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SPORT IN VIEW

Issue 2: November 2025

Theme: The Science Behind Sport Performance

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A Message from our Editor-in-Chief Dr. Rudolph Alleyne

The second edition of ***Sport In View*** with the theme "***The Science Behind Sport Performance"*** covers topics related to the technical and specialized areas in sports. These articles look at the science behind training, performance and management of sport.

Many people are unaware how scientific are the preparation, coaching and operations within sports. From exercise physiology, sport psychology, biomechanics, nutrition, coaching, management, analytics, turf and facilities management, just to name a few.

Understanding the specific intricacies of the strategies and processes behind sport development and the importance placed on how we plan, organize, and manage sport is critical to moving the industry forward. This edition highlights some of the important topics associated with the improvement of athletic performance and sports development from regional experts. These topics bring a deeper understanding and clearer insights into the science of how we can advance the regional sporting industry.

You may use the contact information and QR code to submit articles or to gain further information about this publication. We welcome your comments, feedback and contributions as we seek to use this periodical as a channel for the development of sport in Barbados and the region.

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Meet Our Editorial Committee

DR. RUDOLPH ALLEYNE

Dr. Rudolph Alleyne is the Head of the Academy of Sport at The University of the West Indies, Cave Hill Campus, a distinguished academic and sport psychology expert. In addition to his academic leadership, Dr. Alleyne plays a pivotal role in national sports development serving as the Deputy Chairman of the National Sports Council Board, contributes to youth and athlete development through the Barbados Cricket Association's Education, Scholarship and Placement Committee, and supports the growth of sports tourism as a member of the Barbados Tourism Marketing Inc. (BTMI) Sports Tourism Committee.

Javier Reid is a Lecturer in the Academy of Sport at The University of the West Indies, Cave Hill Campus. He is a career sport management professional, having worked in the field since 2005, and currently serves as a Member of the Board of the National Sports Council. Javier was a member of the Oversight Team responsible for Barbados' delivery of the Final and matches in the ICC Men's T20 World Cup 2024. His research interests centre on sport policy, management and strategy.

MR. JAVIER REID

MS. ANICIA WOOD

Anicia Wood is a former professional volleyball player, now serving as a sports administrator, coach, and lecturer in sports coaching and sport science. As Chair of the Barbados Beach Volleyball Commission, she is deeply committed to the development of beach volleyball in Barbados, with a strong focus on sustainable programming and athlete development. Her work aims to harness the sport's full potential not only as a platform for athletic excellence, but also by making beach volleyball a marketable product to drive sports tourism and economic growth.

Bioenergetics: Training the Energy Systems

Bioenergetics refers to the chemical processes within the body which are responsible for the manufacturing of energy as adenosine triphosphate (ATP). All bodily functions require ATP as the fuel which allows these activities to take place. The production of ATP takes place within the mitochondria of the cells. Since ATP production is important to any form of physical and chemical activity, it is critical to note that for training, especially with high performers in sport, engaging and augmenting the corresponding energy system/s is fundamental to improving performance. This I believe is one of the major shortcomings as it relates to fully developing our athletic prowess across the region, understanding the concept of "Training the Correct Energy System/s." There are generally three main energy systems which are responsible for the formation and delivery of ATP to provide energy throughout the body.

ATP-PC System (Phosphagen System, Anaerobic Alactic)

We have are limited stores of ATP in the cells for a few seconds (1-3) of activity. However, the immediate source of energy which is produced by the body is generated by this (ATP-PC) system. The production of ATP from this energy system does not require oxygen and can only be sustained for short periods of time (6-10 sec). Creatine Kinase (CP or PCr) binds with phosphate ions to produce ATP. When ATP breaks down, energy is then released.

ATP → ADP + Pi + Energy

This energy system caters to high intensity, short bursts of activity that require high volumes but short-term releases of energy. For high intensity, quick events and activities, this is the primary energy system which should be activated and utilized during training sessions. A high portion (about 90% or more) of your training regimen should consist of the types of exercise which activate, stimulate and augment this congruent and pertinent system. These should be activities that are of a very high intensity (85-100% VO2 max) and short duration (less than 10 seconds). Some examples of sporting activities which rely predominantly on this energy system are field events (Shot Put, Discus, Javelin), cricket, diving, 100m and golf.

Glycolytic Energy System (Lactic, Anaerobic)

Energy production in this phase last from about ten (10 sec) seconds to approximately two minutes (120 sec) with very little use of oxygen. In this phase of energy production, the breakdown of glucose and glycogen produces the biproduct lactate (lactic acid) which leads to fatigue. High intensity activities (75-90 % VO2 max) like soccer, basketball, hockey, swimming, 400 & 800 m rely heavily (70-80 %) on energy from this system. This indicates that fueling, engaging and training this energy system to deliver and efficiently utilize ATP (energy) should be a major

part (70-90%) of the athletic preparation. In essence, you are training the energy system to deliver ATP (energy) to facilitate these activities. The types of training which are important to improving performance with these sports should therefore consist of activities which are specific to activating the energy system and maximizing the production, supply and utilization of the ATP.

Oxidative Energy System (Aerobic, Oxidative Phosphorylation)

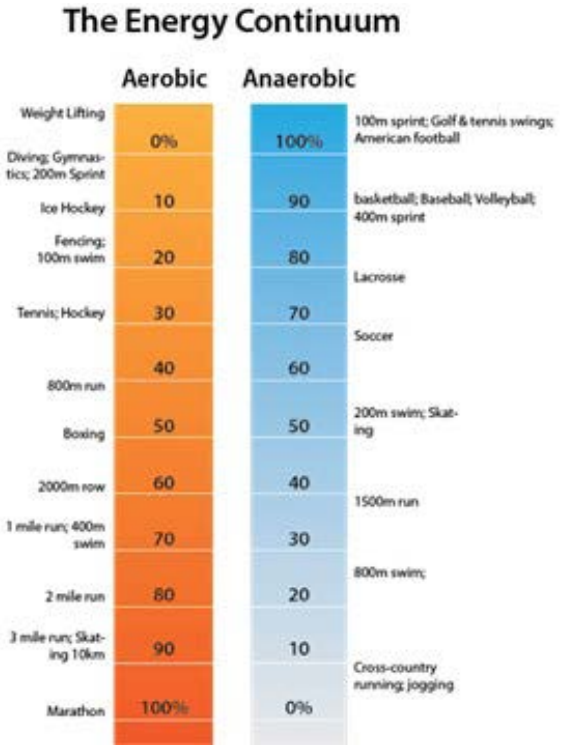
In this energy system, oxygen is utilized to produce ATP (energy) for a sustained period (2 minutes and beyond). Low intensity activities and the physiological functions of the body rely primarily on this energy system to perform. Any low intensity activity (below 75% VO2 max) is fueled principally by this energy system. The energy (ATP) which is produced in this system is generated from carbohydrates and fats (and proteins only in extreme conditions). Like the other two energy systems, any activity which relies heavily on this system for fuel should be comprised of training and activities geared towards activating and improving the production, delivery and utilization of the energy (ATP) from this energy system. This would comprise low intensity (below 70% VO2 max), long duration (more than 2 minutes) training. Sporting activities which utilize this energy system as the primary source of energy include distance running (1500 m and above, 5k, 10k, marathon), walking, jogging, and any prolonged activity.

