Let's Excel Together

CANADIAN ACADEMY OF SPORTS NUTRITION

Lecture 52:

Mountain Sickness

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Mountain Sickness (MS):

- Also known as altitude disease, mountain sickness is a condition experienced by skiers, mountain climbers, and hikers.

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- **It occurs due to a decrease in oxygen content of the arterial blood at high altitudes.**

- **As altitude increases, atmospheric pressure and the partial pressure of oxygen in the arterial blood decrease, leading to a constellation of symptoms called "*mountain sickness*".**

Mountain sickness demonstrates itself as one of the following conditions:

- **a) Acute Mountain Sickness (AMS).**
- **b) High-Altitude Pulmonary Edema (HAPE).**
- **c) High-Altitude Cerebral Edema (HACE).**
- **d) Chronic Mountain Sickness (CMS; Monge`s Disease).**

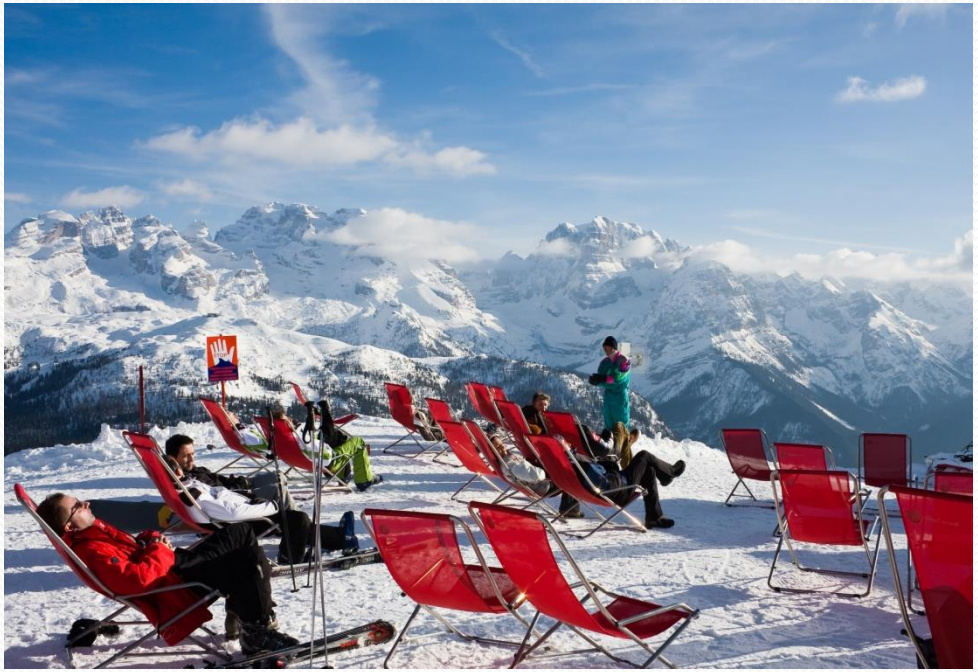
Risk factors for developing mountain sickness at high altitude are:

- **a) Climbing too fast too high.**
- **b) Lack of pre-altitude exposure.**
- **c) A previous history of mountain sickness.**
- **d) Exertion.**
- **e) Concussion within the past 6 months.**
- **f) Survivors of the second impact syndrome (SIS).**

Acute Mountain Sickness (AMS):

- **AMS is the most common form of mountain sickness.**
- **It is experienced by most people at altitudes of 2500 m (8000 ft) within 4 to 12 h after ascent and subsides in 24 to 48 hours.**
- **Some may develop at altitudes as low as 2000 m (6500 ft).**

Being common at ski resorts, AMS is characterized by:



- **Headache.**
- **Nausea.**
- **Vomiting.**
- **Dizziness.**
- **Fatigue.**
- **Loss of appetite.**
- **Insomnia.**
- **Swelling of the hands and feet.**

High-Altitude Pulmonary Edema (HAPE):

- **HAPE is an accumulation of fluid in the lungs.**
- **It typically develops 24 to 96 hours after rapid ascent to 3000 m (9500 ft).**
- **It is responsible for most deaths due to mountain sickness.**

Symptoms of HAPE include:

- **severe headaches.**
- **severe fatigue.**
- **increased breathing and heart rates.**
- **shortness of breath even at rest.**
- **dry coughs.**
- **low grade fever.**
- **cyanosis.**

High-Altitude Cerebral Edema (HACE):

Affecting about 1% of people climbed to altitudes about 2700 m, HACE is the swelling of the brain.

