



Giles Warrington and Dessie Dolan Fuelling Our Development: The Reality Behind Hydration and Nutrition



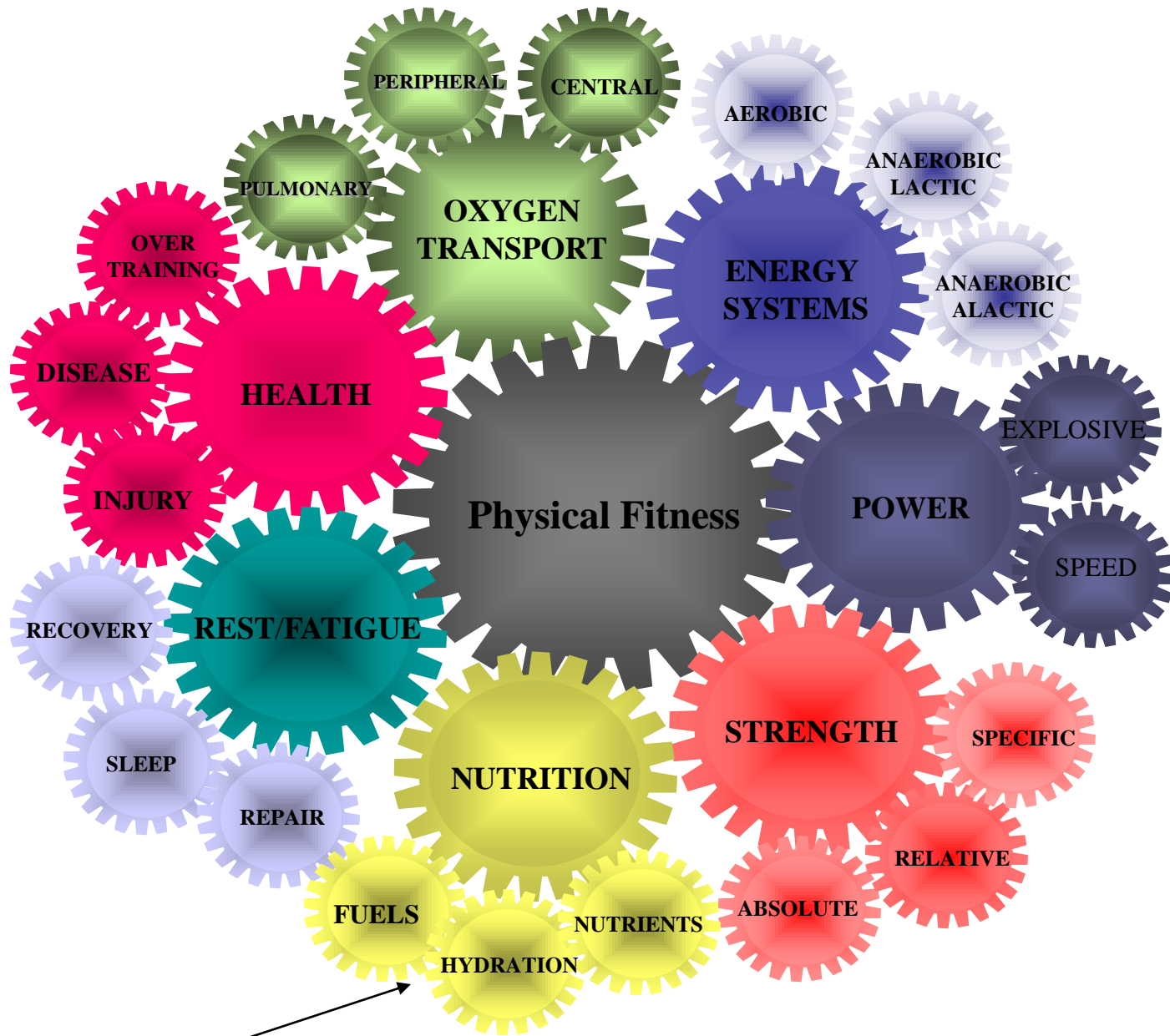
Determinants of Athletic Performance:

1. Genetics

2. Environment

- Training: Technical/Tactical/Physical/Mental
- Lifestyle
 - Recovery/rest/sleep
 - **Nutrition**
 - Health
 - Recreation
 - Others



