

Usage and Trends of Dietary Supplements in Ultra-Long Distance Endurance Events in China

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Abstract

This research investigates the usage and trends of dietary supplements in ultra-long distance endurance events in China. Ultra-endurance events, characterized by their extraordinary physical demands, present unique challenges to participants. Dietary supplements have gained popularity among athletes as a means to enhance performance and support recovery during these grueling events. However, their usage has implications for both performance and health. This study delves into the landscape of dietary supplementation in ultra-endurance events, examining its historical development, common supplement types, and the motivations behind their usage. Trends in supplement usage are analyzed, considering factors like age, gender, and event type. Furthermore, the study explores how cultural and regional factors influence supplement choices. The implications of dietary supplement usage on participants' health and performance are discussed, highlighting potential risks and benefits. Recommendations for safe and effective supplementation are provided. By shedding light on these aspects, this research contributes to a comprehensive understanding of dietary supplement practices in the context of ultra-long distance endurance events in China.

Keywords: dietary supplements, ultra-long distance endurance, endurance sports, supplement usage

1. Introduction

In the realm of sports and athletic endeavors, ultra-long distance endurance events represent a unique and demanding category. Athletes who participate in these events, which include ultramarathons, Ironman triathlons, and extreme cycling races, undertake feats of physical and mental endurance that challenge the limits of human capability. Such events, characterized by their grueling distances and often harsh environmental conditions, push athletes to the edge of their abilities. China has

witnessed a significant surge in the popularity of these ultra-long distance endurance events in recent years. These events not only provide a platform for athletes to test their limits but also offer a sense of personal accomplishment and an opportunity to connect with nature and culture in a profound way.

A critical aspect of excelling in ultra-long distance endurance events is the participants' ability to maintain their physical and mental well-being throughout the competition. In this context, nutrition plays a pivotal role in an

athlete's performance and recovery. Dietary supplements have become an integral part of the preparation and participation of athletes in such events. These supplements, ranging from vitamins and minerals to energy gels and protein shakes, are designed to support various aspects of an athlete's physiology and nutrition, aiding them in their pursuit of endurance and resilience.

This research endeavors to delve into the nuanced dynamics surrounding the usage and trends of dietary supplements among participants in ultra-long distance endurance events in China. Understanding the patterns of supplement consumption, the reasons driving their usage, and the broader implications of such choices is paramount for athletes, sports organizers, and researchers alike. The impact of dietary supplements on athlete performance, as well as the potential associated health risks, are key areas of investigation.

This research will provide insights into the type of dietary supplements favored by ultra-endurance athletes, including their brands and sources. It will also shed light on the motivations and considerations behind athletes' choices regarding supplement usage. Additionally, this study aims to unravel any regional or cultural influences that might sway athletes' preferences for certain supplements.

Understanding how dietary supplements are perceived and adopted in the context of ultra-long distance endurance events is of paramount significance. It can potentially lead to improved guidance for athletes, allowing them to make more informed choices about their nutritional strategies. Moreover, it offers sports organizers the opportunity to tailor support services more effectively to cater to the specific needs of athletes in such events.

In conclusion, this research embarks on a journey to explore the terrain of dietary supplement usage among participants in ultra-long distance endurance events in China. By doing so, it strives to contribute to a deeper comprehension of the role of dietary supplements in optimizing athletic performance and ensuring the well-being of athletes engaged in these extraordinary challenges.

2. Dietary Supplements in Endurance Sports

2.1 Overview of Dietary Supplements

Dietary supplements are a diverse category of

products designed to complement an individual's regular diet and provide essential nutrients or compounds that can be challenging to obtain from food alone. They encompass various forms, including vitamins, minerals, amino acids, herbs, and other botanicals. In the realm of endurance sports, athletes have increasingly embraced dietary supplements as an integral part of their training and competition routines. These supplements fulfill various roles, such as addressing nutritional deficiencies, boosting performance, and aiding in the recovery process.

2.2 Common Dietary Supplements Used by Athletes

Athletes, particularly those engaged in endurance sports, often turn to specific types of dietary supplements to cater to their unique nutritional requirements. Some of the most common dietary supplements used in these scenarios include:

Energy Gels and Bars: These highly portable, easy-to-digest sources of carbohydrates serve as quick and efficient energy sources during prolonged physical activity, offering athletes an energy boost when they need it the most.

Electrolyte Replacements: Endurance athletes lose vital minerals like sodium, potassium, and magnesium through sweat. Electrolyte supplements help maintain proper fluid balance, muscle function, and hydration, which are crucial for sustaining performance in long-duration activities.