It is essential to recognize that the body's

3 ENERGY SYSTEMS

	ATP/PC SYSTEM	ANAEROBIC GLYCOLYSIS (Lactic acid system)	AEROBIC ENERGY SYSTEM
O2 Required	No	No	Yes
Speed of energy supply	Very fast	Fast	Slow
Fuel Source	Creatine Phosphate	Carbohydrates	Carbohydrates &fats (protein in extremes)
Amount of ATP Production	Limited	Limited	Unlimited
By Products	None	Lactic acid	CO2 ,H2O & Heat
Duration	0-10sec	Up to 2min	Forever
Cause of fatigue	Limited supply ATP/PC	Lactic acid production	Unlimited
Activity	Power based activities	Sprint endurance	Long duration

three energy systems operate concurrently, as the continuous supply of energy is vital for sustaining the numerous physiological processes occurring within the body's millions of cells. Additionally, all forms of physical activity rely on all three energy systems but to varying degrees. Most importantly, to compete at the highest level, training the corresponding and correct energy system/s is important in realizing the degree of improvement to be competitive and victorious. However, this is not the only factor in achieving and maintaining a high level of athletic accomplishment. There are other components which also contribute to becoming a performer at the pinnacle of your sport. These include but are not limited to ***quality coaching, genetics, nutrition, psychological, medical and healthcare support.*** Incorporating all of these as part of your preparation for performance is important to realizing the ultimate outcome of sporting supremacy. However, ***"Training the Correct Energy System/s"*** is integral to achieving the goal of superlative accomplishments in sport as these provide you with all of the energy to perform.



By Dr. Rudolph Alleyne

The Invisible Athlete: Training the Mind We Don't See

Behind every sprint, jump, and goal lies something we can't see: The athlete's mind. For years, Caribbean sport has celebrated physical brilliance: speed, strength, and flair. However, the global sport science community has revealed over several years what our eyes have missed all along. The next great leap in athletic performance may not come from the muscles, but from the brain.

Across the world, technology is being used to unlock the mental side of performance. Devices once used to measure distance and speed are now decoding focus, decision-making, and reaction. Studies have shown that tools like FitLight™ and BlazePod — systems that train athletes to respond to flashing lights — don't just improve agility; but rather, they enhance cognitive control and attention as well. In a 2024 study by Campanella and colleagues, elite judo athletes who trained with reactive light devices developed better working memory and mental flexibility. Their bodies got sharper, but so did their minds.

That's the new frontier of kinesiology: the science of human movement expanding to include thought. It's not just about how muscles move, but why they move when they do. In sports like hockey, cricket, and football, where milliseconds define champions, this cognitive edge can change everything. Quick reactions, spatial awareness, and composure under pressure are no longer abstract traits. They're trainable skills, measurable and improvable through technology.

Virtual reality (VR) training adds another layer to this mental evolution. Research by Martínez and Ramirez (2024) and Romeas et al. (2022) on VR use in sports such as rugby and boxing, has shown that athletes who train in virtual environments improve their decision-making, reaction times, and game awareness in real matches. By replicating real-life scenarios, VR helps athletes rehearse mentally before ever stepping onto the field. Manchester United's youth academy has even used VR to help players anticipate plays and adapt faster, essentially rewiring the brain for smarter reactions.

This is the athlete we rarely talk about: the invisible athlete who exists in the mind. The thinker, the processor, the decision-maker behind every motion. Caribbean athletes have long been praised for natural talent, instinct and rhythm. Imagine pairing that natural ability with targeted cognitive training, using reaction systems and VR to sharpen anticipation and composure. We could produce competitors who not only move beautifully but think faster than their opponents can react.

The shift won't be easy. It requires rethinking how we define training. Strength and conditioning programs must now include "mental agility drills." Coaches need to treat focus and processing speed as seriously as fitness. Sport institutions in the Caribbean must invest in accessible technologies that develop both body and brain.

In the end, success in sport will belong to those who can connect mind and motion seamlessly. The future of the Caribbean athlete isn't just visible on the field. It's unfolding in the split-second decisions made before the body even moves. That's where the next champion is being built, in the invisible space between thought and action.

By Mr. Nevin Roach

Mr. Nevin Roach
Technologist, UWI Cave Hill

The Psychology of Consistency: A Conversation on Sustained Excellence

"Coach, why do I play brilliantly one week and struggle the next?"

It's a question I've heard countless times from athletes at every level - from youth players to seasoned professionals. Every athlete knows that rare, almost magical feeling when everything clicks. Movement feels effortless, decisions flow, and confidence radiates. But here's the real test of greatness: not achieving that state once, but being able to return to it again and again, especially under pressure. That's the psychology of consistency, and it's where champions distinguish themselves.

Consistency: The Hidden Science Behind Greatness

When we talk about consistent performance, most people think of repetition, discipline, or physical fitness. Although this is true, consistency runs deeper. It is psychological structure - a concept we call mental periodization. Coaches already periodize physical training: strength here, endurance there, taper before competition. But how many apply that same structure to the mind? Neuroscience reminds us that focus, confidence, and composure are not just attitudes - they're brain functions. When mental fatigue accumulates, neural efficiency declines, timing falters, and even simple decisions start to feel effortful. The mind and body function as a single, integrated system; when one is overlooked, true performance consistency becomes impossible.

