Special Considerations in Specific Athletic Groupings

The Differently-Abled Athlete

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Definition: Special Populations

- Special needs populations, by definition, **require more health care services and/or specialized health care services than other people**.
- … The greater need for health care services among these populations is generally more costly to the system (especially if care is not managed appropriately.)

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Special Populations considered in Sport

- The Pediatric/Adolescent athlete
- The Female athlete
- The Geriatric athlete (renamed Senior Athlete {by me})
- **The Differently Abled athlete**
- Special Disease States in Sport
- Special Considerations in Ultra-Sports

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CCSP® Program Guidelines

Differentially-Abled Athletes
a. Special Olympics: pre-exam
b. Overview of types of athletes

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Differently-Abled Athlete: Intro

- Everyone should have opportunity to participate and compete in sports activities
- Increased participation in physical activity and competition among people with physical challenges
- Several groups exist providing regional, national and international competitions

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Differently-Abled Athlete: Intro

Sports Participation Benefits compared with Inactive Peers

Athletes with Paraplegia	Athletes with Limb Deficiencies
Fewer pressure ulcers	Improved proprioception
Fewer infections	Improved proficiency using prosthetic devices
Lower likelihood of hospitalization	

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Differently-Abled athlete: Intro

Same benefits as other athletes:

- Increased exercise endurance
- Cardiovascular function
- Muscle strength
- Flexibility
- Balance
- Motor skills
- Improved self-esteem, reduced anxiety and depression

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Differently-Abled athlete: Different organizations

- Special Olympics and US Paralympics – division of USOPC
  - Governing rules and inclusion criteria
- Special Olympics – international serving nearly 5 million people ages 8 and above in more than 170 countries
- Require PPEs for eligibility every 1-3 years

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Differently-Abled athlete: Adaptive Sports Organizations

International Paralympics

- Athletes with physical disabilities in one of 10 eligible impairments
- Assigns numerical rank or grading to level of disability for fairness
- Competitions every 4 years – 29 sports
  - 23 summer, 6 winter

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Differently-Abled athlete: Adaptive Sports Organizations

ADAPTIVE SPORT CONTACTS

National Sport Organizations

American Association of Adapted Sports Programs	www.adaptedsports.org
Blaze Sports America	www.blazesports.org
Disabled Sports USA	www.disabledsportsusa.org
National Center on Health, Physical Activity and Disability	www.nchpad.org
Paralyzed Veterans of America	www.pva.org
Triathlon Organization	www.triathlon.org/paratriathlon
United Amputees Services Association	www.oandp.com
United Amputees	www.unitedamputees.com

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Question 1:
To compete in the Special Olympics, how often must the athlete have a PPE?

a. Every year
b. Every two years
c. Every three years
d. Every 1-3 years

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Differently-Abled athlete: Comprehensive Screening

- Tailored to disability or condition
- Identify predisposing conditions/comorbidities
- Provide a needs assessment
- Determine physical ability and limitations

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Differently-Abled athlete: Comprehensive Screening

- ROM with flexibility of extremities and trunk
- Strength
- Balance and equilibrium skills
- Postural discrepancies
- Sensory discrimination and circulation problems
- Rhythmic and coordination skills
- Visual and auditory accuracy
- Orthopedic and special appliances worn by athlete

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Differently-Abled athlete: Paralympic athletes - Common issues to screen

- 12% structural cardiovascular abnormalities
- 2% high risk for SCD
- May have decreased cardiorespiratory capabilities, even when congenital cardiac anomalies are not present
- Secondary affect: Decreased oxygen output
- May require additional cardiovascular testing as part of PPE

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Differently-Abled athlete: Common issues to screen

- Ocular function
- – 1/3 have ocular issues
  - Poor visual acuity
  - Refractive errors
  - Astigmatism
  - Strabismus
- Cardiovascular function
- Neurological function
  - Neurologic deficit
- Dermatologic function
- Urogenital system
- Musculoskeletal system

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Differently-Abled athlete: Types of Disabilities/ Challenges

- Amputations
- Blindness/Visual Impairment
- Cerebral Palsy
- Dwarfism
- Spinal cord injuries

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Differently-Abled athlete: Disability and Injury pattern

- Similar injuries in similar sports
- Similar injury rates
- Similar evaluations
- Thorough history, evaluation imaging prn

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Amputations

- Often same rules as able-bodied athletes
- Need additional care for residual stump
  - Skin irritation from prosthesis
  - Blisters and pressure-related ulcerations
- Phantom pain* (Any pain related to the residual limb)
- Sound limb needs—based on standard treatments
- Prevent heat-related illness and promote electrolyte restoration

