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The Glycolytic Pathway, Metabolic Pathways, Part 4

Last month we investigated the phosphagen System, also known as the ATP-PC(r) system. As previously dis-
cussed, our muscles require ATP in order to contract and facilitate movement. We discovered the phosphagen sys-
tem is the fastest avenue for ATP production within muscle cells and is, thereby, well suited for activities that require
short, intense bursts of movement. After about 8-10 seconds, the phosphagen system becomes depleted and our
muscles must rely on a second metabolic system known as the glycolytic pathway.

Glycolysis takes a bit more time to kick into gear than the phosphagen system, somewhere in the range of 8-10 sec-
onds. Isn't that convenient? Just as the phosphagen system begins to fail, the glycolytic pathway revs up. The prac-
tical reason for this delay is the glycolytic pathway requires the breakdown of stored glucose to produce ATP. In
fact, the term glycolysis is derived from the Greek words for "sweet" (glyco) and "breaking down" or "loosening"
(lysis). This metabolic pathway is best utilized during activities that last from a few seconds to a few minutes (three
to five, depending on which expert you are quoting). A middle distance run, like a 400m or 800m event, would take
advantage of this window of opportunity. In the context of a CrossFit workout, the glycolytic pathway is of great im-
portance due to the high intensity levels that are often maintained for several minutes at a time. As one muscle
group fatigues, we move to the next exercise and begin to tax the glycolytic pathway of another muscle group. It's a
pretty nifty physiological mechanism for a CrossFitter. To understand glycolysis, we must begin at the universal en-
ergy source.

Recalling our previous discussion, life on Earth is dependent upon chemical reactions that allow organisms to har-
ness energy from the sun. In humans, these reactions occur when we eat and digest food. Glucose is derived from
the carbohydrates we consume. This would explain why carbohydrate consumption is an important and highly dis-
cussed topic by Coach Glassman and in the greater CrossFit community. (Most recently, refer to video article by
Nicole Carroll in the CrossFit Journal and on crossfit.com) What happens to glucose during digestion is dependent
upon the body's concurrent ATP requirements. Glucose that is not immediately needed for ATP production is "taken
up" by the muscle cells and liver where it is converted into glycogen, a polysaccharide created by the bonding of
many glucose molecules. Once the liver and muscle stores are full, the liver converts the remaining glucose into
triglycerides for storage in adipose tissue, e.g. connective tissue that is composed of fat cells. As the body's de-
mands for ATP increase, the glycogen and triglycerides can be converted back into glucose and broken down to
produce ATP.

Glycolysis is a complex process whereby glucose is broken down through a series of enzymatic reactions. This se-
ries of reactions both utilize and produce ATP (adenosine triphosphate). The coenzyme NAD (nicotinamide adenine
dinucleotide) also plays a key role. This process occurs in the sarcoplasm of muscle cells, which is essentially the
entire inner portion of the cell (intracellular fluid and organelles) minus the nucleus. The net yield of glycolysis is:
We acquire energy from the food we eat. This energy is utilized to power the various functions of our organs and tissues. The excess dietary proteins, fats and oils we consume are all dealt with in the same manner. They are stored as triglycerides in adipose tissue. Let’s call it by its other name, fat. There is basically no limit to the amount of triglycerides our bodies can glean and store from the foods we eat. This means we need to be careful about what and how much we eat. Additionally (and here is where CrossFit becomes integral) to get those triglycerides back out of those fat cells, we must ensure our muscles demand ATP. We do that by moving. No movement means no ATP demands which means those triglycerides stay in the adipose tissue. This means the body’s fat stores remain elevated and explains why a well-documented correlation exists between obesity and a sedentary lifestyle. To avoid the storage of excess fat, we need to move our bodies and avoid consuming more food than is needed to meet daily demands. It’s a pretty simple formula for most of us and one that we at CrossFit Kids HQ are dedicated to spreading.

It is important that we educate our children regarding the connection between diet, ATP requirements and the abundance of fatty tissue. Our children don’t need to understand the particulars of ATP. Nor do they require a command of biological terms and mechanisms. However, we should not underestimate their abilities to comprehend and put into practice some basic principles of proper nutrition and healthy activity levels. Talk to your kids about their eating habits. Let them know the basics of carbohydrates, fats and protein and how to make good choices. Make the discussion of nutrition a part of your CrossFit Kids focus work. Generate handouts to give to parents that discuss the importance of diet and exercise and offer tips on how to help convey that information to children and how to be positive role models. Continue to encourage active lifestyles by offering interesting and exciting opportunities to engage in exercise. Help spread the word.
Glycolysis for Kids

Last month we discussed the metabolic pathway called the phosphagen system. It can release a strong burst of energy for a short period of time. The phosphagen system uses the energy it releases to make ATP, which is the type of molecule that stores and releases energy within your cells. This ATP is necessary in muscle cells, because it helps you move. Once the phosphagen system stops working, your body has a second metabolic pathway that helps your muscles continue to create and use ATP. This system is called the glycolytic pathway, also known as glycolysis.

Glycolysis has a lot of complicated steps, but you don’t have to know all of them to understand how important it is to your body. Glycolysis starts to work just about the time the phosphagen system runs out. This means your muscles are able to keep contracting so you can keep moving for another few minutes. An activity that would use your glycolytic system would be running a lap around the track.

