Front Loading Speed of Movement Development

Some coaches devote much of their existence to improving speed of movement. While this is a noble undertaking in the performance enhancement world, without proper attention, focus and integration of preparing the athlete for movement, speed training application and optimal performance cannot be achieved. The preparation is creating the mental capacity to react quickly (reaction speed) and to implement the improved speed of movement developed on the “back end” of this equation.

**Perceptual Speed:** An athlete is bombarded with countless pieces of visual and auditory stimuli during a competition and training. While this information is coming in, each athlete must process it and ultimately make a decision from a variety of choices, depending on a particular situation. The ability to do so is called perceptual speed. Perceptual speed is enhanced through experience. For example, an experienced athlete can make a quick decision about what to do in a situation before it happens—all that is needed is a quick glance. An inexperienced athlete must concentrate on one thing and, because of this, is unable to see other options. It is often too late to do something constructive.

**Anticipation Speed:** Like perceptual speed, anticipation speed is also strongly influenced by competition experience. Anticipation is the athlete’s ability to predict the probability and the end result of a situation. Because an athlete can predict what will happen, he or she can execute a desired action. The more experience an individual has, the better able he or she can pick up clues and predict what will happen. For example, the experienced athlete shows the ability to anticipate a situation by being in the right place at the right time with no wasted effort. In contrast, an inexperienced athlete gets to a situation either too quickly or too late. Because of this, the player must react to make up for the lack (or over-abundance) of anticipation.

**Decision-Making Speed:** Athletes must decide what to do after analyzing a situation. This ability is called decision-making speed. Decision-making is related to the complexity of the situation. The more complex a situation is, the longer processing takes and that delays the decision. Like anticipation speed and perceptual speed, decision-making speed improves with experience. It is also influenced by one’s disposition. Some people enjoy making decisions, while others hesitate and squander any opportunity to do so. Experienced players need less information to make quick decisions and inexperienced athletes require more information, resulting in a slower decision-making process.

**Reaction Speed:** Reaction speed is the ability to react to a previously performed action or stimulus. Once reaction takes place, applying the speed of movement takes over and all that training pays off. The takeaway here is to integrate all speeds of training in preparing your athletes starting with perception, anticipation and decision-making.

Something to think about

Ken Kontor-Performance Conditioning Inc.

**Acknowledgement:** Michael Thyron
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- Training Cards 4-6 for players the need to build athletic ability to contribute, improve their strength and general endurance
- Training Cards 7-10 for team, position-specific shape running, first step speed and endurance circuits with and without a ball

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Moving Towards Grass Roots Conditioning: Concept #2 Maintain the Speed of Action

Chris West, NSCAA Director of Conditioning Education, University of Connecticut Soccer Strength and Conditioning Coach

Chris West is currently the Associate Head Coach for Strength and Conditioning at the University of Connecticut working directly with Men's Basketball and Men's and Women's Soccer.

Prior to his appointment at University of Connecticut he served as an Athletic Trainer at Saint Louis University and was later appointed as Strength and Conditioning Coordinator. Coach West also has experience serving strength and conditioning and athletic training internships with the Oakland Raiders and Los Angeles Kings and a graduate assistantship with the Seattle Seahawks.

Chris earned his Bachelor's Degree from California State University at Long Beach in Physical Education and Masters Degree in Exercise and Movement Science from the University of Oregon. Coach West has held certifications from the National Strength and Conditioning Association as Certified Strength and Conditioning Specialist, the National Athletic Training Association as a Certified Athletic Trainer, and the National Academy of Sports Medicine as a Performance Enhancement Specialist.

The goal of the NSCAA is to provide an educational curriculum that will give a base of understanding for the mom and dad coach through high school coach using the relatively simple concept of the conditioning process. This will empower these coaches to design an entry-level conditioning program. Moving Toward Grassroots Conditioning is a series of articles that will create a dialogue to achieve this goal.

In this first article we will introduce three simple concepts which will provide the program’s foundation. Usually the coach will not have the opportunity to bring athletes into a facility to do weight training, nor should weight training with a group of young athletes be done until the athlete can control their own body weight. The intent is to start with body weight exercises for strength and stability as well as speed development opportunities. This program’s intent is to come up with a simple package that the coach can do. It should be used by incorporating exercises into each session that touch upon strength and speed continuum, specific to that athlete’s level. Based on the proposed curriculum, we have three of four levels of knowledge that expand through the conditioning process. The challenge is developing these levels or stages of progress.

Net Link: To read the introductory article of all three concepts click HERE.
Maintain the Speed of Action

Not only do you want to maximize speed of action, but you want to repeat it throughout the game. To reach this goal, small-sided games are introduced in a 3 v 3 or 4 v 4 setting for one minute. They are all followed by three minutes of rest for a series of six games, rest, and then finish with another series of six games. This is done at high intensity with rest that is reduced as the players’ fitness levels increase from three minutes down to two and a half minutes, two minutes or one and a half minutes then to one.

