SPORTS DIETITIAN
SPORTS NUTRITION

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• DIETETICS

• SPORTS DIETETICS

- Dietetics is the practical application of nutritional science that supports the maintenance of health and the treatment of diseases.
- It is a healthcare discipline that utilizes nutrition to maintain health, prevent disease, and treat existing conditions (dietotherapy).

- Sports dietetics is a discipline specifically focused on enhancing athletic performance, facilitating recovery, and addressing the individual goals of athletes.
- It is a specialized branch of dietetics.
- Beyond prioritizing health, its primary objectives are to maximize athletic performance, reduce the risk of injury, support training adaptation, and ensure faster recovery.

WHERE AND WHEN DO WE USE THEM?

THE TWO AREAS PROVIDE ASSISTANCE IN DIFFERENT ENVIRONMENTS AND FOR DIFFERENT PROBLEMS:

- **Specialty: Dietetics (Clinical / General)**
- Primary goal: Health maintenance, disease management, weight loss/gain
- Target audience: Anyone from infants to the elderly; people with chronic illnesses.

- **Specialty: Sports Dietetics**
- Primary goal: Performance enhancement, recovery, body composition optimization.
- Target audience: Elite athletes, amateur competitors, individuals with an active lifestyle.

WHERE AND WHEN DO WE USE THEM?

THE TWO AREAS PROVIDE ASSISTANCE IN DIFFERENT ENVIRONMENTS AND FOR DIFFERENT PROBLEMS:

SPECIALTY: DIETETICS (CLINICAL / GENERAL)

- **Common areas of application:** Hospitals, clinics (post-surgery, artificial nutrition)
- • Metabolic disorders (diabetes, insulin resistance)
- • Gastrointestinal issues (IBS, food allergies, reflux)
- Cardiovascular diseases (high blood pressure)
- **Key focus areas:** Laboratory results, clinical symptoms, replenishing nutrient deficiencies

SPORTDIETETICS

- **Common areas of application:** Sports clubs and national teams (team and individual meal plans)
- **Preparation periods**
- Competition-specific strategies (pre-competition carbohydrate loading)
- Refueling and hydration (replenishment during and after training)
- **Key focus areas:** Training plan, nature of the sport (endurance/strength), timing, meal planning.

WHY ARE THEY IMPORTANT?

- In the general population, poor nutrition can lead to chronic diseases (e.g., obesity, heart disease), whereas in athletes, it can result in reduced performance, premature fatigue, and injuries.

- Experts help achieve desired goals through personalized dietary advice, education, and precisely calculated nutrient ratios.