Remember the energy in your body comes from the sun. It gets into your body from the food you eat. As you digest food, molecules of energy come out of it and are transferred into different cells throughout your body. Glycolysis uses a type of molecule called glucose. Glucose comes from carbohydrates, like vegetables, grains, milk and even sugar. Even though your body can use all of these foods to get glucose molecules, not all carbohydrates are good for you. Talk to your parents about which carbohydrates are best.

Glycolysis helps your body store, release and use energy in many ways. It produces several things that are useful to your muscle cells. Two molecules of ATP are made that can be used to immediately power the muscle. Two high energy molecules are made that give your cells the power to make more ATP. Two other high energy molecules are created that can be changed into a second type of molecule. The new molecules help create more ATP. Unfortunately, all this useful cell activity only lasts a few minutes. Then your muscles begin to rely on another pathway for ATP production. We’ll learn about this system in the next issue.

The Character “Ben 10” uses energy to change form for a short burst of time, about 3 minutes.
Glycolysis in muscle cells is a complex series of reactions. The steps listed below are a simplistic view that includes only the major stages of glycolysis.

**Step 1:** Glycogen is broken down into individual glucose molecules through a process called glycogenolysis. Each glucose molecule contains six carbon molecules.

\[
\text{c-c-c-c-c-c} \\
\text{glucose molecule.}
\]

**Step 2:** Two ATP molecules donate a phosphate group to either end of the carbon chain through a process called phosphorylation. In donating a phosphate, each ATP molecule becomes an ADP molecule. Notice two ATP molecules are spent in this process.

\[
P\text{-c-c-c-c-c-c-P} \\
\text{Fructose 1, 6 - diphosphate} \\
\text{ADP} \\
\text{ADP}
\]

**Step 3:** This chain is broken in half to produce two 3-carbon molecules.

\[
\text{c-c-c-P} \\
\text{glyceraldehyde-3-phosphate} \\
\text{ADP} \\
\text{ADP}
\]

\[
\text{c-c-c-P} \\
\text{glyceraldehyde-3-phosphate} \\
\text{ADP} \\
\text{ADP}
\]

**Step 4:** NAD+ extracts two molecules of hydrogen (H) and energy (e-) from each of the 3-carbon molecules, thereby forming 2 NADH. In a subsequent reaction, a phosphate group (P) is added to each of the 3-carbon molecules. Since the original glucose has been split in two, these reactions occur twice per glucose molecule.

**Before:**

\[
\text{NAD+} \\
\text{c-c-c-P} \\
\text{glyceraldehydes-3-phosphate (PGAL)} \\
\text{ADP}
\]

\[
\text{NAD+} \\
\text{c-c-c-P} \\
\text{glyceraldehydes-3-phosphate (PGAL)} \\
\text{ADP}
\]

**After:**

\[
P\text{-c-c-c-P} \\
\text{NADH} \\
\text{ADP}
\]

\[
P\text{-c-c-c-P} \\
\text{ADP} \\
\text{NADH}
\]

**Step 5:** The phosphate groups are reunited with ADP to form two ATP molecules. We have gained two ATP molecules in this reaction, essentially breaking even on ATP up to this point.

\[
\text{ADP} + \text{P} = \text{ATP} \\
\text{ADP} + \text{P} = \text{ATP}
\]
Step 6: The enzyme pyruvate kinase acts as a catalyst causing each of the 3-carbon molecules to transfer one of their phosphates to an ADP molecule, thereby forming an ATP molecule. Remember, the original glucose molecule was broken in two, so this reaction happens twice per glucose molecule. We now have spent two ATP molecules and produced four ATP molecules for a net of two ATP molecules that are now available for energy use by the muscle cell.

\[
c-\text{c-c-P} + \text{pyruvate kinase} + \text{ADP} \rightarrow \text{pyruvate} + \text{ATP}
\]

Step 7: The 2 pyruvate molecules can enter the Kreb's cycle, if oxygen is present, where it will be used to produce more ATP. Or, in the absence of oxygen, the pyruvate will be converted to lactate as follows.

Step 8: In the absence of oxygen, the NADH molecules that were formed in step 4 donate their hydrogen (H) and energy (e-) back to pyruvate in a process called fermentation. The end product is lactate. In "giving up" its hydrogen and energy, NADH converts back to NAD+ and becomes available for future glycolysis.

\[
\text{pyruvic acid} + \text{H} + \text{e-} \rightarrow \text{lactate}
\]

\[
\text{NAD+}
\]

**Cyndi Rodi** is a Level II Certified CrossFit Trainer, Certified Powerlifting Trainer, CrossFit Kids Programmer & Trainer, contributing writer for CFK Magazine, and is a Kenpo Karate student. She has been a Homeschooling parent for 13 years. Her background includes working as an assistant with the UCLA-Camarillo Neuropsychiatric Institute Research Program and as a Behavioral Therapist, designing and implementing behavioral change programs for children with disabilities. She is an integral part of the CrossFit Kids HQ Staff.

**Team Training**

"Switch"

Divide the Team into pairs.

Have athletes stand about 3 feet apart, facing each other. Team is to complete the following, for time.

- 150 Thrusters (Use 25#, 35# or 45# Barbell Thrusters)
- 150 Squats
- 30 50M Sprints

Team members will take over exercise by calling "Switch" when they see teammate slow his/her pace of movement. Goal is to teach assessment and awareness of teammates condition, as well as offer an opportunity for self-assessment and humility.

Only one team member may be moving at any one time. Reps are counted as a team total.

(You may also track splits if you have the staff)
This month’s 30-45 minute class:

**Warm up**
- Intervals of:
- Follow the leader. Leader can box jump over objects, animal crawl, jog, do various exercises.
- Leaders are changed every 30 seconds or so.

