The 3rd European Race Walking Conference

31:3/4; 135-143, 2016

Leeds Beckett University, England

The 3rd European Race Walking Conference took place at Leeds Beckett University, Leeds, Great Britain, from 11-13 November 2016. Organised by a team from one of Europe's top hubs for race walking, the National Centre for Race Walking Foundation, with support from European Athletics, the conference attracted 59 participants from 10 nations.

The programme reflected the current race walking environment with examples of good practice based on athlete-centred philosophies. It included keynote presentations from both the organisers and guest speakers, workshops and a special in-depth roundtable discussion led by members of the athlete support team for Tom Bosworth (GBR) who placed 6th in the Men's 20km Walk at the 2016 Olympic Games with a UK Record performance of 1:20:13.

This report provides an overview of the conference by giving descriptions of the weekend's sessions.

Welcome Presentations

Andrew Drake (GBR), Brian Hanley (IRL) and Ian Richards (GBR)

In their welcomes to the participants at the start of the event, the organisers Dr Drake, England Athletics National Coach Mentor for Endurance, Dr Hanley, Senior Lecturer in Sport & Exercise Biomechanics in the Carnegie School of Sport at Leeds Beckett University and Dr Richards, Senior Lecturer in Sport Business in the Carnegie School of Sport at Leeds Beckett University, highlighted the role of the coach in the athlete's development and performance. They each referred to research commissioned by England Athletics, which identified the major factors critical to success in sport:

- Intrinsic athlete motivation
- Coaching
- Support from friends & family

In his presentation, Drake outlined the strategy of the National Centre for Race Walking programme through its objectives and underpinning philosophy.

Objectives:

- Use shared passion to develop talent towards championship competition;
- Measure success by the numbers of athletes making representative teams in Olympic-distance events;
- Strive to be unsurpassed at supporting athletes to fulfil their potential.

Philosophies:

- Athlete 2.0: focus on the need to be better (not the best);
- Inclusive high performance vs. elite performer focus;
- Look forwards to the evolving demands of the event group, not back at history;
- Success / support is earned: there is no culture of entitlement.

Eleonora Giorgi – Development and Increase of Her Performance

Gianni Perricelli (ITA)

Perricelli covered the training and progression of Eleonora Giorgi, who has competed for Italy in numerous IAAF World Championships and Olympic Games, and has personal best of 1:26:17 for 20km. He began by outlining some key training principles, including the requirement for progressing to high volumes (greater than 120km per week), the importance of variation in speed to develop the body's metabolic properties, and the need for competition-paced training. In this regard, he advised that training at such demanding speeds required sensible approaches to recovery time so that an athlete can progress to more competition-paced training as the most important events approach.

Perricelli presented an example of a week's training for Giorgi (Table 1), which included sample sessions of such fast race walking. He also showed how Giorgi had progressed from 3200km of training during the 2011/12 season to a peak of 5412km in the 2015/16 season and, importantly, that the proportion of training at paces slower than 5min/km had halved from 64% in 2011/12 to 32% in 2015/16, with consequent increases in training at quicker paces.

Table 1: Typical weekly training programme for Eleonora Giorgi (The percentages shown refer to percentages of competition pace.)

Day	Morning session	Evening session
Monday	10 x 100m uphill + 6 x 500m @ 100% then 10 x 100m uphill + 3km @ 100%	10km + technical training
Tuesday	15km	10km + circuit training
Wednesday	3 x 4km uphill + 3km @ 100%	10km + technical training
Thursday	10km	10km + technical training
Friday	25km @ 90%	
Saturday	25km @ 90%	5km @ 100%
Sunday	Rest	

Addressing the training for the men's 50km race, Perricelli expanded on the importance of using not just competition-paced training, but also speeds quicker than competition pace in the three weeks before an event. In this regard, he suggested a 40km training session at 100% of competition pace 20 days before the event, succeeded by a 25-30km session at 105% 16 days beforehand, a 20km session at 107% 12 days beforehand, a 12km session at 110% eight days beforehand, and finally a 7km session at 112% four days beforehand. For a 50km athlete who aimed for a finishing time of 4 hours, this final session would equate to 7km in 30 minutes.

