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It's Not Just Diagonals -
Incorporating PNF into
Acute Care Practice

BRIAN HICKMAN PT, DPT, CSRS
BOARD-CERTIFIED NEUROLOGIC PHYSICAL THERAPIST
BOARD-CERTIFIED GERIATRIC PHYSICAL THERAPIST
IPNFA CERTIFIED PNF THERAPIST

Disclosures

Financial

• Dr. Hickman teaches continuing education courses in PNF
Agenda

Acute Care Physical Therapy
Introduction to Proprioceptive Neuromuscular Facilitation (PNF)
PNF Interventions
Integration of PNF Interventions into Practice
Summary
Q&A

Course Objectives

After this course, participants will be able to...

- Describe PNF Philosophy and Basic Principles
- Recognize common reasons for physical therapy referral in acute care setting
- Describe impact of PNF treatments on body function/structure deficits and activity limitations
- Describe typical trunk responses to upper and lower extremity PNF patterns/diagonals
- Identify and describe intervention strategies incorporating PNF for common body function/structure deficits and activity limitations in the acute care setting
Acute Care Physical Therapy

Main Responsibilities

Mobilization

Discharge Planning
Acute Care PT Responsibilities

Extensive evidence demonstrating benefit of (early) mobilization
  - Reduce comorbidities associated with hospitalization and immobility
    (Disuse atrophy, pneumonia, delirium, etc..)

Early mobilization promotes shorter length of stay, reduced readmission rates, improved outcomes
  - Average hospital length of stay 5.5 days in 2014 (National Center for Health Statistics 2016)

Functional status predicts 3, 7, and 30 day readmission rates from inpatient rehabilitation in patients after stroke (Slocum et al 2015)

Patients 2.9x more likely to be readmitted when PT discharge recommendations were not followed and/or recommend follow-up services were lacking (Smith, Fields, Fernandez 2010)

What is Acute Care Physical Therapy?

“...to foster excellence in acute care practice, in all settings, in order to enhance the health and functioning of patients and clients.”

Academy of Acute Care Physical Therapy Mission Statement
### Who are the patients?

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Percentage of total patients seen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (41-60 y/o)</td>
<td>28.3%</td>
</tr>
<tr>
<td>Age (61-80 y/o)</td>
<td>40.7%</td>
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<tr>
<td>Age (81+ y/o)</td>
<td>20.5%</td>
</tr>
<tr>
<td>Diagnosis Type (Med/Surg)</td>
<td>35.9%</td>
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<tr>
<td>Diagnosis Type (Orthopedic)</td>
<td>22.4%</td>
</tr>
<tr>
<td>Diagnosis Type (Cardiovascular)</td>
<td>19.5%</td>
</tr>
<tr>
<td>Diagnosis Type (Neurological)</td>
<td>16.6%</td>
</tr>
<tr>
<td>Diagnosis Type (Pulmonary)</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

(Jette et al 2009)

### Who are the patients?

<table>
<thead>
<tr>
<th>Systems</th>
<th>% of patients having a given system examined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal</td>
<td>86.3%</td>
</tr>
<tr>
<td>Functional Ability</td>
<td>86.3%</td>
</tr>
<tr>
<td>Neuromuscular</td>
<td>85.0%</td>
</tr>
<tr>
<td>Cardiovascular/Pulmonary</td>
<td>82.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interventions</th>
<th>% of patients receiving a given intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Ability</td>
<td>82.2%</td>
</tr>
<tr>
<td>Education</td>
<td>79.7%</td>
</tr>
<tr>
<td>Neuromuscular</td>
<td>62.4%</td>
</tr>
<tr>
<td>Cardiovascular/Pulmonary</td>
<td>59.7%</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>46.8%</td>
</tr>
</tbody>
</table>