The Caribbean Context: Talent Meets Mental Precision

We've never lacked natural ability in the Caribbean. Our athletes light up global stages in track and field, cricket, football, swimming, and more. But what sustains world-class performance isn't just talent. It's the ability to remain mentally balanced amidst the emotional turbulence of competition. That's where mental periodization becomes a game-changer. Imagine combining Caribbean passion with psychological precision, where natural rhythm and talent meet structure. The results can redefine our regional athletic identity.

Understanding the Science of Consistency

Neuroscience research describes consistency as neural reliability: the brain's ability to reproduce effective activation patterns even when tired, distracted, or stressed. When the brain's circuits are overtaxed, attention wavers, coordination falters, and performance deteriorates. The good news? Just like muscles, the brain adapts. Athletes who schedule mental recovery (mindful breathing, journaling, visualization, short resets) sustain sharper focus and steadier performances

throughout long seasons. The takeaway: structured mental habits lead to stable results. Random mental training leads to inconsistent and unreliable outcomes.

Building a Framework: Mental Periodization in Practice

So, what does mental periodization actually look like? It means aligning psychological training with physical cycles. During general preparation, athletes learn key skills such as focus, control, self-talk, visualization, and emotional regulation. As competition nears, the goal shifts to applying those tools under realistic pressure. After the season, reflection and recovery complete the cycle. By periodizing the mind this way, athletes develop cognitive endurance: the mental stamina to perform consistently, regardless of circumstances.

Coaches: The Architects of Mental Climate

In every training environment, coaches are the emotional tone-setters. Their words, energy, and consistency shape how athletes think and feel. Emotional safety and predictability breed trust, and trust stabilizes performance. During a regional training project, one of my colleagues supported coaches adding ten-minute “mental focus huddles” before sessions. Each week centered on one of the following concepts: calm execution, reset after mistakes, and confidence under fatigue. Within eight weeks, unforced errors dropped noticeably, and players reported greater self-control. The difference wasn’t talent; it was structure.

The Caribbean Advantage

Our culture brings something special to sport:

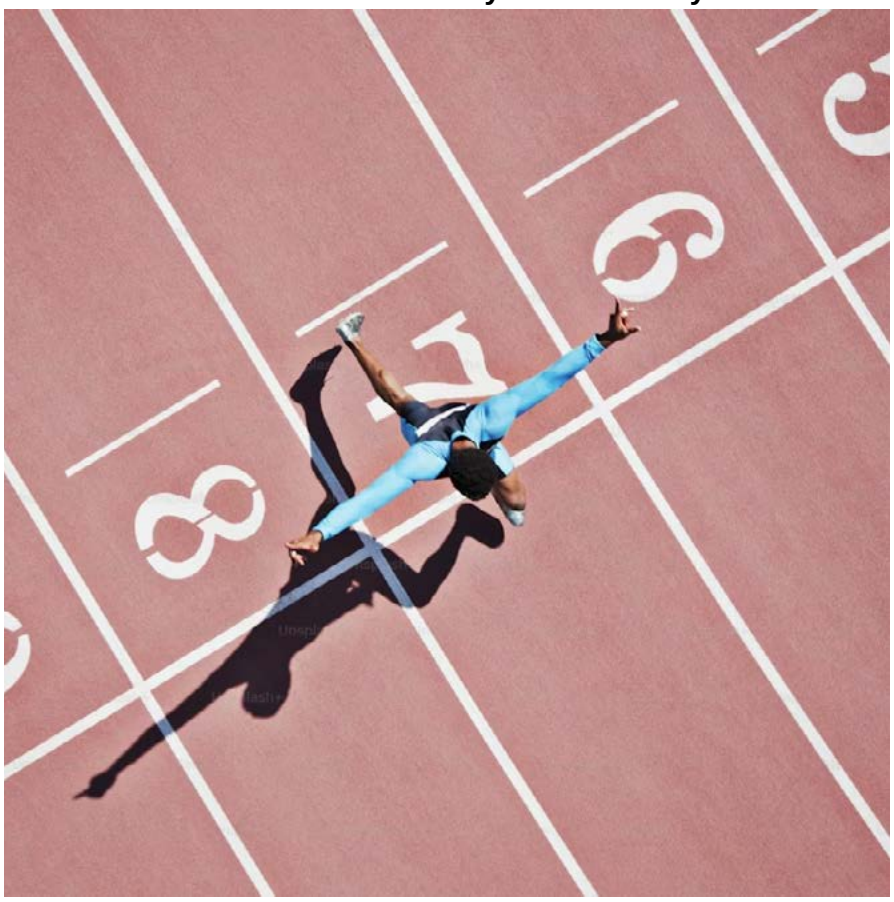
Mr. Paul Sealy
Sport Psychology Consultant,
Sport Science Lecturer
UWI Cave Hill

rhythm, emotion, and pride. These elements fuel our motivation and resilience. Yet unmanaged emotion can turn inward, creating instability under pressure. Mental periodization channels that same energy into consistency. It gives athletes a framework to convert emotional intensity into steady, composed execution. For nations with limited resources, this approach offers a high-impact, low-cost method for sustainable excellence.

Final Thoughts: Consistency by Design

Consistency is not luck. It’s engineered through disciplined mental systems. When athletes train their minds as deliberately as their bodies, performance steadiness becomes repeatable. Mental periodization transforms mindset training into a science of reliability, teaching athletes not just how to perform, but how to return to their best, again and again. Elite performance isn’t random. It’s designed. And the design begins in the mind.

By Mr. Paul Sealy



Rethinking Early Specialization: Applying the Long-Term Development Model to Volleyball Coaching in Barbados

Scholar Allen Guttmann, in his influential book From Ritual to Record: The Nature of Modern Sports (1978), identified specialization as one of the defining characteristics of modern sport, where participants develop specialized roles and skills for a specific sport or position.

In volleyball, specialization means athletes are not just choosing volleyball, they are focusing and training for specific roles such as libero, setter, wing attacker, middle blocker, or defensive specialist. According to the Fédération Internationale de Volleyball (FIVB), specialization shortens the road to success, but it can be hazardous because you are depending on a narrow set of skills rather than a broad-based foundation (FIVB, 2018). In other words, specialization can sharpen expertise but only after a solid foundation has been built. When specialization happens too early, it comes at a cost to the players who miss out on developing the full scope of technical, physical and cognitive skills that make a complete volleyball player. Early positional specialization can limit a player's long-term success and holistic growth in the sport.