**Skill work**
- Hip movement in the kip.
- Superman hold on the bar.  See video from “More Gaining Strength for the Pull up” page 19

**Workout**
- Describe the workout. Explain the movements. Have the kids do a few reps of each. Make the necessary corrections.

21-15-9
Box Jumps
Cleans
Handstand Push ups

Box height, weights, even rep number should be scaled according to age and ability and exposure to CrossFit. Handstand push up progressions can be used for kids who are unable to do handstand push ups yet.

**Game**
- CrossFit Hop Scotch

**Cooldown**
- Stretching
Five New Spring Workouts

Coach Jeff Martin

**WOD #1**

**Big Dawgs**
- 2 rounds of the following:
  - 21 Tuck Jumps
  - 21 Pull ups
  - 21 Thrusters, 45#’s
  - 21 Flying Squirrels
  - 21 Medicine Ball Cleans (12-14# ball)

**The Porch**
- 2 rounds of the following:
  - 15 Tuck Jumps
  - 15 Pull ups
  - 15 Thrusters, 25-35#’s
  - 15 Flying Squirrels
  - 15 Medicine Ball Cleans (10# ball)

**Pack**
- 2 rounds of the following:
  - 15 Tuck Jumps
  - 15 Pull ups (jumping or assisted when necessary)
  - 15 Thrusters, 10-15#’s
  - 15 Flying Squirrels
  - 15 Medicine Ball Cleans (6# ball)

**Puppies**
- 2 rounds of the following:
  - 15 Tuck Jumps
  - 15 Assisted Pull ups
  - 15 Thrusters, pvc-5#’s
  - 15 Flying Squirrels
  - 15 Medicine Ball Cleans (4# ball)

**WOD #2**

**Super Monkey Ball 2**

**Big Dawgs**
- 2 rounds
  - 200 M Sprint
  - 25 Wall Ball (10#)
  - 1 Pass Through Monkey Bars or 10 Pull ups
  - 25 D-Ball Slams (10-12#)
  - 1 Pass Through Monkey Bars or 10 Pull ups
  - 25 Kettlebell Deadlifts (50-55#)

**The Porch**
- 5 rounds for time of:
  - 10 Dumbbell hang squat clean thruster, 25#
    - Run 200 meters

**Pack**
- 5 rounds for time of:
  - 10 Dumbbell hang squat clean thruster, 15-20#
    - Run 200 meters

**Puppies**
- 2 rounds
  - 100 M Sprint
  - 10 Wall Ball (4-6#)
  - 1 Pass Through Monkey Bars or 10 Jumping Pull ups
  - 15 D-Ball Slams (4-6#)
  - 1 Pass Through Monkey Bars or 10 Jumping Pull ups
  - 15 Kettlebell Deadlifts (4-10#)

**WOD #3**

**Big Dawgs**
- 5 rounds for time of:
  - 10 Dumbbell hang squat clean thruster, 25#
    - Run 200 meters

**The Porch**
- 5 rounds for time of:
  - 10 Dumbbell hang squat clean thruster, 15-20#
    - Run 200 meters

**Pack**
- 5 rounds for time of:
  - 10 Dumbbell hang squat clean thruster, 8-10#
    - Run 100 meters

Continued on.....page 10
Puppies
4 rounds for time of:
10 Dumbbell hang squat clean thruster, 3-5#
Run 50 meters

WOD #4
Big Dawgs
Run 800 M
50 Wall Ball (10-14#)
Run 800 M
50 Box Jumps, 24"
Run 800 M

The Porch
Run 800 M
35 Wall Ball (10#)
Run 800 M
35 Box Jumps, 20"
Run 800 M

Pack
Run 400 M
35 Wall Ball (6-8#)
Run 400 M
35 Box Jumps, 20"
Run 400 M

Puppies
Run 200 M
25 Wall Ball (4-6#)
Run 200 M
25 Box Jumps
Run 200 M

Buttercups
Run 100 M

WOD #5
Big Dawgs
3 Rounds
Sprint 100M
15 Ring Push Ups
20 Pull Ups

The Porch
3 Rounds
Sprint 100M
10 Ring Push Ups
20 Pull Ups

Pack
3 Rounds
Sprint 100M
10 Push Ups
15 Pull Ups (When you cannot do anymore regular pull ups fill in with Beginner, Jumping or Assisted)

Puppies
3 Rounds
Sprint 50M
10 Push Ups
10 Pull Ups (Beginner, Jumping or assisted)

Buttercups
3 Rounds
Sprint 50M
10 Push Ups
10 Pull Ups (Beginner, Jumping or assisted)
The Joshua Springs Junior High Lightning Football Team finished the 2007 season with a record of 9 – 1, capturing the Southern California 8-man tackle football championship. The Junior High Lightning became the first football team at our school to win a football championship at any level, although our high school varsity team would win the California Southern Section (Large School) 8-man CIF Championship later in the season.

While the success of the Joshua Springs football is directly related to the expertise of our coaches and the hard work and dedication of our players, when I arrived two years ago, I felt as if there was still room for improvement in regards to our off-field and off-season strength and conditioning programs.