Protein Supplements: Protein plays a pivotal role in muscle repair and growth. Athletes often rely on protein shakes or supplements to expedite muscle regeneration after intense training or competition, helping to reduce muscle soreness and enhance recovery.

Vitamins and Minerals: Comprehensive and balanced intake of essential vitamins and minerals is critical to overall health and well-being. Athletes require these micronutrients to ensure their immune systems function efficiently, and their bodies can cope with the physical stress of endurance activities.

Branched-Chain Amino Acids (BCAAs): These amino acids, including leucine, isoleucine, and valine, are known for reducing muscle fatigue and supporting endurance during extended physical exertion. They are often used by endurance athletes to help maintain performance and delay the onset of fatigue.

2.3 Their Role in Enhancing Performance and Recovery

Dietary supplements are indispensable for athletes in endurance sports, offering several benefits:

Sustained Energy: Energy gels and bars provide a rapid source of carbohydrates, enabling athletes to maintain their energy levels during prolonged exercise, delaying the onset of fatigue.

Hydration and Electrolyte Balance: Electrolyte replacements assist in sustaining proper hydration, muscle function, and overall performance by restoring lost electrolytes during extended physical activities.

Muscle Repair and Growth: Protein supplements support muscle repair and growth, allowing athletes to recover faster after intensive workouts or competitions.

Overall Health and Immunity: A balanced intake of vitamins and minerals is essential for athletes to stay in optimal health. They need these nutrients to support their immune systems and cope with the physical stress that endurance sports impose.

Reduced Fatigue and Enhanced Endurance: BCAAs help reduce muscle fatigue and promote endurance during extended physical activities, contributing to better overall performance.

3. Ultra-Long Distance Endurance Events in China

3.1 Introduction to Ultra-Long Distance Endurance Events

Ultra-long distance endurance events are characterized by their demanding physical challenges and extended durations. Participants in these events must cover vast distances, often traversing challenging terrains, facing extreme weather conditions, and enduring both physical and mental stress. In China, these events have gained significant traction and represent a unique segment within the country's sports landscape. Notable examples include ultramarathons, Ironman triathlons, and extreme cycling races.

3.2 Popularity and Growth of Such Events in China

China has witnessed a remarkable surge in the popularity of ultra-long distance endurance events in recent years. This growth can be attributed to several factors, including:

Increased Focus on Health and Fitness: A

growing emphasis on health and fitness among the Chinese population has driven interest in endurance sports and ultra-long-distance events. People are increasingly aware of the importance of physical activity for their well-being.

Accessibility to Training Resources: The availability of training resources, including coaching, equipment, and facilities, has improved significantly. This has made it easier for individuals to prepare for and participate in such events.

Desire for Unique Challenges: Many participants are drawn to ultra-endurance events by the unique challenges they present. These events offer participants a profound sense of accomplishment and a chance to connect with nature and local cultures.

3.3 Unique Challenges Faced by Participants

Ultra-endurance events place participants in situations that go beyond what is encountered in traditional sporting events. These challenges include:

Extreme Distances: Participants are required to cover distances that far exceed those in standard sporting events. This extended duration places considerable strain on both physical and mental endurance.

Challenging Terrains: Ultra-endurance events often involve traversing rugged terrains, from mountain trails to desert paths. Participants must navigate uneven surfaces, steep climbs, and harsh conditions.

Weather Variability: The weather conditions during these events can be unpredictable, ranging from extreme heat to freezing cold. Athletes must adapt to and endure these variations.

Nutritional Demands: Participants need to carefully manage their nutrition and hydration to maintain their energy levels throughout the event. Maintaining proper nutrition and hydration is crucial for performance and recovery.

Understanding the increasing popularity of ultra-long distance endurance events in China and the unique challenges faced by participants is vital for comprehending the role of dietary supplements in coping with the demands of these events. Dietary supplements are increasingly used to support athletes in these uniquely challenging conditions, enhancing performance and aiding in recovery, which is a

primary focus of this research.

4. Usage of Dietary Supplements in Ultra-Long Distance Events

4.1 Surveys and Studies on the Usage of Dietary Supplements by Participants

The utilization of dietary supplements in ultra-long distance endurance events has become a topic of growing interest among researchers and event organizers. Surveys and studies have been conducted to gain a comprehensive understanding of the dietary supplement habits of participants. These studies often encompass various aspects, including:

Frequency of Usage: Researchers seek to determine how often participants use dietary supplements. This helps in assessing the prevalence of supplement usage within the ultra-endurance community.