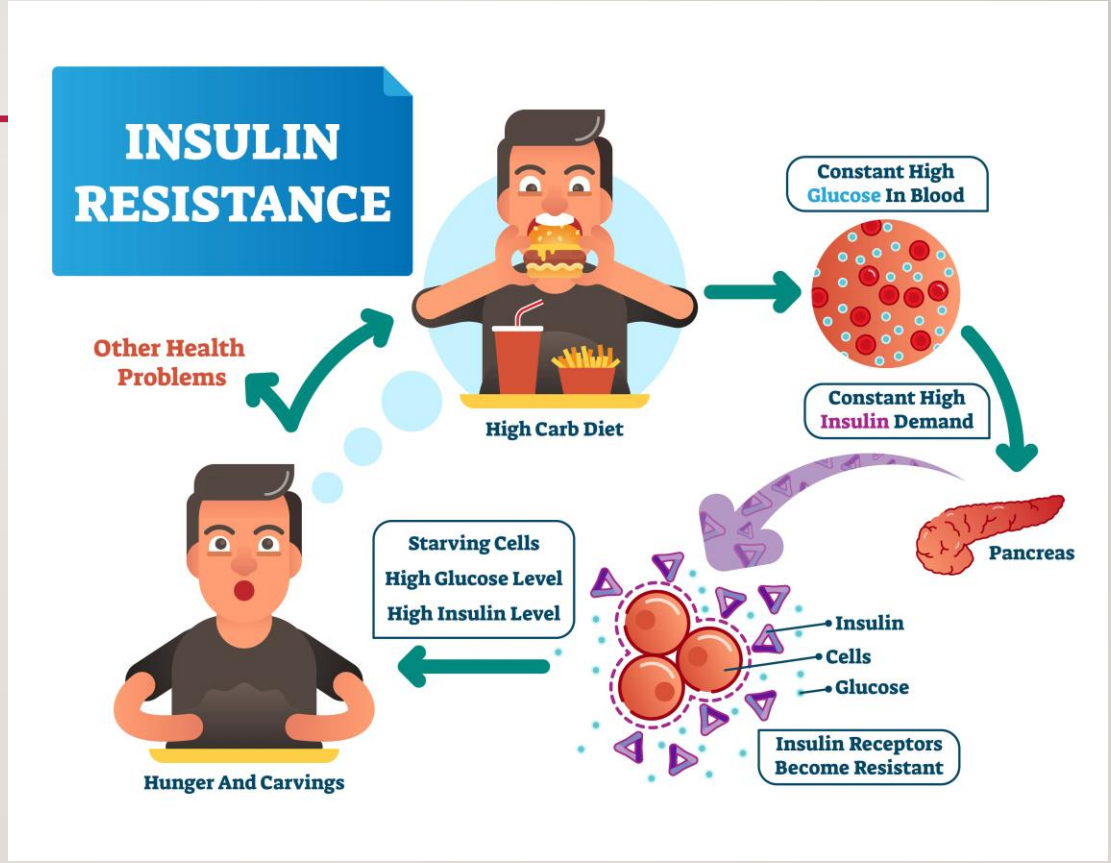
I PRESENT TWO EXAMPLES FROM THE FIELDS OF CLINICAL DIETETICS AND SPORTS DIETETICS.

A combination of insulin resistance (IR) and food allergy

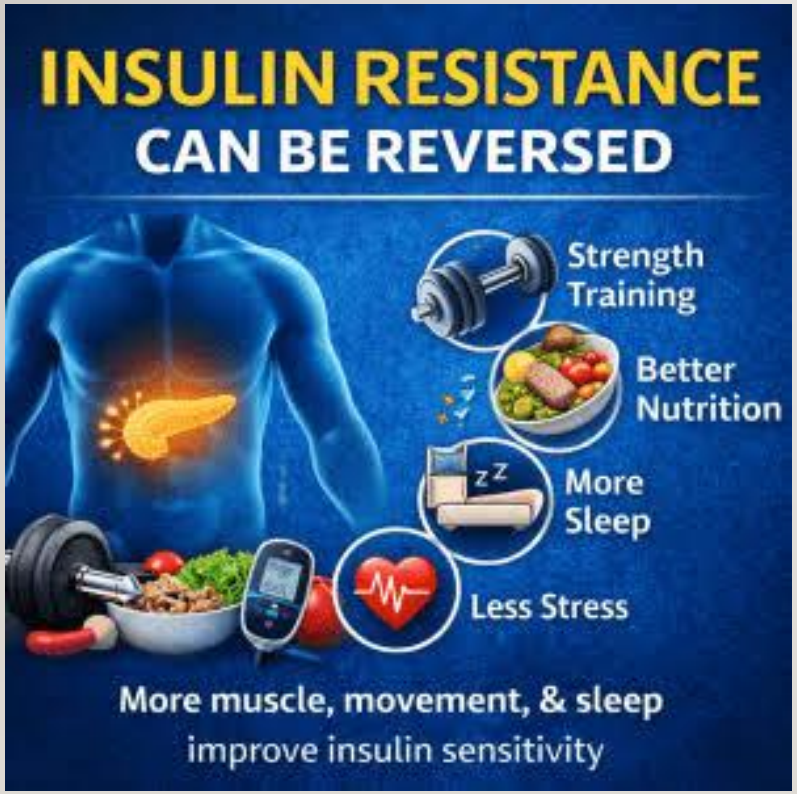
Sport-specific example: Refueling strategy for a half-marathon (21 km) run

EXAMPLE OF A HEALTH ISSUE: A COMBINATION OF INSULIN RESISTANCE (IR) AND FOOD ALLERGY.