The next progression is moving into 6 v 6 or 8 v 8 games starting at four minutes. Based on the Verheijen periodization model, the next advance is to five-minute games with the same rest between games. Rather than decreasing rest, the duration is increased. From a physiological standpoint you look at anaerobic threshold training, maintaining that energy system for a longer period of time. With the 3 v 3 game you can repeat that maximal effort.

The Ball

The first issue to address in maintaining speed of action is the ball. The skill of controlling the ball in playing small-sided games comes into question which can disrupt the “conditioning effect.” How do you quantify what the players do? The first thing I emphasize is Concept #1 Maximize Speed of Action—getting intensity out of what they do. You could play a 3 v 3 game for one minute or for 10 minutes and the speed would be the same. I advocate maximizing speed of action into the singular actions of sprints. You see athletes execute a drill but not at full speed, especially when you integrate the ball into the drill. For example you might have the athlete dribble the ball out 10 yards and take 10 touches in that 10 yards which constitutes quick touches, uses quick feet and then sprints back. You see that you are not getting 100% effort. I fault this back on the traditional training session commonly done in soccer. Players are not asked to demonstrate a maximum effort. As a result, a lot of athletes really do not understand what going as fast as they can really is. There must be a certain amount of coaching to get that speed of action up to maximum levels. I realize we are talking about 3 v 3 games but if the athlete cannot do them singularly at full speed, then when you go play 3 v 3 you are not going to get any action at full speed. The game becomes more complex, the ball is involved and the technical abilities of the players slow them down—this is a speed limiter. This model is best applied to the very young player of 6 to 8 years old, on singular actions with the ball and done at maximum speed.

The Five Runs of Soccer

It was fascinating to watch the NFL draft with star quarterback Cam Newton from Auburn. People who evaluated him said, “He can make all the passes.” I found it interesting in translating this to soccer. Take a right back, for example. How many kids can make all the passes or know what passes are available to them? It is a matter of breaking it down and identifying what all the passes are that the player needs to do. Let’s apply this to speed of action to running. I have broken down all the runs the player can do in soccer. Some are going to be just the change of speed, i.e. jog to a sprint. But we emphasize that change of speed to go from dribbling the ball to passing the ball going to a hard, maximum effort sprint. As the kids learn you can add complexity to the drill. The second example would be acceleration. We know that in soccer the majority of the sprints are from 0 to 10 yards which makes acceleration critical. We know that we can train acceleration going back to the first concept of Maximizing Speed of Action. A third run a player does that can be broken down into a training aspect is running with the ball. The touches here are less frequent than the drill we described as 10 touches in 10 yards, for example one touch every 10 yards. Touching and maintaining the proper distance on the run is an important skill. I would rather see the touch of 20 yards which encourages maximum sprint efforts rather than a touch of five yards which slows things down.

The next run is doing curve runs as opposed to linear runs, or straight ahead. Coaches describe this as a bending run. You bend into...
position and then accelerate to make the play on the ball. This is different from a straight run, where the player waits for the ball to catch up to the player. The final run is without the ball.

When we break these five runs down, we can see deficits in certain areas which allow us to determine which areas we must work on. The idea is to close the gap on the deficits since equalizing them may be a little unrealistic. An athlete can come to realize that they do great running 10 yards without the ball but have difficulty maintaining speed with the ball. That is an area that you can work on. Now we can translate this to our 3 v 3 play, maintain maximum speed by working on these weaknesses and we can play 3 v 3 faster. In my opinion the coach can devote 15 minutes a practice session to enhance these five running skills. After this, the coach can then go into the 3 v 3 portion of the session working on maintaining that maximum speed in game situations. Skill acquisition happens over time; it is critical at an early age for athletes to realize what maximum speed is like. It can be done without the ball, running and doing minimal touches to gain the feel, as well and make it more soccer-specific. Adding the 3 v 3 and working on the five different runs helps the young athlete develop and maintain speed of movement through repeated sprint ability.

**Incorporating RSA—Repeated Sprint Ability**

Anaerobic fitness is necessary to maintain the speed of action improvement. Research indicates the importance of RSA in comparing High Intensity Interval Training (HIIT) training, which a lot of people are doing. Findings show that both are of equal value in improving anaerobic fitness. The results are shown in Figure 1.

Figure 2 incorporates and organizes this type of training in a training session. RSA would be done during the sprint portion at the end of the session as well as the games you play—for this purpose we are talking about the 3 v 3 games.

Figure 3 examines an organizational model over the span of a young athlete’s developmental career. RSA training does not start until around age 14, but 3 v 3 is done immediately (age 6 on). This gives an overview on how development progress should look.

Figure 4 provides RSA programming techniques using a six-week training cycle. This is off the ball work. The first week is about working that maximal effort with a long rest and the second maintains that maximal effort with short rest. The third week has the athletes do a shuttle 15 minutes out and 15 back with long rest and the fourth week has a short rest. These drills are done without the ball.

