21st NACACTFCA CONGRESS – Mérida, México
The Art and Science of Athletics Training

The Coaches Roundtable included Carlos Cavalheiro (BRA/QAT), NACAC Treasurer Alain Jean Pierre (HAI), Raul Barreda (CUB/MEX), David Johnston (USA), Peter Pratt (BAH), and Nordic Sport CEO Dennis Österberg (SWE)

The 21st Congress of the North America, Central America, and Caribbean Track & Field Coaches' Association convened in October 2008 in the historic Mexican city of Mérida. Sixty-five coaches from countries throughout the NACAC region attended, Lecturers included keynote speaker Victor Lopez (PUR), Carlos Cavalheiro (BRA/QAT), NACAC Treasurer Alain Jean Pierre (HAI), Raul Barreda (CUB/MEX), David Johnston (USA), Peter Pratt (BAH), Dennis Österberg (SWE), and Richie Mercado (USA). The 22nd NACACTFCA Congress will be held in Nassau, Bahamas October 4-7, 2012. The theme will be "New Frontiers in Athletics Training." Go to www.nacactfca.org for more information, Technical Bulletins, and electronic articles of past presentations.

Presentations:

Victor Lopez (PUR) delivered the keynote address for the 21st Congress, which focused on the current state of coaching in athletics. Lopez outlined the development and growth of coaching education in the NACAC region since the 1950s, noting the great recent success of athletes and coaches in the region educated through the CAC and IAAF system and the great cooperation between coaches and programs in the US, Canada, and CAC. He also noted the role that NACACTFCA has played in bringing world class coaches and educators into the region, programs for women in coaching, gains in accreditation for personal coaches at majors, the mandate for coaching organizations in each federation, and the Bill of Rights for coaches. With the increased opportunities in coaching education and development, this growth and success in the NACAC region should continue to be seen on the world stage.

David Johnston (USA) spoke on the development of speed in the jumps, especially related to the correlation of stride length to velocity and the corresponding forces necessary to develop speed. For horizontal jump and pole vault approaches, speed is vital, but approach consistency is paramount. Johnston developed theories and specific distance tables in the 1970s that are now supported by the latest research by biomechanists (see Mann, Weyand). Johnston repeatedly preached the mantra "push, push, push!" for both acceleration and maximum velocity running - emphasizing the vital relationship between force production, stride length, and velocity. There is neither reaching nor pulling, but only pushing – down and back in acceleration and 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 Bold to confirm his points. Key numbers for acceleration targets were noted -

seven steps for 10 meters, twelve steps for 20 meters, and sixteen steps for the 30 meter mark. Training for acceleration patterns and push mechanics utilizes marking on tracks, cones, marked bungees to stretch for progressive ladder marks, etc. Johnston developed patterns for long jump and pole vault that have been used for years by coaches and athletes to train, establish consistent patterned approaches, and set mid marks that help athletes avoid over-reaching. Former world class triple jumper and current coach Brian Wellman demonstrated proper technique for acceleration development using the pattern on the track. Johnston noted over-reaching as the number one culprit destroying both natural acceleration in the sprints and jump approaches! More information on Johnston's approach development and stride charts for sprints, hurdles, and jumps may be found here: http://www.oneapproachrun.com/.

Carlos Cavalheiro (BRA/QAT) discussed his program of distance development by starting with his background as a sprinter and coach of Brazilian sprinters like Da Silva. The concept of speed capacity is used to develop training programs for distance runners as well, with emphasis on dynamic footstrike, neuromuscular development of speed and power, and distance training that is founded upon the need for speed in successful endurance running. Cross country, fartlek, and aerobic running are coupled with endurance training which stresses special endurance and intensive interval training. In addition, heavy use of circuits and obstacles to strengthen distance runners in general and specific ways, including breath holding during circuits and running drills and pool running circuits add to the general and special endurance capacity. 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 periodization training plans for distance runners were outlined, and specific race drills for events like 1500 meters were discussed (ex. 1-3 x 300m / 100m / 300m). He also showed a visual tour of the exceptional Aspire facilities in Doha, competition site of the 2010 World Indoor Championships and a current candidate for the 2019 World Outdoor Championships in Athletics.