Here in Barbados we've shifted toward a system that emphasizes positional roles far too early. At the youth level (very early on in the introductory stages), players are trained for a position rather than to play the game. Tall players are often placed in the 'middle', while shorter players are funneled into 'libero' roles. Resultantly, many lack a full understanding of the flow of the game and appear lost once they move beyond their designated position. These effects of early positional focus have infiltrated the national system where senior players lack fundamental skills that should have been mastered years earlier. Instead of refining advanced tactics, national

training camps often have to revisit the basics of passing, serving, movement, and game understanding.

Take for example, the Barbados senior national teams, who haven't won a Caribbean title since 2004 - 21 years ago - when both men's and women's squads did the double at home; back then Team Barbados was known as the Kings and Queens of Caribbean Volleyball. They dominated Caribbean volleyball not merely because of their raw talent, but because they were complete players with a wide range of skill sets. Players could transition between positions, fill gaps, and adapt to changing situations on court. That kind of versatility doesn't happen by chance, it comes from coaching that develops volleyball players first, not positional specialists.

So, is early positional specialization in volleyball really what's best for athletes' long-term development? According to the Long-Term Development (LTD) model, managed and promoted by Sport for Life (Canada), the answer is no. LTD, often referred to as Long-Term Athlete Development (LTAD) can make a real difference in how participants are trained in sport. The LTD model is a scientifically grounded framework for structuring training, competition, and recovery to optimize performance throughout an athlete's life (Balyi, Way, & Higgs, 2013; Sport for Life, 2023). It discourages early specialization and focuses on doing the right things at the right time, aligning training with an athlete's physical, mental, and emotional stage of growth rather than applying a one-size-fits-all approach.

The early stages of the LTD framework focus on developing physical literacy before puberty so children build the movement skills and coordination needed to be active for life. The later stages shift toward advanced preparation and specialization for athletes aiming to perform at elite levels (Sport for Life, 2023). Implementing the LTD model - through school programs, grassroots initiatives, and community clubs - is essential. Establishing a structured framework that defines what is needed at each developmental stage can create a sustainable national volleyball pathway. This ensures that when players reach national trials, they should already possess the foundational skills needed to compete at the national level.

What does coaching volleyball through the lens of the LTD model look like? It means coaching with progression and science in mind, not just experience or tradition. The Volleyball Canada's model which is an extension of the Canadian Sport for Life program, includes the following stages:

- Active Start (Ages <6): Coaching should be centered on physical literacy, creating a positive experience, and exposing children to a variety of movement patterns.
- FUNdamentals (Ages 6-9): Coaches should use a playful, activity-based approach to introduce basic volleyball skills.
- Learn to Train (Ages 8-12): Coaching should be focused on teaching foundational volleyball skills in a more structured way.
- Train to Train (Ages 11-16): Coaches should emphasize learning and developing all volleyball-related skills, not just a single position.
- Train to Compete (Ages 15-19): The focus shifts to competition, with specialized training based on the athlete's specific position.
- Train to Win (Ages 19+): Training is aimed at optimizing performance for national, regional and international competition.

When volleyball coaching is guided by the scientific principles of the LTD model, the focus shifts from producing one-dimensional players to developing adaptable, fully skilled athletes. Barbados volleyball can once again rise to the top of the Caribbean and beyond with a coaching philosophy grounded in science, driven by a long-term development model, and focused on developing well-rounded volleyball players, not just positional specialists.

By Ms. Anicia Wood

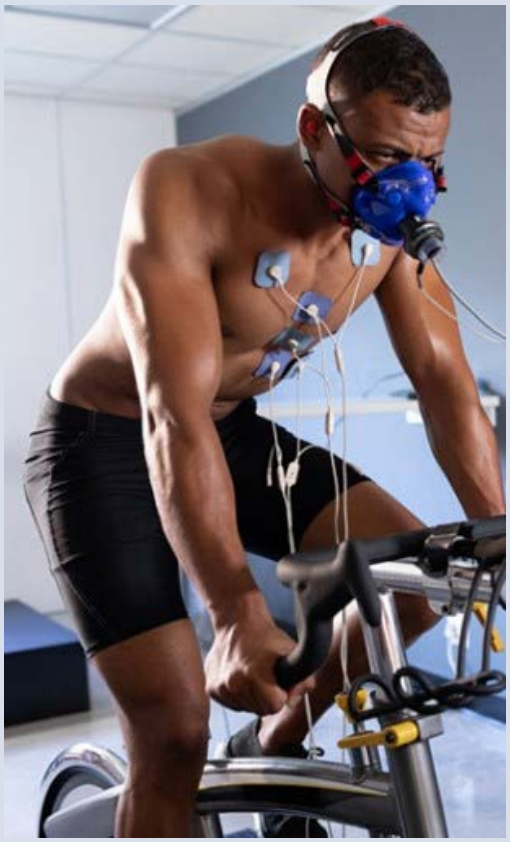
Weaving Caribbean Sports Science into an Entrepreneurial Future

Athletic talent and wisdom has stretched across the Caribbean for many decades. In many cases, it's the explosive performances that stemmed from our grassroots tracks, that have made us Olympic and World Championship contenders that inspire a whole region. Our cricketers of the past, renowned for their strong bowling and astute batting; our footballers, celebrated for their technical soundness and dynamism; our runners, feared for their explosive power and breathtaking speed; and our swimmers, who have carved a legacy of dominance through relentless efficiency in the water. Such world class talent, highlights our historic, innate and cultural understanding of movement in sport. However, while we excel at raw athletic ability, we have a profound disconnect with building supporting industries to continuously leverage such talents. We have the brains for the sport, the science, but we're not building the businesses. We're splendid at playing, but we're not creating the next big thing in sport. That potential is just sitting there, waiting for entrepreneurial transformation.

Our research into the Caribbean athlete is well-recognized, yet it remains trapped in academia, only to be read in theses, confined to specialized journal articles, and debated within the walls of our university sports science departments and biomechanics labs. Thus never reaching the full potential of commercialisation in the marketplace. We need to start spin-off ventures that can be derived from our studies on the biomechanics of bowling in high humidity or the physiological demands of a 400-meter sprint as they hold immense potential. We possess the intellectual capital but lack the crucial "innovation bridge" which may comprise of a specialized infrastructure of venture labs, mentorship, and policy incentives. This chasm between discovery and development prevents our unique insights on thermoregulation from becoming commercial ventures, leaving economic value stranded within the lab environment.

