CONNECTICUT INTERSCHOLASTIC ATHLETIC CONFERENCE

CIAC COACHES UPDATE

VOLUME I, ISSUE 3 *Dr. Bob Lehr, Editor* NOVEMBER 2010

THE PHENOMENON OF PERIODIZED TRAINING

Although the CIAC staff encourages student-athletes to participate in a wide variety of sporting endeavors, we also recognize that there are some individuals who make the choice to devote their athletic efforts to a single sport. We understand that our smaller division schools rely on student-athletes participating in multiple sports; however, the ultimate choice of what sport or sports to pursue rests with the student-athlete.

Although many coaches have developed their own systems for year round training, little has been written on the subject until fairly recently. The article on periodization is for the coach who has one or more student-athletes who are devoted to his/her sport and chooses not to participate in other sports. It provides valuable information on how and why to design a systematic program that will provide sound training throughout a year, a quadrennium or other time cycle. Although CIAC regulations prohibit a coach from coaching out of season, the coach could assist the student-athlete in the development of a well-organized training effort for the length of the training cycle used. The phenomenon of periodized training should be especially beneficial to those training endurance athletes as well as those whose interests lie in the development of skills. Although the primary focus of the research related to periodization has been Olympic level athletes, I see no reason why it cannot be adapted to our high school student-athletes, some of whom may eventually become Olympians. The article also presents information on a cyclical training regimen for a team. For more information on sequential training, be sure to check the bibliography at the end of the periodization article.

In addition to the article on periodization, there is an article on the development of speed and agility.

If your season has recently concluded, I hope that you had an enjoyable coaching experience. For those who still have individuals or teams competing in CIAC tournament play, best wishes for a positive outcome and a memorable experience.

Bob Lehr

INSIDE THIS ISSUE:

ALERT TO COACHES – CONCUSSION CERTIFICATES

Now that the recent concussion law PA10-62 is in full swing, coaches must be aware that the State Department of Education is requiring that the **"OFFICIAL ORIGINAL"** of the Concussion CEU certificate accompany all renewal and temporary applications for a coaching permit. Please put your certificate in a safe place as we are being overwhelmed with requests to reissue certificates less than a month after they were issued. Reissuing a concussion certificate could take up to a month and delay your application to the state!

GUIDELINES FOR CT MIDDLE LEVEL ATHLETIC PROGRAMS

The Guidelines for Middle Level Athletic Programs was recently approved by the Middle Level Board of Control and the CIAC. It is a comprehensive resource for school districts as they develop, refine and implement policies and regulations for middle level athletics. You can find more information on our website www.casciac.org Click on "CIAC (Athletic Divisions)" - left side. Then click on "Middle Level Athletic Guidelines".

Connecticut Interscholastic Athletic Conference • 30 Realty Dr • Cheshire • Connecticut • 06410 • Tel: 203 250 1111 • Fax: 203 250 1345

www.casciac.org

Coaching has been described as the science of total preparation (Plisk & Stone 2003). Effective coaches of all levels rely on systematic training design, or periodization, as a road map to optimal individual or team success (Bompa 1999).

Following these assertions, coaches should be guided by the knowledge of what the crucial tasks are that must be accomplished in the demands of the athlete's event/position and of the sport. Tudor Bompa, an authority on periodization, states "a coach is only as efficient as his or her organization and planning" (150). Bompa continues by stating that periodization is one of the most important concepts of training and planning, as structured phases of training lead to the highest level of preparation and performance. Training design, or periodization, provides guidance, direction and scope to training; yet needs to be simple, suggestive, and flexible so it can be modified to meet individual circumstances or changing environments.

Will Freeman, in his periodization book entitled Peak When it Counts (2001), suggests the three fundamental purposes of periodization: 1) to enable an individual or team to peak at the ideal moment, 2) to achieve optimal training effect from each phase of training, and 3) to make training an objective process. To create the objective process, coaches can measure and test athletes to assess progress towards goals, while at the same time, providing comparisons and objectivity so that the coach can make modifications to workouts, if necessary, and fine-tune progress towards the training objective.