- Let us imagine a patient diagnosed with insulin resistance and a concurrent milk protein allergy.
- The goal is to keep their blood sugar levels stable and avoid hunger, while also preventing allergic reactions.
- How does dietetics help?



CARBOHYDRATE QUALITY AND DISTRIBUTION:



- The dietitian determines the required daily carbohydrate intake (e.g., 160 grams) and strictly distributes it across 5–6 meals.
- Priority is given to slow-absorbing, fiber-rich carbohydrates (brown rice, bulgur, whole grains) that do not cause a sudden spike in blood sugar levels.

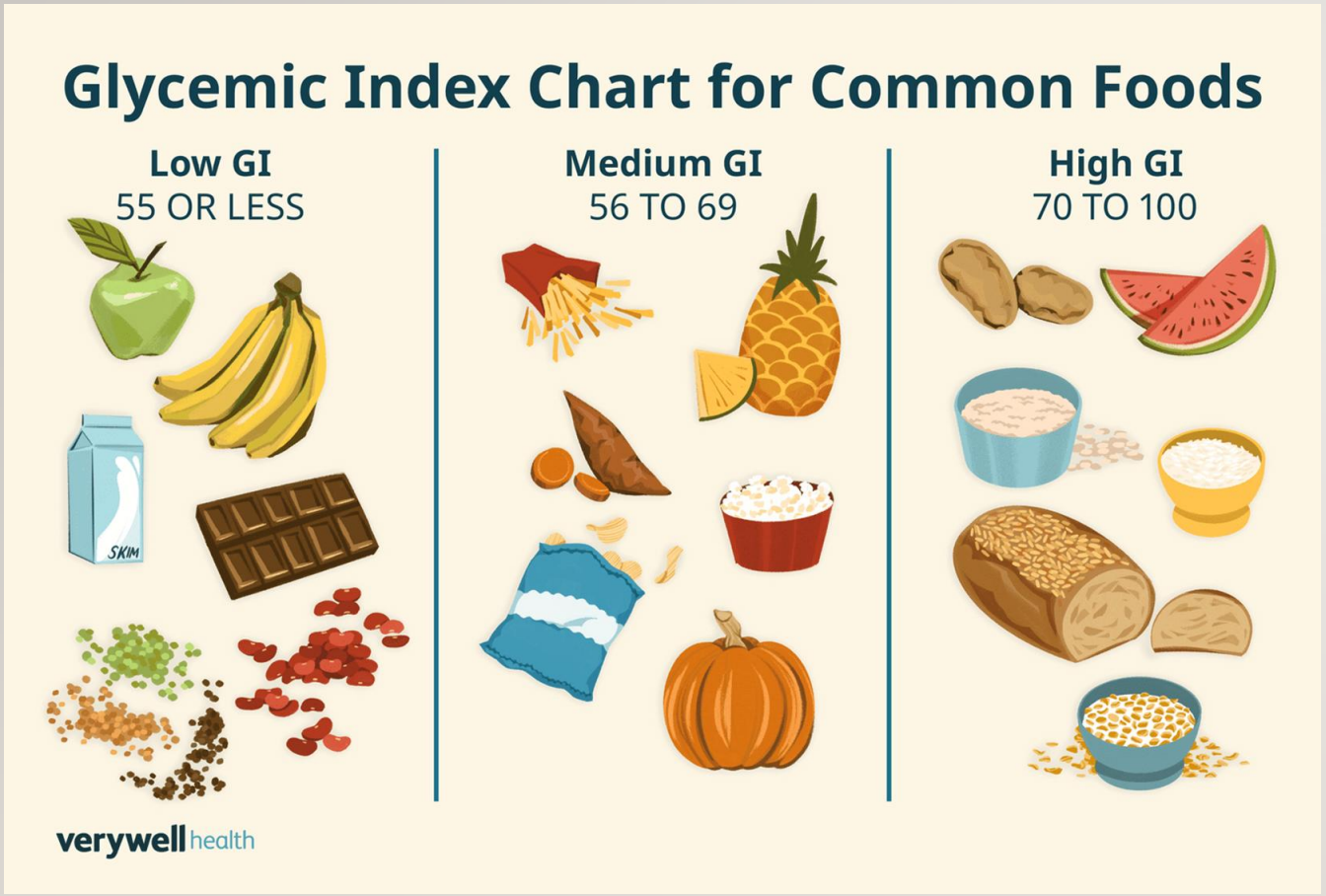
EXAMPLE OF A HEALTH ISSUE: A COMBINATION OF INSULIN RESISTANCE (IR) AND FOOD ALLERGY.

