The IAAF Consensus on Nutrition for Athletics: Updated Guidelines

Louise M. Burke

Over the past 4 years, international governing bodies of sport, the International Olympic Committee (IOC), and FIFA (Federation Internationale de Football Associations) have held updates to the original consensus meetings on nutrition for their athletes. The processes and outcomes of these meetings have been reported in previous articles in *IJSNEM* (15[5] and 16[3], respectively). Following this lead, the Medical and Anti-Doping Commission of the International Association of Athletics Federations (IAAF) recently decided to host an update of its earlier consensus meeting held in 1995. That meeting had resulted in the development of a successful formula of protocol and outputs, so the organizing committee of Professor Ron Maughan, Dr. Frederic Depiesse, and myself determined to continue with the efficient model. One further evolution was to focus more carefully on the specific range of sports and events that fall under the banner of the IAAF—track and field, cross-country, racewalking, and road running—to ensure that each group of athletes would feel that their unique needs were addressed.

We divided sports nutrition into 12 broad topic areas and invited researchers who had made key contributions to the literature on these topics, especially over the last decade, to participate in the consensus meeting. Specifically, each was invited to prepare a fully referenced manuscript summarizing the latest knowledge on the areas within his or her topic—paying particular attention to issues related to the broad range of events covered by the IAAF. A second group of experts, involved in either research or practice in sports nutrition with athletics groups, were invited as discussants. They were invited to contribute to the manuscript, but particularly to lead discussion and debate on the material contained in it. As in the past conferences, effort was made to include people from a range of professions (e.g., research, sports medicine, clinical nutrition practice) and from different regions around the world so that a true range of opinions could be represented. The review papers were circulated to the whole group over the month before the meeting, and finally participants (see Table 1) were brought together at the IAAF headquarters in Monaco, April 18–20, to spend two and a half days deliberating the consensus. Other key people to join the group were Lamine Diack (IAAF president) and members of the Medical and Anti-Doping Commission of the IAAF.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Coverage</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition for sprints</td>
<td>Nutrition for training, Nutrition for racing, Protein requirements for increasing size, strength, and power, Supplements and the sprinter (specific commentary on the evidence that certain supplements might be of value for sprinters)</td>
<td>Kevin Tipton (UK), Asker Jeukendrup (UK), Peter Hespel (Belgium)</td>
</tr>
<tr>
<td>Nutrition for middle distance</td>
<td>Nutrition for training, Nutrition for racing, Recovery between rounds, Supplements and the middle-distance runner</td>
<td>Trent Stellingwerff (Switzerland), Peter Res (Netherlands), Mike Boit (Kenya)</td>
</tr>
<tr>
<td>Nutrition for distance events</td>
<td>Nutrition for training, Nutrition for racing (track and road; including carbohydrate loading, prerace meal, and carbohydrate intake during events), Supplements and the distance runner</td>
<td>Louise Burke (Australia), Mark Tarnopolsky (Canada), Greg Millet (Qatar)</td>
</tr>
<tr>
<td>Nutrition for jumps, throws, and multievents</td>
<td>Nutrition for training, Nutrition for competition (including timing of competition fluid and food intake), Supplements and the jumper, thrower, and multievent athlete</td>
<td>Linda Houtkooper (US), Myra Nimmo (UK)</td>
</tr>
<tr>
<td>Physique and performance in track and field events</td>
<td>Relationship between weight/muscle/body fat and performance in different athletic events, Strategies to reduce weight and body fat</td>
<td>Helen O’Connor (Australia), Tim Olds (Australia), Ron Maughan (UK)</td>
</tr>
<tr>
<td>Female athlete triad</td>
<td>Low energy availability, Menstrual dysfunction, Poor bone health, Issues for male athletes</td>
<td>Melinda Manore (US), Anne Loucks (US)</td>
</tr>
<tr>
<td>Nutrition for the young athlete</td>
<td>Nutrition needs for growth, Training and dietary effects on growth and maturation of young athletes, Special needs: hydration</td>
<td>Flavia Meyer (Brazil), Helen O’Connor (Australia), Susan Shirreffs (UK)</td>
</tr>
<tr>
<td>Fluid needs for training and competition</td>
<td>Fluid needs before, during, and after training and competition in athletic events</td>
<td>Susan Shirreffs (UK), Robert Carter (France), Doug Casa (US)</td>
</tr>
<tr>
<td>Fatigue and illness in athletes</td>
<td>Causes of fatigue and illness, Fuel depletion, Iron deficiency, Gastrointestinal problems and running, Nutrition and the immune system</td>
<td>Myra Nimmo (Sweden), Bjorn Ekblom (Sweden)</td>
</tr>
</tbody>
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(continued)
The first 2 days of the consensus conference were spent on an in-depth discussion of each of the topics, with each author being asked to make a formal presentation of key points (30 min), before handing over to their discussants to host a detailed, and often lively, debate on issues raised in the paper (40–50 min). Toward the end of the discussion, the total group was asked to consider a list of practical guidelines raised for each topic, with strategies divided into “guidelines for,” “guidelines against,” and “equivocal guidelines.” On the last half-day of the meeting the group was asked to prepare a 1-page consensus statement that integrated all the information discussed over the preceding days to provide an overview of the main principles of eating for optimal performance. In the past, this had proved to be a difficult and time-consuming exercise, as participants fought over wording, meanings, and positioning of ideas. On this occasion, however, the task was completed with relative ease and a feeling of real achievement. The major challenge was to distill the ideas onto 1 page, thus providing a political tool to draw attention to the consensus meeting and to the release of the information on nutrition for athletics. This document was uploaded to the IAAF Web site (www.iaaf.org) within days of the completion of the consensus meeting, with public relations activities undertaken to give it publicity. The consensus statement is provided in the appendix to this article.