Joshua Springs Christian School is located in Yucca Valley, about 30 minutes north of Palm Springs and adjacent to Joshua Tree National Park. We are a K-12 school with about 300 total students, 120 in high school.
school and around 60 in junior high. We are a blue-collar community, sprinkled with some Marines and their families (29 Palms) and a little bit of everything else. Unlike the Southern Californian communities closer to the coast, we have few competitive sports leagues for children and minimal fields/facilities for them to play at. We don’t have club teams and we maybe have a few traveling teams in the Summer. In fact, if you were to make a broader stroke of life here in our part of the Hi-Desert, you could say that we are not very fitness-minded. The major recreational activities that our youth participate in are split between motorcycle riding and playing Xbox 360.

With all of this in mind, it became clear to me that we as junior high football coaches not only needed to teach our boys who had never played football how to do so, but we had to teach them basic athletic skills; how to catch and throw a ball, how to jump and how to run and move. We also had to teach them the importance of competition, as the status quo here was to try until things become difficult. Most importantly, we had to have a mechanism that accomplished all of the above, yet kept all of the participants actively engaged with a lot of variation. We knew that the kids we get have very short attention spans, which are even shorter when they do not even see a need to improve.

Enter CrossFit.

During my first season coaching, we mainly used CrossFit in the form of functional movement, circuit training, on Fridays after film. This format allowed all twenty to twenty-five athletes to work simultaneously, which kept them from goofing around and allowed us to maximize our time.

Last summer, during our four practices per week, we used either a CrossFit named workout or some kind of functional workout everyday. We chose workouts that emphasized running, jumping and total body and core strength.
These workouts typically lasted a little longer than half an hour in actual exercise time. In addition to this, we incorporated a fifteen to twenty minute football specific, agility/change of direction period into our daily practice. Although it was not as consistent as we had hoped for, we did teach the Olympic lifts, utilizing both Coach Burgener’s PVC method and Coach Everett’s teaching progression.

When the season started, we remained committed to CrossFit and used CrossFit-style workouts on Mondays and Tuesdays before practice and Fridays after film. After our first intra-squad scrimmage and game, we noticed that our players were getting a little winded and so we changed our Tuesday CrossFit workout into an interval running day. We would basically run two wind sprints to each 10-yard increment, starting at 100 yards and moving down. After each wind sprint, we would add one pushup, starting with one and going all the way to twenty. We would wait about thirty seconds between each interval. It would be safe to say that this protocol more accurately simulated the tempo of a football game.

The results of incorporating CrossFit into our practice schedule were incredible. That is to say, that our players, despite being smaller, less experienced and for the most part less talented, consistently outplayed our opposition both individually and as a team. It was not uncommon for our starting center (120lbs.) to be outweighed by nearly one hundred pounds by the player lined up across from him. Our players were always faster at the end of the game because we never got tired. Statistically speaking, we averaged 42.8 points per game and maintained a (+15) turnover margin on defense.

Continued on…..page 14
After this past season, I was given the opportunity to teach a P.E. class for all of the junior high football players not participating in other sports. Five days a week, one hour a day, I work with our players, coaching them through a blend of CrossFit WOD’s, Olympic lifting and football specific drills. In addition to this, I run an afternoon strength and conditioning program for the high school football players, which runs Monday through Thursday. Independent of any knowledge of what Jeremy Thiel was doing down at CrossFit Central/PowerPlant Athletics, I came up with a program virtually identical to his (see CFJ, Issue #68). Our fifth and sixth graders join us twice a week after school as well.

There are any number of ways to include CrossFit into the preparation for your team and you are only limited by time and your facilities. Here at Joshua Springs, we have found CrossFit to be the absolute best tool for functionally training large groups of athletes in a short period of time. CrossFit allows us to develop and maintain a fitness base in our athletes that when added with football specific training results in physical and mental prowess both on the field and off.

Coming off of championship seasons at both the junior high and high school levels, all of the football coaches are excited about keeping the momentum going. Despite losing some excellent high school seniors to graduation and losing eighth graders to promotion, we are optimistic that the players hard work in our continually evolving system will pay off. Already, the returning players say they feel stronger and faster than they have ever been. It brings me great satisfaction to hear them say this and to know that our athletes are learning the very best. I feel extremely blessed to have both supportive coaches and a supportive athletic director, who have allowed me to change so many things in such a short period of time. I am in debt to all of the coaches that have given me guidance and suggestions along the way: Coach Burgener, Coach Grotenrath at College of the Desert, Coach Carlisle at USC, Coach Jeff Martin and of course, Coach Glassman.

Jason Rojas is a middle school English teacher and football coach and is married to Tricia and has a three year old son (Mick) and a one year old daughter (Gabriella). Jason has been CrossFitting for three years and a strength coach for two years. His favorite WOD is Helen and he enjoys mountain biking and sleeping in his free time. He is particularly interested in implementing CrossFit principles into football specific strength and conditioning.
This month’s KB workouts will use intervals. An easy way to time this is to use a Gym Boss Timer - [GYM BOSS TIMER](#). If you don’t have one there are interval timers available online such as this one [ONLINE INTERVAL TIMER](#).

