

# Nutrition for different population, Ramadan, and travel

NUTD 337

# Presentation Outline

- Vegetarian and Vegan athletes
- Young athletes
- Older and Female athletes
- Nutrition in Ramadan
- Nutrition and Travel
- Exercise Associated Muscle Cramps (EAMC)

# Vegetarian & Vegan Players

## The difference in quality

Animal Food Protein	Plant food Protein
↑Muscle Protein Synthesis	↓Muscle Protein Synthesis
Complete EAAs profile	Missing at least 1 EAA*
Better digestibility	Antinutritional factors

\*Maize(12% more Leucine than animal protein, Quinoa (7% lysine & 3% methionine)

Haeme iron (animal based)	Non-Haem iron
Bette bioavailability (Males 8 mg/day & females 18 mg/day)	Poor bioavailability (Males 14 mg/day & females 33 mg/day)

## Challenging but not impossible

- Add Quinoa, Maize, Lentils
- Increase iron by 80% (supplement)
- Add Creatine & beta alanine
- Evaluate if athlete needs a multivitamin supplement

*Phytates & Tannins in plant based food may inhibit iron absorption*

# Young athletes

- Nutrition utmost important
  - Growth phase (Growth Spurt)
  - Poor nutrition may result in
    - short stature
    - Delayed puberty
    - Poor bone health
    - Increased risk of injuries
    - Menstrual irregularities/absence
  - Higher energy needs
    - Less metabolic efficiency

Energy Needs	Children	Adults
Glycolytic capacity	Lower	Higher
oxidative capacity	Higher	Lower
Fat oxidation	Higher	Lower
Muscle & blood lactate levels*	Lower	Higher
Exogenous Glucose oxidation	Higher	Lower
Glycogen stores	Lower	Higher

\*In Heavy Activity

# Young athletes: Macronutrients needs

Macronutrient	Children	Comments
Protein	Higher protein needs than adults for growth & development support	<ul style="list-style-type: none"><li>•1.40 g/kg BW/day another study suggested it is 2.07 g/kg BW/day</li><li>•Spread over 3-4 meals/day</li><li>•Each meal 0.3 g/kg BW protein</li></ul>
Carbohydrate	No specific requirement, consumption, remember limited glycogen stores, limited glycolytic capacity, & reliance on exogenous glucose	<ul style="list-style-type: none"><li>• Allow high carbohydrate diet</li><li>•No strict glycogen loading is required</li><li>• Provide carbohydrate depending<ul style="list-style-type: none"><li>•Exercise intensity</li><li>•Exercise duration</li></ul></li></ul>
Fat	25-30% of energy from fat	<ul style="list-style-type: none"><li>•Do not restrict unless obese child</li><li>•Include essential fatty acids</li><li>•Tailor toward energy expenditure</li></ul>

# Young athletes continued

## Fluid needs

Lower sweat rates than adult but similar core temperature

Similar fluid replacement to adults during exercise

Educate parents and coaches

Fluid consumption before, during, after exercise

Consider adding NaCl (maintain osmolality), carbohydrate and/or flavor to improve (palatability)

## Supplement use

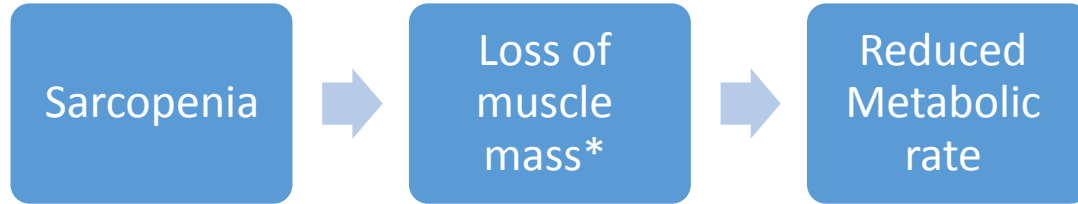
Educate Children on healthy diet

Involve a nutritionist

Be cautious with caffeine

# The Older & Female Athlete

## The Older Athlete



Delayed with resistance training  
but not prevented

*Older adults Muscle Protein synthesis is stimulated with higher protein consumption compared to young athletes → increase protein consumption*

\*Even with training muscle mass loss take place  
Their seem to be a resistance to muscle hypertrophy training

## The Female Athlete

Macronutrient	Recommendation
Protein	Increases with exercise as with men
Fat	Higher oxidative capacity ? ?
Carbohydrates	recommendations as for men
Iron	Monitor, recommend foods with high iron bioavailability, supplement
Vitamin B12	Supplement and provide enriched foods (especially if vegetarian or vegan)
Folate	Supplement and provide high Folate foods (enriched and citrus fruits)
Zinc	Same as iron