Often when we hear the term periodization, we think of it as a recent phenomenon. On the contrary, periodization began back in the ancient Olympics with Philostratus's training of the athletes. U.S. collegiate athletic teams in the early twentieth century utilized more evolved systematic training, while the Germans in the 1936 Olympics began refining periodization with four year training plans. The concepts were further refined by Eastern bloc state-funded regimes after the Second World War. In 1965, Leonid Matvevev published what has become the classic model for periodization in the West. (Bompa 1999).

PERIODIZATION FOR INDIVIDUALS AND TEAMS

The application of periodization varies between team and individual sports. Considerations of training are determined by the sport's specific requirements and the discipline demands of each athlete - such as power-speed positions versus endurance based (Olbrecht 2000). Ledger (1998), suggests utilizing the strategy on two levels. While the development of the individual is important to facilitate their positional and individual potential, team development can be addressed with periodization to produce an efficient and cohesive unit. Often, individual and team concerns can overlap and complement each other depending upon their time of season. During the off-season, or preparation phase, individual conditioning and strengthening plans can be utilized to raise the level of fitness and expertise of each player, while during the

• 30 Realty Dr • Cheshire • Connecticut • 06410 • Tel: 203 250 1111 • Fax: 203 250 1345

www.casciac.org

season, training as a unit should be utilized at every opportunity. An excellent example of combining individual and team related technical training involves the use of game related movements for conditioning. It has been suggested that undulating, non-linear periodization, which will be discussed shortly, best suits team periodization when planning for the year. Variation within microcycles does remain important for team sport players, and this variation of training loads and volume depends on the training age and experience of each player (Gamble 2006). Studies have determined that the variable summated periodization approach, progressing from extensive to intensive on a three week loading; and a one week restorative, or unloading approach is well adopted to team sports and many individual disciplines (Plisk&Stone 2003).

CREATING AN EFFECTIVE PERIODIZED TRAINING PLAN

Before embarking on setting up any training design or periodized program, the coach needs to determine both long term and intermediate goals or objectives for the individual and the team. Evaluation begins with general considerations such as the physical, physiological and technical capabilities of your athletes and team along with specific demands and expectations of the sport, the level at which athletes and team compete, and the time available to train plus prepare for competitions. Considerations should include which competitions are considered developmental, and which competitions, or group of competitions, need the athletes to be at optimal preparation. The evaluation of the athletes includes their training age, level of skill, as well as their occupation and financial support, awareness of nutrition, level of motivation, and support to achieve established goals or objectives.

In the creation of an objective and measurable training plan, routine testing of athletes in controlled sessions or competitions is important so the development can be measured; including areas that need to be addressed in a holistic approach to training (Bompa 1999; Sellers 2007b; Stone et al 2007). Once all parameters of the sport and season are identified, along with the attributes of the athlete and team, the coach needs to identify the focal or major competition. From this date, the coach can begin to work backwards, aligning the components outlined below to create a road map or effective periodized plan.

There are several components to the periodized plan. These periods refer to training with specific and distinct, yet linked goals. By establishing a periodized plan, training loads can be applied in a progressive, cumulative, systematic fashion, with the goal being optimal performance achieved at a specific time.

1) **Four year or quadrennium period:** Used in fundamental long range planning which fits well into the Olympic cycle and U.S. scholastic and collegiate systems.
2) **Annual period:** Culminates with the focal completion identified for the year.
3) **Macrocycle:** Term used for phases of preparation and competition leading up to a season or series of focal competitions. Often coaches implement a single, double, or tri-cycle model of periodization depending on the number of seasons, or focal competitions, the athlete or team has in any given annual plan or year.
4) **Mesocycle:** Matveyev, is his classic periodization model, utilized natural monthly bio-cycles to construct "meso" or monthly periods of four weeks. Within each mesocycle, intensity and volume are gradually increased in each microcycle creating a summated model until the last microcycle, which decreases load and volume for a restorative or stabilizing effect.
5) **Microcycle**: the building blocks of a mesocycle are the microcycle, normally seven to ten day periods, where load and volume of work are interspersed with recovery.
6) **Training Session**: Depending on the demands of the athlete or team, and their training age, the coach may incorporate one or several training sessions into a daily routine.
7) **Training Unit**: The smallest of the periodization units, a unit describes the specific activity prescribed during the training session. It should be noted that sequencing units are important for each session's effectiveness. Well orchestrated programs utilize continuous warm-ups, specific to sport demands, before progressing to motor skill demanding activities while the body is less fatigued, before initiating endurance activities, culminating with a cool down.