In addition to the consensus statement, a range of outputs from the meeting is in the process of development or delivery:

- The publication of the full manuscripts from the consensus conference as a supplement to the Journal of Sports Science in late 2007.
• A CD-ROM containing all presentations from the consensus meeting.

A booklet is being produced targeting athletes and coaches, containing a summary of the guidelines for each area of sports nutrition and providing practical information on how these guidelines apply to various categories of sports and how they can be achieved in real life and with specific eating patterns and food choices. The release of this booklet is timed to coincide with 11th IAAF World Championships in Athletics, August 25 to September 2, 2007, in Osaka, Japan, and we hope it will be distributed to all participating athletes and coaches. Further Web-site material is also being planned.

As with the previous meetings, this project has achieved a number of valuable outcomes, including resources that we hope will allow athletes, coaches, sports scientists, and sports nutritionists to update their knowledge and practice of the specific nutrition needs of participants in athletics.

Appendix

Nutrition for Athletics:
The 2007 Consensus Statement of the IAAF

Athletics consists of a range of events requiring varying inputs of technique, strength, power, speed, and endurance. Well-chosen foods will help athletes train hard, reduce risk of illness and injury, and achieve performance goals, regardless of the diversity of events, environments, nationality, and level of competitors. General recommendations can be made, but these should be implemented on an individual basis, according the athlete’s stage of maturation, sex, periodization phase, training program, and competition goals. A qualified sports nutrition professional can help athletes find practical ways to achieve their nutrition goals despite a busy lifestyle, gastrointestinal issues, and the challenges of travel. Appetite and thirst are not always good indicators of energy and fluid needs, and athletes will benefit from a personalized eating and drinking plan.

Athletes should consume a wide variety of foods that meet their energy needs and provide optimal amounts of carbohydrate, protein, fat, vitamins, minerals, and other important food components. The energy requirements of training vary according to the type and duration of sessions, which in turn change across training cycles. Some athletes naturally achieve their ideal physique as a result of heredity and training, but others must manipulate energy and nutrient intake to achieve desired changes in lean mass and body fat. Energy-restricted diets require careful selection of nutrient-dense foods to ensure that nutrient needs are met. Low energy availability should be avoided, because it can impair performance and adaptation to training, as well as being harmful to reproductive, metabolic, and immune function and bone health.

Adequate carbohydrate intake is necessary to support intensive and consistent training with lowered risk of illness and injury. Guidelines for daily intakes are about 5–7 g/kg body mass during periods of moderate training, up to about 10 g/kg during heavy training or fueling up for competition. Protein intake should be sufficient to optimize adaptation to both strength and endurance training, but intakes of more than 1.7 g·kg$^{-1}$·d$^{-1}$ are not necessary for any athlete. Strategic timing of meals
or snacks that provide these macronutrients around training sessions can help to optimize fuel availability, promote adaptation to training, and enhance recovery.

Preparation for competition should include strategies to ensure muscle fuel stores that are appropriate to the event. Carbohydrate intake during exercise can be of value for events lasting longer than about 1 h, and refueling between events on the same day is important. Each athlete should develop a competition plan that is practical and provides benefits for his or her performance. Carbohydrate loading is beneficial for prolonged events and can be achieved by 2–3 d of high carbohydrate intake and training taper. A depletion phase or fat adaptation is not necessary.

Athletes should also have individualized hydration strategies for training and competition. They should start appropriately hydrated and consider the need and opportunity to consume fluid during and between activities. Generally, an athlete’s fluid plan should limit total fluid deficits to less than about 2% of body mass, particularly when competing in a hot environment. Unless previously dehydrated, athletes should not overdrink before or during exercise to the point that they gain weight. Hyperhydration might detract from performance in weight-sensitive events and can lead to the serious problem of hyponatremia. Rehydration after training or competition requires replacement of both water and salts lost in sweat.

Athletes must respond to changes in needs for energy, nutrients, and fluid in new situations such as hot or cold environments, change in altitude, and travel across time zones. Travel requires planning to cope with effects of the journey, different food cultures, changed access to foods, and the risk of gastrointestinal disturbances.

Young athletes and their parents and coaches should be aware of the importance of nutrition for optimizing health, growth, and performance. Young athletes might need special education, encouragement, or supervision to achieve appropriate energy intake, meet fluid needs related to exercise, and adopt nutrient-rich meal patterns.

When everyday foods are impractical, specialized foods can help athletes achieve nutrition goals. Supplements do not compensate for poor food choices. Some supplements might benefit performance, but athletes are cautioned against using these products without first conducting an individual risk–benefit analysis. Athletes are advised to seek assurances regarding quality control of supplement manufacture to ensure freedom from contamination with toxic or doping substances. Supplements should not be used by young athletes except where clinically indicated and monitored.

Good food choices will contribute to success in athletics, as well as to health and enjoyment of life.

Monaco, April 20, 2007