Racewalk West – What We've Learned

Gerry Dragomir (CAN)

Dragomir, who coaches World 20km bronze medallist Ben Thorne, Olympic 50km 4th placer Evan Dunfee and Iñaki Gomez, described the development of the Racewalk West programme in Vancouver, Canada, which has contributed to recent Canadian successes in race walking. He outlined the underpinning philosophy of the programme and highlighted the application of business and management decision-making practices, tools and mechanisms to underpin coach and athlete development.

According to Dragomir, the key values of the programme can be summarised with the acronym PACE: Patience, Attitude, Commitment and Effort. He discussed how the factors of quality, time and resources were responsible for 60% of a gold medal performance, and then built on through innovation, collaboration and education. He described the theory of 'flow' as proposed by the Hungarian psychologist Mihaly Czikszentmihalyi, and how levels of challenge, skill and action were important in peak performance.

Dragomir also explained how goal attainment planning was relevant across many time spans for an athlete, from short-term specific event plans, to annual plans, four year plans, whole career plans and life plans (including what the athlete might do after retiring from elite sport). He showed how getting the athlete to think long-term and consider how goals could be realised is part of achieving empowerment for the athlete through self-realisation. Finally, he outlined how his athletes gained from taking part in several research studies conducted by scientists interested in learning more about race walking.

Pacing in Race Walking

Brian Hanley (IRL)

Dr Hanley presented findings from a number of his studies on pacing profiles in endurance events in athletics, and especially race walking. He showed that the pacing profiles found in the race walk events in the 2016 Olympic Games were very similar to previously studied races at the IAAF World Championships in Athletics, with most athletes slowing in the final stages having started the race quickly. However, the most successful athletes recorded negative splits (walking the second half quicker than the first), and Hanley showed that many athletes sped up in the very last 2km (of 20km races) or 5km (of 50km races) because of the psychological boost of knowing the finish is near.

Hanley also reported on the phenomenon of athletes using each other as external references for pacing by staying close to one another and mirroring each other's speed, and how this could lead the athletes to focus on beating their nearest rivals rather than achieving the best possible finishing time. It was suggested that a strong reason for athletes starting too quickly relative to ability was that Rating of Perceived Exertion (RPE) was low, and that using previous personal best times as guides to starting pace was a genuinely useful tactic.

Hanley showed how most disqualifications in the 2016 Olympics were before halfway, underlining the fact that many athletes might start too quickly, and that fatigue might not be as important in non-legal technique being adopted. However, tiredness in the latter stages does have considerable biomechani-

cal disadvantages, such as poorer energy return from the stretch-shortening cycle. Different methods of achieving even (or negative) pacing were discussed, such as using a treadmill set at a constant speed, psychological training, and most valuably, the tried and trusted method of employing pacemakers.

Biomechanics Workshop

Brian Hanley (IRL), Catherine Tucker (IRL) and Helen Gravestock (GBR)

Dr Hanley, Dr Tucker and doctoral candidate Gravestock led a workshop on the ongoing research into the biomechanics of race walking at Leeds Beckett University. The participants were shown the advanced data collection and analysis techniques (optoelectronic cameras, force plates and electromyography) used to study complex aspects of race walking, including the Optojump Next system, which is particularly useful for race walkers as it can measure flight time and provide live feedback to allow the user to correct their technique.

Technical Workshop

Gerry Dragomir (CAN) and Gianni Perricelli (ITA)

Dragomir and Perricelli showed the technical drills they typically utilise in their own coaching, which included demonstrations with the participants. The interactive nature of this workshop allowed the sharing of ideas and discussion of solutions to typical technical challenges encountered by race walk athletes, e.g., ranging from novice athletes learning to race walk, through to high standard performers refining their technique.

Nutrition Support to a World U20 Champion

Cara Sloss (GBR)

Sloss, a Registered Dietitian & Sports Nutritionist, presented her work on the development, implementation and evaluation of a six-month period of nutritional support with the 2016 World U20 Men's 10,000m Race Walk Champion from Great Britain. A literature search highlighted the lack of current evidence with regards to nutritional support and analysis in race walkers, and none in the elite U20 competitor. Rationale for support was corroborated by i) the well documented impact of nutrition in endurance performance, ii) the rules of competition placing additional demands on maintenance of technique under fatigue, with effects on energy cost, and iii) transitioning from elite U20 to senior, which requires the athlete to double their competition distance. The intervention was instigated with a preventative rather than a problem-solving approach and athlete engagement was a primary aim.