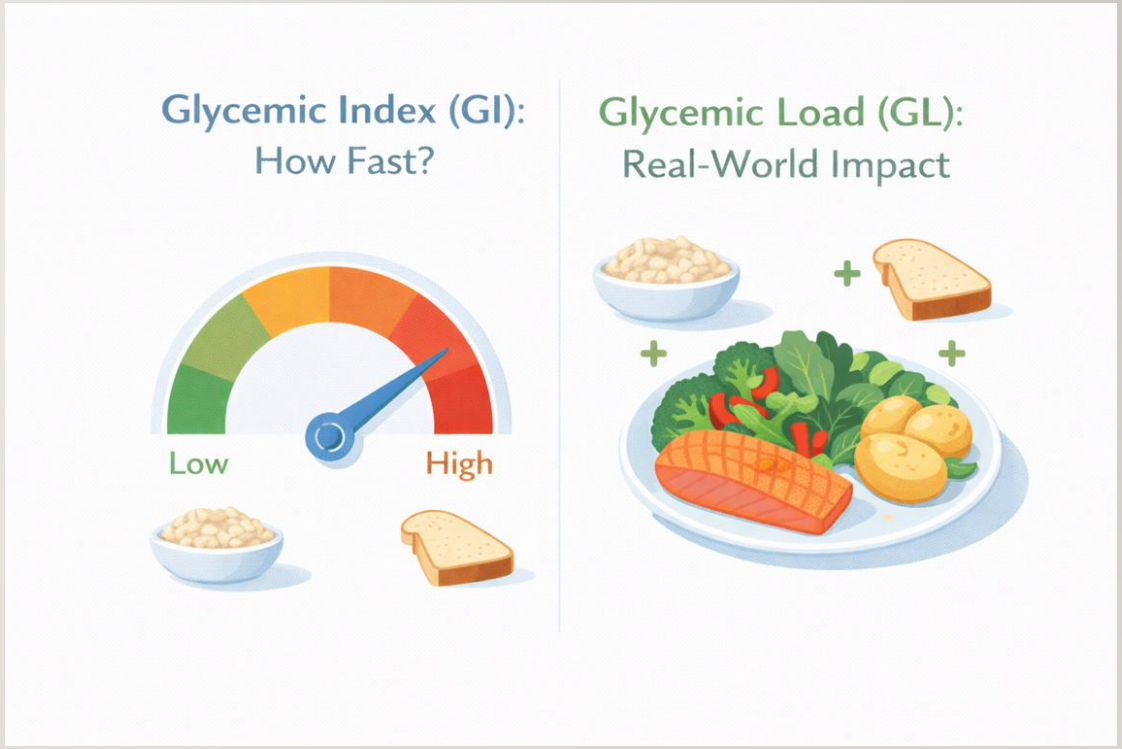
- **Safe substitution**:
- Since the patient is allergic to milk protein, the dietitian helps select suitable plant-based alternatives (e.g., almond milk, coconut yogurt).
- They point out that store-bought plant-based products often contain added sugar—which is prohibited due to insulin resistance—and therefore teach the patient how to read labels.