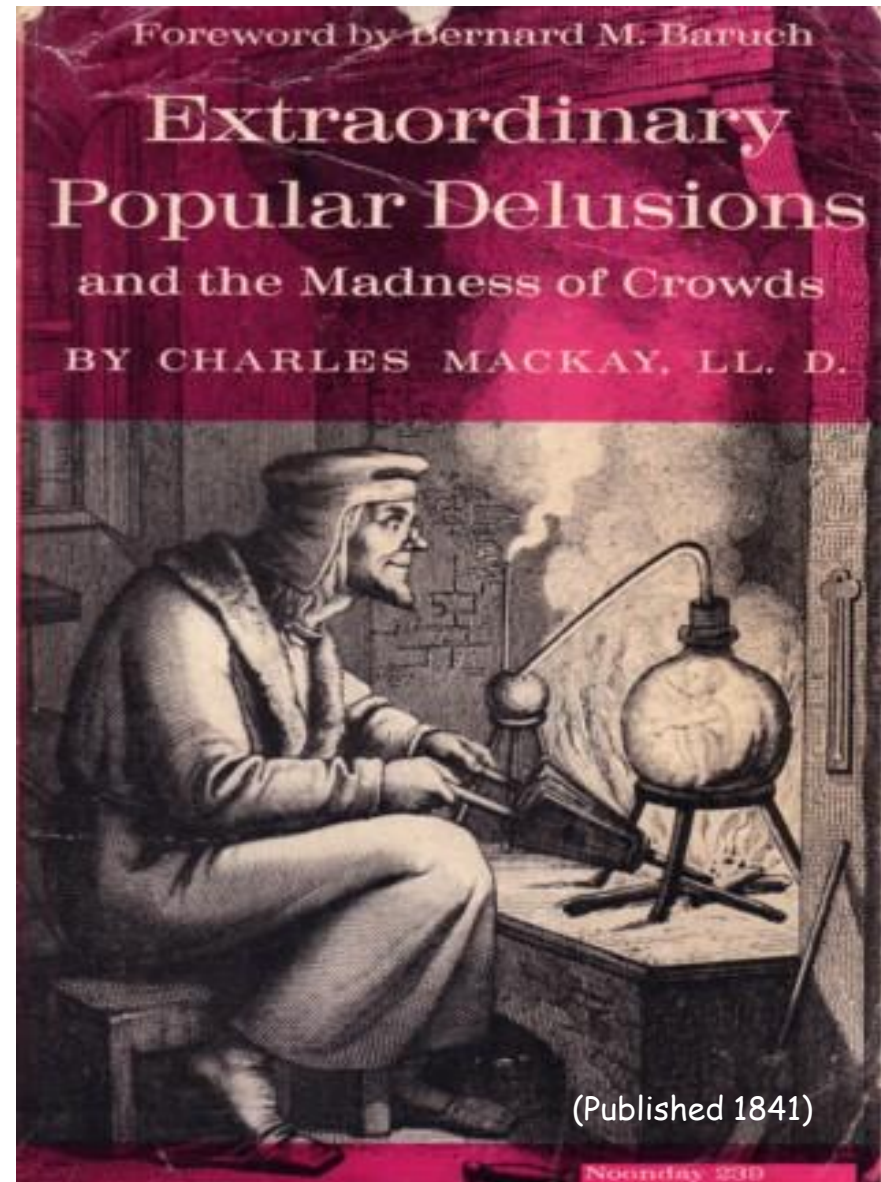


Critical to health, growth and athletic Performance!



Nutrition – Facts v Fads!

- Not a new concept
- Bandwagon effect
- Herding instinct
- Social v Scientific proof
- No quick fixes!

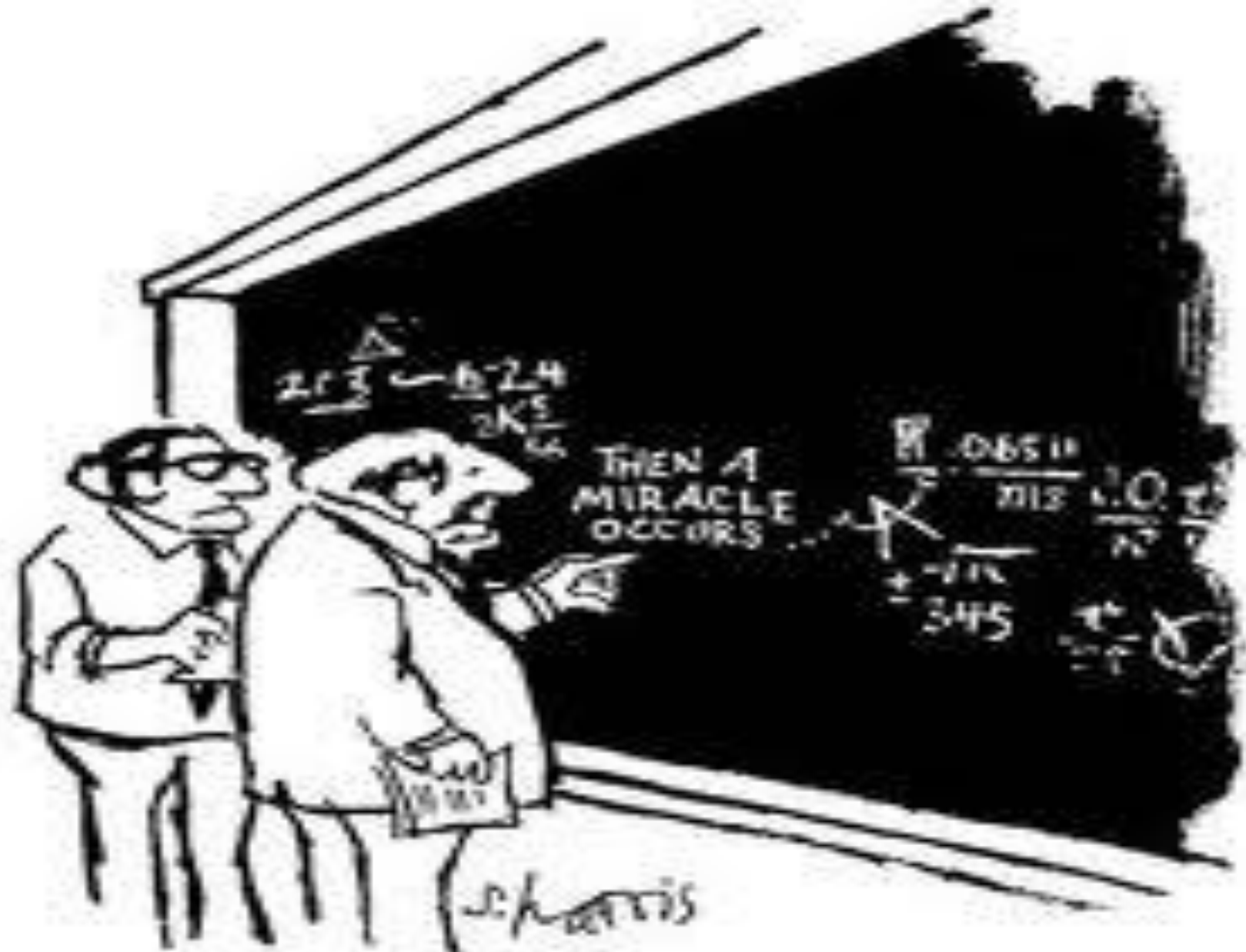






WE SHOUTED OUT ABOUT
SOME NEW INVENTION &
THEN THAT THING HIT HIM!





