

Medical Care of Children in Sports

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Common childhood diseases which may cause problems in exercise

- Asthma
- Heart diseases
- Epilepsy

Asthma

- A chronic inflammatory state of the airways that can develop at any age
- 10% of Hong Kong children are asthmatic
- varying severity, from very mild to very severe
- A general trend of increased deaths and hospitalizations from asthma in all industrialized countries

Triggers of asthma

- allergens, respiratory infections
- weather changes
- emotional stress
- irritants (dust, pollutants, chemicals)
- **exercise**

Exercise-induced Asthma (EIA)

- Exercise is one of the triggers of asthma attack
- EIA usually occurs within 3 to 8 minutes of starting exercise
- symptoms of EIA: coughing, wheezing, shortness of breath, chest tightness

Diagnosis of EIA

Exercise challenge test: treadmill, bicycle, running etc.

How is EIA treated?

- Pre-treatment with an inhaled, short-acting bronchodilator medications, such as ventolin, bricanyl 10 to 15 minutes before exercise

What sports are best for children with EIA?

- Sports with intermittent periods of activity
- People with EIA can participate in any sports with some pre-treatment.
- Exercise in cold, dry air induces more severe attacks than similar exercise in warmer air.

Monitoring EIA with a peak flow meter

Epilepsy

- Chronic seizures stemming from a brain abnormality.
- A seizure is a sudden, involuntary change in behavior or perception caused by abnormal electrical discharge in the central nervous system.

Risks of sports to children with epilepsy

- antiepileptic drugs can cause fatigue and lethargy, impaired vision and coordination
=> poor athletic performance and increase risk of injury
- head injury may worsen the condition of epilepsy

Sports unsuitable for children with epilepsy

- Contact sports, aviation sports, unsupervised water sports

Tips for safer sports

- When exercising, take frequent breaks
- Exercise on soft surface
- water sports must be supervised and wearing a life vest if possible
- not to go ski or hike alone

Heart problems

- Congenital heart disease
- Acquired heart diseases: rheumatic heart disease, Kawasaki disease, myocarditis

What is a congenital heart disease?

- various conditions resulting from the abnormal development of the heart.
- Usually involves structural changes, holes, narrow valves or misplaced blood vessels.
- Cause: usually unknown, both environmental and heredity play a role.
- Very different from acquired heart disease in adults.

Sudden cardiac death usually occurs in children with known, predisposing heart conditions. Only a very small number occur in individuals who have not been previously recognised to have heart disease.

Heart diseases which cause sudden death

- **Hypertrophic cardiomyopathy(HOCM)**
- Pulmonary vascular disease
- Cyanotic congenital heart disease
- Marfan syndrome with aortic lesion
- Abnormal coronary aneurysm after Kawasaki disease
- myocarditis
- long QT interval

Prevention of sudden cardiac death in children

- Appropriate management of children with known heart problems, proper advice regarding exercise
- optimal screening of children for cardiac problem

Cardiopulmonary resuscitation (CPR)

- Drowning
- seizure
- cardiac arrest
- head injury

Uncommon conditions which may require special attention during exercise

- Insulin dependent diabetes mellitus (IDDM)
- Anorexia nervosa

Deleterious effects of exercise to patients with IDDM

- Hyperglycemia and ketoacidosis
- hypoglycemia- more common

Anorexia nervosa

- Excessive weight loss
- amenorrhea

Nutritional consideration of children in sports

- Energy
- Protein
- Calcium
- Water and electrolytes

Physical activity and bone mass

Increasing physical activities in children and adolescents are positively associated with bone density.

Calcium intake in children

- Recommended daily allowance (RDA)
school pupil: 800mg/day
adolescent :1200 mg/day
- Hong Kong Chinese children: 600mg/day
- Calcium supplementation for 18 months
showed increased bone density, but no
benefit on height increment