GLYCEMIC INDEX (GI):

The glycemic index (GI) is a scale ranging from 0 to 100 that indicates how quickly the carbohydrates in a given food are absorbed and raise blood sugar levels, compared to glucose (which has a GI of 100).

- Lowering the glycemic index (GI): It demonstrates how to combine foods. For example, if a patient eats fruit (a source of fast-acting carbohydrates), they must also consume a small amount of nuts or seeds (such as almonds or walnuts), as the fat and protein they contain slow down the absorption of fruit sugar.


Glycemic Index Chart for Common Foods
Low GI
55 OR LESS
Medium GI
56 TO 69
High GI
70 TO 100
SKIM
verywell health


Glycemic Index (GI):
How Fast?
Low
High
Glycemic Load (GL):
Real-World Impact

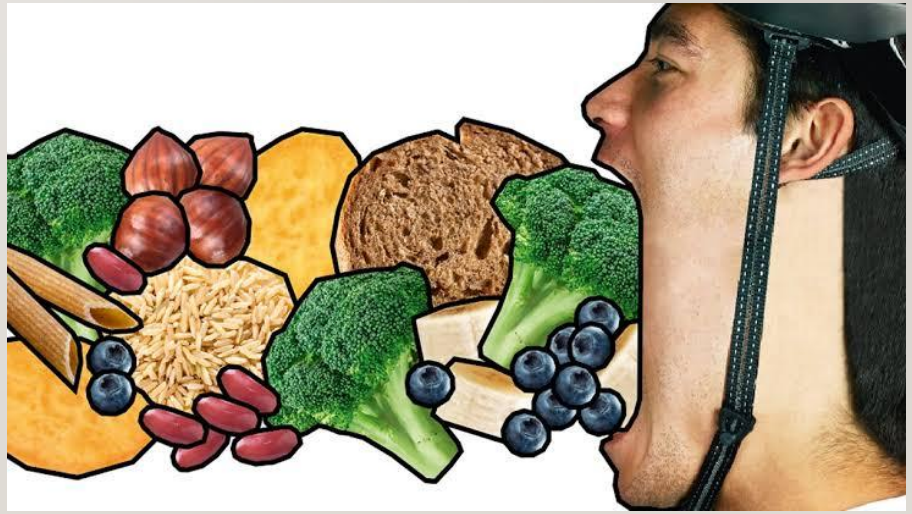
SPORT-SPECIFIC EXAMPLE: REFUELING STRATEGY FOR A HALF-MARATHON (21 KM) RUN

Imagine an amateur runner who wants to complete a half-marathon in under two hours but always completely runs out of steam after 15 km during training (hitting the wall).

- **How does sports nutrition/ sports dietetian help?**

SPORT-SPECIFIC EXAMPLE: REFUELING STRATEGY FOR A HALF-MARATHON (21 KM) RUN

- **Pre-race preparation** (Carbohydrate loading):
- In the 48 hours leading up to the race, the sports dietitian increases the runner's carbohydrate intake (to approximately 7–10 g per kilogram of body weight) while reducing fiber and fat intake.
- The goal is to maximize the glycogen stores in the liver and muscles (the fuel for the muscles) without weighing down the runner's stomach.



- **Race morning:**
- Prepare an easily digestible, high-carbohydrate breakfast 2–3 hours before the start (e.g., oatmeal made with water, with a banana and a little honey).
- Avoid milk and heavy foods to prevent discomfort, stomach cramps, and bloating during the run.

- **Refueling while running (Timing):**
- The sports dietitian provides an hourly plan:
- every 45–60 minutes, consume 30–60 grams of easily absorbable carbohydrates (e.g., 1–2 energy/isotonic gels), washed down with plenty of water.
- **Hydration:** 1.5–2 dl of fluid every 15–20 minutes. In hot weather, opt for an isotonic drink instead of plain water to replenish sodium and potassium lost through sweating, thereby preventing muscle cramps.