(Jette et al 2009)
### Diseases/Disorders Causing System Dysfunction

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>◦ COPD</td>
<td>◦ Joint replacement</td>
<td>◦ Stroke</td>
<td>◦ Decreased activity tolerance</td>
<td>◦ Decreased activity tolerance</td>
</tr>
<tr>
<td>◦ Acute Respiratory Failure</td>
<td>◦ Spinal Surgery</td>
<td>◦ SCI</td>
<td>◦ Decreased activity tolerance</td>
<td>◦ Decreased activity tolerance</td>
</tr>
<tr>
<td>◦ Pneumonia</td>
<td>◦ Trauma</td>
<td>◦ Acquired and congenital brain injury</td>
<td>◦ Decreased activity tolerance</td>
<td>◦ Decreased activity tolerance</td>
</tr>
</tbody>
</table>

### What Are Implications of System Dysfunction?

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>◦ Decreased activity tolerance</td>
<td>◦ Decreased strength</td>
<td>◦ Decreased strength</td>
<td>◦ Decreased activity tolerance</td>
<td>◦ Decreased activity tolerance</td>
</tr>
</tbody>
</table>
What Are Possible Impairments Causing System Dysfunction?

Pulmonary system
- Decreased strength
- Decreased motor control
- Decreased coordination
- Decreased ROM

Musculoskeletal
- Decreased strength
- Decreased ROM

Neuromuscular
- Decreased strength
- Decreased motor control
- Decreased initiation
- Decreased coordination

Cardiovascular
- Decreased strength
- Decreased motor control

Pulmonary System

Lungs are where gas exchange occurs, but it is the musculoskeletal system that drives the lungs
- Thoracic cage (Sternum, ribs, clavicles, thoracic spine)
- Muscular system (Diaphragm, intercostals, abdominals, accessory muscles, etc..)

Limitations in musculoskeletal system may limit effectiveness/efficiency of movement necessary for the pulmonary system to work effectively/efficiently.
Pulmonary System

Lungs are where gas exchange occurs, but it is the musculoskeletal system that drives the lungs
  - Thoracic cage (Sternum, ribs, clavicles, thoracic spine)
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Limitations in musculoskeletal system may limit effectiveness/efficiency of movement necessary for the pulmonary system to work effectively/efficiently.

<table>
<thead>
<tr>
<th>Motor Control</th>
<th>Strength</th>
<th>Range of Motion</th>
</tr>
</thead>
</table>

Neuromusculoskeletal Impairments Limiting Pulmonary Function

Skeletal muscle weakness is known result of COPD (Berry 2013)
Post-stroke pneumonia is typically associated with impaired cough from respiratory muscle weakness, not dysfunction of the glottis (Kulnik 2014)
People with Parkinson’s have been shown to have “…involvement of upper airway musculature and resultant airflow limitation (secondary to increased resistance), progressive declines in respiratory muscle strength and diaphragmatic instability and tremor.” (Silverman 2016)
In patients with acute respiratory failure, a standardized rehabilitation program resulted in improved physical function at 6 months than a conventional therapy program (Morris 2016)
Forward head posture caused reduced vital capacity (Han 2016)
Cervical joint mobilization improved respiratory function in individuals with forward head posture (Kim 2015)
Cardiovascular System

Cardiovascular system delivers necessary oxygen to body and removes waste (Malone 2006)
Tissues in use require more oxygen and produce more waste
More efficient neuromotor and musculoskeletal systems, less demand on cardiovascular and pulmonary systems
Introduction to PNF

What is PNF?
History of PNF

Originally developed by Dr. Herman Kabat and Maggie Knott in the 1940s
Further expanded in 1947 when Dr. Kabat at Ms. Knott moved to the Kaiser Hospital in Vallejo, California
Patients with Multiple Sclerosis and polio were main type of patients being treated at this time, but slowly the benefits of PNF were seen with a wide variety of diagnoses
A residency program at Kaiser Vallejo was created to train therapists
Currently 3-, 6-, and 9- month long residencies are available for physical therapists

PNF Philosophy

1. Everyone has potential
2. An integrated approach that addresses whole person
3. A positive approach that focuses on what the patient/client **CAN** do
4. Interventions must be toward a specific functional goal
5. Incorporates the use of stronger body parts to strengthen weaker ones
6. Facilitate a maximal response
7. Use repetition to promote motor learning
8. An intensive program is required to promote the best outcome
9. Optimize function
What is PNF?