Figure 5 details 3 v 3 training protocol using small goals. Every week as we progress through the six-week cycle. By the fourth week we increase the field dimensions with more ground to cover and the speed of actions should be a little faster. In relation to the series column of Figure 5, you see 2 x 8 then 3 x 6. This is where the three-minute recovery of the last column takes place. In week two after the first series of eight game played with two minutes rest between games, we finish with a three-minute rest and do it eight more times.

Next issue we will talk about the Verheijen Concept #3—Reduce the Time Needed to Recover Between Actions. Contact Chris at westperformance@gmail.com

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**Organization**

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<thead>
<tr>
<th>Duration</th>
<th>Intensity</th>
<th>Frequency</th>
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<table>
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<th>Training to train 11-14yrs</th>
<th>Training to compete 14-20yrs</th>
<th>Training to win 20+yrs</th>
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<tr>
<td>RSA*</td>
<td>Introduce</td>
<td>Develop</td>
<td>Stabilize-Refine</td>
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<tr>
<td>3v3</td>
<td>Develop</td>
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<td>HIIT*</td>
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<td>Stabilize-Refine</td>
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*RSA and HIIT should be cycled over different training periods.*

**RSA Techniques**

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<th>Distance</th>
<th>Shuttle</th>
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<th>Reps</th>
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<th>Series</th>
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<td>3min</td>
<td>1</td>
<td>18min</td>
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<td>Straight</td>
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<td>6</td>
<td>3min</td>
<td>3</td>
<td>12min</td>
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<tr>
<td>3</td>
<td>30m</td>
<td>15m</td>
<td>X : 1.5min</td>
<td>12</td>
<td>3min</td>
<td>1</td>
<td>18min</td>
</tr>
<tr>
<td>4</td>
<td>30m</td>
<td>15m</td>
<td>X : 20sec</td>
<td>6</td>
<td>3min</td>
<td>3</td>
<td>12min</td>
</tr>
<tr>
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<td>10m</td>
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<td>12</td>
<td>3min</td>
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<td>X : 20sec</td>
<td>6</td>
<td>3min</td>
<td>3</td>
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**3v3 to small goals**

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<th>Game duration</th>
<th>Rest</th>
<th>Series</th>
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<td>3 min</td>
<td>12</td>
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<td>2</td>
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<td>2 min</td>
<td>2 x 8</td>
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<td>1 min</td>
<td>3 x 6</td>
<td>3 min</td>
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<tr>
<td>4</td>
<td>25w x 40l</td>
<td>1 min</td>
<td>3 min</td>
<td>12</td>
<td>3 min</td>
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<tr>
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<td>2 min</td>
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<tr>
<td>6</td>
<td>25w x 30l</td>
<td>1 min</td>
<td>1 min</td>
<td>3 x 6</td>
<td>3 min</td>
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</tbody>
</table>
Preparation for Training and Match Play

Shawn Jeffers, CAT (c), CSCS, Assistant Athletic Trainer, Toronto FC

We welcome a new regular contributor the Professional Soccer Athletic Trainers Society (PSATS) to Performance Conditioning Soccer. Each submission will provide coaches, parents and athletes with the latest strategies in prevention injury and maintaining a healthy soccer lifestyle. The mission of the Professional Soccer Athletic Trainers Society (PSATS) is to serve as an educational resource for the Major League Soccer athletic trainers. PSATS serves its members by providing for the continuing education of the athletic trainer as it relates to the profession thereby improving the athletic trainers understanding of sports medicine as it relates to soccer. PSATS strives to improve the education of its members so that they may better serve Major League Soccer, their organizations, and the professional soccer players under their care. PSATS also serves as an educational resource for those outside of the professional soccer community to better educate them on the role of the athletic trainer within the sports medicine team. Thank you PSATS! -ed

Shawn is in his fifth season as Assistant Athletic Trainer with Toronto FC. As one of the original staff members from Toronto FC’s inaugural season, he and the medical staff have been affective in insuring that players are in the best physical state prior to training and match play.

Shawn earned his Bachelor’s of Physical education degree from Brock University and went to further his knowledge in Athletic Therapy, earning his Certificate in Athletic Therapy at York University. Shawn went on to become certified as an Athletic Therapist through the Canadian Athletic Therapist Association (CATA) as well as a Certified Strength and Conditioning Specialist through the National Strength and Conditioning Association. After graduation, Shawn focused on educational courses and seminars in the areas of Olympic weight lifting for performance, sprint and speed training, low back and core performance training as well as soft tissue release and athlete reconditioning.

Prior to Toronto FC Shawn has had the opportunity to work with York University Men’s Volleyball, Ryerson University Men’s Basketball, Markham Waxers Jr. A Hockey and the Ontario Provincial Soccer Association.

As soccer players progress from novice to more elite and professional levels, the physical demands of the sport and the wear and tear on the body become more and more. In order to keep the body...
physically ready for a grueling soccer season, players must keep their body fine tuned for the explosive power and speed that soccer requires. The daily preparation for training and match play will be outlined in the following article, from nutrition and hydration to proper warm up.

