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Unique Considerations – the Female Paralympic Athlete

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Overview

- For most clinical topics – minimal variance amongst the needs of Olympic and Paralympic Female Athletes**
- For some, however, significant differences exist**
 - *Focus on the Female Athlete Triad/RED-S*





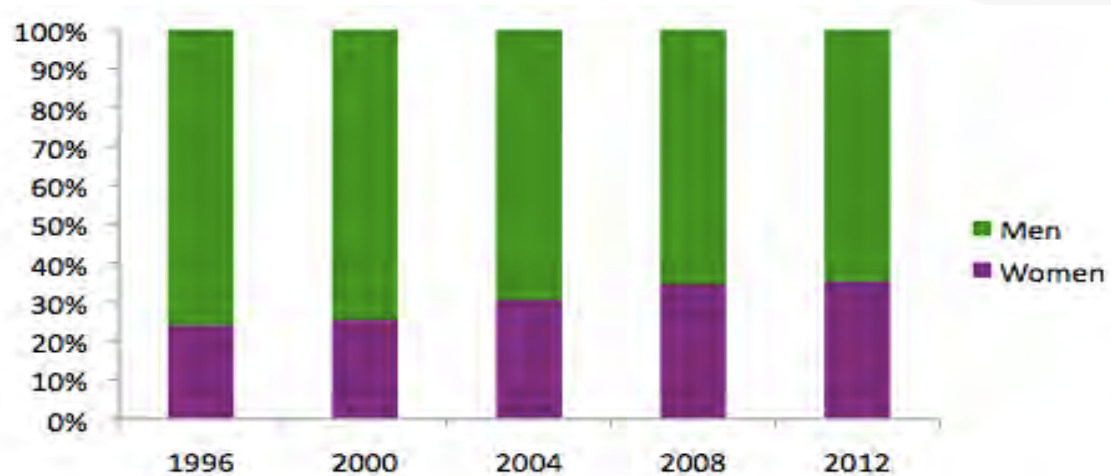
Why Differentiate?

- The unique needs of female athletes with an impairment have often received little attention**
- What we know - the evidence - is in its infancy**
 - Clinical standards of care
 - Diagnostic algorithms
- Involvement of female athletes with a disability is expanding rapidly**
 - From the grassroots to elite





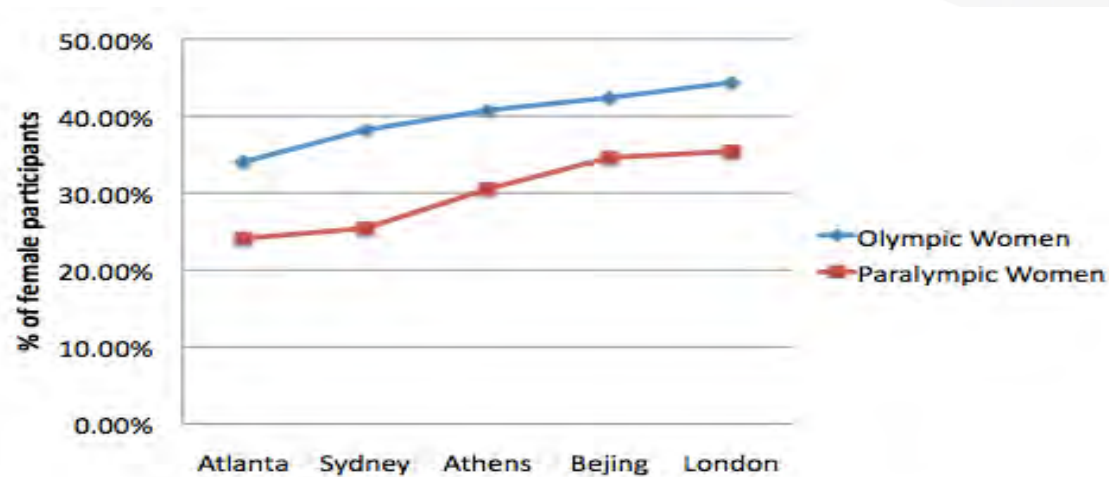
Participation Trends



Gender participation by proportion at the Summer Paralympic Games, 1996-2012



Participation Trends



Trends in female athlete participation in the Paralympic Games in comparison to the Olympic Games