A method to assess and improve the efficiency and effectiveness of human movement and function

How is PNF performed?
PNF Basic Principles

1. Patient Position
2. Manual Contacts (Lumbrical Grip)
3. Therapist Position/Body Mechanics
4. Appropriate “resistance”
5. Traction and Approximation
6. Quick Stretch
7. Irradiation
8. Normal Timing
9. Patterns of Facilitation
10. Visual Input
11. Verbal Input

These are tools used to enhance a treatment

PATIENT POSITION
Consider affect of gravity
Consider treatment goal

MANUAL CONTACTS
Lumbrical grip – “Mitten hands”
Allows for comfortable, specific contact

continued
## PNF Basic Principles

<table>
<thead>
<tr>
<th>THERAPIST POSITION</th>
<th>APPROPRIATE RESISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place body in the line of the movement</td>
<td>Amount of resistance that results in a smooth, coordinated movement or motor response</td>
</tr>
<tr>
<td>Maintain good body mechanics</td>
<td>Can use concentric, eccentric, isometric contractions</td>
</tr>
<tr>
<td>Must move with the patient through the desired movement</td>
<td>Sometimes the appropriate resistance is <strong>ASSISTANCE</strong></td>
</tr>
</tbody>
</table>

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## Traction

- Facilitates movement
- Helps reduce fatigue during anti-gravity movements

**Traction Video**

## Approximation

- Facilitates stability
- Used with pushing or weight bearing activities

**Approximation Video**
## PNF Basic Principles

### Quick Stretch
- Used to initiate or increase motor activation during a movement
- Can be performed on elongated tissue, or actively contracting tissue

### Irradiation
- Creates an overflow over motor recruitment into areas not directly being used
- Allows for use of one body part/segment to recruit another
  - *Using a stronger body part to influence a weaker one*

(Reznik 2015, Hendy 2012)
PNF Basic Principles

Normal Timing

◦ Consider how a movement should be performed
◦ Proximal stability develops before distal
◦ In open chain, adults normally initiate movements distally to proximally
◦ In closed chain, proximal segments initiate over distal

PNF Basic Principles

VISUAL INPUT

Use of vision on target helps to integrate head/trunk
Provides cues to direction of movement
Increases motor response

VERBAL INPUT

Can modulate voice to adjust a response
◦ Quick/fast command vs slow/quiet
Use of a preparatory command
Use of positive feedback
PNF Techniques

Rhythmic Initiation
Replication

Dynamic Reversals
Combination of Isotonics
Stabilizing Reversals
Quick Stretch
  ◦ On Contracting Tissue
  ◦ On Elongated Tissue

Used to teach or enhance a movement or pattern

PNF Techniques

RHYTHMIC INITIATION
Used to teach a pattern or movement
Passive -> Active Assisted -> Active -> Resisted
Start at beginning of range, moving towards end of range
Indications
  ◦ Teaching the pattern/movement
  ◦ Helping patient relax
  ◦ Improving coordination of movement/pattern

REPLICATION
Used to teach the pattern
Start at end of range with a hold
After hold, patient will relax and is moved towards beginning of pattern
Move in small increments each repetition to beginning of pattern
Indications
  ◦ Teach the pattern/movement
  ◦ Assess strength at end range of pattern/movement
PNF Techniques

RHYTHMIC INITIATION

Rhythmic Initiation
Video

REPLICATION

Replication Video

DYNAMIC REVERSALS

Movements are performed against resistance in both directions of a task without stopping