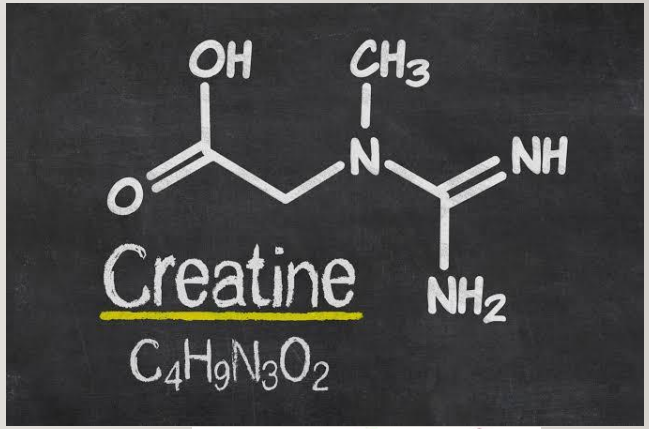
- **Recovery (After finishing):** In the first 30 minutes after the run (the so-called "anabolic window"), a carbohydrate-protein combination (e.g., a protein shake with a banana) is recommended to immediately kickstart muscle repair and the replenishment of energy stores.

IN THE WORLD OF SPORTS NUTRITION, SPORT-SPECIFIC DIETARY SUPPLEMENTS ARE PRODUCTS THAT COMPLEMENT A CONVENTIONAL DIET AND DIRECTLY SUPPORT ATHLETIC PERFORMANCE, RECOVERY, OR CHANGES IN BODY COMPOSITION.

- The International Olympic Committee (IOC) and sports science classify dietary supplements based on the level of evidence supporting them.
- Below, I have compiled a list of truly effective products backed by the strongest scientific evidence (so-called "Category A"), grouped according to their intended purpose.

PERFORMANCE ENHANCERS (DURING TRAINING/COMPETITION) – THESE SUPPLEMENTS DIRECTLY HELP THE ATHLETE TRAIN LONGER, FASTER, OR WITH GREATER POWER.

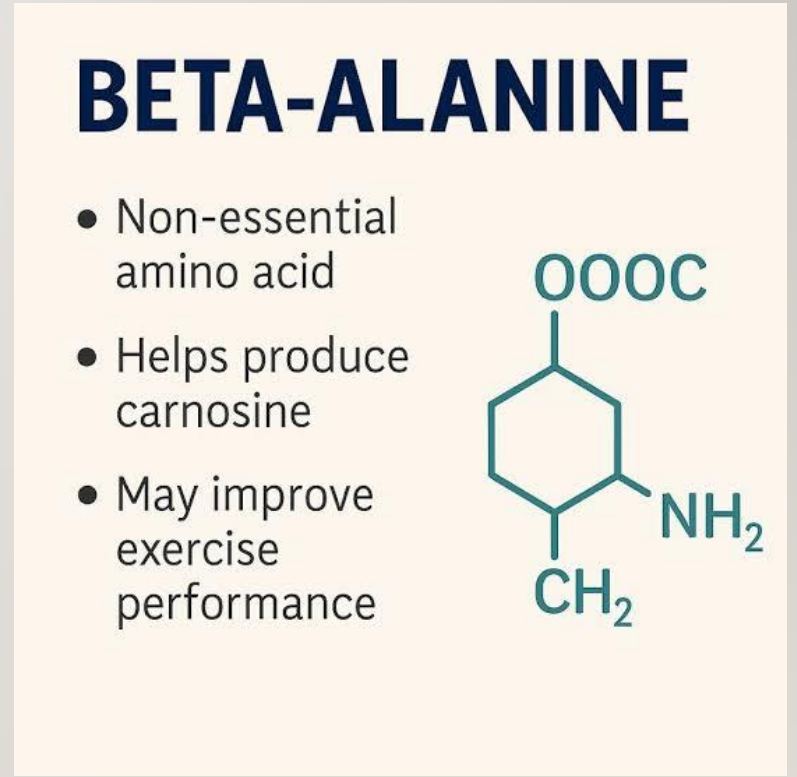
- **Creatine monohydrate:**
- The most extensively researched supplement. It increases muscle ATP (energy) stores, thereby improving explosiveness, strength, and short-term performance (e.g., sprinting, weightlifting). It is also excellent for protecting muscle tissue during periods of injury.
- **Beetroot extract (nitrates):** Dilates blood vessels and improves blood flow and oxygen delivery to the muscles, thereby enhancing endurance and oxygen utilization efficiency.



