OPTIMIZING PERFORMANCE—STRATEGIC APPROACHES TO NUTRITION FOR SOCCER PLAYERS

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Soccer is viewed as a competitive sport that necessitates well-planned tactics, technical skills, and the seamless integration of physical and mental elements in the pursuit of victory (10). Soccer is a physical-demanding sport that entails a multitude of high-intensity activities (56). On average, a full-back covers a distance of 10 – 13 km, which could consists of two kilometers at high intensity actions (53). Additionally, athletes frequently engage in rapid directional changes, such as during acceleration, deceleration, and sprinting (56). Furthermore, athletes must be in peak physical condition, as the maximum heart rate during a game or practice can exceed 85% intensity (4). Soccer can be classified as an intermittent sport characterized by repeated high-intensity actions and a wide spectrum of skills (47). These repeated exertions can lead to elevated blood lactate levels exceeding 25 mmol·g−1·s−1, which may inhibit performance (28). Fatigue during training sessions, mainly in activities lasting over 90 min, can have a myriad of consequences, including reductions in creatine levels, glycogen stores, and dehydration may contribute to decreased performance (9).

The purpose of this article is to emphasize the critical need for a nutrition strategy that aligns with the specific demands inherent in the sport of soccer. Recognizing and addressing these nutritional requirements can significantly impact the overall performance, endurance, and recovery of soccer players, ensuring optimal physical condition for both training and competitive matches. It is important to understand that nutrition plays a pivotal role in the healing and repair processes, as well as in fostering adaptation and growth during training and maturation (48). Additionally, athletes may undergo a comprehensive examination, including a Physical Activity Readiness Questionnaire (PAR-Q) evaluation, blood tests, needs analysis, and body composition assessment. These checks will aid in apprehending an athlete's caloric needs and the appropriate ratios of proteins, carbohydrates, fats, and hydration necessary for maintaining a healthy and optimal condition.

ASSESSING ATHLETES NEEDS ANALYSIS, PAR-Q QUESTIONNAIRE, AND DETERMINING ENERGY NEEDS FOR PHYSICAL ACTIVITY

This article elucidates how strength and conditioning coaches can proficiently profile and recommend essential nutritional requirements by considering variables such as caloric intake and expenditure, protein, fats, and carbohydrate consumption, as well as anthropometric and body composition parameters. Tables 1 and 2 exemplify the manner in which the pertinent data could be systematically profiled. Similarly, nutrition can have an effective influence on intrinsic factors that may increase performance and reduce the risk of injury (55). These intrinsic characteristics can be organized into non-modifiable aspects, such as metabolic rate, gender, injury history, position/role, and age (55). In contrast, modifiable factors include strength, endurance, mobility, flexibility, and workload (8). Additionally, it is possible that injuries may result from extrinsic factors, including the type of playing surface and opponent movements that can expose athletes to muscular injuries (55).

A PAR-Q or other questionnaires could be administered to collect and understand details about the athlete's medical history to evaluate the potential risk of injury and cardiovascular issues, all of which can have adverse effects on performance and health (Appendix 1) (19). The information from the questionnaire enables the strength and conditioning coach and the nutritionist to consider their athletes' medical history when prescribing foods and supplements, ensuring personalized and effective dietary recommendations (47). Significantly, the utilization of blood testing can identify specific athlete needs, aiding in addressing deficiencies or unhealthy biomarkers through supplements or tailored nutrition (42). This method enhances personalized dietary strategies for optimal performance. Insufficient nutrition, poor energy availability, and a lack of crucial athlete information are well-documented risk factors that may result in athletes missing training and competitions (41,52). Creating a personalized diet plan involves evaluating your level of physical activity, which pertains to the movement of the body's skeletal muscles that leads to the use of energy (Table 2). Body composition refers to the proportion of fat and non-fat mass in the body. This procedure involves examining the makeup of various bodily tissues, including muscles, bones, and fat. Body composition analysis provides insights into overall health and fitness by revealing factors like excess fat accumulation and energy needs. Low body fat percentage (bf%) is preferred in many sports, including soccer (34). Dual-energy X-ray absorptiometry (DEXA) can be used to determine bf% and it is also known as gold standard and reliable when standardized procedures are followed (35).

