Integrated Rehabilitation for the Elite and Disabled Military Athlete

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"The warrior above all others prays for peace, for it is the warrior above all others who must suffer and bear the deepest wounds and scars of war"
Disabled or Adaptive Sports

- Organized activities for individuals with disabilities date back to 1888
  - Sports Club for the Deaf was established in Berlin, Germany.
- In 1924, the first international competition for athletes with physical disabilities, the International Silent Games, was held in Paris, France

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Disabled or Adaptive Sports

- Wheelchair sports were developed at the Stokes Mandeville Hospital in Stokes-Mandeville, England, in the mid-1940s
  - Dr. Ludwig Guttman used sports as a form of rehabilitation
- The first Stoke Mandeville Games for the Paralyzed held in 1948,
  - 16 participants in wheelchair basketball, archery, and table tennis

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The First Games

- In 1948, Dr. Guttmann organised an archery demonstration to coincide with the opening ceremony of the London Olympic Games.
- By 1956, there were teams from 18 different nations taking part.
- In 1960, the 1st Paralympic Games were held in Rome immediately after the Olympic Games.

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Legislation

• The Rehabilitation Act (1973)
  – no person could be excluded from participation in any program or activity that received federal financial assistance.
  – physical education, academic programs, intramural and interscholastic sports programs at colleges and universities accessible to participants with disabilities.


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Legislation

- As a result, 7 organizations of disability sports hold membership in the US Olympic Committee (USOC):
  - USA Deaf Sports Federation (fka American Athletic Association of the Deaf),
  - Disabled Sports USA,
  - Dwarf Athletic Association of America,
  - Special Olympics (domestic and international),
  - US Association of Blind Athletes, and
Legislation

• The Americans with Disabilities Act (ADA), 1990
  – provided increased access for persons with disabilities to employment, transportation, public accommodations, state government, local government, and telecommunications.
  – In general, this access facilitates the involvement of people with disabilities in athletic pursuits and the venues where they are held.

• For children and adolescents, the 1990 Individuals with Disabilities Education Act (IDEA) is particularly relevant.
  – The purpose of the IDEA is to assure access to public education for children with disabilities.
  – This law specifically requires that children with disabilities have access to adapted physical education.

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Benefits of Exercise and Sports

• Psychosocial to physiologic benefits of exercise and sports for athletes with disabilities
  – The participants develop an improved self-concept, social awareness, social reintegration, and perception of well-being
• The physiologic benefits of participating in sports are well known.
  – Athletes with disabilities demonstrate increased endurance, strength, cardiovascular efficiency, flexibility, balance and better motor skills compared with individuals with disabilities who do not participate in athletics
• Athletes with spinal cord injury have an increase in bone density above the level of injury
Benefits of Exercise and Sports

- Amputees who participate in athletics have improved proprioception and increased proficiency in the use of prosthetic devices.
- Athletes with paraplegia are less likely to be hospitalized, have fewer pressure ulcers, and are less susceptible to infections than non-active individuals with paraplegia.

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LTC Anthony “AJ” Johnson, MD with the USA Women’s Wheelchair Basketball team at the 2012 Paralympic Games in London.

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Casualty: Any person who is lost to the organization by having been declared dead, duty status - whereabouts unknown, missing, ill, or injured typically due to an act of war. (Joint Publication 4-02) http://www.dtic.mil/doctrine/dod_dictionary/data/c/2986.html

<table>
<thead>
<tr>
<th>Table 1. Overall Casualties in OIF, OND, and OEF</th>
<th>(as of February 5, 2013)</th>
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<tbody>
<tr>
<td>Operation Iraqi Freedom(^a)</td>
<td>4,409</td>
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<tr>
<td>Operation New Dawn(^b)</td>
<td>66</td>
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<tr>
<td>Operation Enduring Freedom(^c)</td>
<td>2,165</td>
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</tbody>
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- Total Casualties: 50,450
- Deaths: 6,640 (13.1%)
- Battle Injuries: 16,185 (32.2%)
  - 54% Extremity Wounds
    - 26% Fractures
    - 82% Open Fractures
- Non-Battle Injuries: 27,636 (54.7%)

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The Process of Returning to Duty Or Not After Limb Loss

Factors Involved in Returning to Duty

- Complications with the healing limb
  - Ongoing residual limb pain
  - Uncomfortable and limited prosthetic use
- Multiple limb loss
- Decreased functional abilities
- Traumatic brain injury
- Delayed psychological adjustment to the limb loss
- Impaired confidence in their ability to resume normal life activities (self-efficacy)

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Department of Orthopaedics & Rehabilitation

- Largest in the Department of Defense
  - Ortho, PM&R, Occupational & Physical Therapy, Brain Injury Rehabilitation, Center for the Intrepid, Clinical Research Cell
- Center for the Intrepid
  - Advanced Rehabilitation Center for Amputee and Major Extremity Trauma
- Integrated Performance Unit
- Ortho, PM&R, PT, OT, RT, Nutrition, Behavioral Medicine, Nutritionist, Case Management

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CFI — IDEO — RTR

• The Intrepid Dynamic Exoskeletal Orthosis, or IDEO
  – Designed by prosthetist Ryan Blanck at the CFI
  – A custom-fit device made from carbon and fiberglass that supports the foot and ankle and resembles an amputee's running prosthetic.

• The RTR is an aggressive multidisciplinary rehabilitation program
  – Begins when the patients are still in circular external fixation
  – Emphasizes strength, plyometrics, power, and agility training with the ultimate goal of return to running, return to sport, or return to military deployment after the healing process is complete.

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Performance Optimization Warrior Enhanced Rehabilitation

- Based on three tenets of sports medicine:
  - Activity
  - Nutrition
  - Health Psychology (sleep)

- Aims to return injured service members, regardless of injury or disability, to full duty or highest quality of life.

- Empower our patients with a “toolbox” which they can use effectively impact their Lifespace.

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Recovery Nutrition Class:

- 5 R’s of Recovery Nutrition
- Order laboratory studies
- Nutrition Survey

Individual appointment:

- Review labs
- Body composition
- Review supplements
- Set goals
- Follow-up as needed

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Research

Model system

- Objective data collected as standard of care
  - Every individual
  - Every aspect of care
- Measures that assess relevant domains (components of Triad)
  - Activity
  - Nutrition
  - Health Psychology
  - Isolate and quantify the independent contribution of the variables vital to the performance triad
- Done in a manner that can be exported (operating company model)
- Advanced technologies investigated for added value
- Support evidence-based-practice using epidemiological data (Value based care)

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Statistics show that teen pregnancy drops off significantly after age 25.

Mary Anne Toledo, Republican state senator from Colorado Springs (contributed by Harry F. Poncec)

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