Female Athlete Triad/RED-S





Female Athlete Triad (Triad) and Relative Energy Deficiency in Sport (RED-S)

The Female Athlete Triad (Triad)

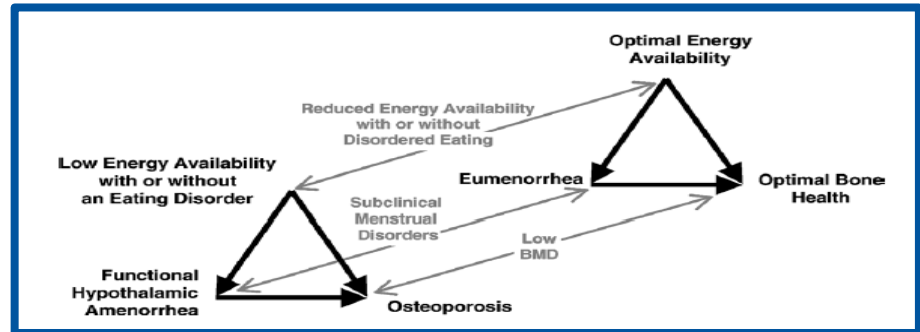
- First defined by ACSM in 1992 (Yaeger, 1993)
 - Updated diagnostic criteria and definition in 2007 (Nattiv, 2007)
-
- **Relative Energy Deficiency in Sport (RED-S)** (Mountjoy, 2014)
-



Female Athlete Triad (Triad) and Relative Energy Deficiency in Sport (RED-S)

□ Defined by the inter-relationship of three conditions:

- Low energy availability (with or without disordered eating)
- Menstrual dysfunction
- Low bone mineral density



(Nattiv, 2007)



Systematic Review of the Triad/RED-S and Athletes with an Impairment

Rationale:

- Currently, little available literature on the prevalence or impact of the three components of the triad in athletes w/ disability

Method:

- Comprehensive lit search cross linking Triad/RED-S terms with six major impairment categories
 - Search yielded **75** articles or book chapters; only **4** were original research papers on a component of the Triad and athletes with a disability
-

Search Results



	Energy availability (EA)*	Menstrual dysfunction (MD)+	Impaired bone health (BMD)≠
Spinal cord injury (SCI)	6 (3G, 3A)	4 (4G)	15 (13G, 2A)
Spina bifida (SB)	4 (4G)	0	4 (4G)
Central neurologic injury (CP/TBI)	5 (5G)	3 (3G)	11 (11G)
Amputee (AMP)	5 (5G)	0	2 (2G)
Short stature (achondroplasia) (SS)	3 (3G)	0	3 (3G)
Visual impairment/blind (VI)	6 (6G)	0	4 (4G)

Legend:

G=general population; A=athletes

Search Terms (sample):

*Low EA: energy expenditure, energy availability, disordered eating, eating disorder, dieting

+Menstrual dysfunction: amenorrhea, menstrual function, menstrual irregularity

≠Impaired bone health: osteopenia, osteoporosis, bone health, bone mineral density, stress fractures



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 - Those who are wheelchair users may have reduced energy requirements; dyskinetic CP may have increased energy expenditure due to spasticity



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 - Amputees**
 - Increased energy expenditure due to gait asymmetry
-



Disability Impacts Energy Needs

□ Key examples

- Amputees have higher energy expenditure (Gonzales 1974)
 - Unilateral BKA - □25%
 - Bilateral BKA - □41%
 - Unilateral AKA - □60-70%
 - Bilateral AKA - □>200%

- Athletes with SCI have lower energy expenditure during exercise (Price 2010)
 - □26-85% dependent on level of injury



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Others

- No available literature on menstrual dysfunction in cases of SCI, SB, AMP, SS, or VI
 - likely minimal differences



Key Findings: Low Bone Mineral Density

Spinal cord injury or spina bifida

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Others

- Affected athletes in high speed sports have much higher risk of injury due to reduced BMD