Indications
- Decrease fatigue of particular muscle group
- Improve strength

Speed and amount of resistance can change at any time based on need

COMBINATION OF ISOTONICS

Combines concentric and eccentric components of a pattern or movement

Agonist is always active

Indications
- Improve strengthening
- Improve coordination
- Improve endurance

Careful – this technique is very demanding on both therapist and patient
PNF Techniques

DYNAMIC REVERSALS
Dynamic Reversals Video

COMBINATION OF ISOTONICS
Combination of Isotonics Video

Stabilizing Reversals
- Alternating muscle contractions against resistance at a generally stable position

Indications
- Promote stability and strength
- Improve coordination
PNF Patterns

What are D1 and D2?

Patterns are named for the position they end in
Each diagonal has two patterns associated with it

Upper and Lower Extremity Patterns
Scapular and Pelvis Patterns

**Remember typical trunk responses!**
Upper Extremity Patterns

**FLEXION-ABDUCTION-EXTERNAL ROTATION ENDING POSITION**

**EXTENSION-ABDUCTION-INTERNAL ROTATION ENDING POSITION**

Upper Extremity Patterns

**FLEXION-ADDUCTION-EXTERNAL ROTATION ENDING POSITION**

**EXTENSION-ABDUCTION-INTERNAL ROTATION ENDING POSITION**
Lower Extremity Patterns

Paired Patterns

FLEXION-ADDUCTION-EXTERNAL ROTATION ENDING POSITION

EXTENSION-ABDUCTION-INTERNAL ROTATION ENDING POSITION
Lower Extremity Patterns
Paired Patterns

FLEXION-ABDUCTION-INTERNAL ROTATION ENDING POSITION
EXTENSION-ADDUCTION-EXTERNAL ROTATION ENDING POSITION

Scapular Patterns

Scapular patterns named for position they end in:
- Anterior-Posterior to midline
- Elevation-Depression from neutral

Patterns will always cross midline

Scapular Clock
- Usually diagonals are close to midline
  - 11:00 <-> 5:00
  - 1:00 <-> 7:00

Are connected with Upper Extremity Patterns
Scapular Patterns

**ANTERIOR-ELEVATION**

**Functional Applications**
- Rolling
- Trunk elongation
- Very good for upward rotation of scapula for overhead reaching

**POSTERIOR-DEPRESSION**

**Functional Applications**
- Weight bearing stability for UEs
- Trunk shortening
- Trunk extensor activation
- Sit to stand
- Eccentric during overhead activity to control scapula

UE Pattern: Flex-Add-ER

UE Pattern: Ext-Abd-IR

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**ANTERIOR-DEPRESSION**

**Functional Applications**
- Very strong connection to trunk flexors
- Trunk shortening
- Trunk Stability
- Flexion Rolling

**POSTERIOR-ELEVATION**

**Functional Applications**
- Overhead reaching
- Trunk elongation
- Strong connection to trunk extensors

UE Pattern: Ext-Add-IR

UE Pattern: Flex-Abd-ER

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CONTINUED
Pelvic Patterns

Exactly the same as Scapular Patterns

Named for position they end in
- Anterior-Posterior to midline
- Elevation-Depression from neutral

Patterns will always cross midline

Scapular Clock
- Usually diagonals are close to midline
  - 11:00 <-> 5:00
  - 1:00 <-> 7:00

Pelvis is a fixed structure
- Ex: Elevation on one side will cause depression on opposite

Connected with LE Patterns

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Pelvic Patterns

Anterior-Depression and Posterior-Elevation Patterns are much more rarely used, but same principles apply