Types of Supplements: Studies explore the specific dietary supplements consumed by athletes. This allows researchers to identify the most popular types and examine how they contribute to performance and recovery.

Demographics: Researchers often collect demographic data to understand variations in supplement usage based on factors like age, gender, and experience level.

Motivations: Surveys delve into the motivations and reasons behind using dietary supplements. This provides insights into the objectives participants aim to achieve through supplementation.

4.2 Types and Brands of Supplements Commonly Used

In ultra-long distance endurance events, participants commonly rely on a range of dietary supplements to support their physical and mental capabilities. The specific types and brands of supplements often utilized include:

Energy Gels and Bars: These supplements provide easily digestible carbohydrates, offering a quick and accessible energy source during races. Brands like GU Energy, Clif Bar, and Honey Stinger are frequently favored choices.

Electrolyte Replacements: To maintain electrolyte balance and hydration during grueling events, athletes frequently opt for brands like Nuun, SaltStick, and Precision Hydration.

Protein Supplements: For muscle recovery and growth, protein supplements like Optimum

Nutrition, MuscleTech, and Vega are often preferred.

Vitamins and Minerals: Brands such as Nature Made, NOW Foods, and Garden of Life offer a variety of multivitamins and mineral supplements commonly used to address potential nutrient gaps in athletes' diets.

Branched-Chain Amino Acids (BCAAs): BCAAs from brands like Scivation, Bulk Naturals, and Myprotein are used to mitigate muscle fatigue and enhance endurance.

4.3 Motivations Behind Their Usage

The motivations behind dietary supplement usage in ultra-endurance events are multifaceted and encompass several key drivers:

Performance Enhancement: One of the primary motivations is to enhance performance. Athletes turn to supplements for an immediate energy boost, increased endurance, and quicker recovery during these demanding events.

Hydration and Electrolyte Balance: Maintaining proper hydration and electrolyte balance is crucial to endurance performance. Athletes use electrolyte supplements to prevent dehydration and muscle cramps.

Recovery and Muscle Repair: After enduring strenuous physical exertion, participants focus on recovery. Protein supplements, in particular, are valued for their role in repairing and rebuilding muscle tissue post-event.

Nutritional Assurance: Dietary supplements are seen as a nutritional insurance policy. Athletes use them to ensure they meet their dietary needs during races where access to regular meals might be limited.

Convenience: The convenience of supplements like energy gels and bars is a motivating factor. They are easy to carry, consume, and digest during ultra-long distance events.

Understanding the patterns and motivations behind dietary supplement usage in ultra-long distance endurance events is crucial for athletes, event organizers, and researchers. By identifying the most commonly used supplements and why participants choose to incorporate them into their routines, it is possible to offer informed recommendations and strategies for safe and effective supplementation, which is a significant focus of this research.

5. Trends and Patterns in Supplement Usage

5.1 Trends in Dietary Supplement Usage Over Time

Over the years, there has been a notable evolution in the usage of dietary supplements in ultra-long distance endurance events in China. Trends reveal shifting preferences, increased awareness, and changes in the types of supplements used. Understanding these trends is essential for assessing the impact of dietary supplementation on athletic performance and the broader sporting culture.

Early trends often revolved around basic supplements like energy gels and electrolyte replacements. However, with advancements in sports science and nutrition, participants have begun to explore a wider array of supplements, including specialized recovery shakes, performance-enhancing substances, and personalized nutrition plans. The trend also reflects a growing recognition of the importance of individualized nutrition strategies based on the specific demands of different ultra-endurance events.

5.2 Analysis of Variations in Usage Based on Factors

Variations in dietary supplement usage are observed based on several factors:

Age: Usage patterns can differ significantly across different age groups. Younger participants may be more inclined to experiment with novel supplements, while older athletes may adhere to traditional options.

Gender: Gender can influence supplement choices, with some supplements being more popular among male athletes and others among female athletes. Gender-specific physiological needs can contribute to these variations.

Event Type: The specific type of ultra-endurance event can also shape supplement usage. Events with distinct requirements, such as long-distance trail running or multi-day cycling races, may demand different supplements for optimal performance.

These variations provide valuable insights into the diverse needs of participants and help identify specific areas for targeted research and guidance.

5.3 How Cultural and Regional Factors Influence Supplement Choices

Cultural and regional factors play a significant role in supplement choices among participants in ultra-long distance endurance events. China's vast and diverse geography, as well as its cultural richness, can lead to distinct preferences in different regions. Additionally, local customs,

dietary practices, and beliefs can influence supplement choices.

