

**Advanced Strength Training Methodology  
Applied Concurrent Sequencing System  
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The development of a football player is a never-ending process. The multiple fitness components and motor abilities needed to succeed at the highest level of sport are too numerous to name. The ability to train as many of these attributes within one training cycle sometimes seems impossible. As performance coaches, we must inherently develop a program that allows us to train numerous performance factors without compromising the athlete's health and welfare.

The purpose of this article is to specifically discuss the 3 main qualities of strength development and strategies to implement them into a weekly training plan. The three qualities to be discussed are, maximum strength, explosive strength, and strength endurance. Each quality has an important role in the complete development of the football player. It is necessary to develop a training plan that allows us to systematically raise and retain these qualities, without the occurrence of detraining during a specific phase. Detraining generally occurs when there is a reduction of volume that leads to a decrease in training levels or performance of a specific ability. Volume and intensity must be manipulated over a training cycle to allow for some type of retention to be made.

Utilizing a system known as Concurrent Sequencing enables us to raise and retain several training effects within one training cycle. During any strength

training cycle we can prioritize one or two of these qualities, as the other[s] will be retained. The level or training age of the athlete will determine if one or more qualities are raised. Generally, experienced athletes tend to focus on one quality while retaining the other two with a manipulation of volume and intensity. At no time during the training cycle is there only one type of strength development occurring with the use of concurrent sequencing. Many performance specialists may refer to this type of training as non-linear or conjugate periodization.

## **Qualities of Strength Development**

### *Maximum Strength*

Maximum or Absolute strength can be defined as the maximum load an athlete can complete through a full range of motion regardless of time. This is accomplished by using either the Maximal Effort or Sub Maximal Effort method of strength development. The maximal effort method consists of training the athlete for multiple sets at or above 90% for 1 to 3 repetitions per set. The sub maximal effort method is utilized for sets up to 6 reps at or above 80%. Most coaches will either utilize a 1,3, or 5 repetitions maximum to determine their athlete's absolute strength levels. This method of development is crucial for optimal strength gains as well as improved neural coordination.

### *Explosive Strength*

Explosive strength can be defined, as the ability to move an external load to completion in the shortest period of time. This trait is trained through the Dynamic Effort Method. This method requires the athlete to utilize sub maximal loads and concentrate on maximum concentric acceleration. Utilizing the dynamic effort method increases the rate of force development and explosive strength but will do little to improve maximum strength. Dynamic Effort work is typically done for 6-12 sets of 1-2 repetitions between 40-70%. It should be noted that regardless of the bar speed the intent and effort of the athlete should be to move the load as fast as possible.

### *Strength Endurance*

Strength Endurance can be defined as the ability to move a sub maximal load continuously over a prescribe repetition value or time period. This is developed through the Modified Repeated Effort Method. This method is used to increase the athlete's lean body mass [LBM] as well as work capacity. Generally, the athlete will perform sets for a prescribed number of repetitions (8-12) until there is a breakdown in technique. We prefer the athlete not to go to momentary muscular failure (the definition of the Repeated Effort Method). This would be a detriment in our goal of increasing work capacity. A simple goal is to choose a

repetition scheme that allows the athlete to complete the set while still having 1 to 2 repetitions left in him.

### **Concurrent Sequencing and it's value to a football player**

In a justification of why this design has validity to a football player lets evaluate the three types of strength we want to develop and how they may play a role during a football game.

#### *Maximum Strength*

As a football enthusiast we have all heard the famous phrase "The Strongest Shall Survive". The first strength-training book for football written by Bill Starr has this exact title. A stronger athlete is able to maintain higher levels of strength in the endurance and explosive strength work. From a psychological standpoint, the stronger the athlete is the more confidence he will display in his ability to perform.

#### *Explosive Strength*

This ability is extremely important with the emphasis on an athlete's ability to change direction with little hesitation or the ability to get from point A to point B faster than his opponent. For receivers and running backs, we often refer to the term "burst" for those who can accelerate off the line of scrimmage or through the "hole". For lineman, starting strength (a component of explosive strength

development) is crucial. Starting strength is the ability to overcome a static position (stance) by instantaneously igniting as many muscle fibers as possible. The individual who is the fastest and most forceful at turning these fibers on as well as the better technician usually wins the skirmish at the line of scrimmage.

### *Strength Endurance*

Our average football game consists of 75 plays, which are broken down into 5 plays per series for 15 series for both offense and defense. Another 25-35 plays per game occur on special teams. This takes place over a time span of 3 1/5 hours. Our athlete's ability to endure the time frame and be able to maintain the highest percentage of maximum strength levels will allow them to out last their opponents. The increase of anaerobic work capacity is extremely important in reducing fatigue during high intensity bouts of exercise or in the case of a football player, numerous plays in a game.

Also, strength endurance training helps in the reduction of overall body fat percentage and the increase of lean body mass. This by product of strength endurance training allows the athlete to be more efficient in his athletic and sport specific movement skill.

### *If You Don't Train It – You Lose It*

As you can see from the above explanations, each type of strength will come into play on every snap of every game. Why wouldn't you want your athletes to have the ability to utilize each one of them in any order for a specific play or drive? If you were to cycle each of these strengths separately (linear Periodization) you would detrain the other two and would not have the ability to draw from the development of a previous training cycle. Therefore, a concurrent sequencing approach is a superior training regimen that you may want to research further to see if has merit to your program.