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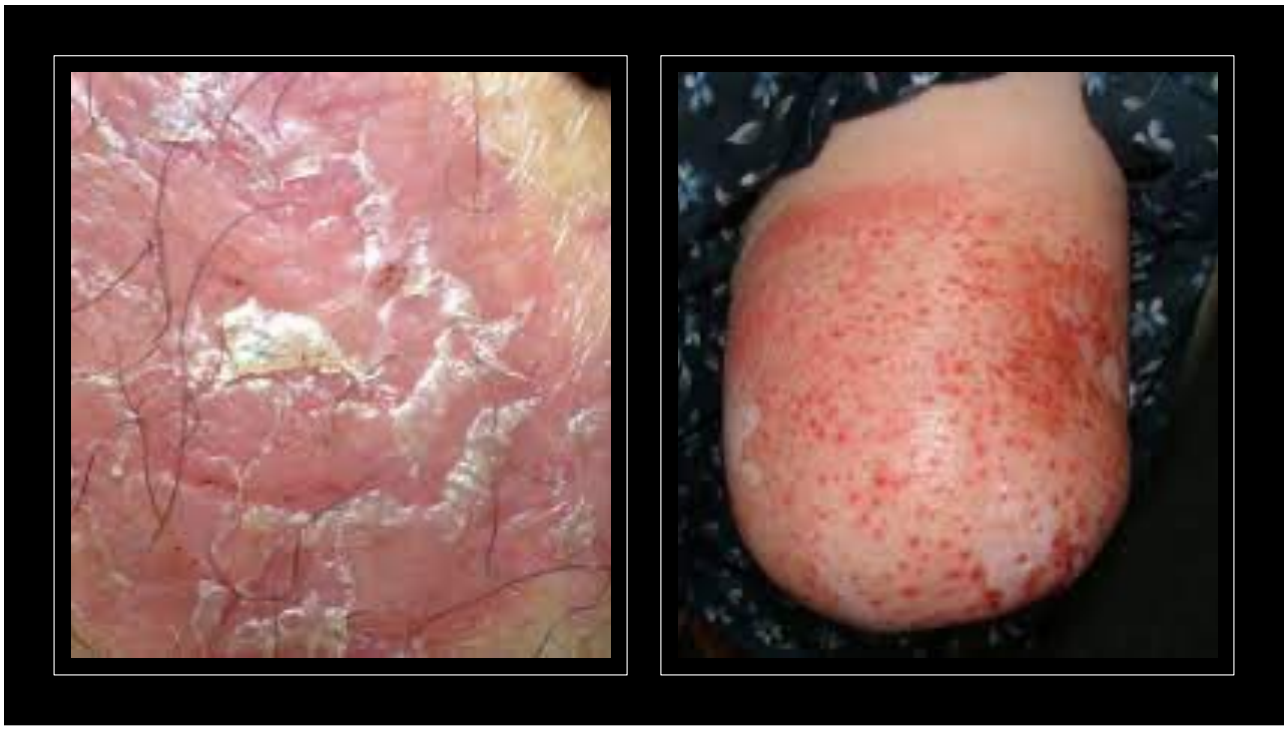

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LE conditions in Amputees

- LE prosthetics transfer ground reaction forces through direct and indirect load transfers
- Musculoskeletal system
  - Evaluation of strength of commonly injured sites
  - Evaluation of stability
  - Evaluation of flexibility

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Blindness/Visual Impairment

- High prevalence of vision abnormalities among Special Olympic athletes
- Lack of visual cues creates the issue as MSK system is WNL
- Track and road barriers need athlete runner guides
- Sunburn an issue

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Question 2:
Which differently-abled athlete is most likely to experience phantom pain?

a. Spina bifida athlete
b. Down Syndrome athlete
c. Amputee athlete
d. Quadriplegic athlete

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Cerebral Palsy

LE injuries at ankle and knee

Possibly due to spasticity and biomechanical gait changes

Tight LE musculature, esp hams and gastroc
- Eval for flexibility and strength
- Eval AROM and PROM
- Exaggerated stretch reflex

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Cerebral Palsy

- Speech difficulties a consideration
- Decreased strength
- Shoulder, wrist and hand issues in wheelchair use
  - Motor control and hand-eye coordination issues
  - Balance difficulties
- Evaluate for risk to others with sticks, racquets or throwing sports

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Down Syndrome (Trisomy 21 MC)