"I think you should be more explicit here in step two."

Child v the Adolescent Athlete

- Childhood obesity epidemic
- Higher energy and nutrient requirements (~15%)
- “Key message variety, balance and moderation in food choices should be promoted” (ADA,1996)





Vitamins & Minerals
Important for everyday body functions and to make energy available from food

Proteins
Needed for growth, development and repair of muscles

Carbohydrates
Provide energy for the working muscles

**NUTRIENTS
IN FOOD**

Fats
Provide energy, insulation and protection for organs such as lungs and kidneys

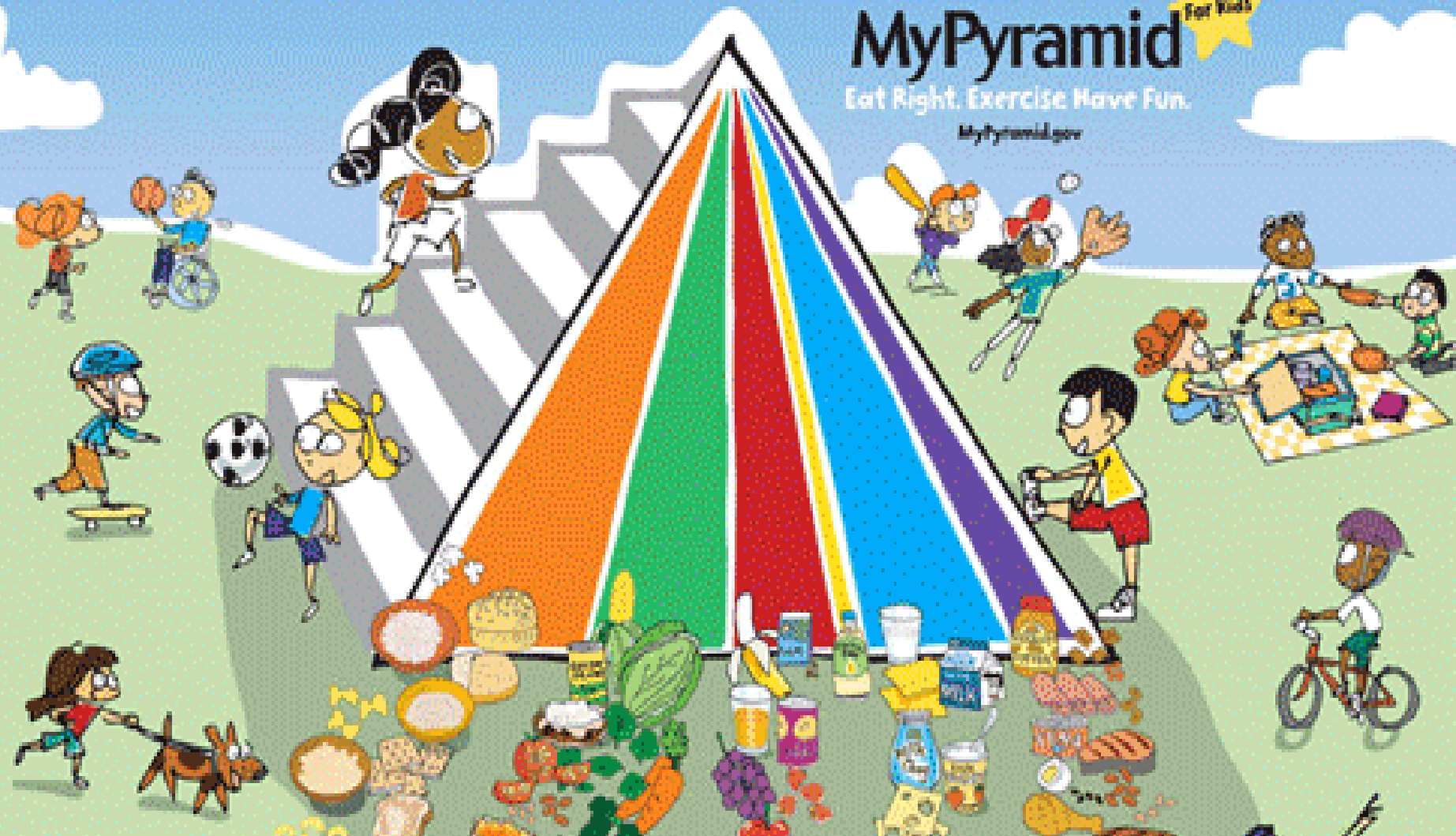
Water
Fluid is vital for all body functions as well as allowing you to sweat to keep cool

MyPyramid

For Kids

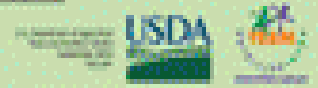
Eat Right. Exercise Have Fun.

