Physical Medicine and Rehabilitation
An Introduction
The Basics

• Physical Medicine and Rehabilitation (PM&R)

• Related terminology
  – Physiatry/physiatrist
  – Rehabilitation Medicine
What is PM&R

“Branch of medicine emphasizing prevention, diagnosis, and treatment of disorders – particularly related to nerves, muscles, and bones – that may produce temporary or permanent impairment.”

--American Academy of PM&R
A Physiatrist...

- Specializes in clinical and diagnostic use of physical agents and exercises to provide physiotherapy for physical, mental, and occupational rehabilitation of patient.

- Examines patient, utilizing electrodiagnosis and other diagnostic procedures to determine need for and extent of therapy.  
  --Webster’s Online Dictionary 2009
Another Laymen’s Definition

“A branch of medicine which aims to enhance and restore function ability and quality of life to those with physical impairments or disabilities.”

--Wikipedia.org

Physiatrists are sometimes referred to as

Muscle Doctors
Quick Clarification

**IMPAIREDMENT**
Anatomical or physiological dysfunction

**DISABILITY**
Unable to perform a human activity

**HANDICAP**
Unable to meet a societal role
International Classification of Functioning, Disability, and Health (ICF)

ICF Terms in the context of health:

**Body functions** are the physiological functions of body systems (including psychological functions).

**Impairments** are problems in body function or structure such as a significant deviation or loss.

**Activity** is the execution of a task or action by an individual.

**Participation** is involvement in a life situation.

**Activity limitations** are difficulties an individual may have in executing activities.
Timeline

**ORIGIN**
As early as heat/cold modalities used for health benefits (time of Hippocrates)

**DEFINED**
Principles formulated during post WWI

**CONSOLIDATED & EXPANDED**
Post-WWII

**ESTABLISHED**
Approved as medical specialty in 1947

**EVOLVED**
In 1955 more than 21,200 cases of polio are reported. The polio epidemic dominated the attention of PM&R physicians and rehabilitation institutions expanded from institutions dedicated to the treatment of polio.
Common Conditions

- Spasticity and Movement Disorders
- Stroke
- Traumatic Brain Injury (TBI)
- Spinal Cord Injury (SCI)
- Multiple Sclerosis (MS) and other Neurological Conditions
- Pain
- Amputation
- Osteoarthritis
- Sports Injuries
Evaluation

History (include focus on function), physical exam, imaging
Evaluation

Electromyography

Nerve Conduction Study
Problems

Amputation  Malnutrition
Aphasia      Neurogenic Bladder
Cognitive Impairment  Pain
Depression  Paralysis and Paresis
Dysphagia  Radiculopathy
Gait Dysfunction  Skin Breakdown
Heterotopic Ossification  Spasticity
Hypoventilation  Weak Muscles
<table>
<thead>
<tr>
<th>Problems</th>
<th>Solutions</th>
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</thead>
<tbody>
<tr>
<td>Amputation</td>
<td>Malnutrition</td>
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<tr>
<td>Aphasia</td>
<td>Neurogenic Bladder</td>
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<td>Cognitive Impairment</td>
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<td>Spasticity</td>
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<tr>
<td>Hypoventilation</td>
<td>Weak Muscles</td>
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</tbody>
</table>
Orthoses

Malnutrition
Neurogenic Bladder
Pain
Paralysis and Paresis
Radiculopathy
Skin Breakdown
Spasticity
Weak Muscles
Solutions

Electrical Stimulation

Thickening Mix

Amputation
Aphasia
Cognitive Impairment
Depression
**Dysphagia**
Gait Dysfunction
Heterotopic Ossification
Hypoventilation

Electrical Stimulation
Solutions

Amputation
Aphasia
Cognitive Impairment
Depression
Dysphagia
**Gait Dysfunction**
Heterotopic Ossification
Hypoventilation

Gait Training
Solutions

- Solutions
- Amputation
- Aphasia
- Cognitive Impairment
- Depression
- Dysphagia
- Gait Dysfunction
- Heterotopic Ossification
- Hypoventilation
- Malnutrition
- Neurogenic Bladder
- Pain
- Paralysis and Paresis
- Radiculopathy
- Skin Breakdown
- Spasticity
- Weak Muscles

- Manual Therapy
- Botox Baclofen Pump
- Medication
Solutions

- Water Therapy
- Heat/Cold
- Transcutaneous Electrical Nerve Stimulation
- Medication Control