**WOD #1**

15 seconds work / 15 seconds rest
x 10 intervals each exercise
1 minute rest between exercises

**Exercise 1** - 1 handed swing (*swap hands each interval*)

1 min rest

**Exercise 2** - Push Press (*swap hands each interval*)

1 min rest

**Exercise 3** - SDHP

1 min rest

**Exercise 4** - Snatch (*swap hands each interval*)

**WOD #2**

**Tabata 16**

Set the timer to count 20 secs work and 10 secs rest but instead of the usual 8 intervals this one is 16 intervals

**Exercise 1** - KB swing

1 min rest

**Exercise 2** - Burpee

1 min rest

**Exercise 3** - SDHP

---

**Davie Easton**

David Easton is the man behind CrossFit Central Scotland. After gaining a Higher National Diploma in Fitness, Health and Exercise in 2003 he started working in the gym industry. After many years of following the usual exercise routines that are found in almost every gym the world over, he stumbled across [www.CrossFit.com](http://www.CrossFit.com) back in late 2004. Since that time he has gained the following accreditations: Scotland’s first CrossFit Certified instructor, Qualified British Weight Lifting Association Olympic lifting instructor, “U.K.K.A kettlebell instructor” (UKKA = United Kingdom Kettlebell Association). He recently became the U.K.K.A 25kilo champion in the 25kg class and throwing. Davie coached at CrossFit London’s Body Weight Seminar in 2005 and The BIG London CrossFit Seminar in April 2006 along with CrossFit Coach, Jeff Martin. The same month he opened CrossFit Central Scotland and is now offering CrossFit personal training and classes in his CrossFit gym based in Motherwell.

As well as receiving his certification in San Diego, California, David also regularly travels to train with other CrossFitters across the UK including London, Manchester and Inverness.
For most adult (and some teen) CrossFitters, who pursue elite fitness through constantly varied functional movement at high intensity, the main catalyst for the fire that drives intensity hangs around the neck of the Coach. The stopwatch, as a tool for measuring performance, becomes both friend and foe, depending on an individual’s strengths and weaknesses. Provided there is proper instruction and the discipline to maintain reasonably good technique throughout a tough WOD, the 3, 2, 1 GO method which results in names and numbers on the board is incredibly effective.

When training junior athletes though, this approach is often ineffective and potentially dangerous. Pull out a stopwatch with a bunch of kids that are about to do a box jump / push press workout, and you’d better pull out your cell phone and dial 911 as well, because someone is probably going to get hurt. Kids often don’t think of a timed workout in the same terms that adults do; as a chance to do your personal best. Instead they think of it as a race where there is a winner and loser, and while I’m not opposed to competition, it’s a poor environment to develop the muscle memory of rock-solid technique.

Question: What do you use to spark the fire of intensity in young athletes that are still developing basic skills without degradation in form and possible injury?

Answer: The Game Based WOD (GBWOD)

BIG FUN is the foundation of the CrossFit Kids method. BIG stands for Broad, Inclusive, and General. These are the same exercise principles stressed in CrossFit’s Second Fitness Standard (see CFJ article “What is Fitness”), which boils down to training with the goal of performing well at all tasks. FUN, well that stands for fun, because if you don’t have that, then what’s the point?

There are really no limits to what a GBWOD can be, but there are three main objectives, which allow for broad, inclusive, and general training, while ensuring a safe and effective intensity.

1. An overriding focus on proper exercise technique.
2. A means for integrating a diversity of fitness and skill levels.
3. A built in catalyst for high output (intensity).

Developing a GBWOD – An Example

The Warm up
3 rounds of:
5 inch worms
5 long jumps
10 walking lunges (5 each leg)
This Month’s Game – “The Wide Receiver”
This GBWOD is based on the quarterback – wide receiver relationship. For this WOD you will need:

1. Some open space
2. A ball (football, tennis ball, etc.)
3. Something to mark off distances

Establish where the quarterback will be and then pace off 10 steps to the first cone, 20 steps to the second cone, and 30 to the third.

Have the receivers form a line next to the quarterback, and when directed, one will run to the first cone to catch a pass. It is often the Coach that plays the quarterback, but it can also be a position for one of the kids. After the first receiver returns with the ball the second one can go.

When a pass is caught, the receiver simply brings it back, does an appropriate number of push ups and squats (i.e. 10 push ups and 20 squats) and waits for his or her next turn, when he or she will be going to the next cone out. If the receiver misses or drops the pass, they bring the ball back and do the push ups, squats, plus 5 good burpees, and wait for their next turn, to go to the next cone out. After everyone has done all three cones, the exercises are changed to pull ups and sit ups, with thrusters as the penalty exercise for an incomplete pass.

Scoring
When a receiver catches a pass and performs good exercises, they get 1 point. If they also perform the penalty exercise, they get another point.

When a receiver misses a pass and performs good exercises as well as the penalty exercise, they get 1 point.

Note 1:
Different receivers will be given different numbers of each exercise, based on their age, skill level, and fitness.

Note 2:
If the fault of an incomplete pass is that of the quarterback, then it is the quarterback that should do the penalty exercise.

Skills Development Considerations
One of the most interesting things about GBWODs is that of the 10 general physical skills, those that are more neurological in nature (coordination, agility, balance, and accuracy), are developed as a result of the game element, while the skills that are more organic (endurance, strength, stamina, and flexibility), are developed as a result of the exercises. By putting these together it is possible to watch incredible development in the
areas of power and speed.

Conclusion
Anyone that trains athletes for a living knows that the young ones require a special kind of attention, and that the incentives that work to promote constantly varied functional movement at high intensity in adults do not cross over well to children. By using Game Based Workouts, however, young athletes develop all general physical skills, while having fun. Ask an adult that is on their way to the gym what they are doing, and they will tell you: “going to work-out,” ask a kid - and if you’re doing your job right - they’ll say “going to play a game.” BIG FUN.

Rob Ord (ord.rob@gmail.com) is a CrossFit and CrossFit Kids certified trainer in Encinitas, CA.