MyPyramid.gov



<p>Grains Make half your grains whole</p>	<p>Vegetables Eat your veggies</p>	<p>Fruits Focus on fruits</p>	<p>Milk Get your calcium-rich foods</p>	<p>Meat & Beans Go lean with protein</p>
<p>3 Oils Oils are not a food group, but you need some for good health. Get your oils from fish, nuts, and liquid oils such as corn oil, soybean oil, and canola oil.</p>				

★ Find your balance between food and fun ★ Fats and sugars — know your limits





Good Nutrition Practices:

- Aid growth and development
- Provide fuel/fluid
- Delay fatigue
- Promote faster recovery
- Enhance training adaptation
- Optimise athletic performance



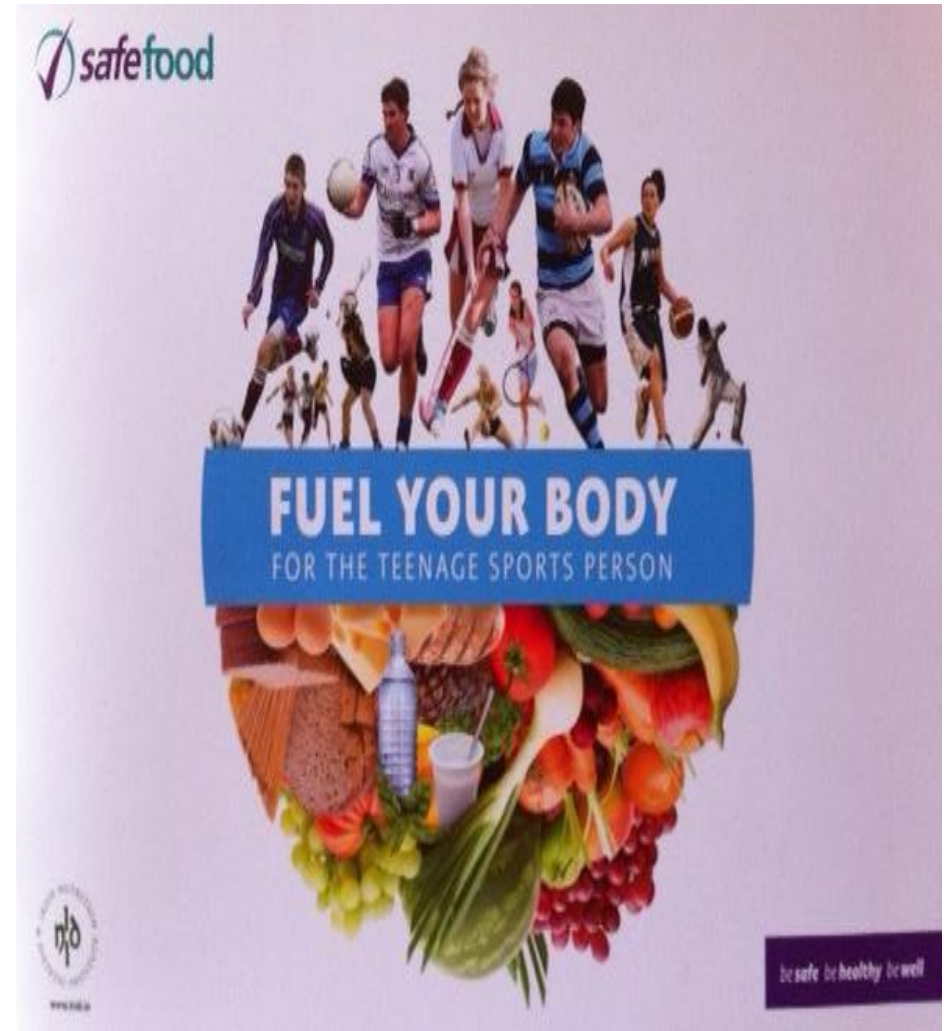
Nutritional Considerations for the Young Athlete

- Stage of development
- Size
- Activity levels
- Training and competition demands
- Individual needs
- Lifestyle issues
- Promote good health



Nutritional Facts

- Carbohydrate is the most appropriate fuel for energy production
- Carbohydrate forms the basis of ALL good training diets
- Protein is important for growth and is required to repair & regenerate muscle
- Small amount of fat are necessary
- Adequate vitamins and minerals are crucial for health and performance





The Athlete Diet - How Much of Each ?

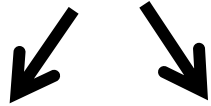
Carbohydrates	Calorie Intake 6-10 g/kg/day (Usually 50-70 % of daily intake) <i>(adolescent athlete ~55-60% of daily intake)</i>
Protein	Calorie Intake 1.2-1.7g/kg/day <i>(Adolescent Athlete 1.5-2.0 g/kg/day)</i>
Fats	Usually 20-35 % of daily Intake (<u><</u> 20% does not benefit performance)
Energy	Very individual, 2,000 to 7,000 kcal/day

(ADA, 1996; ACSM/ADA, 2009; Lemon, 2000; Tarnopisky, 2006)

Where do you find Carbohydrates?

Starchy Carbs

(Med-Low GI)



Slow release to
bloodstream

Sugary Carbs

(High GI)



Fast release to
bloodstream

Where do you find Protein?