Performance enhancers (during training/competition

- **Caffeine:** Stimulates the central nervous system and reduces feelings of fatigue and pain during exercise. It has been proven effective in both endurance sports (running, cycling) and strength sports.

- **Beta-alanine:** Increases muscle carnosine levels, which helps neutralize acidity (lactic acid accumulation) during high-intensity efforts lasting 1–4 minutes (e.g., 400–800m runs, CrossFit).



MUSCLE BUILDING AND RECOVERY (POST-WORKOUT) –

THESE PRODUCTS FACILITATE THE REPAIR OF MICRO-TEARS IN DAMAGED MUSCLE FIBERS AND SUPPORT REBUILDING (ANABOLISM).

- **Whey Protein:** An extremely fast-absorbing, complete protein source containing a high concentration of the amino acid leucine. It is ideal after a workout for immediately kickstarting muscle protein synthesis.

- **Casein protein:** A slow-absorbing milk protein. It is most commonly consumed before bedtime, as it provides the body with a continuous supply of amino acids for 6–8 hours during overnight recovery.

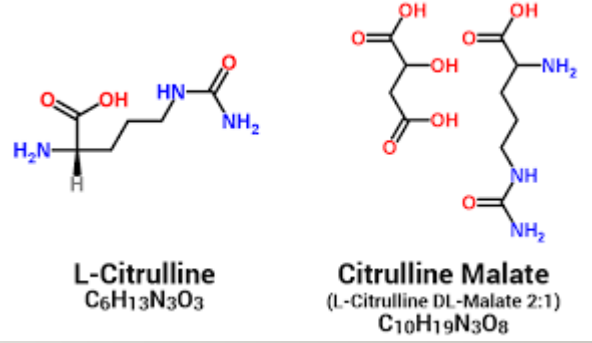
MUSCLE BUILDING AND RECOVERY (POST-WORKOUT)

- **Carbohydrate-electrolyte drinks (Isotonic drinks):** During and after exercise, they replenish glycogen burned and minerals (sodium, potassium, magnesium) lost through sweating, preventing muscle cramps and dehydration.

HEALTH MAINTENANCE AND JOINT PROTECTION (FOUNDATIONAL SUPPLEMENTS) – A SOLID FOUNDATION OF HEALTH AND FREEDOM FROM INJURY ARE ESSENTIAL FOR PEAK PERFORMANCE.

- **Omega-3 fatty acids (fish oil):** Powerful natural anti-inflammatories that support cardiovascular health and joint health, and aid in muscle recovery.
- **Vitamin D3**: Crucial for bone density, immune system function, and maintaining proper muscle strength.
- **Hydrolyzed collagen + Vitamin C:** Supports the elasticity and regeneration of tendons, ligaments, and cartilage, specifically for injury prevention and rehabilitation.

CITRULLINE (MOST COMMONLY CITRULLINE MALATE)



- Citrulline is an amino acid that the body converts into arginine and subsequently into nitric oxide (NO).
- **What does it do?**
- It dilates blood vessels (vasodilation), thereby improving the supply of blood, oxygen, and nutrients to the muscles. It helps clear away fatigue-inducing byproducts (e.g., ammonia, lactic acid).
- **When is it used?**
- In weight training, it is used for a better "pump" and faster recovery between sets, while in endurance sports, it helps improve oxygen delivery.
- For maximum effect, it is recommended to take 6–8 grams 30–60 minutes before a workout.

