

The 21st North America, Central America and Caribbean Track and Field Coaches Association Congress

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Mérida, México

Sixty-five coaches from countries throughout the region convened in the historic Mexican city of Mérida for the 21st Congress of the North America, Central America, and Caribbean Track & Field Coaches' Association (NACACTFCA), entitled the Art and Science of Athletics Training, from 6 to 8 October 2011.

The NACACTFCA president and chairman of the IAAF Coaches Commission Víctor Lopez (PUR), was the keynote speaker and the line-up of lecturers included Carlos Cavalheiro (BRA), Alain Jean Pierre (HAI), Raul Barreda (MEX), David Johnston (USA), Peter Pratt (BAH), Dennis Österberg (SWE), and Richie Mercado (USA).

Following are highlights from the main presentations.

The Current Situation of the Coaching Profession

Victor Lopez (PUR)

Lopez outlined the development of educational opportunities in athletics since the 1950s and the impact on the coaching profession, noting the recent success of athletes and coaches educated through the Central America and Caribbean (CAC) and IAAF systems and the great cooperation between programmes in the USA, Canada, and the CAC. He explained the role that NACACTFCA has played in bringing world-class coaches and educators into the region, promoting programmes for women in coaching, increasing accreditation oppor-

tunities for personal coaches at major events, creating a mandate for the establishment of coaching organisations in each federation, and creating a Coaches Bill of Rights. He said that with the opportunities in coach education and development, the success of NACAC athletics on the world stage should continue.



NACACTFCA President Víctor Lopez

Practical Applications of Speed

David Johnston (USA)

Johnston, currently serving as the national pole vault coach in Saudi Arabia, spoke about the development of speed in the jumps, especially the correlation of stride length to approach velocity. For approaches in the horizontal jumps and pole vault, speed is important, but consistency in the approach is paramount. Johnston explained how he developed theories and specific distance tables in the 1970s that are now supported by the latest biomechanical research. He repeated his mantra “push, push, push!” for both acceleration and maximum velocity running - emphasising the vital relationship between force production, stride length and velocity. In sprinting there should be neither reaching nor pulling, only pushing – down and back in acceleration progressing to vertical force at maximum velocity. He offered the adage “form follows function”, as well as analysis of great sprint races from Lewis to Gay to Bolt to confirm his points. His key numbers for acceleration: seven strides for 10m, twelve for 20m, and sixteen for 30m. His training for acceleration patterns and push mechanics utilises marking on tracks, cones, marked bungees to stretch for progressive ladder marks, etc. Johnston has also developed patterns for

long jump and pole vault. These have been used for years by coaches to help their athletes train, establish consistent patterned approaches, and set mid marks that help avoid over-reaching. Former world-class triple jumper and current coach Brian Wellman joined Johnston to demonstrate proper technique for acceleration development using the pattern on the track. Johnston said over-reaching is the number one culprit destroying both natural acceleration in the sprints and in jump approaches! More information on Johnston's approach and his stride charts for sprints, hurdles, and jumps may be found at <http://www.oneapproachrun.com/>

The Art and Science of Endurance Training

Carlos Cavalheiro (BRA)

Cavalheiro, whose Brazilian athletes have amassed three Olympic and 12 world championships medals over two decades, is currently the senior endurance coach at the Aspire Academy in Qatar. He explained his approach to training distance runners by starting with his personal background as a sprinter and coach of sprinters like two-time Olympic bronze medallist Robson Da Silva. Cavalheiro said that speed is a necessity for top-level success in the middle- and



David Johnston

long-distance events and that even endurance training must take into account this requirement. He uses the concept of speed capacity, putting emphasis on dynamic foot strike, neuromuscular coordination and power. Cross country, fartlek, and aerobic running are coupled with intensive interval training and training means that stress special endurance. In addition, he makes use of circuits and obstacle runs to strengthen runners in general and specific ways. His training means include breath holding during circuits, running drills and pool running circuits. Weight training is also used to develop strength in the hips and overall power (squats, snatch, clean, etc). Cavalheiro presented the general approach used with junior athletes at the Aspire Academy in Qatar and senior distance runners he trains. Examples of periodised training plans were outlined. He also explained specific race drills, for example for the 1500m: 1-3 x 300m / 100m / 300m). He also showed a visual tour of the Aspire facilities in Doha, competition site of the 2010 IAAF World Indoor Championships and a current candidate for the 2019 IAAF World Championships in Athletics.

Triple Jump: The Game

Peter Pratt (BAH)

Currently a national team coach and a former triple jumper himself, Pratt said that development of a triple jumper is a long-term affair, with at least four years required to achieve real technical and aesthetic success. He takes a simple but well-founded approach that begins with posture and foot strike, sound mechanics of bounding, hopping and jumping, and enhancing the emotional fortitude or daring spirit of the athlete. In the first year, the emphasis is on the approach run mechanics, rhythm, and moving through the phases; the second year focus is on posture and refining technique – hopping, step phase, transitioning; and in the third year the focus is on spatial awareness, attacking the board, maintaining body position, exaggerating arms, and holding on to phases. Preparation work includes three components - physical training (jump work); anticipating, compensating or making adjustment to environmental situations that may arise in competition; and mental strategy preparation – working on situational is-

ues in competition. Pratt said he utilises sand, grass and hill running for general development and progresses to jumping into pole vault and high jump mats for the development of stabilisation and specific technical strength and strength endurance. He demonstrated several examples of running posture and strength exercises on the mat as well as special strength exercises he uses. Pratt said he teaches competitors to be observant in setting marks, knowing what is going on with other competitors, officials, etc, and remembering the first attempt to build on throughout the competition. He wants the athlete to function well without the coach, since the coach is often far away from the field or completely absent in major competitions.