- Meat, poultry, fish, cheese, eggs, nuts, pulses
- Necessary for building tissue, repairing damage
- Increased need during growth and heavy resistance training



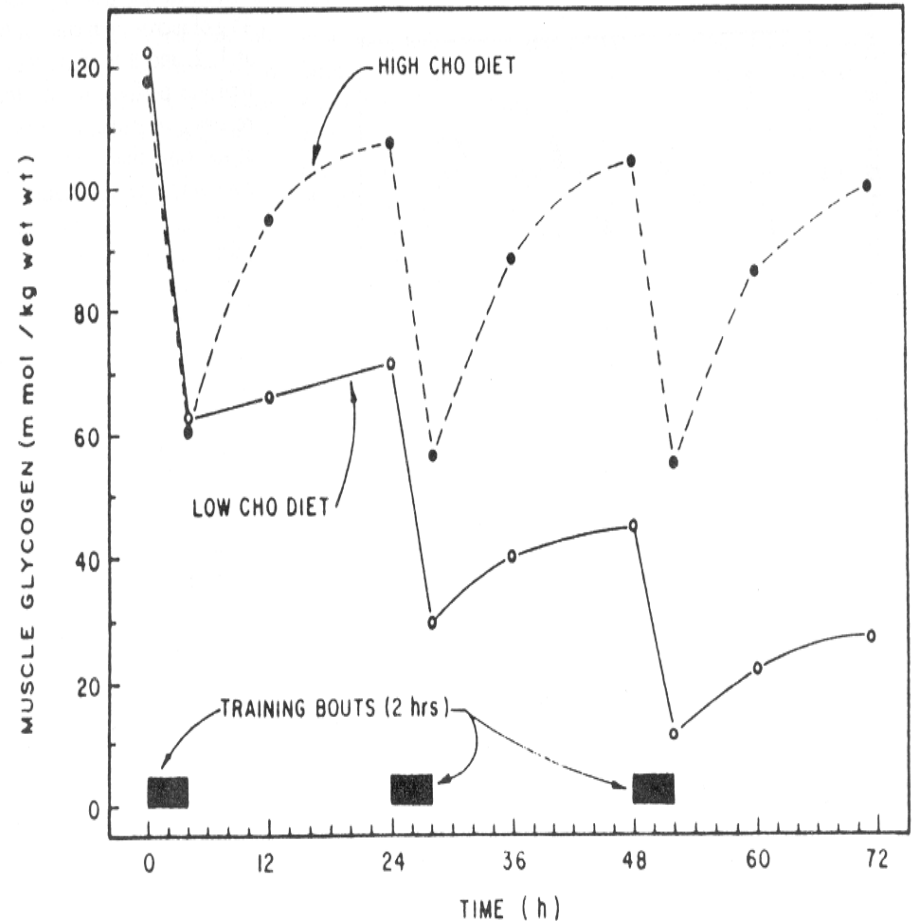
Where do you find Fats?

- Butter, oil, cream, fat on meat, salad dressings
- Small amount necessary in diet
- Fat soluble vitamins ADEK
- Necessary for essential production of some hormones
- Omega 3 (EPA & MHA) and Omega 6



Glycogen depletion

- High intensity exercise uses glycogen stores rapidly
- Concept of “Hitting the wall”
- Glycogen depletion
 - if inadequate recovery between high intensity training sessions, and/or
 - inadequate carbohydrate intake



(Costill 1985)

Replenishing Glycogen

- Eat carbohydrate rich food or drink immediately after training (1-1.2g per kg body weight)
- 30 mins post exercise critical in replenishing glycogen “window of opportunity”
- 6-10g per kg in the full 24 hour period
- 24-48 hours required to fully replenish stores
- Eat carbohydrate rich foods regularly throughout the day

Recovery

- First 30 minutes post exercise important for energy replenishment and recovery
- Eat carbohydrate rich food or drink immediately after training (1-1.2g per kg body weight)
- Small amount protein (0.2g per kg body weight) may aid recovery
- Fluid intake critical – 150 % rule (1.5 litre/kg lost)



Factors Influencing Fluid Intake

- Maturation and body size
- Activity levels
- Exercise duration & intensity
- Individual sweat rates
- Environmental conditions



Sweat Rates

- ~1-2,000ml/hr
- GI absorption ~ 800ml/hr

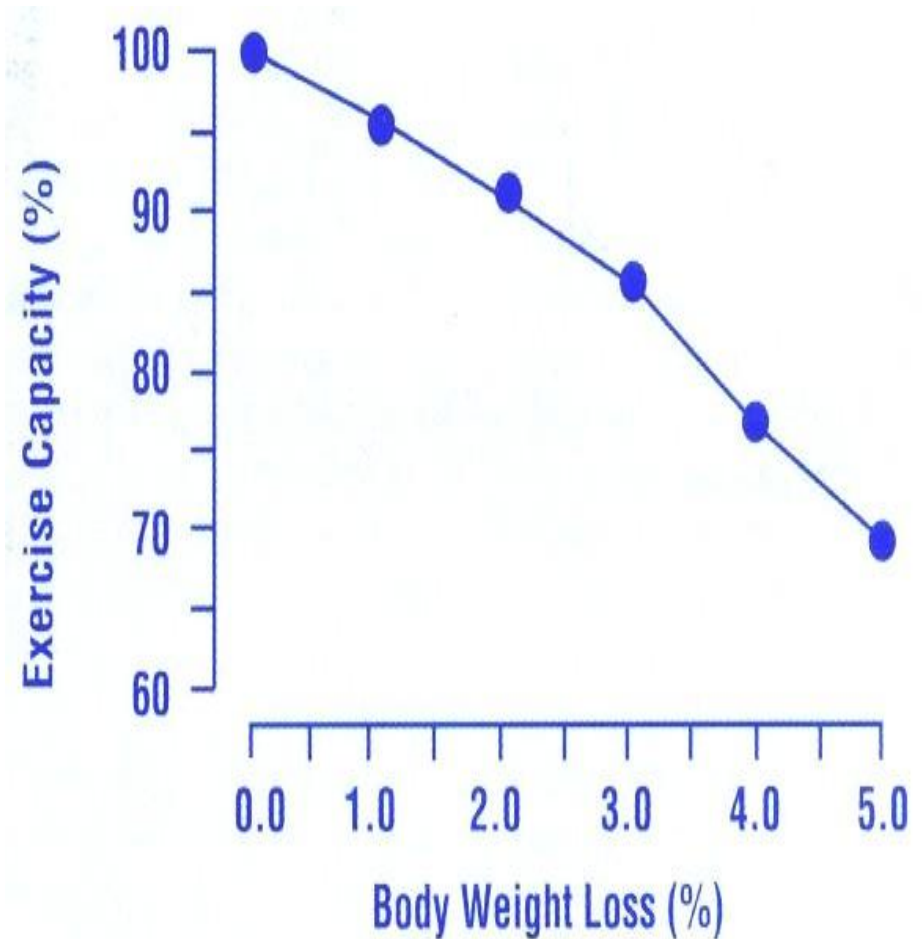
=20 % deficit even with regular fluid intake
Athletes must consume fluids in excess of their perceived needs but typically replace <50% of sweat loss during exercise.