Resting metabolic rate and total energy expenditure are used to calculate energy expended by the body at rest in order to maintain basic physiological functions such as breathing, circulating blood, and maintaining body temperature (15,34,45). Lastly, the Cunningham equation is considered more accurate than some older formulas, taking into account both fat-free mass and fat mass (21). Fat-free mass accounts for 70% of energy expenditure (24). Please refer to Table 3 for the typical total calories needed during the pre-season. Refer to Tables 1, 2, and 3 for details and an example athlete profile.

CARBOHYDRATES

Given that the hypothetical athlete in this scenario plays soccer and engages in 90 min of daily training at a moderate to high intensity, it is recommended that the athlete aim to consume approximately 5 – 10 g of carbohydrates (CHO) per kilogram of bodyweight (9,13). Carbohydrates serve as a source of energy and are stored as glycogen in the muscles and liver (13,47). The positive impact of adequate CHO availability on high-intensity training is well-established (9). Importantly, it has been suggested that CHO can enhance aerobic endurance performance in high-intensity intermittent events by delaying the time to exhaustion (3). It is also

TABLE 1. EXAMPLE ATHLETE PROFILE (55)

FACTORS	NON MODIFIABLE	EXAMPLES	MODIFIABLE	EXAMPLES
Intrinsic	Sex	Male	Weight	70 kg
	Height	177 cm	Body fat %	13%
	Age	19 years	Strength	Can lift two times bodyweight in the deadlift and squat
	Previous injury	None	Flexibility	Needs to work on hamstring range of motion
	Dominant leg	Right foot	Fitness level	Excellent yoyo score of 19.5 level
			Psychological	Determined/motivated
Extrinsic	Training level	Experienced high level	Workload	High
	Playing position	Forward	Training load/duration	60 – 90 mins per day
	Playing activity	Full time	Training location	Turf/grass/gym
	Season	In-season	Equipment	Soccer/gym equipment
	Climate	Hot/humid	Frequency of practice	5 days per week
			Frequency of games	2 games per week
			Frequency of strength sessions	2 – 3 per week
NEEDS ANALYSIS				
Sport	Soccer	Requires running, change of direction, speed, and power		
Training age	Advanced	Able to perform basic primal movement effectively		
Athlete profile	Active	Coming from off-season, training regularly 5 days a week and 1 – 2 sessions a day		
Past Injuries	No	Requires strength, nutrition, sleep, and training load management		
Season	Pre-season	Focus on maintaining strength, bodyweight, body fat percentage, nutrition, and hydration levels		

reported that higher glycogen levels can spare protein for fuel, reducing muscle breakdown (47). Furthermore, having a greater amount of muscle glycogen stores can delay fatigue by 10 – 20% in aerobic sports (9).

Conversely, inadequate glycogen stores can lead to a 10% decline in speed or power production, which is undesirable for athletes during training (9). However, ergogenic aids can enhance glycogen stores, but training is another means of increasing natural glycogen capacity due to increased muscle growth and size (9,28). The biogenesis of mitochondrial cells is a critical aspect of adaptation that enables athletes to train at higher intensities and submaximal levels for extended durations (31). Strength and conditioning coaches can ascertain the appropriate CHO intake based on the Dietary Guidelines for Americans, which recommends that CHO constitute 45 – 65% of total daily caloric intake (22). For example, 50% of 2,000 calories = 0.50 * 2000 = 1,000 calories from CHO. Because one gram of CHO provides four calories, in this scenario an athlete would need 1,000 / 4 = 250 grams of CHO.

PROTEIN

Protein, recognized primarily as a fundamental building block of cells, plays a crucial role in maintaining and repairing cellular structures, facilitating the transport of essential hormones, and contributing to various metabolic processes (47). Given the multifaceted demands of soccer, which encompasses elements of strength, anaerobic power, and aerobic capacity, the athlete's dietary protein intake should ideally fall within the range of 1.4 – 2 g per kg of bodyweight (47,50,53). The percentage of total daily calories from protein is generally recommended to be around 10 – 35% of total daily. Twenty percent of 2,000 calories = 0.20 * 2,000 = 400 calories from protein (47). Because one gram of protein provides four calories, in this scenario an athlete would need 400 / 4 = 100 g of protein.

