Disabled Athletes and the Special Olympics

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Introduction

• There are 35 million people in the US with disabilities
• 15 to 20 million children have chronic health conditions, up to 2 million require extensive daily caretaking.
• 4,000 Athletes in 2008 Beijing Paralympics
Introduction

- 7,500 athletes, 164 countries in 2007 Special Olympics World Games, China
- 2000 athletes, 100 countries in 2009 Special Olympic World Winter Games, Idaho

Special Olympics

Miran Brejc of Slovenia
Physically Challenged Athletes

Athletes with Disabilities
International Paralympic Committee

- The International Paralympic Committee (IPC) - includes more than 120 member nations and the International Federations representing different disability groups.
- It is the sister organization of the International Olympic Committee (IOC).
International Paralympic Committee

- Affiliated International Sport Organizations:
  - Comité Internationale des Sports des Soudes
  - Cerebral Palsy International Sports and Recreation Association (CPISRA)
  - International Blind Sports Association (IBSA)
  - International Sports Organization for the Disabled
  - International Stokes-Mandeville Wheelchair Sports Federation
  - International Sports Federation Intellectual Disability (INAS-FID)
Classification of Disabled Sports

• Disabled Sports Organizations are impairment specific, not sports specific
• Disability classification, rules of competition, and medal awards are different for each organization - even within the same sport
• This creates a very complex and fragmented system of classification internationally
History of Paralympic Games

[Chart showing the growth in participants and countries from 1960 to 1996]
3,310 athletes from an unprecedented 104 countries
17 full medal sports and 2 demonstration sports
Paralympic Sports

Archery  Goalball
Athletics        Judo
Basketball      Lawn Bowls
Boccia          Powerlifting
Cycling         Rugby
Equestrian       Shooting
Fencing          Swimming  Volleyball
Football         Table Tennis  Yachting
Paralympic Sports
Paralympic Sports

- BOCCIA – 1992
- Greek ball tossing game played by athletes with CP
- Chutes, ramps, and mouth activation devices allow the more severely disabled to compete
Paralympic Sports

- **GOALBALL – 1988**
- Blind and visually impaired play with modified ski goggles to equal the visual acuity of the athletes, while they “listen” for the ball thrown at the goal
Paralympic Sports

- LAWN BOWLS – 1996
- Open to amputees, wheelchair athletes, and blind & visually impaired athletes
- Allows disabled and able-bodied athletes to compete against each other
- A small target ball (Jack) is placed on the green: each competitor tries to roll larger wooden balls closest to the Jack
Other Disabled Sports

- Alpine Skiing
- Bowling
- Canoeing
- Cross Country
- Diving
- Figure Skating
- Floor hockey
- Gymnastics
- Ice hockey
- Nordic skiing
- Racquetball
- Roller skating
- Slalom
- Softball
- Speed skating
- Team handball
Paralympic Summer Games
Paralympic Winter Games
Physically Challenged Athletes
Disability Specific Injuries

- Most common in upper extremities: relied on for transfers and mobility
- During athletic events blisters, lacerations, and abrasions occur
- Elbow pain occurs in 15% of athletes, rotator cuff tendonitis and carpal tunnel syndrome are also common
Disability Specific Injuries

• Amputees - frequent sprains & strains, blistering, pressure sensitive areas
• Lumbar pain can also occur because of ground reactive forces transmitting differently to the low back from the prosthetic limb vs. the sound limb - especially in runners
• Metabolic demands are also higher
Medical Issues in the Physically Challenged Athlete

• AUTONOMIC DYSREFLEXIA:
  - In T-6 and above Spinal Cord Injury (SCI) athlete
  - Noxious stimulus below SCI level causes unchecked stimulation of sympathetic nervous system resulting in:
    - Headache, piloerection, sweating, paroxysmal hypertension and/or bradyarrhythmia
Medical Issues in the Physically Challenged Athlete

- “Boosting”: Self-induced autonomic dysreflexia used to ↑ performance
Autonomic Dysreflexia

• Treat by removing noxious stimulus:
  • Look for pressure sores, urinary tract infection, fracture, tight clothes, distended bowel or bladder

• Treat persistent \( \uparrow \) BP:
  • 10 mg nifedipine SL or other Ca\(^{++}\) channel blocker, captopril, hydralazine, clonidine
Thermoregulation in Wheelchair Athletes

- **Risk of hypothermia:**
  - Lack of muscle mass below level of lesion
  - Loss of vasomotor and sudomotor control
  - Impaired or absent sensation

