Ergogenic Aids & Sports Performance

Lesson 9
Successful Sporting Performance

What does successful sporting performance at national & international level need?

- The right mental attitude.
- Good nutrition.
- The opportunity to take part in sport.
- Healthy body with all muscles, tendons, and systems working at their best.
- Proper sleep & recovery.
- The right training.
- Long term training.
- A good coach.
- Genetics
What are Ergogenic Aids

Any substance that helps or claims to help enhance athletic performance by:

- Improving strength.
- Improving endurance.
- Increasing exercise efficiency.
- Achieve a performance goal more quickly.
- Increasing tolerance for more intense training.
- Preparing the body for exercise.
- Reducing the chance of injury during training.
- Enhancing recovery.
Types of Ergogenic Aids

There are two main types of ergogenic aids:

- **Pharmacological** (drugs or medicines):
  - Anabolic Steroids.

- **Nutritional**:
  - Vitamins
  - Amino acids
  - Caffeine.

They can be used during training or competition to:

- Help build more muscle.
- Reduce tiredness and fatigue.
- Maximise the effect of training.
- Increase performance.
Banned Substances

• Sporting authorities have banned the use of a number of medicines and other aids.

To be banned a substance or aid must meet two of the following three criteria:

• Potential to cause harm to an athlete.

• Potential to enhance performance.

• Violate the spirit of the sport.

• It is up to the athlete to make sure they are drug free.

It is up to the athlete to make sure they are drug free:
Beware of contaminated products!
What is banned?

There are five classes of banned drugs:

• Anabolic Steroids.

• Hormones.

• Beta-2-Agonists.

• Drugs that enhance or reduce the function of hormones.

• Diuretics.

• Some athletes may need some of these substances for health reasons e.g. asthma.

• Need to apply to for a therapeutic use exemption.
• Red blood cells carry oxygen to muscles during exercise.

• The more red blood cells you have, the better your performance in training or events.

**Athletes can increase red blood cells by:**

• Taking blood out during training and adding it back in just before an event.

• Taking a drug called erythropoietin to boost the number of red blood cells the body makes.
Common nutritional ergogenic aids include:

- Protein, Amino acids, Creatine, Caffeine
- Carbohydrate (gels, sports drinks)
- Vitamin & mineral supplements.
- Men are more likely to take performance enhancing products than women.
- Do they work?
- How many of the claims are backed by science?
- If we are eating a healthy diet is there any benefit to taking them?

Ask:

- What is the science behind this? Is there any?
- Remember to look further than the person or website selling the product.

Don’t just ask friends; ask a CORU Registered Sports Dietitian
Nutrition & Ergogenic Aids: The facts

Vitamin and Mineral Supplements

• No benefit if you are eating a healthy, balanced, diet that is giving you all of the vitamins and minerals you need.

• No benefit to high doses of any single vitamin and mineral.

• **Remember:** you pee out a large amount of high-dose supplements.

Antioxidants.

• These include some vitamins and minerals as well as plant and herb extracts.

• Do not show any benefit in scientific studies.
Caffeine

- Has been banned in the past, now monitored to prevent excessive use.

Enhances performance by
- Reducing fatigue.
- Longer training times.
- Improved concentration.
- Enhanced alertness.
- Limited to 600-800mg or 6-8 cups (not mugs) of coffee in one day

Side effects include:
- Abdominal pain
- Diarrhoea
- Dehydration
- Restlessness
- Poor sleep & recovery
Beetroot Juice & BCCAs

Beetroot Juice

- Tested in runners
- May slightly widen blood vessels in muscles when exercising
- Allows more oxygen and fuel to get to muscles
- Short studies do show a slight benefit but more studies are needed to confirm.

Branched-Chain Amino Acids (BCCAs)

- No benefit in aerobic exercise
- May improve strength training

BUT

- A healthy diet including protein-rich foods will supply enough BCCAs for muscle growth
- Find BCCAs in milk, yoghurt, meat and beans
Creatine & Amino Acids

Creatine

- Supplements of creatine may help to improve strength during training but results of studies vary.

- Not recommended as a supplement for under 18s due to impact on kidneys and lack of safety research.

- Your body makes creatine naturally from protein foods including lean meat, fish, beans and lentils.

Amino Acids

- Include: arginine, citrulline, tryptophan and glutamine.

- Most studies show no benefit in supplementing with these amino acids.

- Expensive and effectiveness not supported by research.

- Find the amino acids you need in lean meat, fish, poultry, beans, nuts, milk and yoghurt.
Carbohydrate

- Sports drinks and gels that contain carbohydrate can improve both training and performance.
- Supply energy to working muscles.
- Useful in endurance events.
- Useful in intense events longer than 45 minutes.
- Food should be the main source of carbs for exercise.
- Sports drinks and gels can be used during or immediately after training.
- Never use a new gel or drink on the day of an event: always test it in training.
Choosing Sports Supplements

Never believe the hype:

- If it sounds too good to be true, it is.
- Remember that there is very little actual scientific evidence behind most sports supplements.
- A healthy balanced diet will give you everything that you need.

Supplements are:

- Expensive Rarely live up to claims.

Cannot replace:

- Proper training & coaching
- Good diet.
- Sleep and recovery.
- Hydration