To delve deeper into the dynamics of protein metabolism in the context of soccer, it is essential to consider the concept of the anabolic window, a period during which elevated protein intake can stimulate muscle protein synthesis while attenuating muscle breakdown (23). Leucine, an essential branched-chain amino acid,

TABLE 2. PHYSICAL ACTIVITY (15)

PHYSICAL ACTIVITY LEVEL (PAL)	EXAMPLES	PHYSICAL ACTIVITY COEFFICIENT (MALES/ FEMALES)
Sedentary (>1.0 – 1.4)	Common activities of daily living (ADLS)	1.00/1.00
Low active (1.4 – 1.6)	ADLS and 30 – 50 min of daily moderate activity	1.11/1.12
Active (1.6 – 1.9)	ADLS and >1 hour of daily moderate activity	1.25/1.27
Very active (1.9 – <2.5)	ADLS and >1 hour of daily moderate activity and 1 more hour of vigorous activity or 2 hours of moderate activity	1.48/1.45

TABLE 3. BODY COMPOSITION, WEIGHT, TOTAL ENERGY EXPENDITURE, AND CUNNINGHAM FORMULA (45)

CUNNINGHAM EQUATION: RMR = 500 + 22(FFM IN KG)	
Bodyweight	70 kg
Body fat%	12%
Resting metabolic rate (RMR)	70 – 12%
RMR	62 fat-free mass
RMR	500 + 22(62)
RMR	1355.2 + 500
RMR	1855.2
Physical activity	1.8
Total energy expenditure	1,855.2 x 1.8
Total energy expenditure	3,339.36 calories

TABLE 4. RECOMMENDED NUTRITIONAL RANGE (9,13,44,47)

	CHO	PROTEIN	FAT	FLUID
RECOMMENDED RANGE	5 – 10 g	1.4 – 2 g	20 – 35%	2 – 4 L per day
	364 g	140 g	581 g	

plays a notable role in promoting a positive net balance in muscle protein synthesis (50). Approximately 2 – 3 g of leucine before and after training will positively impact protein synthesis primarily attributed to activating a signalling pathway called the mammalian target of rapamycin (46). Furthermore, protein consumption after training sessions can extend its impact on muscle protein synthesis for up to 48 hr, underlining the importance of post-training nutrition (37).

For athletes, the quantity of protein per meal is a critical consideration. It is recommended that an intake ranging from 20 – 48 g of protein per meal can significantly influence acute muscle protein synthesis, contributing to the recovery and adaptation process (23). These insights underscore the significance of protein in an athlete's diet, not only for cellular maintenance but also for optimizing performance and recovery in sports like soccer, where multifaceted physical demands are at play.

FATS

Fat, often referred to as lipids, can exist in various forms, including triglycerides, fatty acids, phospholipids, and cholesterol (47). Compared to CHO stores, the body's fat reserves are considerably larger and can serve as a significant source of energy during exercise (28). Fat utilization occurs significantly when athletes are engaged in low-intensity activities (14). Target consumption for fat should be around 20 – 35% of caloric intake. This percentage range is in line with recommendations from health organizations like the American Heart Association and the Dietary Guidelines for Americans (2). Fat can provide nine calories per gram. If this athlete consumes 3,396 calories, he would need 30% of calories from fat, which is 1,018 calories from fat (0.3 x 3396). Divide 1,018 by nine to get approximately 113 g of fat (47). Saturated and trans fats should be consumed sparsely; however, unsaturated fats (monounsaturated and polyunsaturated fats) are better alternatives as they are a good sources of healthy fats.

HYDRATION

Hydration is of paramount importance for athletes, and strength and conditioning coaches and nutritionists should maintain vigilant oversight of the athletes' hydration status (47). The recommendations for daily fluid intake for athletes are 30 – 35 mL per kg of bodyweight (44). The amount of water required for the athletes can be calculated by the daily fluid intake, calculated as 70 kg multiplied by the range of 30 – 35 mL/kg and is estimated to be between 2,100 – 2,450 mL (1).

Particularly in hot and humid climates, profuse sweating can lead to hypohydration, a condition characterized by an elevation in body temperature, a decrease in blood plasma volume, and an increase in heart rate (26,32). Even a relatively modest degree of dehydration, ranging from 2 – 3%, can result in weight loss, which in turn can elevate the risk of heat-related conditions such as heat strokes, while also impairing neuromuscular control and endurance performance (44).