The curricular void and the narrow market lens is at the heart of the problem. It is necessary to transform how we educate our experts in the science field. Our education system produces bright and enthusiastic sports scientists, yet its narrow focus creates a critical gap. By omitting entrepreneurial literacy, intellectual property (IP) law, and business acumen from their curricula, we are systematically

training a generation for technical execution, not for economic leadership and ownership. Furthermore, we are fundamentally training for employment, not ownership, exporting the very talent and ideas that should be building local wealth and economic sovereignty for our region. More startling is that to-date our entrepreneurial mindset is limited to sporting goods, specializing in the ease of traditional retail, selling imported sneakers and various forms of gear for a mere mark-up on price. While others focus on the service side of event management, basically putting on a show. This short-sighted approach falls well below meeting our full potential of creating and exporting our own intellectual property. There is no doubt that we have the aptitude to go to the next level. We possess the human capital to develop specialized training protocols, data-driven performance apps, and wellness solutions tailored to our environment, however we lack the supporting frameworks and entrepreneurial spirit to bring them to life. Further, our ability to engineer a generation of elite sport-technology is currently hampered by a deficient evidence based approach. The absence of robust, large-scale anthropometric and physiological intelligence creates a significant barrier to the innovation process, making it challenging to substantiate product claims and achieve true market leadership. Without this data, we are guessing; with it, this data moves us to building strategic market-leading, science-



driven products for the world of athletes.

All things being equal, imagine the potential of a digital platform for talent identification built on decades of movement data from Caribbean athletes, or a recovery supplement formulated specifically for Afro-Caribbean physiology in tropical heat. This new venture creation requires building the bridges to a new future. The journey requires a clear framework. First, let's connect students. We need to create "Venture Labs" in our universities and mobile test centres for our sports clubs, where athletes can team up with sports science students, business students and engineering students. Together, they can build and test new product ideas early. Next, let's bring other stakeholders together. We need to create physical hubs, where physiotherapy clinics, research labs, and new startups can all work side-by-side. This closeness sparks collaboration and drives innovation. Finally, let's provide the right funding. I am proposing the need for a dedicated "Caribbean Sport-Tech Fund", run by experts who have an in-depth understanding of both investing and sports. This approach will provide the crucial starter money a local entrepreneur needs to conduct the research and development necessary to turn a homegrown idea into a product you can sell to the world. By building these bridges and creating these pathways, we will not only discover the next great athlete; we will create a new, high-value export industry, transforming our sports science and athletic excellence into tangible economic growth.

By Prof. Paul Pounder

Prof. Paul Pounder
Department of Business and Management
St. George's University

Hydration Considerations for Performance

Dehydration refers to the depletion of the body's water/fluids, which may compromise physiological functions. The human body requires approximately 2.7 (women) to 3.7 (men) litres of water per day to maintain proper bodily function. Exercise and physical activity acutely increase the amount of hydration required and the risk of dehydration if fluids intake is insufficient. Dehydration is common among individuals who engage in physical activity, particularly due to fluid loss through sweat. Some 30-50% of athletes reported to have experienced dehydration during exercise. This is especially true in endurance type and strenuous exercise regimens, or sport participation that exceeds 45-60 minutes. These types of exercise, by virtue of their intensity and duration, place tremendous physiological demands on the body. During periods of prolonged exercise the body can lose water at the rate of 1-2 litres per hour which is equivalent to 2-4 pounds of body weight. If fluids are not replaced at a similar rate, dehydration occurs and can become severe as the exercise duration and intensity increase.

Dehydration can lead to several physiological dysfunctions, including premature fatigue due to disturbances in energy production within the muscles (e.g., loss of electrolytes such as potassium and sodium), elevated body temperature, reduced blood volume (plasma), decreased stroke volume, electrolyte imbalances, increased heart rate, and, in extreme cases, death. Every litre of water loss from the body results in an approximate 8-beat elevation in the heartrate, a decrease in cardiac output of 1 litre per hour, and an increase in core body temperature of 0.3 degree Celsius. The body then becomes physiologically inefficient, as a result, the quality and duration of the performance decreases. Hydration then must be an important consideration for athletes and exercise enthusiasts seeking to improve or maintain high levels and quality of performance. However, consuming excessive volumes of fluid during physical activity may result in gastrointestinal distress (GD) and may slow down gastric emptying (GE). Fluid replacement must be monitored in an attempt to restore cardiac output, maintain plasma levels, and promote heat dissipation. Complicating the matter of maintaining hydration is the role of sodium, efficient gastric emptying, and the replacement of carbohydrates to restore depleted energy stores to the performing muscles.

In addition to water, electrolytes, particularly sodium, needs to be replenished. Deficiencies and/or imbalances in sodium levels lead to decreases in extracellular and intracellular sodium, which in effect causes a loss of water from the intracellular space, resulting in an inability to maintain plasma volume levels as the water is drawn to the intracellular spaces. For this reason, the national Academy of Science recommend approximately 20-30 mmols of sodium, 2-5 mmols of potassium and the presence of chlorides as an anion in each litre of water to maintain hydration. To replenish fluid levels rapidly after dehydration requires that the level of sodium (50-80 mmols) increase dramatically. Additionally, sodium maintenance allows for adequate fluid absorption in the gut, the regulation of plasma levels, the prevention of hyponatremia, beverage palatability, and ensures complete rehydration during and following exercise.

Significant to the hydration process is the ability of water and fluids to be absorbed by the permeable gastrointestinal tract, especially those of the small intestines and the colon. Glucose plays

a crucial role in this process by binding with sodium ions and acting as a co-transporter, thereby promoting sodium absorption and establishing an osmotic gradient that facilitates water absorption in the duodenum and jejunum. However, high levels of glucose reduce the rate of water absorption even though it may be replenishing depleted energy supplies. Therefore, it is important that the glucose levels be assessed to maximize the rate of water absorption as high levels may affect the rate of gastric emptying (GE), resulting in gastrointestinal distress (GD). Studies have shown that glucose levels not exceeding 8% of the total solution (e.g. sports drinks) are ideal for proper hydration and minimizes GD. Supplementary to glucose levels is that hypotonic solutions (those with lower concentration of solutes than the cells it surrounds) have been proven to increase absorption rates in the intestines whereas osmolality (active particles in a solution expressed in terms of osmoles or solutes per kilogram of solvent) is of secondary importance. Additional factors affecting gastric emptying (GE) and the rate of fluid absorption in the gastrointestinal tract include volume (increase volume promotes GE), osmolality (increase osmolality decrease GE), exercise intensity (intensity > 70-75 % VO2 max decreases GE), stress (mental stress and anxiety decrease GE), and dehydration (slows GE). At an exercise intensity of approximately 80-90% of VO2 max GE decrease by 50% of that at rest.

