

# Introduction to Sports Medicine

EID424  
Bioengineering Applications in Sports Medicine  
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## Presentation Outline

- + Definition of sports medicine/athlete
- + Who is a sports medicine professional?
- + Some basic philosophy

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## What is sports medicine?

- + Caring for professional athletes?
- + Treating broken bones, ruptured tendons, strained muscles?
- + An aggressive approach to rehabilitation from injuries?
- + Promotion of fitness and wellness for the prevention of disease and injury?

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## What is sports medicine?

- + Who is an athlete?
  - + Professional?
  - + Semi-pro?
  - + College?
  - + High school?
  - + Youth?
  - + Weekend warrior?
  - + Bridge-playing residents of nursing homes?

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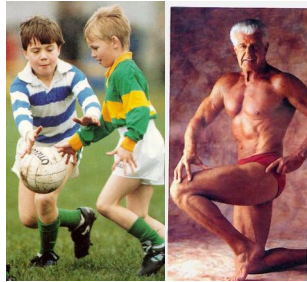
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## Who is an Athlete?

- + Youth
- + Prime
- + Middle-aged
- + Senior
- + Super senior



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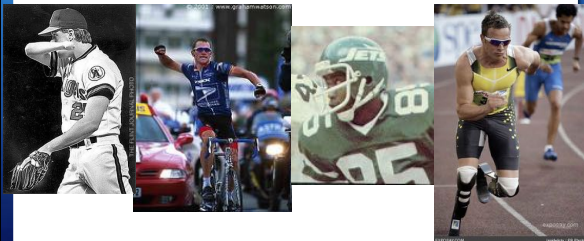
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## Who is an Athlete?

- + Successfully competing with/after disabilities/illness



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### Who is a Sports Medicine Practitioner?

- + Orthopaedic surgeon
  - + Treats musculoskeletal injuries
  - + Often via surgery
  - + Traditionally, the head of the "sports medicine team," especially in the role of team physician

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### Who is a Sports Medicine Practitioner?

- + Internist/general practitioner
  - + Usually the first doctor one sees for any problem
  - + Increasingly taking the lead role

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### Who is a Sports Medicine Practitioner?

- + Cardiologist
  - + Specializes in issues involving the heart
- + Nephrologist
  - + Specializes in renal (kidney-related) issues
- + Neurologist
  - + Specializes in nerves and the brain
- + Endocrinologist
  - + Specializes in issues related to hormones and glands (e.g., thyroid) and diabetes

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### Who is a Sports Medicine Practitioner?

- + Psychiatrist
  - + Has an MD
  - + Can prescribe drugs
- + Psychologist
- + “Ninety percent of this game is half mental” --Y. Berra, noted philosopher and Hall of Fame Yankees catcher, regarding baseball.

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### Who is a Sports Medicine Practitioner?

- + Physical therapist
  - + Supervises rehabilitation after injury
  - + Much less medical training than an MD

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### Who is a Sports Medicine Practitioner?

- + Athletic trainer
  - + On the field to provide immediate care after an incident
  - + Less medical training than a PT

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### Who is a Sports Medicine Practitioner?

- + Coach
  - + Oversees practice and competitions
  - + Likely no medical training

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### Who is a Sports Medicine Practitioner?

- + Advisor
- + Guru
- + Parent
  - + No medical training
  - + Not necessarily any training of any kind

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### Who is a Sports Medicine Practitioner?

- + Physiologist
- + Nutritionist
- + Massage therapist
- + Dentist
- + Podiatrist
- + Biomechanist
- + Electrical engineer?

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## Who is a Sports Medicine Practitioner?

- + There are no standard qualifications
- + Anyone can hang out a shingle that says "Sports Medicine Specialist"

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## Interesting Ideas from NISMAT

- + Nicholas Institute of Sports Medicine and Athletic Trauma
  - + My day job
  - + First hospital-based institute devoted to sports medicine
  - + Founded by Dr. James A. Nicholas
- + Linkage
- + The Seven Ps
- + Performance factors

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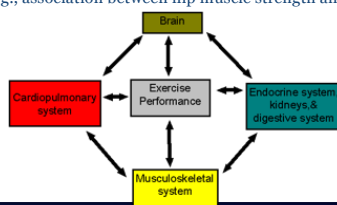
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## Linkage

- + All body's systems are interrelated
- + Weakness in one area may result in/from weakness /pathology in another
  - + e.g., association between hip muscle strength and knee pain



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## The Seven Ps

PERFORMER - everyone who exercises  
 PERFORMANCE - the form of exercise and its demands on the individual  
 PATHOLOGY - an underlying physical condition, weakness or injury  
 PRESCRIPTION - who should play what sports, for what duration, intensity and frequency  
 PRACTITIONER - the physician, coach, trainer, therapist, teacher, parent or other advisor to the performer  
 PRACTICE - the act of acquiring speed, skill and endurance for enjoyment of recreational activity and optimal performance for competitive sport  
 PREVENTION - avoidance of injury or illness by careful attention to the prior 6 Ps

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## Performance Factors

- + Neuromuscular and Physical
  - + Strength, Endurance, Body Type, Flexibility, Balance, Agility, Speed, Coordination, Timing, Reaction Time, Rhythm, Steadiness, Accuracy
- + Mental and Psychometric
  - + Alertness, Creativity, Intelligence, Motivation, Discipline
- + Environmental
  - + Playing conditions, Equipment, Practice
- + A way to chart and compare the demands placed on the body by various sports
  - + Each factor gets a rating of 0, 1, 2 or 3
- + Highest-rated activities: football (American) and ballet

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