Scrappy’s Corner
Free Running in the UK

This March I had the chance to travel to Europe for 19 days with a group from my school... we did some amazing things...
I purchased soccer balls in Italy, Austria, England, and Germany which I can now add to my collection that I started last time I visited Europe. While we were visiting London, we were given the opportunity to take a Free Running class, this is a lot like American Parkour. The class was held in a giant gymnasium that offered classes of all different types such as boxing. The class circuit consisted of stations, one of the stations had a mini trampoline that would launch you high enough for you to try doing two flips before landing on a huge mat! This is how I learned to do a front flip. Another station consisted of you running and jumping as high as you could over boxes and maneuvering your way through a short track. The boxes were really really tall about 42-46”. You could move through the course using an endless possibility of varying types of jumps and moves. I could do it pretty easily, so I found that this was a great class for beginners, but it also was challenging for the people who had been doing it for a long time. It was great fun! I have set up similar tracks at Brand X and will continue to do so. I have also been practicing front flips, which I can now do just standing in one spot! I can use this to celebrate the goals I plan to score during my next Soccer season.
Last month we went over some movements that kids can do to gain strength for the pull up. This month we are going to add a couple of movements, that will not only help kids add strength but also begin to introduce them to the kip.

**Skin the Cat**

Hang from a bar, hands about shoulder width apart

Bring your legs up and through your arms

Lower your legs into the skin the cat position

Pull your legs back through to the original position

as you get more strength try and keep your arms and legs straight, as you get more flexible you can go further down and have your eyes focus on the wall rather than the ground

(See Video above)

**Fall Through to Monkey Hang**

Monkey Hangs can be boring for kids. This is a way to make them more fun.

Hang from the bar

Pull into an inverted hang

Drop "or fall" to the original hang position (See Video above)

**Fall Through to Monkey Hang and Monkey Swing**

Hang from the bar

Pull into an inverted hang

Drop "or fall" to the original hang position

Release one hand

Swing down and back up

Repeat and swing from the other hand

**Superman's**

If you haven't seen Adrian's excellent video's on how to do kipping pull ups you should spend some time viewing them. They are on the CrossFit site and we highly recommend them. Adrian has the trainees kick his hands with their feet to introduce them to the hip movement in the kip. The problem is the term kick the hands doesn't translate well to the little ones. CFK HQ trainer Cyndi Rodi found that the cue "Make your body like Superman flying" worked really well.
3-5 reps is enough for little ones. Older kids 8-10 reps. (See Video below)

Flexed Hang to Push Away

Assist the child so that they can get their chin above the bar
Have them hang for a second
Then push away from the bar as they fall to the bottom position
This can be done assisted at first and then on their own later. They can also be done with assisted pull ups.
3-5 reps is enough for any of the kids

By now you should be getting the idea that the key to getting kids strong enough to do pull ups, is to get them on the bar. To get them on the bar you cannot make it work or a chore. It has to be FUN! If it is, kids will want to get on the bar, they'll beg you to let them. While endless reps of assisted, jumping, or beginner pull ups will eventually lead to unassisted pull ups, the drudgery will kill any hope that the average kid will stick with it long enough to see results.

The answer is to make the training fun. Kids love Monkey Swings, Tarzans, Skin the Cats and Fall Throughs. A simple game you can play is every time you fall off the bar you have to do 3-5 beginner pull ups or Superman’s to get back on the bar. So if your child is doing Monkey Swings they will be having a great time. As they tire, they will likely switch to a monkey hang and then slowly lose their grip and fall to the ground. Brief rest then 3 Superman's. Back on the bar for a round of Tarzan's. When they drop a few beginner pull ups and then back at it. Turn it into a game 2-3 days a week. Get your kids on the bar, swing, hang, traverse, climb, make a game of it.

Next month we will continue working on the kip.
This feature includes video of some of our kids doing a CrossFit Benchmark “Girls” or “Heroes” workout. This month we feature one of the “Girls” - Isabel.

Isabel as Rx’d
30 Snatches 135#
no takers

PVC Partner Isabel
Duncan age 10 Justin age 9

Scaled- Little Isabel
Keegan age 14
30 Snatches 35#

One Armed “Rehab Isabel”
David age 17
30 left arm snatches 50#

Video Link Button

http://www.brandxmartialarts.com/videos/Isabel.wmv
CrossFit Kids KickBall

**Equipment**  A 4# Medicine Ball and 4 cones

**Area**  A small scale baseball diamond

**Play**

Two Teams with a minimum of four players each or a neutral pitcher

The ball is pitched to the team “kicking”

Players kick the ball and immediately begin broad jumping to base. There is no running, players broad jump between all bases.

Players can be tagged out by any outfielder.

The standard rules regarding outs apply

( fly balls caught are out, 3 fouls or 3 strikes are an out )

Additionally, forgetting to broad jump is a foul, not squatting before touching the ball is a foul.

The first outfielders to touch the ball must do three squats before picking it up, they may then run with the ball or pass the ball to another outfielder there are no throws. Players are forced to the next base, by subsequent plays.

Runs are scored in the traditional way.

For our group the three squat/broad jump scenario kept the action going and the game came up pretty evenly. Other exercises can be substituted as long as the timing works well. Our outfielders usually got to the ball and performed three squats by about the time the “kicker” was 3/4 of the way to base, which maintained the right amount of tension in the game.
Burning the candle at both ends, it's become a way of life for most kids. It is the inevitable result of living full and busy lives and a seemingly necessary part of surviving in an increasingly demanding and competitive world. This lifestyle of rushing from one event to the next, dealing with one responsibility after another has created a need for kids to downsize in other areas of their lives, and the amount of time they sleep has become the logical place to trim their scheduling fat. After all, isn't sleep the least productive time in their days? Sacrificing a few hours a week in order to accomplish "everything" doesn't seem like too high a price to pay.