Any disturbance in the sodium gradient across the

lumen affects the levels of intracellular and extracellular hydration, and consequently the degree and rate of water absorption. Since hydration status can alter the sodium gradient, appropriate hydration must be a central component of any training program. However, excessive sodium intake may lead to water retention, bloating, and GD.

The literature offers several suggestions to improve hydration, and to minimize gastrointestinal distress (GD). The following are some of the most important suggestions.

1. Take fluids on regularly throughout the day (16 8oz cups for men: 12 8oz cups for women).
2. Hydrate 2-3 hours before competition or practice.
3. Maintain hydration with approximately 8oz of fluid every 15-20 minutes during activity.
4. Use sport drinks- good replacement for electrolytes and glucose.
5. Don't wait until you are thirsty to drink fluid. Excessive fluid consumption may lead to or reduce gastric emptying (GE) and increase gastrointestinal distress (GD).
6. During training athletes should experiment with fluid intake to establish an appropriate fluid intake level that works best for them.

These recommendations are important for the serious athlete, the exercise enthusiast, or the novice starting an exercise program. Given that inadequate hydration compromises physiological function and performance, these guidelines are particularly important for individuals seeking to sustain or improve their physical capabilities. For the more mature population these recommendations are of even greater importance since physiological functions become impeded as we age, therefore dehydration may cause an exasperated effect on the physiological maintenance. Ultimately, hydration should be a fundamental aspect of daily dietary practices across all population groups, as fluid loss impacts every bodily system.

By Dr. Rudolph Alleyne

Play Hard, Sleep Smart: Recovery Science for Active Kids

As the world of youth sports continue to expand, children are being trained harder at an earlier age as they are being prepared to play in the ever-increasing number of youth competitions constantly emerging. Although physical activity is important for the healthy development of growing kids, there is a vital part of the equation often overlooked and neglected: rest and recovery. For active children, rest and recovery are critical components of growth, performance and overall long-term wellbeing.

To fully appreciate the importance of rest to children, it is crucial to note that their bodies are constantly in a state of growth and development. Additionally, being physically active stimulates muscle and bone growth which increases the importance for proper rest and recovery (Gabbett et al., 2014). During rest, the body repairs muscle tissue, regulates hormones, and strengthens the immune system (Cohen et al., 2009). Moreover, sleep plays one of the most crucial roles in recovery at no expense of parents, coaches, or the children. Studies by Brooks et al. (2016) have suggested that children between the ages of 6-12 require 9-12 hours of sleep, while teenagers require 8-10 hours. Children in sleep deprived states have reported impaired coordination, a reduction in their ability to concentrate and have a greater risk of injury (Milewski et al., 2014). Mental health advocates among children have often argued that kids should be given time to decompress, process their emotions and reset following periods of intense training or competition (McCarty, 2022). Furthermore, without adequate rest, children often become irritable, anxious, and are more likely to experience burnout.

In today's youth sport landscape, children are at greater risk physically and mentally due to inadequate rest and recovery. The repetitive strain on the joints, muscles and tendons often results in injury because the body does not receive the necessary time to undergo repairs (which occurs mostly during sleep). Overuse injuries experienced by youth athletes include stress fractures, tendinitis, muscle strains and joint discomfort. In addition to these physical injuries, youth athletes have reported persistent fatigue, exhibited frequent mood swings, and lost their love for sport. Although the aforementioned factors are linked to inadequate rest, this effect is compounded if the child

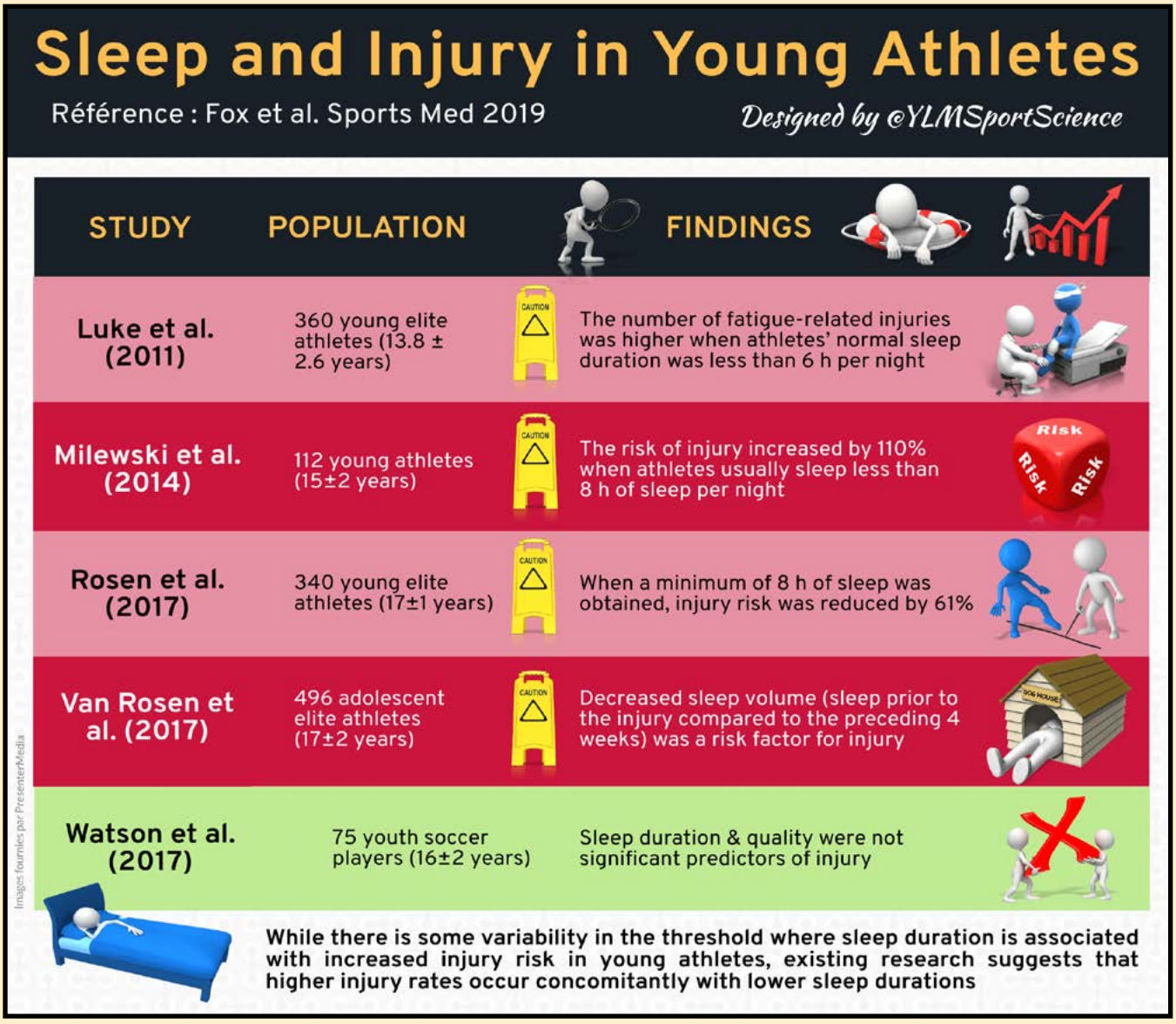
has already specialized in the sport.