The initial needs analysis ensured the support was athlete-driven, based on current knowledge (assessed by questionnaire) and worked from a performance-backwards approach. A comprehensive food and fluid diary analysis highlighted that, although the athlete was effectively meeting energy needs, it was important to look beyond the dietary data to the nutrient timing and food sources. This exposed pre- and post-training nutrition, along

with diet variety and quality, as areas vulnerable to negatively affect training performance. This is particularly important as the athlete increases his training load to compete over the 20km distance.

The support process consisted of face to face review meetings, along with body composition monitoring, and assessment of bone health (DXA scan, vitamin D analysis). Reflection and goal setting formed the basis of review sessions, with all information discussed with a practical application. Aspects of motivational interviewing were used to work within, rather than challenge, the athlete's current food preferences, with a consultation style that positively influenced compliance with goal setting. Outcomes suggested the possible role of nutritional screening as part of an U20 race walker's training programme, to help build the foundations of nutrition for health and performance.

In Pursuit of Clean Sport

Susan Backhouse (GBR)

Professor Backhouse, the Head of the Centre for Sports Performance at Leeds Beckett University, discussed the work of her team in anti-doping research and education, and their commitment to clean sport. Their aim is to bring people and knowledge together to strengthen the quality and effectiveness of doping prevention. This was described as a long-term mission built on a foundation of trusting relationships. The presentation focused on the role of the participants (as coaches) in the role of doping prevention.

Backhouse gave historical background to the prevalence of doping with reference to ancient Greece and Dr Otto Rieser's 1933 work, 'Doping and Doping Substances', which discussed the prevalence of doping as well as the culpability of medical professionals. Bringing the discussion up-to-date, the systematic doping of Russian athletes, in particular race walkers based in Saransk, Russia, and the role of coaches and Athlete Support Personnel (ASP), were highlighted.

As of July 2016 there were 141 ASP banned for Anti-Doping Rule Violations (ADRVs), showing that people in places of influence continue to engage in unacceptable behaviours, whether intentionally or inadvertently. For Backhouse, this signals a need for better education and support to facilitate ASP anti-doping efforts to ensure that ASP are effectively equipped to undertake their prescribed Code responsibilities.

The official role and responsibilities for ASP as per the current policy document are to:

- be knowledgeable of and comply with all anti-doping policies and rules within the Code;
- cooperate with the Athlete Testing programe;
- use their influence on Athlete values and behaviour to foster anti-doping attitudes;
- inform sporting and anti-doping organisations of any involvement in doping behaviours within sports that are not signatories of the Code;
- cooperate with doping-related investigations;
- not engage in personal use of banned substances.

Very few studies have been conducted to explore ASP behaviours and the factors that influence their behaviours. One of the first was Mazanov et al. (2014) (which Backhouse was a part of), in which 292 Australian ASP responded to a survey on knowledge of anti-doping rules, ethical beliefs and practice, and attitudes towards performance enhancement. The authors concluded that future work on the context within which ASP experience anti-doping is needed, exploring acquisition and translation of knowledge into practice. For example, Dr Kelsey Erickson (working with Backhouse and Prof Jim McKenna at Leeds Beckett University) conducted interviews with student-athletes and found that the main situational protective factor was secure attachment to people at all stages of the athletes' lives, and this included attachments to coaches, as well as family members and teachers. These people facilitated the promotion of moral decision-making and the development of anti-doping attitudes.

Indeed, members of ASP, including coaches, can be key positive influences on doping behaviours, and not just facilitators.

Lessons from Serial Winning Coaches

Sergio Lara-Bercial (ESP)

Lara-Bercial from the Carnegie School of Sport / International Council for Coaching Excellence, Leeds Beckett University, reviewed the findings of his team's study into serial winning coaches (SWCs), providing participants with a chance to reflect, discuss and self-assess.

High-Performance (HP) coaches are central actors in the coach-athlete-performance relationship and performers in their own right. Their performance directly and indirectly impacts athletes' performance. Positioning HP coaches as performers is important to foster research to examine what helps / hinders their performance, which is important when examining the complexity and dynamism of HP sport.

Lara-Bercial interviewed 17 coaches, who to date were responsible for 160 gold medals, major championships / professional league titles between them. The objective of the research was to improve selection and recruitment of the next generation of elite coaches, and support, develop, retain and reward current elite coaches. Specifically:

- identifying key traits and essential coaching skills for success;
- how coaches developed these key traits and coaching skills;
- understanding differences and nuances in how these coaching skills are applied in different situations.