In reality, the effects of this rushed, competitive lifestyle are causing our kids to function at declining levels. Our kids simply aren't getting enough sleep. According to the National Sleep Foundation, 60 percent of high school students report experiencing extreme daytime sleepiness. Over 25 percent fall asleep during class at least once a week. These are the same teenagers who are laying their educational foundations for college and career, the same kids who are driving cars on our roads. Another study reports that one quarter of students have experienced a drop of a full grade in their academic studies. This is counterproductive to the goals we normally attribute to a high school career. It's not just teenagers who are suffering from a lack of sleep. According to statistics, infants are sleeping an average of 90 minutes less than the daily recommended hours. Toddlers are losing approximately two hours of sleep per week, and preschoolers are getting more than four hours less than the weekly minimum necessary for proper functioning of their physical and emotional systems. Several major studies have shown that during the elementary and high school years, kids are getting an hour less sleep per night than they did 30 years ago. These sleep deficits are producing a generation with impaired functioning, increased illness and a rash of behavioral problems.

Maybe this sounds dramatic. How can a period of inactivity so deeply affect daily functioning and wellness? Can a few minutes of extra sleep really be that important?

The answer is a resounding "YES!" Sleep is not superfluous to human functioning. It is not something we can choose to omit from our busy schedules, because it is imperative to our health. Sleep is a time of profound brain activity that contributes to our physical and emotional wellbeing. Unfortunately, the National
Sleep Association reports that 90 percent of parents are not aware that their children are sleep deprived since symptoms are not always easily associated with a lack of sleep. The NSA also reports this problem is compounded by the fact that many healthcare professionals have not been made aware of the dangers of sacrificing sleep. After all, sleep research is a fairly new field of study.

It was inevitable that someone would begin to ask questions about the role of sleep. Why would humans spend approximately one-third of their lives in a dormant, passive state? What possible environmental circumstances could cause our bodies to adopt such a bizarre and dangerous practice?

Sigmund Freud was one of the first to theorize that sleep plays an important role in human health and behavior. In the late 1800's, Freud published his ideas about the purpose of dreams for the human psyche. Most of us are familiar with at least a loose interpretation of Sigmund Freud's dream theories. Though his theories never gained the momentum he desired, his attention to what he termed the "unconscious" mind and dreams as a "safety valve" for unconscious desires drew some initial attention to sleep as an important behavior.

It wasn't until the early 1900's that scientists began to investigate sleep from a physiological perspective. In 1913, Henri Pieron published a book that discussed sleep as a physiological function of the body. Dr. Nathaniel Kleitman began to study sleep patterns and deprivation in various populations in the 1920's. Then, in 1953, he and a colleague made a ground breaking discovery. The existence of rapid eye movement, or REM, permanently changed the way in which scientists viewed sleep. Subsequent research showed that blood pressure, heart rate and brain waves fluctuate throughout periods of sleep. In the mid 1960's, the work of H. Gastaut highlighted the control of the brain over vital bodily functions during sleep. Clearly sleep is not a passive, latent state.

Sleep is a dynamic experience. It is a survival response to the internal demands of our brains and bodies. Our brains are extremely active while we sleep; synthesizing, sorting and disregarding stimuli. States of wakefulness are made possible by what we experience during sleep. The body repairs and replenishes itself during sleep, and children experience importance surges of growth hormone. Proper cognitive functioning is governed by appropriate periods of sleep. Sleep is so important, we would die without it.

Children and teens require more sleep than adults, which offers us a clue as to the importance of this activity to their well being. Sleep is a mandatory part of their lives, and the number of hours does count. The physical and emotional states of our kids are at risk when we allow them to forego this pivotal part of healthful behavior.

We will discuss the specific functions of sleep and the detrimental affects of sleep deprivation in future issues.

Mark Beck and Karl Steadman of CrossFit Manchester
Hi, my name’s Karl and I co-own CrossFit Manchester, England. I have been CrossFitting since 2005 and am a Level 2 instructor. I hold qualifications in diverse fields such as olympic weightlifting and pre-post natal care. My background is in athletics, but like most English lads, I have played football for many years! I hope you all enjoy the w/o! :)

The Footie Workout Courtesy of CrossFit Manchester
www.CrossFitManchester.com

"Joe Cole"

Big Dawgs
5 rounds
Run 400M
20 overhead dumbbell lunge walk
(10 each arm) 20#
20 pull ups

Pack
4 rounds
Run 400M
15 overhead dumbbell lunge walk
(10 each arm) 10-15#
15 pull ups, jumping or assisted

Puppies
3 –4 rounds
Run 400M
10 overhead dumbbell lunge walk
(10 each arm) 3-8#
10 pull ups, seated or assisted

Mark’s sporting background is in soccer, playing semi-professionally for over 10 years. Mark found CrossFit in January 2004 and has trained himself, individual clients and classes using CrossFit principles ever since. He was the first of the UK community to venture to California for a Level 1 CrossFit Certification and has also become a USA Weightlifting Certified Club Coach under the tuition of Coach Mike Burgener. He is a qualified Personal Trainer in the UK and has additional qualifications in Concept 2 Rowing, Speed and Agility Training, Kettlebells, and Soccer Coaching. His commitment to CrossFit is profound and he wants to play a leading role in developing both elite fitness and the powerful sense of community and support which define CrossFit. Mark is the inventor of the Beck’s Burpee.