- **Risk of hyperthermia:**
  - Impaired sweating - less body area for evaporative cooling
  - Feel the skin under the arms
Wheelchair Athletes and Venous Blood Pooling

- Partial or complete loss of innervation from sympathetic nervous system results in diminished reflexive control of blood flow
- Decreased cardiac output
- Risk of DVT
Orthopedic Problems in Wheelchair Athletes

- **Premature osteoporosis:**
  - Increased risk of fractures in extremities

- **Heterotopic ossification:**
  - Increased warmth, swelling or contracture around major joints

- **Spasticity:**
  - Due to nociceptive stimulus
Orthopedic Problems in Wheelchair athletes: Osteoporosis

- Combination of factors:
  - Decreased weight-bearing
  - Less muscular pull on bones
Orthopedic Problems in Wheelchair Athletes: Pressure Sores

- Common over ischium & sacrum
- Proper positioning
- Regular relief of pressure areas
- Cushioning
- Skin care
Orthopedic Problems in Wheelchair Athletes

- Musculoskeletal injuries:
  - Overuse of shoulder complex
  - Compensatory muscle imbalances

- Common problems:
  - Blisters
  - Wheel-burns
  - Abrasions
  - Bruising
Technological Advances
Controversies!!

• Oscar Pistorius – the “Blade Runner”
• “the fastest man on no legs”
Ethical/Social Issues!

- Brian McKeever (and brother Robin)
- Paralympic cross-country skier with Stargardt disease (juvenile macular degeneration)
Special Olympics Athletes

• Eligibility:
  • Identified by a professional agency as having mental retardation (MR)
  • OR: Having a developmental disability with significant learning or vocational problems due to cognitive delay that require specially designed instructions

• Unique population
Mental Retardation

- Identified prior to age 18
- Significantly sub-average intellectual function with significant limitations in 2 or more adaptive skill areas:
  - Communication
  - Self-care
  - Home Living
  - Social Skills
  - Community Use
  - Self-direction
  - Health and Safety
  - Functional Academics
  - Leisure
  - Work
Special Olympics Athletes

- Preparticipation physical examination is necessary prior to any competition
- Must participate for 8 weeks in formal sports training and practice sessions
- Medical history summary should be available on-site
Special Olympic Athletes

- Communication needs:
  - Give simplified instructions regarding injuries
  - Make eye contact
  - Speak clearly and directly to athlete
  - Language must be concise, age-appropriate
  - Review all dialogue with athlete
  - Demonstrate motor patterns and activities
Medical Conditions of Special Olympics Athletes

- Hypokinetic diseases:
  - Obesity
  - Diabetes
  - Hypertension

- Cardiovascular conditions:
  - Both congenital and acquired

- Seizure disorders
Medical Conditions of Special Olympics Athletes

- Asthma and allergies
- Vision problems
- Musculoskeletal conditions
- Joint laxity
- Down Syndrome
Heat Illness in Special Olympics Athletes

- At greater risk if they are:
  - Overweight
  - Taking antiepileptic and psychotropic drugs
- Need to be reminded to continue to hydrate before, during and after competition and practice
Special Olympic Athletes

- May have Type 1 or Type 2 diabetes:
  - Delayed wound healing
  - Skin care and proper footwear is important
- Watch for symptoms of hypoglycemia or hyperglycemia
Athletes with Down Syndrome

- Congenital heart disease in 40-45%:
  - Ventricular septal defects
  - Mitral valve prolapse
  - Aortic regurgitation

- Signs & symptoms of distress:
  - Heart palpitations, dyspnea
  - Syncope, lightheadedness
Athletes with Down Syndrome

- Orthopedic problems:
  - Atlanto-axial/occipital instability
  - Patellar instability
  - Metatarsus primus varus with hallux valgus or varus
  - Pes planus
  - Poor muscle tone
  - Scoliosis
Athletes With Down Syndrome

- Delay in cognitive development, +/- motor skill, language development
- May have Atlanto-occipital or atlanto-axial instability due to laxity of the transverse ligament, potential neurologic complications
Athletes with Down Syndrome

- Screen for atlanto-occipital instability
- Lateral cervical spine xrays
  - Flexion, neutral, extension
  - Atlanto-dens interval (ADI) space greater than 4.5 mm in children, 2.5 mm in adults
  - repeat q 3-5 years?
Athletes With Down Syndrome

- Swimmers with atlantoaxial instability are restricted from starting on the blocks
- For CPR and rescue breathing - use modified jaw thrust
Special Olympics

The Special Olympics Athlete Oath

Let me Win!
But if I Cannot win,
Let me be brave in the attempt!


Selected References