Nutrition
One of the most important things prior to a training session or match is a proper meal that enables the athlete to maintain their energy at optimal levels. Aerobic endurance athletes who train for long durations such as 90 minutes or daily should consume carbohydrate levels of approximately 8 to 10 g/kg of body weight. And out of that, 200-300g should be consumed 3-4 hours prior to competition/training, which is said to increase carbohydrate stores in the muscle and improve endurance and performance. It is also very important that the Glycemic index of the carbohydrates ingested are more moderate to low prior to exercise.

The following is a table that shows the glycemic index of food:

<table>
<thead>
<tr>
<th>High Glycemic Index Carbohydrates</th>
<th>Moderate Glycemic Index Carbohydrates</th>
<th>Low Glycemic Index Carbohydrates</th>
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<tr>
<td>Puffed flakes</td>
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<tr>
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<td>Peas</td>
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<tr>
<td>Mango</td>
<td></td>
<td>Kidney beans</td>
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Hydration
During the MLS season which is played primarily during the summer months, it is vital that each athlete is well hydrated prior to 90 minute games and intense training sessions. Water affects the athletic performance more than any other nutrient. Fluid loss equal to 1% of total body weight can be associated with an elevation in core temperature during exercise. A loss of 3% to 5% of body weight can result in cardiovascular strain. The athlete should be consuming 1 liter of water 2 hours before exercise, and proper hydration should start 24 hours before, by consuming 500 ml of water for every pound of body weight lost from training session the day before game.

Dynamic Warm up
The key to a successful game or effective training session is having a proper dynamic warm-up. A dynamic warm-up consists of going through movements and changes in intensity typically seen in a game of soccer, and should last approximately 10-15 minutes. The purpose of the warm up is to increase the physical readiness of the athlete, decrease the chance of injury and enhance performance.

The first part of the warm up is to increase the heart rate and temperature of working muscles through general movements such as, jogging, skipping, marching, leg swings, and lateral shuffling to name a few. The second part of the warm up should include some sort of dynamic or active stretching, that progress from large muscle groups to smaller. Some examples of active stretching include deep lunging to target the quads and hip flexors, lateral lunging to target the groin complex, leg crudes to target the external rotators of the hip. The purpose is to take the muscle into a complete stretch for a short period of time 2-3 seconds and then release, these should be single and multi joint stretching movements. The final phase of the warm up is for the purpose of neurological preparation and athletic development. This is achieved through speed, agility and quickness drills performed at the same tempo that one would see in the training session or match. It is also very important that the drills incorporate similar patterns that would be seen, for example lateral shuffling, pivoting, back pedaling and sharp directional changes. Tempo and pace is the key to this final phase.

FIFA has developed a useful tool to put together a simple warm up that incorporates all the important elements, in their F-MARC FIFA 11 warm up program. The warm up is an area that should be taken very seriously and if implemented correctly can significantly reduce injury and enhance performance.

Net Links: Contact Shawn at shawn@propulsiontraining.com, www.propulsiontraining.com
For the F-MARC FIFA 11 warm up program go to: http://f-marc.com/11plus/
Click HERE for the article: “A Coaches Guide to the Three Warm-ups of Soccer”
Plus the “Rational for Second Half Warm-up” by -Jens Bangsbo
Craig has been working at Ajax Cape Town for 5 seasons so far, working with the PSL team and Youth Academy and has benefited intensely from the daily experience of working in this environment. In the past, Craig has been a lecturer on Football Coaching and Conditioning at Gateway College, and been involved with High Performance Testing and Training at Performance Sports Testing.

Here is Craig’s person mission statement: I hope to continuously develop and improve myself in every aspect and learn as much as I can from the exposure of working in this wonderful industry of professional football, and from interacting with the people and experts in it.

Ajax Cape Town Football Club in South Africa is made up of the 1st Team (playing in the Premier Soccer League) and the Youth Academy (6 teams). We are affiliated to Ajax Amsterdam, and through this relationship, have had 5 players go to Amsterdam over the past 10 years. Three of these players came through our youth development system, namely Steven Pienaar, Stanton Lewis and Daylon Claasen, while Benni McCarthy and Eyong Enoh also made the move to Holland. We currently have about 80 players playing professional soccer around the country and the rest of the world that have come through this same system.

Our Youth is a massive priority for us, and we make every effort to ensure their potential is fully developed and nurtured. We have 6 teams – U/12, U/13, U/14, U/15, U/17 and U/19. Each of these teams plays league matches in the age group above theirs. We focus on specific conditioning with each of these age groups and are constantly improving our methods. Over the course of the last 2 seasons the conditioning protocols have gone as follows:

Starting at the Beginning- the Importance of Flexibility/Mobility, Motor Skills and Coordination in the Development of the Young Soccer Athlete and Matching It with Growth

Our junior youth teams (U/12, U/13, and U/14) do gymnastics, rope skipping and Capoeira with the emphasis on mobility, fundamental motor skills and co-ordination. The reason that we included these programs into our youth training schedule is for a number of reasons. We feel that co-ordination and multi-skills are especially important for our U/12 players because they are still at the age where they can quickly learn new motor skill patterns, and with exposing them to as many different skill aspects as possible, it will greatly add to their holistic development as an athlete and ultimately aid their progress as soccer players.