Sodium plays a vital role in the regulation and maintenance of bodily fluids (40). The primary electrolytes lost in sweat include sodium chloride, potassium, magnesium, and calcium, which all have the potential to negatively impact muscle contraction (47). Furthermore, athletes can lose sodium at varying rates, with sweat sodium concentrations ranging from 0.2 – 12.5 g per L (26). To compensate for these losses, athletes should incorporate foods and beverages containing electrolytes and sodium into their diets (12).

Inadequate hydration, especially when relying solely on water, may dilute blood sodium levels to dangerously low levels, a condition known as hyponatremia (12). Hyponatremia can result in cellular dysfunction, leading to symptoms such as nausea, muscle cramps, seizures, and, in extreme cases, a risk of death (47). Preventative measures to mitigate the risk of hyponatremia include ensuring athletes consume adequate fluids while not exceeding their sweat losses (12). Additionally, athletes can monitor changes in their weight before and after training sessions and consider incorporating sports drinks containing sodium into their hydration strategy (12,47).

CRITICALLY EVALUATING SUPPLEMENTS

Nutritional supplements represent a common approach adopted by many athletes to enhance their performance. However, it is important to recognize that while some supplements can be safe and beneficial for soccer performance, there are potential risks associated with illegal substances in their supplements (17,29).

To ensure that athletes can avoid the risk of being banned from their sports and maintain their health, a prudent approach for strength and conditioning coaches and nutritionists is to prioritize real food and recommend legal supplements (17). These supplements can be conveniently sourced online through organizations such as the Informed Choice and Banned Substance Control Group (17). This method supports a balance between optimizing performance and understanding the rules and regulations that govern sports.

Notably, blood testing could help determine whether athletes require supplements or other food if there are any deficiencies or unhealthy biomarkers (42). Biomarkers are used to assess the effect of exercise on various biologic systems (5). For example, these markers may be abnormal creatine kinase levels and myoglobin that indicate muscle damage (5). Moreover, assessing the levels of inflammation, such as interleukins and C-reactive protein, would be equally important to analyze (5). Furthermore, blood testing can help identify low energy availability, which diminishes the capacity to adapt from training and can cause bone injuries (41). Vitamin D and C deficiency are known to lower immunity, muscle repair, and bone health (42).

TABLE 5. SUPPLEMENTS FOR SOCCER PERFORMANCE (29)

SUPPLEMENTS	DOSE	HEATH EFFECTS	PHYSIOLOGICAL MECHANISM
Creatine	3 – 5 g per day	Increase muscle strength and power	Increases muscle creatine content
			Facilitates muscle phosphocreatine resynthesis
			Muscle glycogen resynthesis
			Increases resistance training workload
Amino acids	5 – 8 g per day	Increases muscle volume/fat-free mass	Stimulates muscle amino acid uptake
			Stimulates muscle protein synthesis and insulin release
		Stimulates recovery from exercise	Stimulates muscle glycogen resynthesis
Caffeine	3 – 9 g/kg	Enhances endurance performance	Stimulates lipolysis and muscle fat oxidation rate
		Stimulates reaction time	Stimulates exogenous carbohydrate oxidation
		Mental alertness	Increases heart rate

STRATEGIC NUTRITIONAL PERIODIZATION

In the context of soccer, athletes can achieve satisfactory performance when they can efficiently produce the chemical energy needed for endurance and speed throughout the match (15). This efficient energy supply relies on the contribution of the phosphagen, anaerobic glycolysis, and oxidative energy systems (15). However, a challenge arises as these energy systems tend to become depleted after prolonged periods, typically exceeding 90 min (28). When athletes struggle to appropriately fuel their training, there arises a need for a well-structured nutritional strategy to address these issues (15). Such challenges can be compounded by factors such as inadequate blood flow to the stomach and the release of catecholamines, which can elevate heart rate and muscle contractions (46). Additionally, excessive calorie consumption during the in-season phase can lead to gastrointestinal issues (GI) (46). Therefore, strength and conditioning coaches should provide athletes with the right types of food at the correct times and in appropriate quantities to prevent GI problems (46). A periodized training schedule can assist strength and conditioning coaches in planning healthy approaches to support training outcomes (49). Furthermore, it is important to solicit feedback from athletes if they exhibit signs of GI distress.