Lara-Bercial said that despite the simple questions, identifying a stereotypical profile of a SWC is likely to be impossible but we can learn from these outliers and embrace common features as well as their diversity. Thus emerged a picture of high performance coaching: the size of the task, the day-to-day tasks and duties, and the variety of challenges coaches must deal with regularly. SWCs believe coaching must be athlete-centred, i.e., in the best interest of the athlete, which is about the centrality of the goals of the athlete above those of the coach, and at times, the team. SWCs and their athletes take a very high moral stance and pride in respecting athletes, even for instance when being critical of them or dropping them. One surprising finding related to the emphasis placed by SWCs in achieving a relatively positive work-life balance; they placed a high value on family, friends, hobbies, their own mental and physical fitness and in making an effort to ensure that the balance within their own personal circumstances was maintained.

The data revealed three key themes about what serial winning coaches do; these revolved about the development of programme vision, the management of people and the creation of a competent environment where people can realise the vision.

Vision

- Long-term approach
- Ability to see into the future
- Capacity to simplify complexity
- Thorough action planning
- Constant monitoring, reviewing and adjusting.

People

- People selection (athletes and staff)
- Believe in ME (the coach), in YOURSELF (the athlete) and in US (the team and organisation)
- Managing the High Performance Team
- Managing the Entourage.

Environment

- High expectations and demands
- 'No stone unturned'
- Challenging training environment
- Greenhouse Effect (stability and dependability)
- Managing Upwards.

After the overview of his work, Lara-Bercial invited the participants to evaluate themselves with a Coach Self-Assessment Profile exam-

Figure 1: The wider support team, including national governing body colleagues, private sports injury professionals, "17 Management", supporting coaches, training partners and training group.

ining the areas of Philosophy, Vision, People, and Environment, and to share their evaluation with a fellow conference delegate.

Tom Bosworth: Athlete, Coach & Support Team Development 2009-2016

Andrew Drake (GBR), Brian Hanley (IRL), Louise Sutton (GBR) and Andrew Manley (GBR)

Dr Andrew Drake, Dr Brian Hanley, Louise Sutton, a Principal Lecturer at Leeds Beckett University and Dr Andrew Manley, also a Principal Lecturer at Leeds Beckett, led a round-table presentation of their roles in supporting the development of Tom Bosworth (GBR), who placed 6th in the Men's 20km Walk at the 2016 Olympic Games with a UK Record performance of 1:20:13. Bosworth has trained at the National Centre for Race Walking, based on the Leeds Beckett University Headingley Campus, since its inception in 2009. Originally a partnership between the University and British Athletics, it is now a charitable foundation.

The four team members were highlighted as part of the wider support team for Bosworth (Figure 1). Key points from the discussion are presented below.

Coaching

Bosworth completed a BSc degree in Sports Performance at the University from 2009 to 2012, progressing to a Postgraduate Certificate in Sports Nutrition in 2013. He then worked part-time during 2014, before signing with 17 Management in 2015 and gaining a place on the British Athletics World Class Performance Programme for 2016 (onwards). Drake described how Bosworth had progressed from a young U20 athlete (2009) taking increasing interest and responsibility for his training (2012-2013), through to real ownership (2014-2015) and professionalism in his approach (2016). From a practical perspective Bosworth's training volume had increased progressively and his average training pace had decreased (improved!) between 2009 and 2016. Drake highlighted the development of the training focus, which in 2009-2012 was to develop:

1. Event "power", i.e. the raw capabilities of a World-standard athlete in the race walk event group;
2. …and since 2013 to develop event "capacity", i.e. the ability to maintain pace for 20km in competition with technical competence and the tactical nuances of an athlete in the leading group at World-standard.

Physiology

Bosworth's training is monitored utilising mathematical modelling with TrainingPeaks software, predicting performance calculated from the sum of base-level performance and positive training effects minus negative training effects, calculated as "training stress scores". In terms of the strength and conditioning elements of physical preparation, Bosworth's abilities have advanced from developing stability and movement competence in 2009 through to dedicated strength training by 2015-2016. In the exercise physiology laboratory Bosworth made small improvements in maximum oxygen uptake (VO_2 max.), and race walking economy, and larger improvements in velocity at maximum oxygen uptake (v-VO_2 max.), lactate threshold, and lactate turnpoint. Since 2010 he has increased his altitude exposure, in particular since 2014 with improvements in haemoglobin mass, and in 2016, steady state blood lactate measurements. Drake also identified improved post-training nutrition and sleep hygiene in the period 2015-2016, linked to the greater ownership and professionalism highlighted in coaching.