For example, in regions with a strong tradition of herbal medicine or alternative remedies, athletes may be more inclined to explore natural and herbal supplements. In contrast, urban areas with a more cosmopolitan culture may see greater adoption of mainstream sports nutrition supplements. Additionally, regional climates and environmental factors can influence the need for specific supplements, such as those addressing extreme temperatures or altitude-related challenges.

These cultural and regional variations underscore the importance of considering local context when assessing dietary supplement trends in ultra-endurance events. Recognizing the impact of these factors can help event organizers, health professionals, and athletes tailor supplement recommendations to better match their specific needs.

The trends, variations, and influences on supplement usage in ultra-long distance endurance events represent dynamic aspects of this research, shedding light on the evolving dietary practices of athletes and the multifaceted considerations that come into play when choosing dietary supplements in this context.

6. Health and Performance Implications

6.1 Effects of Dietary Supplements on Participants' Health and Performance

The usage of dietary supplements in ultra-long distance endurance events has notable implications for both the health and performance of participants. Understanding these effects is essential for athletes, coaches, and health professionals in optimizing performance while safeguarding the well-being of competitors.

In terms of performance, dietary supplements can provide several benefits. They can help maintain energy levels during prolonged exertion, improve endurance, enhance muscle recovery, and reduce the risk of dehydration and electrolyte imbalances. The intake of specialized supplements tailored to the demands of specific events can also lead to better performance outcomes. For instance, endurance runners may benefit from carbohydrate and electrolyte supplementation, while cyclists might require protein and branched-chain amino acids to support muscle recovery.

However, these benefits need to be weighed against potential health risks. Excessive use of certain supplements or inadequate understanding of proper dosages can lead to adverse effects. Over-reliance on dietary supplements can create a false sense of security, diverting attention from the importance of a balanced diet. The risk of contamination in some supplement products can also pose health hazards. Additionally, interactions between supplements and medications, if not carefully monitored, can be detrimental to health.

6.2 Potential Risks and Benefits Associated with Supplement Use

The potential risks and benefits associated with supplement use in ultra-long distance endurance events are multifaceted:

Benefits:

- Improved endurance and stamina
- Enhanced muscle recovery
- Nutrient replenishment during prolonged exertion
- Reduced risk of dehydration and electrolyte imbalances
- Tailored supplementation for specific event requirements

Risks:

- Overuse and improper dosage
- Dependency on supplements over a balanced diet
- Risk of contamination in supplement products
- Potential interactions with medications
- Misinformed choices leading to adverse effects

6.3 Recommendations for Safe and Effective Supplementation

To ensure safe and effective supplementation, participants, event organizers, and health professionals should consider the following recommendations:

Education: Athletes should be educated about the appropriate use of supplements, emphasizing that they should complement, not replace, a balanced diet. Comprehensive knowledge about the benefits, potential risks, and dosage guidelines is essential.

Individualization: Supplementation should be personalized based on the specific needs and

demands of the event, as well as the athlete's characteristics. A one-size-fits-all approach may not be suitable for ultra-endurance events.

Quality Control: Stringent quality control and verification of supplement products are necessary to mitigate the risk of contamination or substandard ingredients.

Medical Supervision: Athletes with preexisting medical conditions should seek medical supervision to ensure that supplement use does not interfere with their health and medication regimens.

Regular Monitoring: Ongoing monitoring of athletes' dietary habits, supplement use, and health status is crucial. This helps identify any potential issues and allows for timely interventions.

Event Guidelines: Event organizers should provide guidelines and recommendations for supplement use, ensuring that all participants are informed and guided toward safe practices.

Incorporating these recommendations into the culture of ultra-long distance endurance events can help participants maximize the benefits of dietary supplementation while minimizing health risks.

7. Conclusion

In conclusion, the utilization of dietary supplements in ultra-long distance endurance events in China represents a complex landscape where performance enhancement and health considerations intersect. Participants often turn to dietary supplements to gain an edge in these challenging events, and the implications are both beneficial and potentially risky.

Balancing the pursuit of peak performance with health and safety is the key challenge. Understanding the multifaceted nature of dietary supplement usage, including its trends, variations, and influences, can lead to more informed decisions by athletes and event organizers.

As ultra-endurance events continue to evolve and attract a diverse range of participants, the responsible use of dietary supplements will remain an important topic of discussion and research. Navigating the fine line between optimization and risk mitigation is essential to ensure that dietary supplements contribute positively to the experiences and achievements of participants in ultra-long distance endurance events in China.

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