I have firsthand experience of how much individual attention is required for new academy players to improve co-ordination at U/17 or U/19 level when it is evident that they haven’t been exposed to different sports or a basic multi-skills programming at a young age. So start young.

In terms of flexibility/mobility; we closely track the growth rates of our Youth Academy players and when they are at the stage where they reach their Peak Height Velocity (the point where they will grow the most) it is vitally important that they are doing sufficient flexibility/mobility exercises. At this time it is critically important to limit the number of games played at this stage of development so as to limit chances of injury. This maturation process is monitored by quarterly tests and data capturing where we get results such as Predicted Height, Peak Height Velocity and Development Type (Early/Normal/Late).

Gymnastic, Rope Skipping and Capoeira Exercises

At the moment we have external individuals coming in to run the multi-skill programs.

Gymnastics – includes skills such as trampoline jumps with landing, hand stands, cartwheels, balance beams, etc.

Rope Skipping – includes teaching the players various types of skipping techniques from basic to advanced.

Capoeira – they are taught the basic stances and movements of capoeira as well as various kicks. The movements are varied from ground to crouched to squatting positions.

Editor’s Note: Capoeira is a Brazilian art form that combines elements of martial arts, sports, and music. It is known by quick and complex moves, using mainly power kicks and quick leg sweeps, with some ground and aerial acrobatics, knee strikes, take-downs, elbow strikes, punches and headbutts.
**Ball Work and Match Play**

The junior youth teams train 3 x per week (for 90 minutes), and play one match. Within these 3 training sessions, they have 1 x 30 minute session for capoeira and 1 x 30 minute session for gymnastics/rope skipping. It is always the best case scenario if balls can be included with everything that they do, however the emphasis is on learning skills other than soccer and there are only having two multi-skill sessions per week. This means that they will have 1 full 90 minute soccer training session and 2 training sessions split by the multi-skill program.

All our youth training sessions are outlined in the Ajax method and therefore involve a lot of ball, including many technical and tactical drills.

**Sample Program Outline**

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<th>Monday</th>
<th>Wednesday</th>
<th>Friday</th>
<th>Saturday</th>
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<tbody>
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<td>16h30 – 17h00</td>
<td>U12 GYM/ROPE</td>
<td>FULL TRAINING</td>
<td>U13 CAPOERIA</td>
<td>10H40 MATCH</td>
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<tr>
<td>17h00 – 17h30</td>
<td>U13 GYM/ROPE</td>
<td>FULL TRAINING</td>
<td>U12 CAPOERIA</td>
<td>11H40 MATCH</td>
</tr>
<tr>
<td>17h30 – 18h00</td>
<td>U14 GYM/ROPE</td>
<td>FULL TRAINING</td>
<td>U14 CAPOERIA</td>
<td>12H40 MATCH</td>
</tr>
</tbody>
</table>

**Senior Youth Considerations**

Our senior youth teams follow a strength training curriculum that we have developed. They train 4 times per week for 90 minutes (excluding match), while the squad strength training program takes place 2-4 times per week. Here U/15’s start with very basic technique training of most of the strength exercises they would do throughout the Strength Curriculum, with some Olympic lifting techniques.

**Net Link:** Click [HERE](http://www.usada.org/spirit-of-sport) for an article on how to introduce Olympic Lifting Techniques safely.

Once they reach U/17, they would know the techniques well and would gradually increase the weight of the exercises they do. Our U/19’s is the age group that we focus most of our strength training on. They would have up to three strength sessions and one power session in a week.

Their season runs for 9 months (similar to PSL) and therefore we can plan for a phase of hypertrophy, max strength and then maintenance. During all of this we do periodize the speed and stamina of each team, but give the responsibility of this to the coach to include specific drills into their training sessions. We also track the Height and Weight of each youth player every 8-12 weeks. We use this information to estimate each player’s Peak Height Velocity or PHV a period of time where the athlete has the most growth. During a player’s PHV, he will be pulled out of strength training and will do more co-ordination and running mechanics training.

I hope this gives you some information about my role and the Medical Departments role within the Youth Academy.

**Net Links:** Contact Craig at craigvw@ajaxct.co.za

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**Spirit of Sport - From USADA to You**

*Mellissa Lewis, Editor and Olympic Education Coordinator*

The USADA summer edition of the Spirit of Sport is now available at [http://www.usada.org/spirit-of-sport](http://www.usada.org/spirit-of-sport)! Click on the link to access stories that demonstrate how USADA has remained committed to serving athletes.

Highlights include: bicycles

- **Kristin Armstrong**, a USADA Athlete Ambassador and 2008 Olympic gold medalist in the women’s cycling individual time trial shares her take on life as a member of the USADA Registered Testing Pool

- **Paperless Sample Collection** – USADA is moving to an electronic sample collection process

- **Mobile Drug Reference Online (DRO)** – Easily check the status of your medications by accessing the mobile based application from your smartphone! (www.globaldro.com)

- **Coach’s Advantage** – The 2011 version of Coach’s Advantage has launched and is now available for National Team level coaches to test their anti-doping knowledge.