The pre-season phase in soccer is primarily focused on developing lean body mass (LBM), enhancing metabolic capacity, and improving muscular endurance (27). However, it is worth noting that our sample athlete currently has a lower LBM percentage (12%), but still requires an adequate calorie intake to meet the demands of training. As strength and conditioning coaches and nutritionists, it is essential to be flexible and capable of adjusting an athlete's calorie intake, especially if there are challenges in consuming higher quantities of food. In the pre-season, the physical activity level is classified as 1.6 – 1.9 (15). To support these training objectives, daily carbohydrate intake should amount to 6 g per kg of bodyweight during the preparatory cycle (15,27). In addition, daily protein intake should reach 1.9 g per kg to facilitate muscle mass development, considering the high training volume (Tables 6 and 7) (15,27,45,47).

In the first transition and competition, the energy expenditure will change because the physical objectives are higher in intensity and usually include improving strength, power, and speed (27). The physical activity chart is 1.9 for this phase of the season (15). The modification of CHO requirements will be in a higher range because of the number of matches played compared to pre-season (27). Therefore, the CHO content should be seven grams per kilogram of bodyweight (15). Protein intake should be aimed at two grams per kilogram of boyweight because of the high-intensity nature of soccer (15,47). Additionally, the specific intent is to control extreme dehydration; for example, losing more than two percent bodyweight due to sweat loss, exercise intensity, and environmental conditions (Tables 8 and 9) (15,45,47).

The off-season is generally a period of active restoration that involves leisure activities or light training and typically spans 1 – 4 weeks (11). According to the physical activity chart, light exercise is defined as 30 – 60 min of moderate training with a rating of 1.4 – 1.8 (15). This phase is characterized by lower energy expenditure requirements for the athletes (27). Consequently, the recommended daily CHO intake for this athlete is reduced to a range of 3 – 5 g/kg of bodyweight, which should be sufficient to support light endurance and strength training sessions (47). Similarly, the protein intake is adjusted to approximately 1.2 – 1.6 g/kg to align with the demands of light endurance and strength exercises (47). Tables 10 and 11 provide specific details and recommendations.

TABLE 6. PRE-SEASON CALORIE CALCULATIONS (45)

CUNNINGHAM EQUATION: RMR = 500 + 22(FFM IN KG)	
Bodyweight	70 kg
Body fat%	12%
RMR	70 – 12%
RMR	62 FFM
RMR	500 + 22(62)
RMR	1,355.2 + 500
RMR	1,855.2
Physical actvity	1.8
TEE	1,855.2 x 1.8
TEE	3,339.36 calories

TABLE 7. PRE-SEASON PROTEINS, CHO, AND FATS (47)

MACRONUTRIENTS: PRE-SEASON		
Protein	1.9 g/kg x 70 kg = 133 g	
CHO	6 g/kg x 70 kg = 420 g	
Fat	?	
Protein calories/ gram (10 – 35%)	4 x 133 g = 532/3,339.36	15%
CHO calories/ gram (45 – 65%)	4 x 420 g = 1,680/3,339.36	50%
Fat calories per gram (20 – 35%)	532 + 1,680 = 2,212	
Fat	3,339.36 – 2,212	
Fat	1,127.36/3,339.36	
Fat	33.76	34%

TABLE 8. IN-SEASON CALORIE CALCULATIONS (45)

CUNNINGHAM EQUATION: RMR = 500 + 22(FFM IN KG)	
Bodyweight	70 kg
Body fat%	12%
RMR =	70 – 12%
RMR =	62 FFM
RMR =	500 + 22(62)
RMR =	1,355.2 + 500
RMR =	1,855.2
Physical activity =	1.9
TEE =	1,855.2 x 1.9
TEE =	3,524.88 calories

TABLE 9. IN-SEASON PROTEINS, CHO, AND FATS (47)

MACRONUTRIENTS: IN-SEASON		
Protein	2 g/bw x 70 kg = 140 g	
CHO	7 g/bw x 70 kg = 490 g	
Fat	?	
Protein calories/ gram (10 – 35%)	4 x 140 g = 560/3,524.88	16%
CHO calories/ gram (45 – 65%)	4 x 490 g = 1,960/3,524.88	56%
Fat calories per gram (20 – 35%)	560+1,960 = 2,520	
Fat	3,524.88 – 2,520	
Fat	1,004.88/3,524.88	
Fat	28.51	28%