Overlapping this periodized approach is the concept of phases that emphasize thematic or training emphasis. The initial phase is called preparation (prep), or conditioning phase which may last several mesocycles. Athletes in the prep phase address conditioning and fundamental sport skills so they will be able to adopt to the increasing demands of competitive environments. The preparation phase is usually divided into the general and specific prep phases. In the general prep phase broad, multi-lateral training takes place and then moves into overall strength, flexibility, stamina, and coordination. Building on the general phase, athletes move into the specific preparation phase where the improvement of sport specific skills is emphasized. Training volume is often high during this prep phase to allow conditioning, while intensity is low.

Depending upon the length and complexity of the season, the majority of the competition season is called the competitive phase. The athlete has evolved from the prep phase with stable fitness and the ability to accomplish position and sport specific demands with minimal fatigue. As the competitive phase progresses towards the focal competition, training volume begins to decrease while intensity increases with event and sport specific training emphasized (Bompa 1999; Counsilman&Counsilman 1994; Grosso 2006; Sellers 2007b; Stone et al 2007).

The crescendo of a competitive phase is the taper, or peak, when all components of the cumulative training plan converge to enable optimal performance for a period of time. Tapers are initiated one to three weeks prior to focal competitions and are determined by the training load and level of fatigue on the athlete to that point in the season. Studies on the tapers of swimmers, cyclists, and track athletes identify a performance increase of 0.5 to 6 percent enabled by increased blood cell volume and muscle glycogen content, giving the athlete greater stamina and energy (Karp 2007; Ledger 1998).

The final phase of periodization is called the transition phase which lasts one to four weeks beginning after the focal competition and allowing athletes to heal injuries and recover from previous training. While the inclination is to immediately stop training after a focal competition, athletes are better served to gradually reduce volume to facilitate recovery. The goal of the transition phase is to maintain some level of fitness while allowing the athlete's body to recover, and the athlete to rejuvenate (Stone, et al 2007).

Training design and periodization have often been compared to cooking with many ingredients, compounded by innumerable factors beyond the coach and athlete's control. The key is to begin with a simple systematic plan and to keep records so that the coach and athlete can review the progression afterwards and make informed assessments and refinements from the training plan. There are many sources available for the novice coach willing to increase his/her effectiveness by utilizing periodization or training design. Several are listed in the reference section below, and additional resources are available through NGB's or the USOC.

Tudor Bompa declared that periodization is one of the most important concepts in training and performance. By structuring phases and periods which lead to the highest level of speed, strength and endurance in athletic competition, all athletes can succeed at their highest level (Bompa 1999). Negotiating the road to success is most effectively achieved by utilizing the road map of periodization.

REFERENCE

Bompa, T. (1999). *Periodization: Theory and methodology of training* (fourth ed.). Champaign, IL: Human Kinetics.

Counsilman, J., & Counsilman, B. (1994). *The new science of swimming*. / Englewood Cliffs, NJ: Prentice-Hall.
Freeman, W. (201). Peak when it counts (fourth ed.). Mountain View. / CA: Tafnews Press.

Gamble, P. (2006). *Periodization for training of team sport athletes.* / Strength and conditioning journal, 28 (5), 56-66.

Grosso, M. (2007). *Athletics training program*. Modern athlete& coach, 45 (1), 27-31.

Grosso, M. (2006) *Training theory: A primer in periodization*. Modern athlete & coach. 44 (3), 7-14.

Karp, J. (2007). Hey! Back off! Marathon & Beyond, 11 (3), 20-27.

Ledger, P. (1998). *A guide to planning coaching programmers*. Leeds, U.K.: National Coaching Foundation.

Olbrecht, J. (2000). *The science of winning*. Overijse, Belgium: Olbrecht.

Plisk, S., & M. Stone (2003). *Periodization strategies*. Strength and conditioning journal, 25 (6), 19-37.

Sellers, C. (2007a). *Sequencing your workouts*. USOC Olympic coach, 19 (2).