**ANTERIOR-ELEVATION**

**Functional Applications**
- Swing phase of gait
- Flexion Rolling
- Trunk shortening
- Trunk flexor activation

**Manual contact**
- Anterior iliac crest superior to ASIS

LE Pattern: Flex-Add-ER

**POSTERIOR-DEPRESSION**

**Functional Applications**
- Stance stability
- Trunk elongation
- Contralateral trunk shortening

**Manual contact**
- Ischial tuberosity

LE Pattern: Ext-Abd-IR

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Continued
PNF Interventions

PNF Breathing
Inspiratory and Expiratory training
Manual Contacts
◦ Sternal
◦ Bilateral Rib Cage
◦ Abdominal

Consider what aspect of movement is impaired
◦ Bucket handle
◦ Pump handle
◦ Excessive accessory activation
PNF Breathing: Sternal Contact

**Manual Contact**
- Palm of one hand on sternum (NOT XIPHOID)

**Instruction**
- Tell patient to inhale, exhale in normal timing of breathing (1:2 Inspiration to Expiration)
- Resistance can be provided during inspiration
- Force can be applied to increase range during inspiration
- Can use stretch to initiate inspiration or facilitate increased response during inspiration (quick stretch)
- Patient position: Supine, seated, reclined, etc.
- Consider “Pump Handle” mechanism

**Indications**
- Poor timing/control of inspiration
- Impaired breathing

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PNF Breathing: Bilateral Rib Cage

**Manual Contact**
- Heels of hands on lower margin of rib cage

**Instruction**
- Tell patient to inhale, exhale in normal timing of breathing (1:2 Inspiration to Expiration)
- Resistance can be provided during inspiration
- Force can be applied to increase range during inspiration
- Patient position: Supine, seated, reclined, etc.
- Consider “Bucket Handle” mechanism

**Indications**
- Poor timing/control of inspiration
- Impaired breathing
PNF Breathing: Abdominal

**Manual Contact:**
- Make circle around navel with hands

Resistance can be applied during inspiration
Pressure is applied up and under the rib margin

**Indications**
- Increasing diaphragm activation
- Forced expiration (Assisted cough)

*Interventions can be performed in a variety of positions*
Mass Flexion

**Manual Contacts**
- Anterior shoulder near coracoid process
- Anterior-superior pelvis (above ASIS)

**Patient Position**
- Sidelying

**Action**
- Trunk shortening and flexion

**Indications**
- Increasing trunk flexor activation
- Forced expiration (Coughing)
- Forwards Rolling
- Coordinating upper and lower aspects of trunk
Mass Extension

**Manual Contacts**
- Posterior superior shoulder
- Ischial tuberosity

**Patient Position**
- Sidelying

**Action**
- Elongation and extension of trunk

**Indications**
- Increased trunk extensor activation
- Expiration
- Thoracic extension
- Backwards Rolling

Mass Extension Video
Hooklying Stabilizing Reversals

Stabilizing Reversals
◦ Can be performed on any body part, segment, pattern, or movement
◦ Alternating direction of resistance against a static position

Indications
◦ Activating trunk stabilizers
◦ Bilateral activation
◦ Irradiation
◦ Stronger side to weaker
◦ Proximal activation (neck pain)

Seated Stabilizing Reversals

Manual Contacts
◦ Anterior contact on coracoid process
◦ Posterior contact on inferior angle of scapula

Indications
◦ Irradiation to LEs
◦ Trunk stability
◦ Proximal stability prior to movement
Seated Stabilizing Reversals

Seated Stabilizing Reversals Video

Resisted Low Trunk Rotation

Can be performed via TRACTION or APPROXIMATION
- APPROXIMATION will facilitate trunk stability
- TRACTION will facilitate trunk movement

Can be performed thru full or partial range

Can use PNF Techniques to modify task
- Dynamic Reversals
- Combination of Isotonics

Indications:
- Activating lower trunk and LE musculature
- Rotation
- Rolling

Resisted Low Trunk Rotation Video
Seated Resisted Trunk Rotation

Expansion on seated stabilizing reversals
- Adds isolated movement onto stable trunk