### *Metabolic Strength Sets*

In football, the individual who has the ability to maintain a high level of strength, play after play combined with outstanding technique has an upper hand in his one on one competition with his opponent. Most sports have multiple bouts of exercise followed by a short rest period. The athletes/teams who can recover the quickest between rest intervals and maintain the highest level of strength are usually the ones who are victorious.

Metabolic Strength sets allow for a combination of modified maximum effort and strength endurance work to be trained simultaneously within one set. This cycle uses a set/rep principle called a "cluster", in which each rep of the set is done individually with a short rest time between. We will usually use a 20-35 second

rest in between a cluster with a 90-120 second rest in between sets. This allows the athlete a short recovery period followed by a single effort at a particular load.

Cluster sets are primarily used as sets of 3 and 5 reps but, for testing purposes a set could go as high as 10 to 15 reps. This implemented with our Front 7 group – 6 weeks before we report to camp. This is extremely challenging both mentally and physically. This is as close as we can get to the energy system development that is similar to actual field play.

### **Planning Your Program**

The basis of our program is formulated around a 3-Tiered daily training design. We prefer to train our football players 3 days per week with a whole body emphasis. We feel that if the athlete is going to utilize his entire body on every play then why should we train his body any differently in the strength program. Our daily training sessions are based on the rotation of three major movements per day; total body, lower body, and upper body, followed by our mobility movements for the day.

**Table 1 Daily Training Rotation**

<b>Tier</b>	<b>Monday</b>	<b>Wednesday</b>	<b>Friday</b>
<b>One</b>	<b>Upper Body</b>	<b>Lower Body</b>	<b>Total Body</b>
<b>Two</b>	<b>Total Body</b>	<b>Upper Body</b>	<b>Lower Body</b>
<b>Three</b>	<b>Lower Body</b>	<b>Total Body</b>	<b>Upper Body</b>

When developing our yearly plan we will rank in order what we feel is the goals of each phase of training and attach a specific method of development next to

that tier. Depending on the position group these are rotated through out the year based on the specific goal of the training cycle.

We break down our football team into two groups, Outside the Box (running backs, receivers, safeties, cornerbacks, specialists, and quarterbacks) and Front 7 (offensive and defensive linemen, tight ends, and linebackers). Below is an example of a yearly training regime for each group base don concurrent sequencing training

**Table 2 Winter Program Mid January – Mid March**

<b>Tier</b>	<b>Outside the Box</b>	<b>Front Seven</b>
<b>One – Priority</b>	<b>Maximum Strength</b>	<b>Maximum Strength</b>
<b>Two – Raise or Retain</b>	<b>Explosive Strength</b>	<b>Explosive Strength</b>
<b>Three - Retain</b>	<b>Strength Endurance</b>	<b>Strength Endurance</b>

**Table 3 Spring Program Mid March – End of April**

<b>Tier</b>	<b>Outside the Box</b>	<b>Front Seven</b>
<b>One – Priority</b>	<b>Explosive Strength</b>	<b>Maximum Strength</b>
<b>Two – Raise or Retain</b>	<b>Maximum Strength</b>	<b>Explosive Strength</b>
<b>Three - Retain</b>	<b>Strength Endurance</b>	<b>Strength Endurance</b>

**Table 4 Summer Stage 1**

<b>Tier</b>	<b>Outside the Box</b>	<b>Front Seven</b>
<b>One – Priority</b>	<b>Volume</b>	<b>Volume</b>
<b>Two – Raise or Retain</b>	<b>Maximum Strength</b>	<b>Maximum Strength</b>
<b>Three - Retain</b>	<b>Explosive Strength</b>	<b>Explosive Strength</b>

**Table 5 Summer Stages 2-3**

<b>Tier</b>	<b>Outside the Box</b>	<b>Front Seven</b>
<b>One – Priority</b>	<b>Explosive Strength</b>	<b>Maximum Strength</b>
<b>Two – Raise or Retain</b>	<b>Maximum Strength</b>	<b>Explosive Strength</b>
<b>Three - Retain</b>	<b>Strength Endurance</b>	<b>Strength Endurance</b>

**Table 5 In Season and Bowl Prep**

<b>Tier</b>	<b>Outside the Box</b>	<b>Front Seven</b>
<b>One – Priority</b>	<b>Explosive Strength</b>	<b>Explosive Strength</b>
<b>Two – Raise or Retain</b>	<b>Maximum Strength</b>	<b>Maximum Strength</b>
<b>Three - Retain</b>	<b>Strength Endurance</b>	<b>Strength Endurance</b>

## **Conclusion**

Although strength training is a vital aspect of the athlete's development, one must realize that the priority has to be put on the athlete's performance on the field. This being his ability to play football. This is where the general traits of the strength program and the specific skill development acquired through his coach's technical mastery of the position must be conjoined to allow the best possible football player to step on the field. The number one attribute a football player has is his ability to play FOOTBALL, not how much he can bench press, back squat, or power cleans but, how he applies this development to his skill development of the field.

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## References

- Dermody, B. 2003. Exploding with Bands. *Training and Conditioning*. 8(6).  
 Haan, R. 2004. Band Science. *Milo*. 12(2).  
 Kenn, J. 1993. Strength Training Procedures Lecture Guide and Laboratory Manual.  
 Kenn, J. 2003. The Coaches Strength Training Playbook.  
 Stone, M., O'Bryant, H. 1987. Weight Training: A Scientific Approach.  
 Tate, D. 2000. The Periodization Bible – Part II. [www.t-mag.com](http://www.t-mag.com).  
 Zatsiorsky, V. 1995. Science and Practice of Strength Training.

Note: This article was written in 2005. Information is valuable but, the author reserves the right to have made changes to this model in the following years.