SALT TABLETS (ELECTROLYTE REPLACEMENT)

- Through sweating, we lose not only water but also significant amounts of minerals—primarily sodium (salt).
- **What does it do?**
- It maintains the body's fluid balance and blood pressure, and ensures the proper functioning of neuromuscular connections. If we drink only plain water during a long workout, blood sodium levels become diluted (potentially leading to hyponatremia), causing headaches, loss of muscle tone, and severe muscle cramps.
- **When is it used?**
- In endurance and ultra-endurance sports (running, cycling, triathlon), or when training in hot weather with heavy sweating.

BCAA (BRANCHED-CHAIN AMINO ACIDS)

BCAAS CONSIST OF THREE ESSENTIAL AMINO ACIDS: LEUCINE, ISOLEUCINE, AND VALINE.

- **What do they do?** While once considered the "holy grail" of muscle building, modern sports science takes a more nuanced view: BCAAs alone do not build muscle (doing so requires the full spectrum of amino acids found in a complete protein).
- However, they do reduce central nervous system fatigue during workouts and protect muscles against breakdown (an anti-catabolic effect) when training in a fasted state.
- **When are they used?**
- To preserve muscle mass during cutting or dieting phases, or to delay fatigue during long, multi-hour workouts.

COMBINATION OF ZINC AND SELENIUM AND THE B-COMPLEX (GROUP OF B VITAMINS)

- Two essential trace elements that support each other's effects.
- **What does it do?**
- Intense training places stress on the body, temporarily weakening the immune system and increasing oxidative stress.
- Zinc is essential for wound healing, tissue regeneration, and optimal testosterone levels. Selenium is an excellent antioxidant that protects cells and supports thyroid function.
- **When should it be used?**
- During the recovery phase, during periods of intense training to prevent immune system collapse (falling ill), and following injuries.

THE B-COMPLEX (GROUP OF B VITAMINS)

- **B vitamins (B1, B2, B3, B5, B6, B9, B12) form a closely integrated system.**
- **What do they do?**
- They act as the engines behind the body's energy-producing processes.
- They do not provide energy directly (like caffeine), but without them, the body cannot convert consumed carbohydrates, proteins, and fats into fuel.
- Furthermore, they are crucial for nervous system health and the formation of red blood cells (oxygen transport).
- **Where is it used?**
- All active athletes have an increased need for B vitamins due to heightened metabolic activity. A deficiency leads to fatigue, anemia, and a decline in performance.

QUESTIONS ABOUT TODAY'S LECTURE

WHAT IS THE DIFFERENCE BETWEEN DIETETICS AND SPORTS DIETETICS?

WHERE AND WHEN DO WE USE THEM?

WHY ARE THEY IMPORTANT?

- What should be done during the post-workout "anabolic window,,?
- Do you really need to consume protein immediately?
- Which scientifically proven dietary supplements actually enhance performance?
- When and how should you choose isotonic drinks?
- When can plain water be a good source of hydration for an athlete?
- Plan an easily digestible, high-carbohydrate breakfast.
- Why it is beneficial for athletes to consume beetroot?
- What does the glycemic index mean?

THANK YOU FOR YOUR ATTENTION!

☺

https://www.youtube.com/watch?v=ALY9L0cAtJc
https://www.youtube.com/watch?v=krIgKr3IC7s

https://pubmed.ncbi.nlm.nih.gov/32824034/

https://pmc.ncbi.nlm.nih.gov/articles/PMC8746600/

https://www.dairymax.org/blog/nutrition-injury-prevention-and-recovery-key-tips-athletes

https://pmc.ncbi.nlm.nih.gov/articles/PMC8746600/

https://www.todaysdietitian.com/injury-prevention-and-recovery/

https://www.researchgate.net/publication/400555742_Nutrition_for_Recovery_of_Sports_Injury