Kids should not be expected to create and adhere to rest and recovery plans for themselves and are heavily dependent on parents and coaches for regulating their structured physical activity schedules. Parents and coaches are responsible for creating a healthy balance between activity and rest. They should monitor children for signs of fatigue, injury, mood changes and emotional withdrawal. As a standard guide for rest and recovery, coaches and parents should note the following recommendations.

- **Sleep:** Ensure children get the recommended hours of sleep based on their age.
- **Weekly Rest:** Schedule at least two full days from organized sport each week.
- **Active Recovery:** Incorporate light activities such as yoga, walking, and stretching into their schedules.
- **Encourage Free Play:** Unstructured physical activity provides an outlet for stress while fostering creativity in children.
- **Recovery Tools & Techniques:** Use foam rollers, ice baths, sea baths, meditation and massages to aid recovery efforts.

Rest and recovery are necessities that should be emphasized and encouraged by parents and coaches. By prioritizing sleep, downtime and creating a healthy balance between rest and physical activity, young athletes will have better performances, hormone regulation and mental wellbeing. In the long run, well rested kids are healthier, happier, more likely to enjoy sports, physical activity and remain active for life. A well-rested child has a higher sport ceiling and a greater capacity to fulfill their potential on and off the field.

By Mr. Durae Padmore



Sport Leadership in the Data Age

The science behind sport reminds us of sport's essential place in society. Over centuries the level of embeddedness may have shifted within and across global societies but our average, personal proximity to sporting activity demonstrates that it remains a core part of contemporary life. Consequently, there is a requirement that leadership within sporting organisations cultivates a culture of 'good practices' (Dawson, 2015) where data-driven decision making that is aligned to clear strategic imperatives, becomes the norm.

A successful data-driven culture must be established and championed by leadership, utilizing data, analytics and emergent, collaborative practices to inform and guide decision-making across all functional, organisational areas. Using information to improve performance and the quality of decisions is as old as time itself, but the proactive guidance set by leadership can make all the difference to performance both on and off the field of play.

It is this 'difference making' which is vital to sporting organisations, whether they are commercial, governmental, non-profit or whether they operate locally or internationally. There is a veritable competitive environment in which these entities operate, that makes it incumbent for their decision-makers to ensure the organisation's competitiveness by appropriately applying information. As sustainable competitive advantage arises from fit across activities, sporting organisations have the potential to embed sustainability through their systems of operation (Porter, 2011) by engendering a **culture of learning.**

This culture of continuous learning may often require organisational leaders to establish a shift that encourages flexibility and teamwork, moving beyond the practice of subjective assessment. Such a perspective, in an age of information proliferation and where smart phones provide individuals with 'super-computing' capacity in their pockets, can potentially move athletic and organisational performance to consistently high levels. An appropriate framework circumscribing how organisations intentionally interact with the vast information and tools at their disposal should be a priority, after first identifying 'scientia' - knowledge based on demonstrable and reproducible data (Sorell, 2016) – as a core ingredient of their success.

An interpretation of the 'Science Behind Sport' through a lens of organisational impact and administrative accountability, suggests that while scientific knowledge dictates how performance improves, management determines the strategic deployment and resource allocation necessary for success.

The analytic sophistication in the sport sphere has matured, moving leaps and bounds beyond descriptive statistics. Sport analytics now encompasses predictive and prescriptive modelling across recruitment, fan engagement, marketing and operations. Almost ten years ago the National Basketball Association (NBA) appointed one of sports' first Chief Innovation Officers when they hired Amy Brooks in November 2017 (Leaders Report, 2018). Since then, the association has never looked back and has been at the forefront of meaningful, successful change on and off the court.

Managing sporting organisations now requires fluency with change management, technological adoption and the alignment of strategic plans to optimise a glut of performance data. Such a foundational shift, affecting both volunteer-led and professionally staffed organisations, requires an environmentally sensitive perspective in which leaders are focused on cultivating a culture of learning to ensure optimal calibration of all the modern tools available for success.

By Mr. Javier Reid

Fueling the Future: The New Wave of Sports Nutrition in the Caribbean

Caribbean athletes train in heat, balance school and work, and travel across time zones and islands. They are resilient, but one thing often missing is consistent, practical sports nutrition guidance. Fortunately, that is changing. More athletes, coaches, and institutions are recognizing that nutrition is not optional, but it is an essential component of any training program for elite success. Let's start with the basics: Training creates the stimulus; nutrition creates the adaptation. An athlete who trains hard but is consistently under-fueled will not adapt well. Therefore, simple adjustments in daily eating patterns translate into noticeable improvements in training quality, recovery, and resilience across a season and throughout an athletic career.