Continued on…..page 26
I like CrossFit because I like the way we play and exercise at the same time. They make working out fun. I have learned that I can build my body strength and do the exercises and still have fun doing it. CrossFit has helped me run faster for soccer and my legs have gotten stronger with the workouts. Nicole age 7

I did not take CrossFit seriously when I first started, but now I love CrossFit! My favorite exercises are the pushups and the squats because they are challenging. They also make me more flexible, stronger, and have increased my confidence. I have made a lot of new friends. We love playing DodgeBall and Musical Medicine Balls so much that we forget that we are still exercising while we are playing the games. Michalyn age 8

I like CrossFit because it makes me feel stronger and gives me more energy. It even makes my school backpack feel lighter. My favorite thing to do at CrossFit is box jumps. (I do them better then my mom.) My least favorite thing to do is burpees. I also like doing WODS. (Running, push-ups, pull-ups, sit-ups and squats.) Us girls try to stick together and try to encourage one another. Sometimes we play games that include our workouts. That makes it fun. My favorite game is dodge ball. Mackenzie - Age 10

I like CrossFit because we have lots of fun! My favorite thing to do is pull-ups. I don't like burpees! Crossfit makes me feel good. I love to be with my friends, and Ms. Melissa makes it fun. Peyton - Age 7
What fun events does your CrossFit Kids Affiliate participate in? 
Your home gym? Your family?

Last week Katie, of CrossFit Kids Brand X, ran the Miracle Mile in San Diego. Here is what she had to say about it.

Today I ran the Kids Magic Mile- Race for Literacy. It was in downtown San Diego. I ran in the 6-9 age category and finished in about 9 minutes. My mom laughed and said, "We drove all this way for 9 minutes." I had fun and got a medal that is colorful, like a rainbow, and a book. I picked out a book about Valentine’s Day. I want to do the race again next year.

Send your fun events to mikki.crossfitkids@gmail.com

Trevor Memorial Day Challenge
CrossFit Kids at Brand X did a scaled version of this last year (in red below) Send us your 2008 Kids results!
Date: May 26th, 2008-Memorial Day

CrossFit Affiliates, Fire, Police, and Military around the globe will come together to remember the fallen, and to support our sons, daughters, husbands, wives, neighbors, and friends who are in harm’s way each and every day.

Four member teams will come together for the Trevor Win'E Memorial Day Challenge to participate in a team CrossFit style workout and donate (each team entry fee pays for one cooling vest for folks on the front lines in Iraq or Afghanistan). This workout fundraiser is to support all heroes in our military. The event will be held at a CrossFit affiliate site near you. (Ask your nearest affiliate for more info).

The workout named "Trevor" is:

300 Pull-ups then, 100 seated
400 Push-ups then, 200 on 15" tire
500 Sit-ups then, 300 Sit-ups
600 Squats 400 Squats

This is a timed team event, so these are accumulative reps.

Only two members of the team can be exercising at a time.

Watch the Video here for the “Trevor Workout Demo” executed by the CrossFit Santa Cruz Trainers


To Donate for this great cause without participating in the challenge, follow this link:
http://www.active.com/donate/trevorwine
Rowing Workouts
courtesy Chris Kemp of CrossFit North East England

WOD #1
Big Dawgs
Row 500M
15 shoulder press, 55#
Row 500M
15 push press, 55#
Row 500M
15 push jerk, 55#

Pack
Row 350M
15 press, 25 - 45#
Row 350M
15 push press, 25 - 45#
Row 350M
15 push jerk, 25 - 45#

Puppies
Row 200M
15 press, PVC - 20#
Row 200M
15 push press, PVC - 20#
Row 200M
15 push jerk, PVC - 20#

WOD #2
Big Dawgs
3 rounds for time of
Row 500M
7 Overhead Squats, 65#
7 Front Squats, 65#
7 Back Squats, 65#

Pack
3 rounds for time of
Row 350M
7 Overhead Squats, 25 - 45#
7 Front Squats, 25 - 45#
7 Back Squats, 25 - 45#

Puppies
3 rounds for time of
Row 250M
7 Overhead Squats, PVC - 20#
7 Front Squats, PVC - 20#
7 Back Squats, PVC - 20#

Chris Kemp Hi, I'm Kempie and I've been training in one form or another for over 15 years in my native Australia and here in the UK. For the last four I have been lucky enough to make a living out of bringing fitness to other people. In my search for more effective training methods I found CrossFit. After a year or so of testing it on myself and my clients I traveled to Santa Cruz in California for certification. A short time thereafter I became an Affiliate and opened CrossFit North East England www.crossfitnortheastengland.com.
CrossFit Kids Magazine is an electronically distributed magazine (emailed e-zine) detailing fitness training and coaching with kids, pre-teens and teens in the CrossFit method. CrossFit Kids Magazine is directed to the CrossFit Community, coaches, teachers, homeschoolers, kids and parents who want to work out with their kids. Features may include monthly workouts, team training, sports conditioning, self defense information, and articles on related subjects. Focus skills, games, tips for the home gym and Affiliates are also often included. CrossFitKids may also feature Affiliate Kids programs, and a child or teen in Focus on CrossFit Kids and Community. (Send your info, questions or comments to mikki@CrossFitKids.com)

Go to www.CrossFitKids.com for a daily workout and don't forget to post your times!
For subscription information go to the CrossFit Kids store at www.CrossFitKids.com/index.php/store/

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