“Individualise strategy”



Dehydration and Exercise Performance

- Decreased cognitive function
- Decreased endurance capacity
- Impaired sports performance
- Increase risk of heat illness (Petrie et al., 2004; Montain, 2008)
- Delays recovery



Sports Drinks v Energy Drinks

Sports drinks:

- Beverages that may contain:
- carbohydrate
- minerals
- electrolytes

and are intended to replenish water and electrolytes lost during exercise

(AAP Clinical Report, 2011)

Energy drinks:

- Beverages that may contain substances that act as non-nutritive stimulants such as:
- Caffeine,
- Guarana,
- Taurine,
- Ginseng,
- L-Carnitine,
- Creatine etc

with purported ergogenic or performance enhancing effects

Hydration - What's Best for Sport ?



v



Isotonic Sports Drink vs Water?

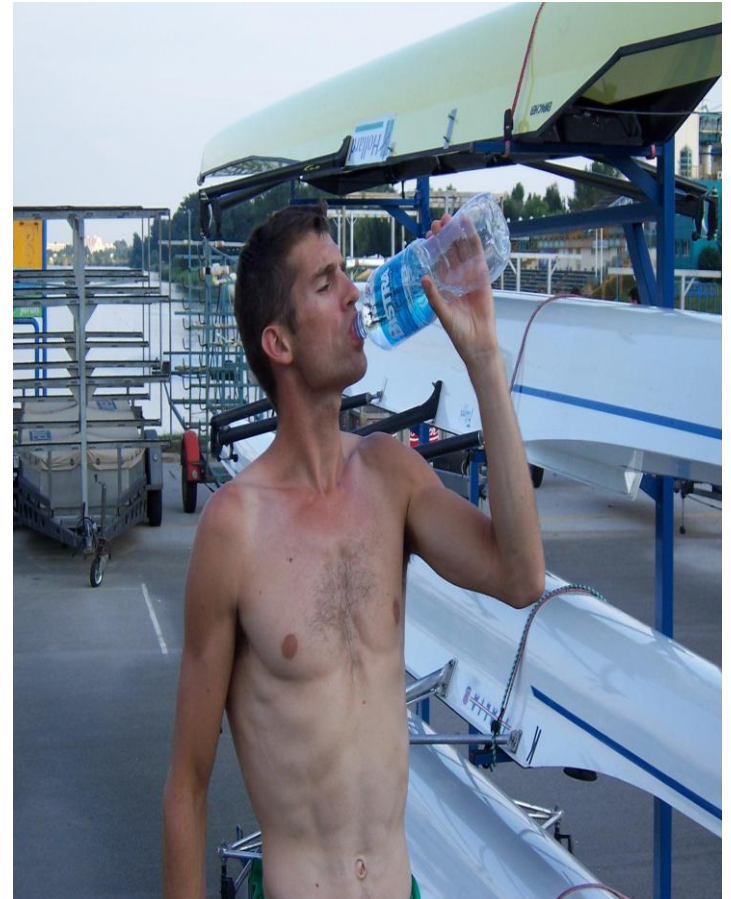
	Sports Drink	Water
Fluid	YES	YES
Electrolytes	YES	NO
Taste	YES	??
Fast Energy (calories, carbs) -avoid fatigue	YES	NO

It does what is says on the tin!