New SOS edition, used with permission
WIRTING YOUR FIRST PROGRAM

Writing Your First Program:
The Moment of Truth

Robert L. Brown, Owner, Robert Brown Sports Performance in Arlington, Texas

Robert Brown is the owner of Robert Brown Sports Performance in Arlington, Texas, which specializes in sports-specific conditioning. He works with high school and collegiate conditioning programs in the Dallas area and beyond.

“*If a soccer coach cannot write a program how can s/he expect to put their athletes through a program?*”-Robert Brown

PC: How does a soccer coach go through the process of writing a program? Should s/he read a bunch of programs and take pen to paper knowing that each program is very specific to the circumstances surrounding it? Or should s/he take a step back and discover his/her own personal philosophy on what is important in designing a program and then proceed?

RB: Actually, writing a soccer-specific program is a process of both approaches. A lot of what is done comes from what was done before. It’s good to take a look at those programs. When you read those programs it’s important to take a look at the purpose of why the program was designed such as it was. One purpose might be that the program was designed based on test data results. This can tell a coach that maybe his or her team is below average on the vertical jump so s/he might have to do more power development training to improve.

The next thing to do is go back to your philosophy toward conditioning. Maybe it’s your philosophy not to max out the athletes when doing barbell exercises. Many old programs might have that philosophy as part of what they do, so this means your philosophies don’t match and that particular program is not a good fit. Consequently, the coach has to adjust to find means to achieve improved performance goals. Writing a good program is a process of continual modifications to fit the needs of the team and the training philosophy of the coach. You might get Oklahoma’s or Nebraska’s general program but is what you get specific to your level of athletes? Can you coach/teach what they wrote? Elite level programs have an elite level mentality. This is usually designed for the elite level athlete where the maturation process has run its course. For younger athletes it’s a whole new ballgame. In a nutshell, a strength and conditioning program is that something we, as coaches, have to modify to know if and when to apply concepts that are within our philosophy regardless of who wrote it. You have to bring it back to you and what you have.

PC: How does one develop a strength and conditioning philosophy?

RB: Coaches tend to do what they were previously taught and practiced. This is a great starting point. Some may have lifted weights and had a bad experience so they may not want to have their athletes lifting because they got injured. This makes it easy to do but hard to enact if the experience was an exception rather than a rule (most people don’t hurt themselves lifting weights). I come from a football conditioning background and my philosophy was to lift-lift-lift heavy. I found that the more I got to the higher intensity the more soccer athletes held off. They didn’t want to get into those ranges of motion or lift that much weight. Therefore, I had to change and find a way of developing my athletes without bruising my ego. Because of training my athletes year-round I had to forget the load ‘em up and lets go’ and had to back up and rethink my situation. So I had to draw upon my past, adjust it to my present and the type of athletes I was working with and plan for the future to insure my athlete’s progressed.

PC: Would you summarize that you start with core principles, the 10 Commandments so to say, and then in a fluid, changing environment change to fit your athlete’s needs based on gaining experience in working with those athletes. My question is, what changed you from your football mentality of program design?

RB: This may sound crazy but the heavier my female athletes (14-18 years old) lifted the more they backed off. I found that as I got to the 87 to 90 percent they backed off and there wasn’t any performance gain. What this made me do was to regress before we started to progress. (Ed. Note: see Robert’s article on this concept that accompanies this article). I’m not talking
about doing 40 to 60 percent of maximum but I found that at 75 to 80 percent the athlete started to push themselves and progress started to happen. My test data back up this fact. Based on strength and conditioning principles this is somewhat backwards but I feel those principles are based on a male dominated population—I had to change the intensity. I’m not saying this is for everybody but it’s now working for me. This is to say I don’t look at change; I constantly tweak the program to make it better based on my experiences.

PC: To summarize, the process of program writing is taking previous experiences, match what is being done with the start in order to write a program. The next question is how does a coach know s/he can do this?

RB: The best thing to do is just start; however, you carefully monitor and watch what’s going on. If you write down the squat exercise and get into it but techniques are all over the map and the players are having difficulties you, as coach, have to change. I’ve observed and asked questions of several Olympic lifts coaches on how to teach these lifts, but to be honest, there are movements within these lifts I don’t teach because I’m not qualified. It’s not part of my program because I can’t teach it. You have to know the limits of what you can and cannot teach. If you can’t articulate on how to teach it, how can you expect your athlete to do it right?

PC: In teaching lift the practical curriculum for the USA Volleyball Conditioning Coaching Accreditation program (VCAP) a candidate is given an exercise to teach and must demonstrate that s/he is competent in teaching it to a group of peers. A member of the group does the exercise and the candidate must correct the person if s/he is doing it wrong. Would you recommend this method when working with athletes?

RB: This is the only way!

PC: Let’s talk about developing a season-specific program and the limiting factors beyond inability of a coach to teach an exercise that a coach might run into in the off-season at the various levels of play, collegiate to club?