Sellers, C. (7 August, 2007b). *Training design for fencers*. PowerPoint presentation at USA Fencing Coach Camp, Colorado Springs, CO.

Stone, M., M. Stone & W. Sands (2007). *Principles and practice of resistance training*. Champaign, IL: Human Kenetics.

General Guidelines For Speed And Agility Drills

Quality is the key for successful performance of these speed and agility drills. Keep the individual sprints short and rest completely between sets. Use these 6 pointers to optimize the training response:

1. Warm up thoroughly. Speed and agility drills may not leave you out of breath but they do put considerable strain on your musculature.

2. Speed and agility drills should be performed either on separate days to other training or at the start of a training session after the warm up.

3. You will gain most benefit from these speed and agility drills if you have previously developed a solid strength and power base.

4. A typical session may consist of approximately 5 sets of 10 repetitions (each sprint being 1 repetition). Work to rest ratio should be 1:5 i.e. a 5 second sprint should be followed by a 25 second recovery period.

5. The number of sessions per week varies greatly. For most team sports, speed and agility drills should be introduced later on in the pre-season phase. Two sessions a week is usually adequate. During the competitive season, one session per week may be enough. Sprint athletes may need as many as 3-5 sessions per week.

6. The speed and agility drills below are suitable for many sports. To make them more specific adapt them slightly to mirror the movement patterns in your game. You'll find some examples below.

Choose 2 or 3 of the speed and agility drills below to make up the session, keeping to the recommended number of sets and repetitions.

Ready? "Marks" "Set" GOOO!!!

Speed And Agility Drills

1. Basic Sprints

Set 2 cones out 10-20 meters apart. Sprint from one cone to the next and slowly jog back to the start. Vary the start of the sprint to make the drill more sport specific. For example...

Face backwards, lie down, jump up, pretend to receive a pass, jump to head a ball etc.

2. Rolling Start

Exactly the same as above except you jog for 10 meters before sprinting. This drill is specifically designed to enhance acceleration rather than speed off the mark. Try running backwards or side stepping as well.

3. Up Hill Sprints

In competition the first few strides are crucial. Running up a slight hill (about 30 degrees) helps to develop power and acceleration. Keep the distances short (10-15 meters) and allow extra rest between sets and reps.

• 30 Realty Dr • Cheshire • Connecticut • 06410 • Tel: 203 250 1111 • Fax: 203 250 1345

www.casciac.org

An alternative to uphill running is a resistance parachute. Resistance chutes are one of the most popular and effective training aids for sprinters. If it's adjustable it can be used to develop power for sprint trainers or even long distance runners.

4. Down Hill Sprints (Over speed training)

Down hill speed and agility drills help to develop leg speed and co-ordination. This is sometimes referred to as over-speed training. Keep the distance short (10-15 meters) and make sure the hill is only slight.

An alternative method of over-speed training is to use elastic cords. An Over-Speed Trainer consists of a pulley system to provide a smooth build up of speed. It enables the sprinter to move at a rate greater than 100% of their usual top speed. It can also be used to provide resistance much like uphill sprints.

5. Hollow Sprints

Set 5 cones out in 30 meters intervals. Sprint 30 meters, jog 30 meters, sprint 30 meters and jog 30 meters to the final cone. Walk back to the start and repeat.

6. Cruise And Sprint

Mark out a distance of 100 meters. From the start gradually accelerate to reach full speed at about 60 meters. Sprint all out for the final 40 meters.

Reduce the number of repetitions for this exercise as it takes longer to complete.

7. Ladder Drills

A ladder is a simple training device that helps to improve co-ordination and leg speed. It can be used for a number of speed and agility drills and is particularly useful for sports such as tennis and basketball that requires fast and coordinated footwork

Try Power-Systems.com for a speed training equipment. They sell resistance chutes, over speed trainers and ladders.

8. The Snake

Set up a series of 6-8 cones in a straight line about 1 meter apart. Weave through the cones, turn and weave through back to the start.

9. Follow The Leader

A training partner and large area is required for this drill. Have your training partner jog, run and sprint randomly over a large area. You must try to shadow her as closely as possible. This is an excellent drill that helps to develop reaction time, acceleration and speed endurance.