb or balance beam

Heel walking on ground, curb or balance beam

**Joust Games**

Partners try to pull each other across a line (contralateral – opposite side)

Ipsilateral (same side)
Combination Drills - Run/Turns

Athlete jogs for 20 – 30 feet
Performs a 180-degree jump
Continues to back pedal in a seamless transition
Advanced version – performs 360-degree jump
Continues to sprint forward in seamless transition
**Rhythm** – Ability to determine extent of movements in time and in relation to a given exercise

*A’ Skips*

Athlete performs a rhythm based skipping sequence to a given timing or cadence

**Skip Loop**

Athlete jumps rope between two cones to a given cadence (forward)

**Sideways**

**Single Leg**
**Single Leg Knee-Ups**

Athlete performs single leg knee skips through evenly spaced hurdles

Through staggered hurdles

**Spatial Awareness** – Ability to know where you are in space and in reference to external environmental considerations.

**Overhead Catch Sequences**

Athlete throws ball in air

Attempts to catch it behind back (1 way)
Different way

Athlete throws ball in air

Performs 180-degree jump

Catches ball (also try with 360-degree jumps)
Look Over Catch

Partner throws ball over other partners shoulder

Partner must gage direction, placement and speed of ball without being able to look directly at it

Catch ball as soon as it comes into plain view

Somersault Throw/Kick Combinations

Athletes stand facing each other – one holds a light medicine or sport ball
Athlete performs a somersault with the ball in his/her hand

As soon as they come out of the roll, they will throw the medicine ball directly to their partner or specific target

**Speed of Reaction** – Ability to respond to a particular stimulus.

**Ball Drop**

Partners face off – one partner holds a tennis ball

In absence of auditory cue, ball is dropped and athlete must react by catching it
Wall Ball

Athlete faces wall. Partner throws ball off of wall without letting athlete see where the throw is coming from.

Athlete reacts to the ball and moves to catch/block it.

Verbal Reactions

Athlete starts in standing position.

‘Reacts’ to whatever verbal command the coach offers – ‘KNEEL’.
Sprints From Varied Start Positions

Kneeling start (1)

React to cue (2)

4-Point start (1)

React to cue (2)

Partner rolls ball from behind athlete (1)

As soon as athlete sees ball, he/she reacts (2)
**Kinesthetic Differentiation** – Ability to know how much force is necessary in order to produce a desired result.

**Target Pass**

Athlete looks backwards towards partner and judges distance and angle from wall

Based on assessment, athlete throws ball off wall and attempts to ‘hit’ partner

**Rolling Target**

Partner rolls a medicine ball passed athlete.

At a specified point, athlete tries to hit medicine ball with another, smaller ball (this can be via a throw or kick)
Principals of Coordination Training

There are several issues to consider when creating coordination-based exercises for young athletes/participants –

1. Eventual skill mastery (in either sport or training) is based largely on a warehouse of knowledge. M ANY Trainers who read this e-book will be left wondering how some of these basic skill sets are applicable to them – they certainly seem like more sport-based exercises... Wrong! In training high school and elite adolescent athletes for speed and agility for example, a given athletes’ ability to learn and understand more complex skills associated with quick deceleration and acceleration habits is routed in how much exposure they have to this kind of stimulus. If you train young athletes or children and do not expose them to a variety of stimulus (movement habits, level changes or external environmental considerations) than there ability to grasp these concepts later in life will be diminished. As I stated earlier, training young people should not only focus on strength, flexibility and cardiovascular considerations.

   a. Create and design exercises/routines that fit a given athlete(s) ability. Exercises that are too easy will not challenge the nervous system enough and are unlikely to elicit positive change. Exercises that are too difficult will overwhelm a young person and limit both the enjoyment and positive experience they should be gaining from the drill. As always, plan your lessons and training programs with the end in mind!

   b. Never stay in a rut with respect to programming. The purpose of this e-book is to make you understand the principals associated with coordination development and offer you some sample drills that I have found to be very successful. Having said that, do not be complacent with merely following the exercises in this e-book... Challenge yourself to create new and innovative drills that are either different than or extensions of the ones listed here.

   c. Once a skill or exercise is mastered, do not assume that you are done with it. Quite the opposite, once a young person has mastered a given skill, your objective as a coach is to alter that exercise in some fashion so that the nervous system has to respond and gain ability. For example:

      - Add extra movements
      - Change the direction of the movement
      - Change the finishing position of the exercise
      - Allow for the exercise to be completed in a certain amount of time
      - Change the load (if applicable)
      - Change environment (size or surface of area)
      - Add ‘wrong’ verbal cues into the mix when working on reactivity skills