- **It is characterized by:**
- **intractable headaches.**
- **severe fatigue.**
- **confusion and disorientation.**
- **staggered gait**
- **drowsiness.**
- **loss of consciousness.**

Chronic Mountain Sickness (CMS; Monge`s Disease):

- **CMS can develop after an extended time (months and years) living at a high altitude.**
- **It is characterized by severe fatigue, drowsiness, cyanosis, confusion, coughs, shortness of breath, and chest pain.**

Approach to Mountain Sickness:

- **The best approach to mountain sickness is to prevent developing it.**

- **Altitude acclimatization reduces the risk of developing mountain sickness.**

In AMS, descent is the simplest measure:

- **If the person is at altitudes of 8000 – 10000 ft, it is recommended to descend 1000 ft daily.**
- **If the person is at altitudes of over 1000 ft, he/she should descend 500 ft daily.**

- **If you are susceptible to develop mountain sickness or you cannot avoid rapid ascending, it is strongly recommended you see your doctor to prescribe you "acetazolamide" for AMS prevention.**

- **You should start taking acetazolamide 250 mg every 12 hours from one day before ascending to one day after.**

- **Descending to low altitudes and supplemental oxygen are effective for HAPE, HACE and CMS.**

Nutrition Supports for Mountain Sickness:

The following nutritional recommendations may help with mountain sickness:

- **a) Ginkgo Biloba (containing 24 - 32% flavonoids and 6 - 12% terpeniods): 240 – 480 mg a day. It contains flavonoids (quercetin and myricetin) and terpenoids (ginkgolides and bilobalides) that improve blood circulation and oxygenation.**

- **You may start taking ginkgo biloba from one week before climbing to high altitudes.**

- **b) Reishi Mushroom Extract: as a capsule, 1000 – 2000 mg a day, as a powder 1000 – 2000 mg a day, or a tincture 1 ml per day. Reishi mushroom contains plant sterols, mannitol, polysaccharides, and triperpenoids that improve blood oxygenation and help prevent mountain sickness.**

- **It should be taken from one week before to one week after ascent.**

- **c) French Maritime Pine Bark Extract: 200 – 300 mg a day from one week before to one week after ascent. This flavonoid improves blood circulation and oxygenation.**

- **d) Carbohydrate loading: increase your intake of complex carbohydrates to 70% three days before ascent, and maintain a high carbohydrate diet throughout the journey.**

- **e) Maintain a high – carbohydrate diet. It provides energy, enhances altitude tolerance, and reduces severity of mountain sickness.**

- **f) Foods high in mannitol: sweet potatoes, cauliflower, mushrooms, snow peas, watermelon, and celery. Mannitol is a sugar alcohol that acts an osmotic diuretic agent and can reduce intracranial pressure.**

- **It may help prevent and ease symptoms of mountain sickness especially HAPE and HACE.**

- **g) Drink plenty of water: dehydration makes mountain sickness worse.**

- **h) Avoid alcohol and caffeine: they cause dehydration.**
- **i) Avoid greasy and oily foods while ascending.**
- **j) Ginger: 500 – 1000 mg a day. It helps relieve gastrointestinal symptoms of mountain sickness.**
- **k) An herbal potion of lemon juice, ground ginger and honey. This potion may help ease mountain sickness.**

- **l) If you are taking creatine monohydrate, stop taking it from 2 weeks before ascent to 2 weeks after descent.**

- **Creatine may aggravate symptoms of mountain sickness.**

Homework:

- **1) Describe the risk factors for developing mountain sickness.**

- **2) Describe your nutritional approach to mountain sickness.**