RB: Let’s face it, collegiate program writing is simple. You are at a school with a closed environment. Those athletes are under your guidance only. You can plan periods of training. You can overload without maturation concerns since the athletes are usually at a level of full physical maturity. A main concern is that kids coming into the program are beat up from overuse/abuse in high school/club. They come in with injury issues and training deficiencies. Here the coach needs to refer to medical staff to get the athletes back on balance.

In high school coaches are in a constant battle. The high school coach wants total control. The club coach wants total control. The kids are being pulled back and forth. A kid does lifting and running at high school and comes to the club and might be expect to do lifting as well. You have three to four individuals that the kid has to answer to, the high school coach’s philosophy, the high school strength and conditioning coach’s philosophy, the club soccer coach’s philosophy and, in some cases, a club strength and conditioning coach. Not an easy situation for the athlete.

Another obstacle a high school athlete faces is time. On the collegiate level an athlete trains for an hour to an hour and a half. But in high school/club, it might be 20 to 30 minutes. I didn’t create this system; I just have to adjust to it. You have to work with each kid and be willing to change your program on the fly. Maybe it’s just doing recovery type activity all the way to a heavy strength and conditioning program, it all depends on the athletes.

PC: Would communications between the club and high school coach help this situation any?

RB: That would be a good idea; however, as you know, by their nature coaches are control freaks. This applies from skill coaches to strength and conditioning coaches. But there are coaches who take the time to understand what a player might be going through in the related sport activities and back off. However, all too often it’s the boot camp philosophy—this is the way it is, here’s the program, my way or the highway.

PC: The pressure to play is enormous. How can we get coaches to understand that playing all the time retards physical development? How can we convince coaches to realize that there’s a time necessary to set aside for physical development?

RB: This is the tough part. The only answer I have is through education and education on a continuous basis.

PC: OK let’s talk about the program writing process. We have the philosophy, a list of exercises that we can teach, and we’ve taken a critical look at other programs. Now what’s the next step? Let’s address the off-season specifically.
RB: The four qualities you want to develop are strength, strength-endurance, power and power endurance. Strength is done with quality, allowing the athletes to recover in order to gain maximum strength development. Repetitions are eight to ten and below. Two to three minutes of rest between sets.

Strength endurance is done at a lighter load with more repetitions. The rest levels are shortened between sets and exercises done circuit style with minimum rest between sets and exercises. A 225-pound bench press test for maximum repetitions is what pro football uses to test rookies at the combines. To do those, the players have to spend some time in the strength endurance mode.

For power, a coach wants to stimulate the neurological system so the reps drop to 4 to 6 with total recovery between sets and exercises.

Power endurance is doing power related exercises in a circuit setting similar to the strength programming. Here you should do more than 10 to 12 repetitions or as little as 6 reps.

PC: When training for power does the nature of the exercises change? How about the speed (velocity) in which the exercises are done and the order in which they are done, like squats followed by squat jumps?

RB: Let’s take the squat and bench exercises. We can work with the four qualities I just mentioned (strength, strength-endurance, power and power endurance). I can do a heavy set of squats followed by no resistance or light resistance squat jumps. This method is called contrast training, combo training or super setting—take your pick. This is a power endurance exercise as I classify it.

One thing important to talk about is that training these qualities are done in phases and not all at once. In the beginning a lot of people hit all the qualities with one day strength, one day power, one day power endurance and one day strength endurance. An advance athlete can do this but for the vast majority of those who are in the maturation progress, its one thing at a time. I know this may seem boring to some but this is how a developing young athlete’s body works and time has to be given to allow for this one quality at a time approach.

As to exercise selection, it’s best to stick with the basics and the ones you as a coach can teach. One of the “new” things from the sports medicine community is tri planer loading, transverse, sagittal and frontal. The question becomes how do you load this? If I’m doing a transverse lunge with 5 pound dumbbells and want to progress, the next weight is 10 pounds, which, percentagewise, is a huge jump.

PC: When a coach takes pen to paper, what is the most important thing to remember when designing a program?

RB: Program design is a complex issue. One thing that can be done is to sit down and write a program based on what you feel and then have the athletes come in and do it. If they fail in finishing and the coach loses it and takes the athletes out and runs them, s/he is making a huge mistake. This is the wrong message in all respects. The kids didn’t fail, the coach did.

More Information Please!
Contact Robert at www.rbrownsports.com or e-mail to robert@rbrownsports.com
Net Link: for a program article from Robert on the all important posterior chain click HERE.

Seven Habits of a Highly Effective Conditioning Program
Reducing the Chance of Injury: Regress to Progress

Robert L. Brown

Habits, and for our discussion good habits, are things that are repeated time and time again to the benefit of the individual. In volleyball, most players have not formed good habits. They go from program to program, piece by piece, trying different things that never really settle into good habits. Players and coaches need to set some good guidelines or habits to establish principles that say, “my program consists of this.” Some coaches run around saying, “I have a speed/agility program” but say nothing about how it fits. Nothing is said about prevention of injury and other aspects of a comprehensive program. It’s just out there floating in air and not really part of anything.