- Malnutrition
- Neurogenic Bladder
  - **Pain**
  - Paralysis and Paresis
  - Radiculopathy
  - Skin Breakdown
  - Spasticity
  - Weak Muscles
Solutions

Amputation
Aphasia
Cognitive Impairment
Depression
Dysphagia
Gait Dysfunction
Heterotopic Ossification
Hypoventilation
Goal

Overall Functional Enhancement

MAXIMIZE

- Independence
- Dignity
- Quality of Life

Physical
Psychological
Social
Vocational
Educational
Task at Hand

1. Optimize Function
2. Relieve Pain
3. Prevent and Manage Complications
4. Coordinate Care
5. **Educate and Empower Patients**
Practice Settings

INPATIENT
• Acute Care Hospitals
• Long Term Acute Care Hospitals
• Inpatient Rehabilitation Units of Acute Care Hospitals
• Skills Nursing Home with Subacute Rehabilitation Programs
• Nursing Homes

OUTPATIENT
• Hospital Clinic
• Acute Rehab Clinic
• Private Office
## Sample Inpatient Experience

<table>
<thead>
<tr>
<th>Brain Injury</th>
<th>Pediatric</th>
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<tbody>
<tr>
<td>Burn</td>
<td>Polytrauma</td>
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<tr>
<td>Cancer</td>
<td>Pulmonary</td>
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<tr>
<td>Cardiac</td>
<td>Spinal Cord Injury</td>
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<tr>
<td>Neurologic Disorder</td>
<td>Stroke</td>
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<tr>
<td>Orthopedic</td>
<td>Transplant</td>
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<tr>
<td>Sample Outpatient Experience</td>
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<td>--------------------------------------------------</td>
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<tr>
<td>Amputee</td>
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<tr>
<td>Arthritis</td>
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<tr>
<td>Cerebral Palsy</td>
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<tr>
<td>Fibromyalgia</td>
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<tr>
<td>EMG &amp; NCS</td>
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<tr>
<td>Musculoskeletal</td>
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<tr>
<td>Ortho-Rehab</td>
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<tr>
<td>Pain</td>
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<tr>
<td>Pediatric</td>
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<tr>
<td>Spasticity</td>
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<td>Spina Bifida</td>
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<tr>
<td>Spine</td>
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<td>Stroke</td>
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<tr>
<td>Wound Care</td>
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Interdisciplinary Teams
Medical Professionals

Critical Care  Neurology
General Surgery  Neurosurgery
Geriatrics  Pediatrics
Internal Medicine  Psychiatry
Orthopedics  Rheumatology
Oncology  Urology
Interdisciplinary Teams
Allied Health Professionals

Dietician
Music Therapist
Occupational Therapist
Pet Therapist
Physical Therapist
Prosthetist / Orthotist
Psychologist
Recreational Therapist
Rehabilitation Nurse
Respiratory Therapist
Speech & Language Therapist
Social Worker
Vocational Counselor
## Fellowships

<table>
<thead>
<tr>
<th>Electrodiagnostic Medicine</th>
<th>Rheumatology</th>
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</thead>
<tbody>
<tr>
<td>Hospice and Palliative Medicine*</td>
<td>Pediatric Rehabilitation Medicine*</td>
</tr>
<tr>
<td>Interventional Spine Medicine*</td>
<td>Spinal Cord Injury Medicine*</td>
</tr>
<tr>
<td>Neuromuscular Medicine*</td>
<td>Sports Medicine*</td>
</tr>
<tr>
<td>Pain Medicine*</td>
<td>Stroke</td>
</tr>
<tr>
<td></td>
<td>Brain Injury Medicine*</td>
</tr>
</tbody>
</table>

*Denotes sub-specializations certified by ABPMR
Lots of Work Ahead

- Aging Population
- Decreasing Injury Mortality
- High Healthcare Costs
- New Applications
- Innovative Technology
- Regeneration/Stem Cell Advances
- Artificial Intelligence
- Robotics & Computer Science
Additional Resources

Associations

Association of Academic Physiatrists
www.physiatry.org

American Academy of Physical Medicine & Rehabilitation
www.aapmr.org

American Congress of Rehabilitation Medicine
www.acrm.org

American Board of Physical Medicine & Rehabilitation
www.abpmr.org
Additional Resources

Journals

American Journal of Physical Medicine & Rehabilitation
www.ajpmr.org

Archives of Physical Medicine and Rehabilitation
www.archives-omr.org

PM&R
www.pmrjournal.org
Thank You!

*These slides were adapted from a presentation by Jiaxin Tran, MD, New Jersey Medical School - UMDNJ*