The 400 Meter Sprint

Raul Barreda (CUB)

Barreda has worked for many years in Mexico, where his best known athlete is former world 400m champion Ana Guevara. He discussed the training of long sprinters, noting that the 400m is often referred to as “la carrera de la muerte,” (the run of death)! One of the major reasons is that the demands of the event are so much more anaerobic than the shorter sprints or middle-distance races. Vital to a 400m runner is development of speed, speed endurance, special endurance, and strength endurance. High intensity training must increase the glycolytic capacity and ability to maintain high levels of oxygen debt. Anaerobic special endurance is trained using distances of 300m, 500m, and 600m, with distances of 320-400m yielding the most return in terms of increased percentage of lactate training and acidosis tolerance. Barreda discussed the percentages of 200m segments for men's and women's finalists in the 1999 IAAF World Championships in Athletics to make the point of the need for both speed in some (Freeman – 23.79 / 25.88 = 49.67 [diff=2.09], and Parrela – 21.13 / 23.16 = 44.29 [diff=2.03]) and special endurance in others (Johnson – 21.22 / 21.96 = 43.18 [diff=0.74], and Rucker – 24.03 / 25.71 = 49.74 [diff=1.68]). Indeed, Johnson was the model for both speed and special endurance, with a 200m differential of only 0.74 and a very fast first 200m! There was a direct correlation among men to placing and ability to main-

tain a smaller differential in the two segments, and only slightly less for women. Barreda uses a table for comparing speed to speed endurance and special endurance (30m to 600m) with high percentage targets to hit in training to reach a goal time for 400m. Training of his high level 400m runners is based on always hitting the proper percentage at the appropriate time for the distance and energy system being trained.

The Olympic Solidarity Programme **Alain Jean Pierre (HAI)**

Pierre is the Treasurer of the North American, Central American and Caribbean Athletic Association (NACAC). In his presentation he explained the financing of athletics and sport with a focus the Olympic funding programmes for 2008-2012, including Olympic Solidarity, continental programmes, the Youth Olympic Games, and programmes for athletes, coaches and national federations. There is an emphasis on the development of Olympic organisations and the education of personnel through subsidies and grant programmes. Internships and technical development programmes for

coaches are available, as well as programmes for exchanges of administrators between regions. Also represented in the plan and funding programmes are sport medicine research, sport and the environment, culture and education, heritage and the Olympic Academies, improving the role of women in sport, and the "Sport and All" programme.

The Evolution of the Javelin **Dennis Österberg (SWE)**

Österberg, who works at Nordic Sport in Sweden, discussed the history and evolution of javelin design and production and the new direction that his company is taking to develop "stiffness" ratings for javelins much like those on vaulting poles. The current distance ratings of javelins do not take into account the vibrations and flexing that take place in flight and affect the length of a throw, but Nordic has developed a carbon technology that will allow for stiffer or less stiff (softer) javelins to meet the specific throwing style, strength and shoulder girdle stability of the thrower. As a result of experimentation in production and with special mechanical devices to measure stiffness and



vibration in throws from a javelin cannon, Nordic is developing a flexchart, with 0 being the stiffest and 20 being very soft. For many throwers, to throw a very stiff javelin can damage the shoulder, while others – Thorkildsen (NOR), for example – would benefit from the stiffness to achieve greater performances. Österberg's argument is: stiffer = less vibration through the throw increasing aerodynamics and reducing vibration; softer = more vibration through the release and less damage to the shoulder, but less aerodynamic fluidity. Maria Abakumova (RUS) has requested a softer Nordic javelin while Thorkildsen has requested three stiffness javelins – 25%, 50%, and 75% stiffer than the traditional Nordic AirGlider Carbon. Thorkildsen's 2011 world leading throw of 90.61m was made with the 75% stiffer javelin. According to Österberg, stiffness and other aerodynamic factors become more important the higher the speed of release of a javelin. Speed of release, coupled with appropriate angles of release and the clean hit of the javelin, is dependent on the individual athlete's physical capabilities, technical skill, and feel of the equipment. The lower the flex of a javelin, the greater the requirement of both the thrower's technical and physical ability.

Using Kinovea Software for Fundamental Impact Analysis

Richie Mercado (USA)

The NACACTFCA Secretary used his presentation to demonstrate practical coaching uses for the free download software Kinovea and high-speed filming using Casio or other cameras in training and competition. Kinovea allows for accurate and quick evaluation of time, distance, angles, and velocities using

normal or high-speed video. Its practical applications include accurate and quick measurement of maximum velocities, angular velocities, stride length, stride frequency, angles, hurdle unit times, flight times, ground contact times, and distance. With a limited number of athletes, some important variables can be measured between runs or attempts, allowing for accurate evaluation of each aspect of a training session. Kinovea allows the coach to measure and track aspects of training and technical development that can frame future training goals, and test athletes accurately. All this for the best price yet – totally free! There is also a great online forum with answers to questions, ideas from a variety of coaches and sports, and solutions to the common and unusual problems that may arise - go to www.kinovea.org for information and to download the program.

Conclusion

The 22nd NACACTFCA Congress will be held in Nassau, Bahamas from 4-7 October 2012. The theme will be "New Frontiers in Athletics Training." More information including presentations from past congresses is available at www.nacactfca.org.

Reported by Richie Mercado

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