Carbohydrates Deserve A Fair Hearing

Many athletes think cutting carbs is the fastest path to getting lean. In practice, inadequate carbohydrate availability reduces intensity, increases fatigue, and elevates cortisol, which can undermine an athlete's progress. A practical approach is to match carbohydrate intake to the day's training demand: higher for intense sessions, moderate for skill or tactical days, and lower during rest periods. This not only prevents overconsumption of carbs but also adequately maintaining energy levels throughout an athlete's career and overall daily life, even after the sporting career.

Protein is for Every Athlete, not Bodybuilders Alone

Spreading protein intake across the day, with roughly 20 g at breakfast, another 20–30 g at lunch, and regular amounts across snacks and dinner, supports recovery, muscle resynthesis from training and keeps athletes in an anabolic state. Simply, consistent changes, like adding eggs or yogurt to breakfast, yield significant returns over time for athlete's seeking to lose, maintain, or increase their muscle percentage.

Hydration in the Caribbean Climate is a Performance Variable - not A Comfort of Measure

Even mild dehydration impairs decision-making, power output, and perceived exertion. Research suggests that losing just roughly 2% of your water weight can negatively impact performance. It is therefore critical to encourage athletes to sip fluids throughout the day and use electrolytes during long sessions (over an hour) or hot sessions to reduce performance loss and aid recovery.

Common Mistakes are Usually Simple and Fixable

Some of the most common mistakes related to nutrition are skipping breakfast, training fasted too often, relying on a single evening meal, or trying to lose weight too rapidly. However, some of the simplest inexpensive fixes to these mistakes include education, routine, and small habit changes are the fastest way to fix these issues with methods such as pre-training snacks, planned recovery meals, and consistent hydration habits.

Beyond Individual Athletes, Practical Systems Matter

Clubs and programmes that create simple meal plans, offer recovery snacks at training, and schedule nutrition education sessions see quicker uptake. Even if not perfectly followed, these efforts create awareness that success involves more than just physical training. Coaches can start by normalizing brief nutrition check-ins during practice. Taking a few minutes to ask whether athletes ate, drank, and slept well before the session, builds awareness without judgement.

Cultural food practices are strengths

Local meals, such as roti, fish, rice and peas, yams, plantains, and fresh fruit are not only delicious but provide high-quality carbohydrates, proteins, and micronutrients when prepared with performance in mind. Teaching athletes to modify familiar dishes to increase protein content or add an easy recovery element makes routines sustainable and cost-effective.

Travel and competition logistics are real constraints in the region

Preparing travel-friendly snack packs, using local markets to source portable foods, and arranging simple hot meals where possible reduce the temptation to rely on fast food, as athletes can easily find themselves in such traps. Federations that plan logistics with nutrition in mind protect athlete readiness and reduce the performance impact of travel fatigue.

Importance of Coaches and Support Staff

Coaches and support staff can also use simple monitoring tools, such as a weekly food-and-sleep log, a hydration checklist, or short wellness questionnaires that flag persistent fatigue. These low-cost interventions allow staff to prioritize athletes who need immediate support and design small, targeted corrections rather than blanket recommendations. An individualized approach for those who are falling short in performance can aid the team's overall performance and likelihood of championships.

Conclusion

In summary, the future of Caribbean sport depends as much on what athletes eat and how they recover as it does on their drills, techniques and strength and conditioning. Nutrition is a practical lever coaches can pull to extract more consistent performance from talented athletes. When applied with cultural sensitivity, logistical planning, and consistent messaging through appropriate and guided information to the athletes, sports and performance nutrition becomes a competitive advantage accessible to nearly every sporting programme imaginable.

By. Mr Joseph Parris

UPCOMING EVENTS

Caribbean Sport Conference

Date: April 9 - 11, 2026

Location: Usain Bolt Sports Complex

[Register here]

Get ready—The Caribbean Sport Conference is back at UWI Cave Hill, igniting the region with the bold theme **"Sport for All: Access, Inclusion, Opportunity!"** This year, we're turning up the energy as we explore how sport can drive real social change, break barriers, and open doors for everyone. From electrifying keynotes to powerful panels and hands-on sessions, join the movement to make sport a force for unity, empowerment, and opportunity across the Caribbean and beyond!

KEYNOTE: PROFESSOR EMILY ROPER

Professor Roper is a trailblazing multidisciplinary researcher and visionary leader in sport and exercise psychology, sport sociology, cultural studies, and gender studies. Her groundbreaking work explores how gender shapes experiences, cultural narratives, and societal structures in sport and physical activity. Her influential research has been featured in leading publications such as Research Quarterly for Exercise and Sport, The Sport Psychologist, Sex Roles, Research in Dance Education, Women in Sport and Physical Activity Journal, Journal of Applied Sport Psychology, and Athletic Insight.

UPCOMING EVENTS

2026 UWI Hockey Scrimfest Championship
Date: February 18 - 22, 2026
Location: Usain Bolt Sports Complex

Get Ready, Barbados!
The 2026 UWI Hockey Scrimfest Championships are coming and this 16th edition is set to be the biggest, boldest, and most electrifying one yet!

What started as a spirited clash between UWI, BCC, SJPI, and Combined Schools has exploded into a national spectacle, now featuring top-tier local clubs and custom-built dream teams. And this year? We're turning up the heat even more.

For the first time ever, we're opening the gates to international teams, raising the stakes, the skill level, and the spotlight on Barbadian hockey like never before.

This isn't just a tournament. It's a movement, a celebration, and a showdown that the entire Barbados hockey community has been craving.

For more information contact:
Organizer: Mr. Shane Lewis
Email: shane.lewis@uwi.edu
Call: (246)-417-7405

UPCOMING EVENTS

UWI Relay Fest & Track Extravaganza
Date: February 27 - 28, 2026
Location: Usain Bolt Sports Complex

On Your Marks - Brace yourself for two electrifying evenings where the thrill of track and field meets the pulse of live entertainment! The UWI Relay Fest & Etravaganza is not just a meet, it's a celebration of athleticism, rhythm, and pure adrenaline.

From the tiniest titans in the Under-9s to the seasoned warriors in the Seniors, this event will showcase non-stop action across all age groups. Expect high-octane relays, fun challenges, and a dedicated entertainment segment that will keep the energy soaring between races.

Whether you're a die-hard track fan or just in it for the vibes, UWI Relay Fest promises unforgettable moments, fierce competition, and a festival atmosphere like no other.

For more information contact:
Organizer: Mr. Aundrea Wharton
Email: aundrea.wharton@uwi.edu
Call: (246)-417-4212