Disability Type	Energy Expenditure* #	Menstruation*	Bone Mineral Density*
Spinal Cord Injury	Reduced (wheelchair users) or increased (ambulatory – due to gait inefficiency)	Minimal variance beginning approximately 5 months post-injury	Severely reduced in lower extremities (paraplegia, wheelchair users) or both upper/lower extremities (tetraplegia, wheelchair users)
Spina Bifida	Reduced (wheelchair users) or increased (ambulatory – due to gait inefficiency)	Unknown	Reduced in lower extremities (wheelchair users)
Central Neurologic Injury	Reduced (wheelchair users) or increased (ambulatory – due to gait inefficiency)	Menstrual dysfunction may be present in severe injuries	Reduced (wheelchair users, those with poor nutritional status and/or higher GMFCS [‡] score)
Amputee	Increased due to asymmetry of gait	Unknown	Reduced in limb affected by amputation
Short Stature	Minimal variance or increased (achondroplasia)	Unknown	No variance or reduced (achondroplasia)
Visual Impairment	Minimal variance	Unknown	No variance or reduced in sedentary individuals

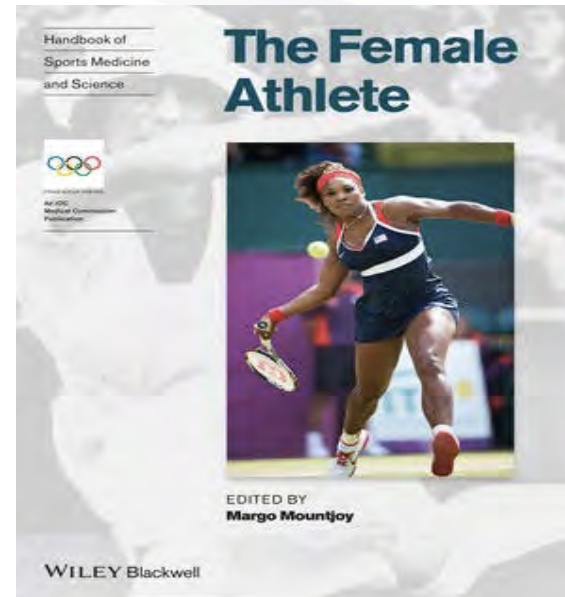
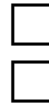


Summary of Findings

- Female athletes with a disability are at disproportionate risk for the Triad/RED-S dependent on sport and disability type**
 - Awareness is very low – a concerning problem**
 - Future research priorities should include:**
 - Assessment of the prevalence of the three Triad components in athletes with a disability
 - Assessment of knowledge of the Triad/RED-S in athletes with a disability
 - Characterization of energy needs in athletes with various disability types and various sport disciplines
-



Growing Collaborations



Growing Collaborations



THE FEMALE PARALYMPIC ATHLETE BETA

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The Female Paralympic Athlete

Listen to Overview

On the 29th July 1948, in Stoke Mandeville, England, a wheelchair archery demonstration was staged to coincide with the opening ceremony of the London Olympic Games. 16 athletes - 14 men and two women - competed, and the idea was to use sport as a tool for rehabilitation and physical fitness. Twelve years later, the first modern Paralympic Games took place in Rome, Italy, and Paralympic athletes competed in the same venues as their Olympic counterparts. The rest, as they say, is history. Although the vast majority of the health and medical needs of women with disabilities are similar to their able-bodied counterparts, as the paralympic movement has grown, the unique health needs of female athletes with disabilities have come to the forefront, and this is what we focus on in this module. In Paralympic sport, the incidence and characteristics of both injury and illness are disability and sport-specific. In a study of the London 2012 Paralympic Games, it was noted that, across all sports and injury types, female paralympians are not at greater risk for injury than males, nor do illness rates between male and female paralympians differ in major competition. And, of course, many sports-related health issues for able-bodied female athletes also apply to female athletes with a disability. However, there are a few unique health and injury issues which all female paralympic athletes should be aware of.

START ↓

A photograph of a female Paralympic athlete in an orange and black uniform, running on a track. Her bib number is 1285. The background shows a blurred crowd and stadium lights. The image is part of a digital interface with colorful geometric overlays.

Female Athlete Health Interactive Learning Module
<https://www.olympicresources.com/Home/Welcome>

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Obrigado!