Good habits allow for a systematic approach to conditioning players. They are consistent, organized and produce results—a program with a purpose.

The Habit of Reducing Chance of Injury
Introducing Injury Prevention Early On

The qualities of a top-notch injury prevention program are to develop good joint, tendon and ligament strength and thickness; balance and coordination will evolve over time. Let’s start with a 10-year-old athlete. There is a school of thought that says as soon as this athlete is able to perform a bodyweight squat, it’s time to start loading. This, in my opinion, is too soon. Joint tendon and ligament development takes longer than muscles to develop. I advocate carefully loading and not starting with a barbell. Start with bodyweight and progress to medicine ball and weighted vests. This is loading but with the idea of teaching the athletes to get better while allowing them to develop over time.

If an athlete has been in our program for a while, say a few years, this athlete has progressed enough and as we gradually load him or her with a barbell, I know s/he will be able to handle the load. This is because s/he has been taught in a progressive manner that insured safety in the weight room and gave him/her something that is transferable to the court. This takes patience on my part to make sure this athlete can do things properly and over the long haul. It has to be career oriented.

Establish Injury Prevention Strategies: Regress to Progress

The squat is a versatile exercise. It can be performance enhancing as well as an injury prevention. The difference: how it’s used, progressed and taught. The squat will improve performance by increasing strength and power so one can jump higher.

To ensure the injury prevention aspect, the approach I use is regression. Don’t be afraid to take a step backward and regress your program. If I have an athlete squatting with a load up to 75/80 percent of one repetition maximum and the athlete is starting to stress, what happens is that the athlete’s technique starts to suffer trying to compensate for the weight. This is where injury prevention aspect comes in. When you regress that athlete and reduce the load, s/he will benefit from the load reduction by reducing stress, which is a major cause of injury. And, when the athlete adapts and progresses, that regression will act as an injury reduction phase in the program thus allowing the body to catch up to gains in muscle strength.

Another way of looking at it is the concept of maximum strength and maximum power. These are the qualities we seek in a strength program. However, with female athletes, when one gets into the 85 to 95 percent of one repetition maximum, the athletes are not accustomed to this type of load and they will compensate, usually through improper technique or increase stress, which they can’t handle. Through the years, one thing I’ve found out is that athletes learn how to compensate and this is a prescription to potential injury. If technique or response to stress is compromised, you need to back off to 65 to 70 percent of 1RM. This is not to say heavy loading should be avoided, it just needs to be administered in a careful manner with attention to technique and proper periodization.

Injury Prevention and Overuse

In volleyball, a side dominant sport, overuse is a common chronic injury. Imbalances and huge volume of work over time leads to injury. Here coaches need to be aware of total volume. In volleyball, it’s the number of jumps and arm swings. In the 10 to 18 age group play has become year-round and this play is hard with the athletes exposed to multiple championships through the year. It’s just too much. Getting back to the concept of regression to progress, there are times during the year when the total volume needs to be diminished markedly. From the strength training side, the system I use is training two days a week rather than four days. This is about all the athletes can handle without getting into trouble.

Relationship of Performance Enhancement and Injury Prevention Exercises

Can performance enhancement and injury prevention be done at the same time, in the same program? The answer is yes. However, coaches should use injury prevention as the base and build with progression that is performance enhancement, which is a natural progression. If an athlete has never been in a program, gains will come quickly in the beginning. The important thing is to start with the basics and keep things simple with simple principles. This will make the players feel better about themselves, something every coach should strive for. By doing a basic program that kids can master, you will be doing better than 90 to 95 percent of all programs out there.
Multiple risk factors related to familial predisposition to anterior cruciate ligament injury: fraternal twin sisters with anterior cruciate ligament ruptures

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Abstract

OBJECTIVE: A multifactorial combination of predictors may increase anterior cruciate ligament (ACL) injury risk in athletes. The objective of this twin study was to examine these risk factors to identify commonalities in risk factors that predisposed female fraternal twins to ACL injury.

METHODS: Female twins in high-risk sports were prospectively measured prior to an injury for neuromuscular control using three-dimensional motion analysis during landing, hamstrings and quadriceps muscular strength on a dynamometer and joint laxity using a modified Beighton-Horan index and a Compu-KT arthrometer. Intraoperative measures of femoral intercondylar notch width were recorded during ACL reconstruction.

RESULTS: Abduction angles were increased at one knee in both of the twin sister athletes relative to uninjured controls at initial contact and at maximum displacement during landing. The twin female athletes that went on to ACL injury also demonstrated decreased peak knee flexion motion at both knees than uninjured females during landing. The twin athletes also had increased joint laxity and decreased hamstrings to quadriceps (H/Q) torque ratios compared to controls. Femoral intercondylar notch widths were also below the control mean in the twin siblings.

CONCLUSIONS: Prescreened mature female twins that subsequently experienced ACL injury demonstrated multiple potential risk factors including: increased knee abduction angles, decreased knee flexion angles, increased general joint laxity, decreased H/Q ratios and femoral intercondylar notch width.
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