TABLE 10. OFF-SEASON CALORIE CALCULATIONS (45)

CUNNINGHAM EQUATION: RMR = 500 + 22(FFM IN KG)	
Bodyweight	70 kg
Body fat%	12%
RMR	70 – 12%
RMR	62 FFM
RMR	500 + 22(62)
RMR	1,355.2 + 500
RMR	1,855.2
Physical activity	1.6
TEE	1,855.2 x 1.6
TEE	2,968.32 calories

TABLE 11. PROTEINS, CHO, AND FATS (47)

MACRONUTRIENTS: OFF-SEASON		
Protein	1.8 g/bw x 70 kg = 126 g	
CHO	5 g/bw x 70 kg = 350 g	
Fat	?	
Protein calories/ gram (10 – 35%)	4 x 126 g = 504/2,968.32	17%
CHO calories/ gram (45 – 65%)	4 x 350 g = 1,400/2,968.32	47%
Fat calories per gram (20 – 35%)	504 + 1,400 = 1,904	
Fat	2,968.32 – 1,904	
Fat	1,064.32/2,968.32	
Fat	35	35%

COMPETITION DAY NUTRITION

Providing a nutrition plan would guide the athlete to meet their nutritional needs, especially before and after match day. A CHO-rich meal and extra hydration hours before the event can elicit muscle glycogen levels to help athletes in intermittent sports (9). Hydration will be equally essential to regain lost weight and reduce the chances of dehydration (32). After the competition, a high protein intake would stimulate protein synthesis to aid in recovery by increasing muscle protein synthesis (50). One day before match day one (MD-1) and on MD+1, CHO intake should be increased to 6 – 8g/day/kg of body mass. Approximately 1 – 4 hr before MD-1, the athlete should consume 1 – 3 g/kg to replenish liver glycogen stores (20). For hydration 2 – 4 hours before the match, it is advisable to consume 5 – 7 mL/kg of fluid. During halftime, the ahtlete may want to consider consuming 30 – 60 g of CHO. After the match is over, to replenish glycogen stores and initiate recovery, it is recommended to consume one gram of CHO and 20 – 25 g of protein (Table 11) (20).

CONCLUSION

Strength and conditioning coaches and nutritionists are responsible for helping athletes to maintain adequate levels of hydration and electrolytes and receive the right energy intake through the appropriate balance of proteins, CHO, and fats. It is crucial to emphasize that while strength and conditioning plays a significant role, the primary responsibility lies with a qualified nutritionist. Their main task is to ensure adherence to nutritional guidelines, underscoring the importance of their expertise in meeting these standards effectively. This approach is essential for maximizing the adaptations that result from training. Moreover, it is crucial to recognize that each distinct cycle within the periodization model should have a well-structured dietary strategy to facilitate the smooth occurrence of positive adaptational processes. Macronutrient ratios should be scientifically designed to ensure optimal nutrition along with realistic hydration levels, allowing athletes to optimize their pre-competition meals. Post-competition nutrition is equally important, as it helps in achieving

TABLE 12. PRE-COMPETITION MEAL AND HYDRATION PLAN (15)

4 hours before competition or more	4 g of CHO per kg of bodyweight
Breakfast and lunch	1 g of protein per kg of bodyweight
	700 – 800 mL of water
2 hours before competition	1 g of CHO per kg of bodyweight
	400 – 600 mL of water or sports drink
1 hour before competition	30 – 60 g CHO or 0.5 g of CHO per kg bodyweight
During halftime	460 – 690 mg sodium
	75 – 195 mg of potassium
	Drink about 200 mL of water if possible
Post-training or post-competition	Consume 1.5 L of water for kg of bodyweight lost
	For example: 2% drop of weight = 69 kg; therefore 1.5 x 2
	Drink 3 L of water gradually
Dinner	Within 30 or 40 min, have 20 – 35 g of protein (0.48 g/kg of bodyweight)
	1 – 1.5 g CHO per kg of bodyweight
	34 g (0.48 g/kg of bodyweight)

APPENDIX 1. PAR-Q (19)