# Ramadan

- Monitor food and fluid intake
  - Ask the player to use a food diary
- Monitor sleep habits
  - Ask the player to record time of sleep and time of wake up at night
  - Time durations of naps during day
    - Avoid long naps
- Monitor training loads
  - Communicate with coach
  - Adjust food intake to training load
- Pay attention to food consumed
  - In Suhoor & Iftar
  - Make sure athlete meet nutrient needs
  - Make sure athlete is hydrated
- Avoid extreme environment
  - Extreme heat to minimize sweat loss & dehydration
- Be sensitive to athlete needs
- Consider time and dates when organizing events



# Nutrition for travel

Study the destination (food culture, disease, food & water availability, quarantine rules, catering arrangement, vaccinations)

Understand your staff and athletes food needs (food intolerances, food palatability, allergies, restrictions, medical conditions, special diets)

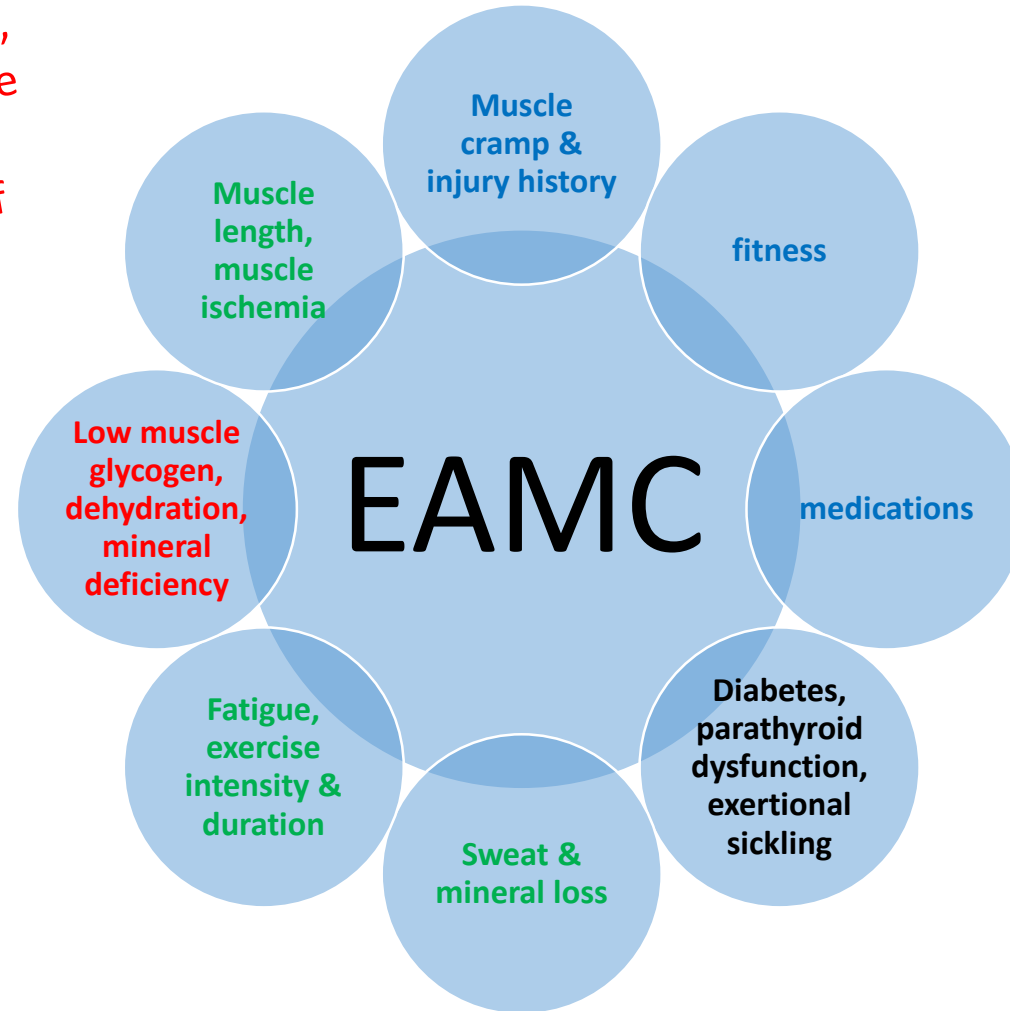
Travel (provide proper nutrition and fluids in long travels, frequent stops, if travelling through time zones arrange meals according to time zone)

To ensure safety establish food hygiene and safety protocols for team and staff such as use of hand sanitizers, hand washing, eating out restrictions, etc...