Peter Pratt (BAH) takes a simple but well-founded approach to the development of triple jumpers and an interesting approach to the event as a "game" for both coaches and athletes. This begins with posture and footstrike and sound mechanics of bounding and hopping and jumping, but also with the emotional fortitude or daring spirit of the athlete. Development for triple jump is a long term affair, with at least four years required to achieve real technical and aesthetic success in the event. Pratt utilizes sand and grass and hills for general development and progresses to pole vault and high jump mats for the development of stabilization and specific technical strength and strength endurance in triple jumpers. He demonstrated several examples of running posture and strength exercises on the mat as well as special strength triple jumping exercises. Preparation focuses on three components - physical training (jump work); anticipating and compensating, or making adjustment to environmental situations which may arise in competition; and mental strategic preparation – working on situational issues in competition. First year emphasis is on the approach run mechanics, rhythm, and moving through the phases; second year focus is posture and refining technique – hopping, step phase, transitioning; and third year focus is on spatial awareness, attacking the board, maintaining body position, exaggerating arms, and holding on to phases. Pratt 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 through competition. Pratt wants the athlete to function well without the coach, since the coach is often far away or may absent in major competitions.

Raul Barreda (CUB/MEX) discussed the training of long sprinters that he uses in Mexico, noting that the 400 meters 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 glycolitic (60-65% glycolitic) than the shorter or longer sprints and middle distance races like 100m, 200m, 800m, and 1500m. Vital to the training of a 400 meter runner is development of speed, speed endurance, special endurance, and strength endurance. High intensity training must

develop the glycolitic capacity and ability to maintain high levels in 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 200 meter segments for men's and women's finalists in Seville in 1999 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 Rücker – 24.03 / 25.71 = 49.74 [diff=1.68]). Indeed, Johnson was the model for both high speed and tremendous special endurance, with a 200 meter differential of only 0.74 and a very fast first 200 meters! There was a direct correlation among men to placing and ability to maintain a smaller differential in the two segments, and only slightly less for women. Barreda also uses a table for speed to speed endurance and special endurance (30 meters to 600 meters) with high percentage targets to hit in training to reach a goal time for 400 meters. Training of his high level 400 meter runners is based on always hitting the proper percentage at the appropriate time for the distance and energy system being trained.

Dennis Österberg (SWE) discussed the history and evolution of javelin design and production and the new direction that Nordic Sport is taking to develop "stiffness" ratings for javelins much like those on vaulting poles. Distance ratings do not take into account the stiffness nor the vibrations and flexing of a javelin, but Nordic has developed javelin stiffness with carbon technology that will allow for stiffer or less stiff (softer) javelins to meet the throwing style and strength and shoulder girdle stability of the athlete. And for many throwers, throwing a very stiff javelin would damage the shoulder, while others – Torkildsen, for example – would benefit from the stiffness to achieve greater performances. Österberg's argument: Stiffer = less vibration through the throws increases aerodynamics and reduces vibration; Softer = more vibration through the release and less damage to the shoulder, but less aerodynamic fluidity. Abakumova requested a softer Nordic javelin, and Thorkildsen requested three stiffness javelins – 25%, 50%, and 75% stiffer than the traditional Nordic AirGlider Carbon. His world leading throw in 2011 was made with the 75% stiffer javelin – 90.61 meters. 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 stiffness Flexchart for javelins, with 0 being the stiffest and 20 being very soft, and stiffness being measured in much the same way and with similar equipment as vaulting poles. 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 equipment. *The lower the flex of the javelin, the greater the requirement of both the thrower's technical and physical ability*."

Alain Jean Pierre (HAI) - In order to explain the financing of athletics and sport, the Treasurer of NACAC outlined the Olympic Solidarity Program for 2008-2012, including continental programs, youth olympics, and world olympic programs for athletes and coaches and national federations. He discussed the goals for hosts of Olympic games and continental and regional games from identification to qualification to preparation. Issues for athletes include training centers, credentials for family, coaches and support staff. Programs for organization and education and coaches are also part of the quadrennial plan. Represented in the plan and funding are sport and medicine research, sport and the environment, culture and education, and improving the role of women in sport, as well as the "Sport and You" program.

Richie Mercado (USA) presented efficient practical coaching applications 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, test athletes accurately, and all 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.

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