Hydration Before Exercise

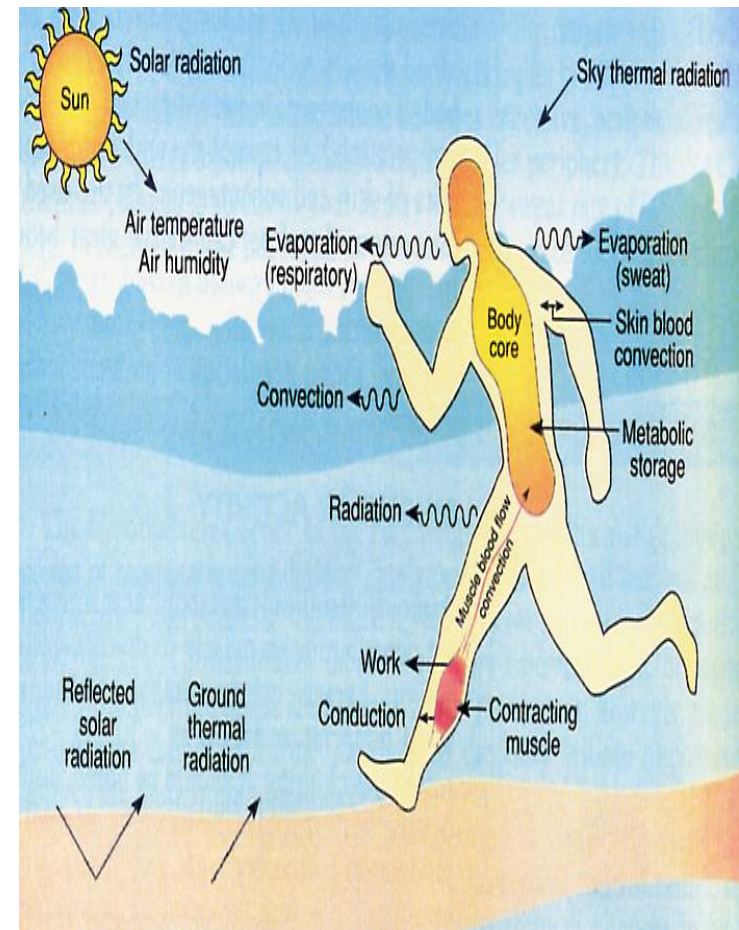
- Prehydrate to start training/competition in euhydrated state
- ≥ 4 hrs pre exercise-slowly drink fluids $\sim 5-7\text{mL}\cdot\text{kg}^{-1}$
- ~ 2 hrs prior to exercise ingest $\sim 3-5\text{mL}\cdot\text{kg}^{-1}$
- Fluid consumption enhanced by palatability i.e temperature, sodium content and flavouring



(ACSM Position Stand, 2007)

Fluids During Exercise

- Goal of drinking to prevent excessive dehydration (>2% BW) and maintain plasma volume
- Matching fluid loss during exercise may not be possible as maximal gastric emptying is approx. 800-1000ml/hr whereas sweat rates may exceed 1-2 litres
- 150-200 ml every 10-15 mins is recommended
- Cool fluids also help decrease core temperature



Post Exercise Rehydration

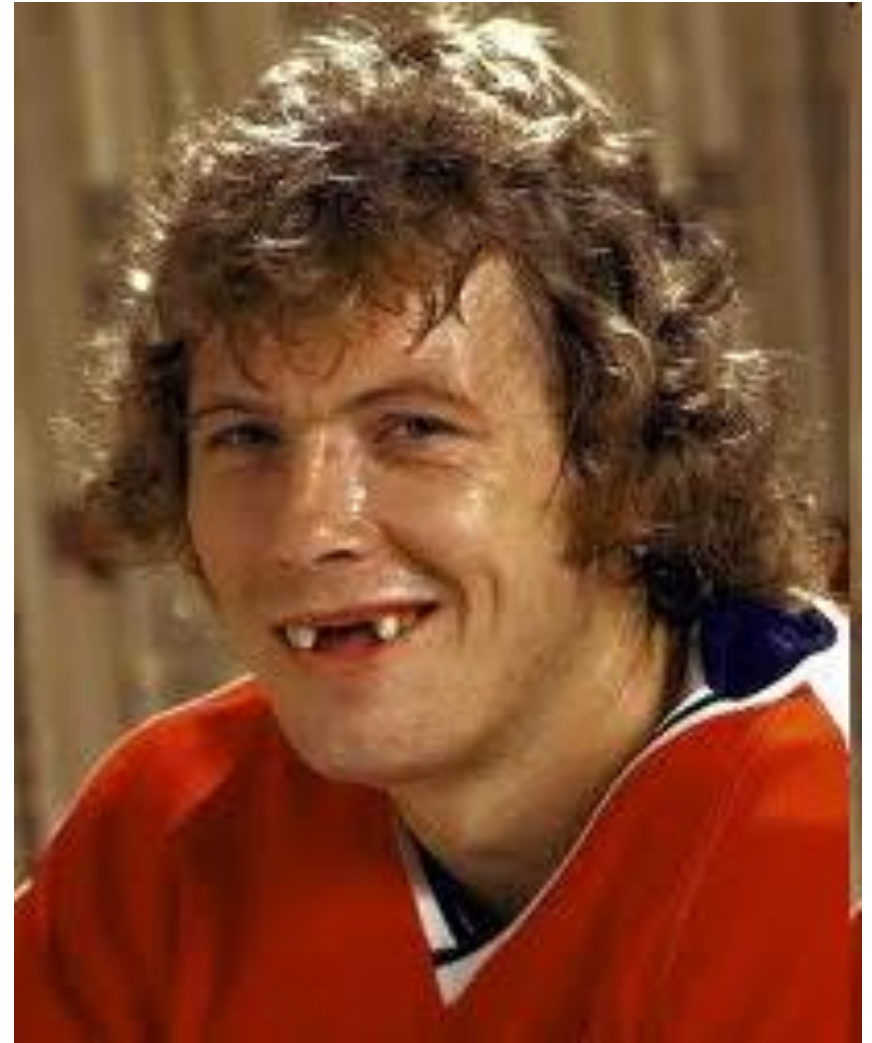
- Goal to fully replace and fluid and electrolyte deficit
- Voluntary fluid intake studies show that athletes typically replace 30-70% of sweat losses during exercise.
- Even when drinks are freely available sufficient fluid is not ingested
- An athlete may continue to lose fluid in the post-exercise recovery phase by urination and continued sweat production
- Hydration strategies are extremely important to maintain performance
- Complete recovery from dehydration ~1.5L per kg of weight loss '150% rule'