Biomechanics

Hanley spoke about the biomechanical testing that had been carried out on Bosworth between 2009 and 2016. He showed the results of a kinematic analysis of Bosworth's technique during the 2009 European Cup (U20 10km) where he finished 39th, and compared these with higher-placed finishers (some of whom are also now Olympic competitors). Hanley then showed how the key measurements of stride length and cadence were monitored over time using the Gaitway treadmill (with in-built force plates), and how electromyography was used in conjunction with the treadmill tests to compare muscle activity between the left and right legs. He also showed the results of laboratory-based testing that had been completed the week before the 2009 European Cup event and demonstrated how Bosworth had progressed in terms of muscle activation in the lower limb muscles. Of particular interest was how the ankle plantarflexor muscles were required to generate less energy in 2016 compared with 2009 (Figure 2) and how this might be related to a better usage of muscle elasticity. It was also shown using force trace patterns how Bosworth has developed a more mature race walking gait over time.

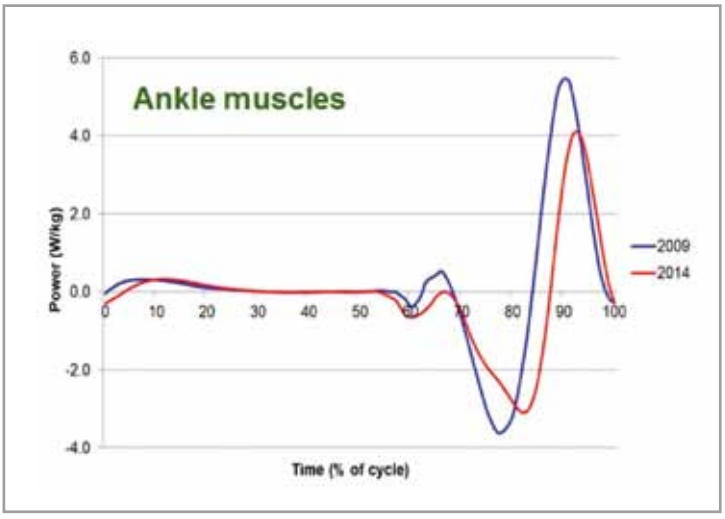

Figure 2: One of the greatest changes in Bosworth's biomechanics from 2009 to 2016 was in the energy generated and absorbed in the ankle muscles

Nutrition

The interdisciplinary nature of sports nutrition support for Bosworth was highlighted by Sutton, a Practitioner Registrant, Sports Nutrition Register. The underlying philosophy is based on finding practical solutions to challenges using a food-first approach. Sutton's initial intervention was identifying the energy needs required to meet the demands of training (pre-, during, and post- with palatable foods / liquids) and his undergraduate study. Bosworth's first major championship experience was competing in the 20km Walk at the 2010 Commonwealth Games in Delhi (IND) and a strategy was put in place to meet energy demands of the 21-day preparation altitude camp, followed by heat acclimation in an environmental chamber. This led into planning for eating foods provided in the Games Village restaurant before competition. This strategy has been developed to consider the fluctuating energy demands of the annual training plan, to ensure Bosworth continues to meet dietary needs with a plan that is nutrient-dense, varied and enjoyable.

Psychology

Bosworth began working with Sport & Exercise Psychologist, Manley in 2012 (Manley is a Chartered Psychologist with the British Psychological Society and is Health Care Professions Council registered). The initial request at the behest of the coach (Drake) was for "mentoring", which Manley developed into a framework of support, based on challenging perceptions and offering alternative perspectives to challenges identified by Bosworth. The framework was athlete-centred based around three interlinked areas:

- Internal factors (e.g. thoughts, emotions)
- Behaviours
- Environment

Manley identified the evolution of his support with Bosworth, which progressed from being primarily practitioner-led to primarily client-led over the period they had worked together. This pattern mirrored the development of ownership and professionalism identified above.

The challenge for the support team in the next Olympic cycle is to build on their work together to maximise performance to progress from a sixth place finish in 2016 to challenging for the podium in 2020!

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