Before settling undertake renaissance trip to accommodations, catering services, changing rooms, bathrooms, and observe hygiene and catering style

# Exercise Associated Muscle Cramps (EAMC): Causes

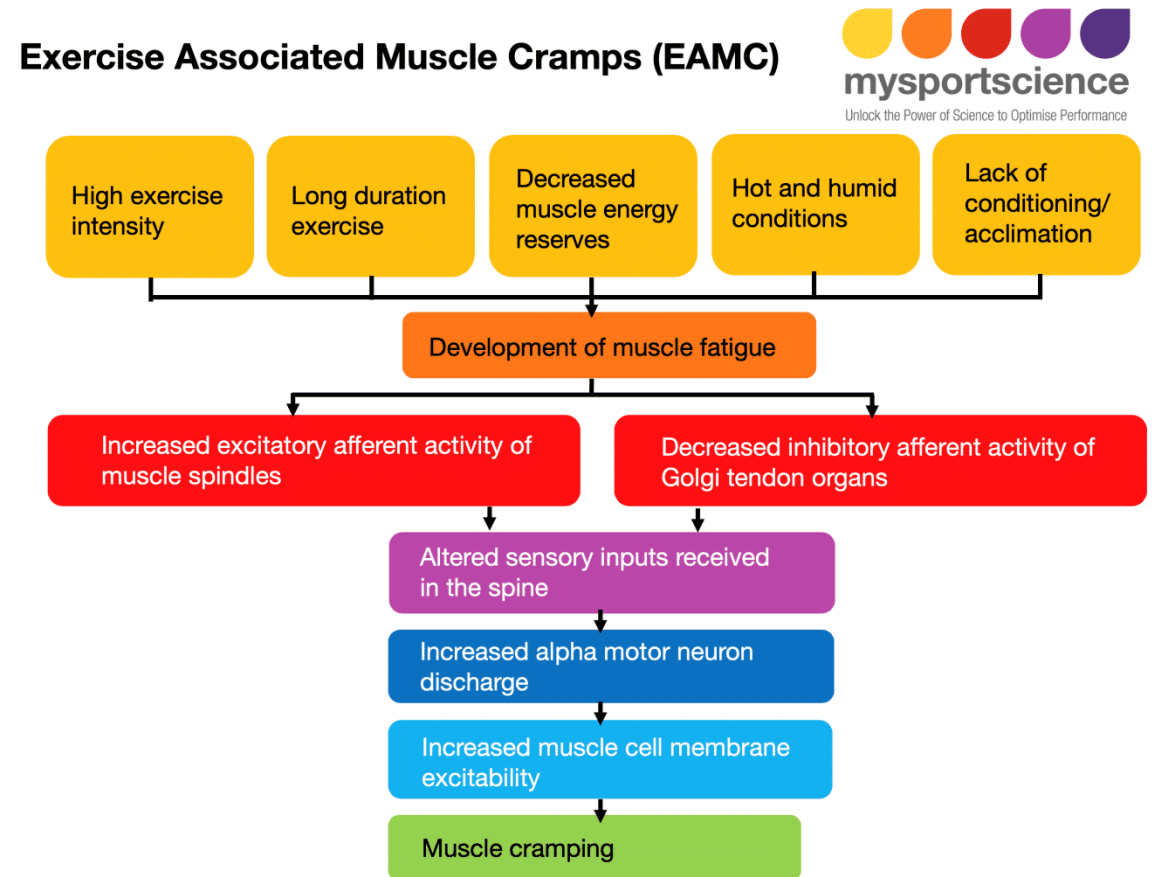
*Muscle Cramps: an involuntary, hard, painful contraction of the muscle, and it is often accompanied by a knotting of the muscle.*



Nutrition related cause  
Exercise related causes  
Disease causes  
Individual causes

# Muscle Cramp Theory

- It is suggested the causes of muscle cramp results in muscle fatigue
- Fatigue result in over excitation of muscle contraction while decreasing muscle relaxation mechanisms
- Over excitation of the muscle results in muscle cramps



Source: Jeukendrup A, mysportscience.

# EAMC prevention

## Pickle Juice

Salt, water, vinegar (pickle Juice)



Drinking Pickle Juice (1ml/kg BW) makes vinegar stimulate TRP channel (mouth and GI tract)



TRP channels causes muscle relaxation in 3-4 minutes

## Magnesium and Quinine

- Magnesium (Mg)
  - Not many Mg studies on athletes available
  - Studies were limited to older adults with cramps
  - No strong evidence
- Quinine
  - Weak to moderate evidence
  - Larger studies are required
  - Restricted in many countries
  - No strong conclusion available