Monitoring Hydration Status

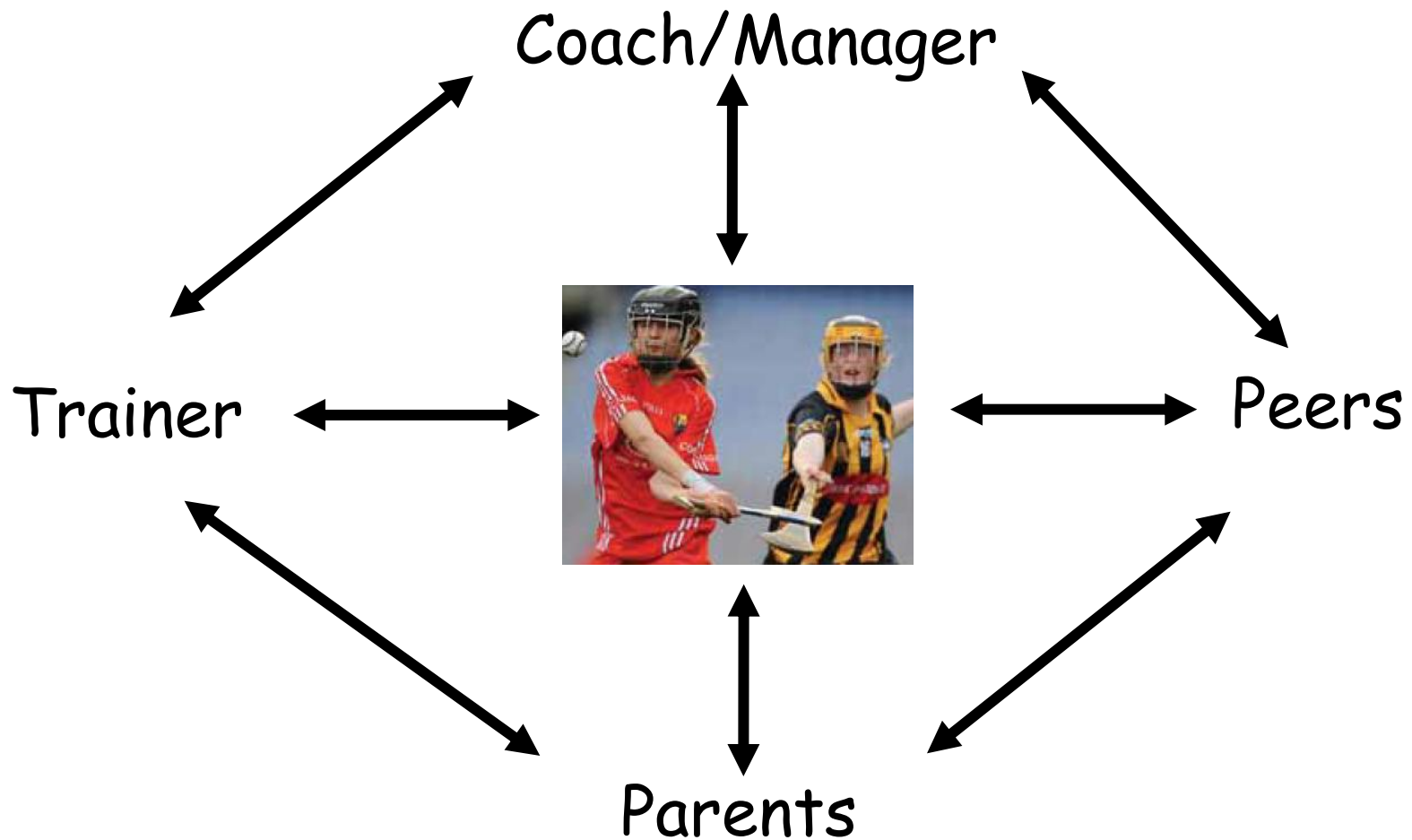


Athletes and Dental Health

- Brush and floss teeth regularly
- Chew sugar free gum
- Use a squeeze bottle or drink from a straw
- Drinks should be slightly chilled
- Rinse mouth out with water after eating and drinking
- Regular dental checks

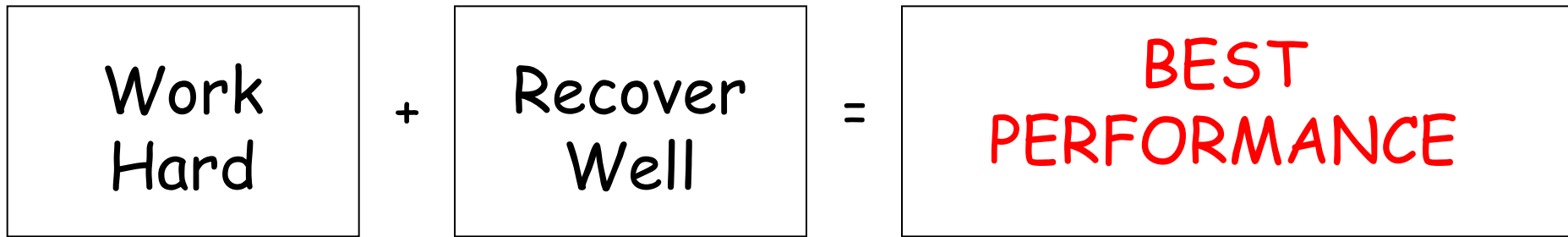


Collaborative Approach to Dietary Choices



(Adapted from Hackman et al., 1992)

And Finally.....



- Work alone is not enough to produce optimal performance
- Good nutrition practices are critical and they work !
- For specific advice consult with an accredited Sports Dietician or Sports Science specialist

Go Raibh Maith Agaibh