- **AA instability** is the orthopedic variant in DS that carries the **most serious potential concerns** in relation to physical activity and sports participation
- Recommended for persons with DS who have **radiographic evidence of AA instability be restricted** from participating in sports that entail a high risk of head and neck trauma to prevent occurrence of an acute and catastrophic spinal cord injury
- Sports include most contact sports such as soccer, football, and basketball, as well gymnastics, diving, swimming with a diving start

https://www.researchgate.net/publication/6727745_Down_Syndrome_and_Sport_Participation

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Down Syndrome

15% have AAI (Atlanto-Axial Instability)

Ligamentous laxity

AAI Neurological manifestations:

- Easy fatigability
- Abnormal gait
- Incoordination and clumsiness
- Sensory deficits
- Spasticity
- Hyperreflexia
- Clonus

Must undergo evaluation for AAI (Atlanto-Axial Instability)

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Down Syndrome (Trisomy 21 MC)

- Today average lifespan 60 y/o
- Congenital heart disease present in 40-50%
- Additional issues:
  - Hearing loss
  - Ear infections
  - Vision problems
  - Mental retardation
  - Orthopedic concerns
  - Epilepsy
  - Greater risk for obesity

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Others at risk for AAI

- Rheumatoid arthritis
- Achondroplastic dwarfism
- Klippel-Feil syndrome in abnormal fusion ≥ 2 cervical vertebrae

Three AAI questions (if no, further assessment not warranted):

1. Does athlete show signs of progressive myopathy?
2. Does athlete have poor head/neck muscular control?
3. Does person's neck flexion allow chin to rest on chest?

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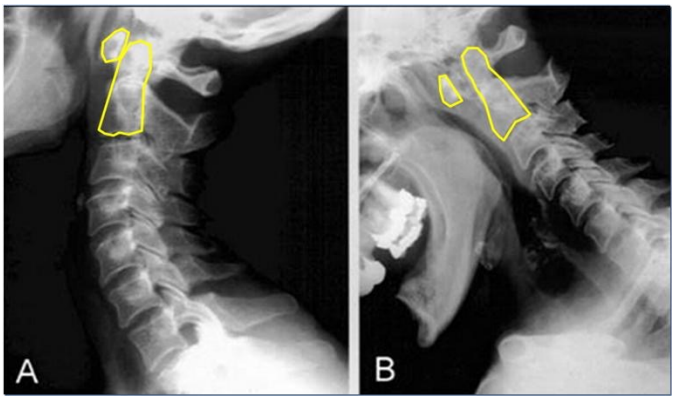
Atlanto-Axial Instability



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Question 3:
Which differently-abled athlete might you expect to encounter speech difficulties?

a. Spina bifida athlete
b. Cerebral palsy athlete
c. Amputee athlete
d. Quadriplegic athlete

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Conditions in wheelchair racers

- Neurological function
  - Neurologic deficits
  - Peripheral nerve entrapment syndromes of UE common
    - MC CTS and ulnar neuropathy at the wrist (Guyon Canal syndrome)
  - Look for signs of muscle atrophy
  - Look for signs of weakness in hand
  - Test for specific sensory nerve deficits

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Conditions in wheelchair racers

- Dermatologic function - Prone to skin injuries
  - Examine UE for abrasions, blisters
  - Skin contact with other wheelchairs
  - Pressure ulcers over sacrum and ischial tuberosities due to sweat, shear
  - Prosthetic devices additional
- Try modified seat cushions

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Conditions in wheelchair racers

- Urogenital system
  - Confirm any devices needed for drainage
- Musculoskeletal system
  - RTC tendinitis assoc/pec tightness
  - Evaluation of stability
  - Evaluation of flexibility
  - Evaluation of strength of commonly injured sites

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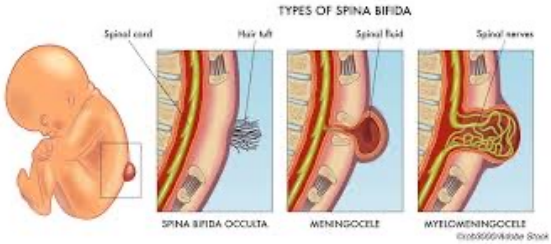
Spinal Cord Injuries (SCI)

- Trauma damages cells within the spinal cord MC
- Can be spina bifida
- SCI level determines level of function
- Quadriplegia involves both lower extremities, some UE involvement
- Paraplegia involves both LE, little to no UE impairment



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Spinal Cord Injuries (SCI)

- Pain, muscle spasms, sensitivity to stimuli may develop
- Prone to secondary medical problems
  - Bowel issues
  - Bladder infections
  - Lung infections
  - Pressure sores
- Shoulder pain common due to wheelchair use

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