QUESTION	YES	NO
Has your doctor ever said you have a heart condition and that you should only do physical activity recommended by a doctor?	[ ]	[ ]
Do you feel pain in your chest when you do physical activity?	[ ]	[ ]
In the past month, have you had chest pain when you were not doing physical activity?	[ ]	[ ]
Do you lose your balance because of dizziness or do you ever lose consciousness?	[ ]	[ ]
Do you have a bone or joint problem (for example, back, knee, or hip) that could be made worse by a change in your physical activity?	[ ]	[ ]
Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?	[ ]	[ ]
Do you know of any other reason why you should not do physical activity?	[ ]	[ ]

recovery and adaptation, while reducing the likelihood of illness and injury. During the competition, maintaining proper fluid and electrolyte levels in athletes is imperative to prevent dehydration and hyponatremia, allowing athletes to continue performing at their best. Finally, a well-designed diet may contribute to enhancing athletes' overall health by closely monitoring their blood profiles and body composition, ultimately leading to improved training adaptations and performance outcomes.

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Varun Ghosh is an experienced strength and conditioning coach based in India with a passion for optimizing athletes' performance. He earned a Master of Science degree in the Science of Coaching and Performance, along with a Bachelor's degree in Sport Science. Ghosh holds several certifications, including the Certified Strength and Conditioning Specialist® (CSCS®) certification through the National Strength and Conditioning Association (NSCA). He is an accredited coach with the Australian Strength and Conditioning Association (ASCA) and a Level 1 Functional Movement Screen (FMS) practitioner. Throughout his career, he has worked with elite and semi-professional setups in cricket. Notably, he contributed significantly to the development of players with the state teams of Bengal and Mizoram. Additionally, he served as a strength and conditioning coach for national camps at the National Cricket Academy, endorsed by the Board of Control for Cricket in India (BCCI). Presently, Ghosh is the Lead Strength and Conditioning Coach at Reliance Foundation Young Champs. In this role, he focuses on creating athletic and robust footballers for the Indian Super League, nurturing young talent and molding them into exceptional athletes capable of competing at the highest level.

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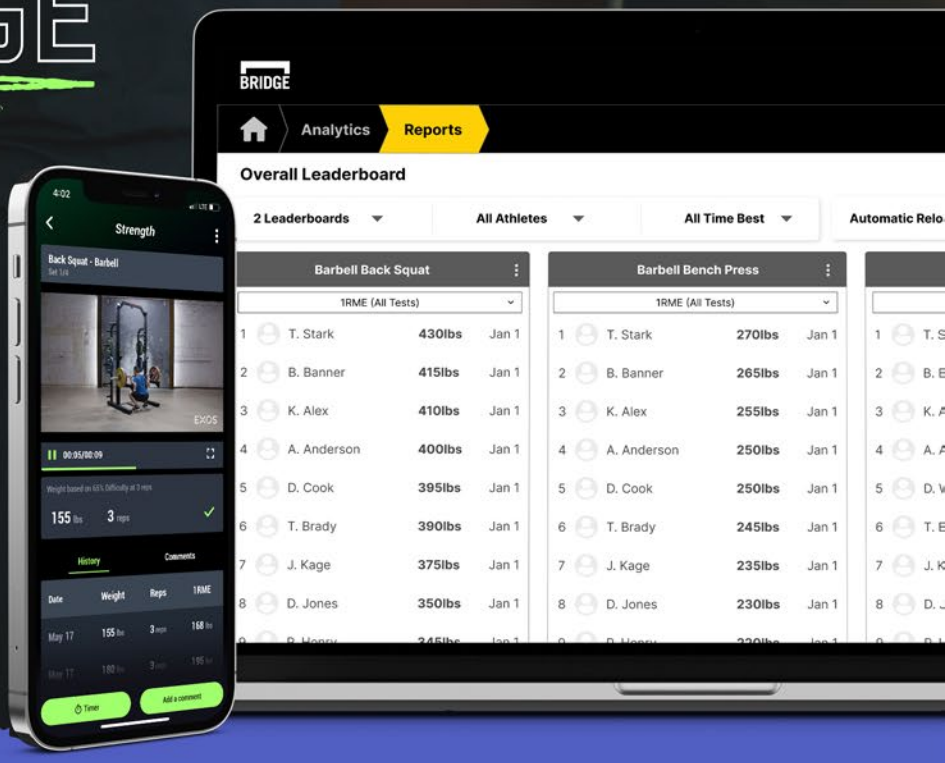

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