Rotation helps to build coordination

**Indications**
- Reinforce postural mobility while maintaining stability
- Rotation
- Dynamic balance
- Trunk mobilization

Resisted seated rotation video

Resisted Trunk Flexion and Extension

**Indications**
- Trunk strengthening
- Irradiation LEs
- Preparation for sit to stand
- Fear of falling

Can perform with various techniques
- Dynamic Reversals
- Combination of Isotonics

Resisted Trunk Flexion-Extension Video
Facilitated Sit to Stand

One of the most important functional movements

Success limited by
- Weakness
- Limited forward flexion
- Fear of falling
- Poor timing

Setup is critical!
- Seat Height
- Foot Position
- Pelvis Position

Many patients will need more assistance than resistance

Sit to Stand Video

Integrating PNF into Practice
ICF Model

Health condition (disorder or disease)

Body Functions and Structures

Activities

Participation

Environmental Factors

Personal Factors

APTA Vision Statement for the Physical Therapy Profession

“Transforming society by optimizing movement to improve the human experience”
PNF Philosophy

1. Everyone has potential
2. An integrated approach that addresses whole person
3. A positive approach that focuses on what the patient/client can do
4. Interventions must be toward a specific functional goal
5. Incorporates the use of stronger body parts to strengthen weaker ones
6. Facilitate a maximal response
7. Use repetition to promote motor learning
8. An intensive program is required to promote the best outcome
9. Optimize function

What is the goal?

What are the activity limitations?

What are the body function/structure deficits

What can the patient do?
Example

78 y/o male presented to ED 3 days prior with altered mental status, shortness of breath, and difficulty walking. Found to have dehydration and pneumonia.

Examination:
- Vitals: At rest HR 86 bpm; RR 18 with excessive accessory muscle usage; BP 134/84; SaO2 97% on RA
- Cognition: A0x4, follows simple and complex commands
- Strength: Grossly 3+/5 –> 4/5 except 2+/5 in bilateral hip extensors and abductors
- Functional Movements:
  - Supine to sit: Mod I, but difficult
  - Sit to stand: SBA with FWW. Early knee extension, braces legs against edge of bed. Flexed trunk throughout
What are possible interventions?

Interventions

**MOVEMENT DEVIATIONS**

- Decreased thoracic extension
  - Accessory muscle use
  - Flexed posture

- Poor timing for sit to stand
  - Early knee extension
  - Posterior pelvic tilt causing limited anterior weight shift

**PNF INTERVENTIONS**

- Sternal Breathing
- Bilateral Rib Cage Breathing
- Mass extension
- Resisted seated trunk extension
- LE Extension-Abduction-Internal Rotation
- Facilitated sit to stand
Example

25 y/o male was brought to ED after a MVA 5 days ago. Sustained C7-T2 fractures and cord contusion. Underwent surgery for stabilization C5-T4. Currently C7 AIS B and wearing an Aspen Collar.

Examination:
- Pain: 6/10
- Vitals: HR 76; BP 110/72; RR 20; SaO2 100%
- Cognition: AOx4. Quiet voice, difficulty clearing throat
- Strength: Tricep 3/5, Grip 2+/5; Bicep 5/5; Shld Flex/Abd/IR/ER 5/5
- Functional Movement:
  - Rolling: Total A
  - Supine to sit: Total A
  - Sitting balance: Poor, requires constant assistance

What are possible interventions?
Interventions

**MOVEMENT DEVIATIONS**

- Poor diaphragm usage, weak abdominals
  - Vocal quality
  - Difficulty clearing throat

- UE and trunk weakness
  - Poor mobility
  - Poor sitting balance

**PNF INTERVENTIONS**

- Abdominal breathing
- Bilateral rib cage breathing
- Sternal breathing

- UE Extension-Adduction-Internal Rotation
- UE Extension-Abduction-Internal Rotation
- UE Flexion-Adduction-External Rotation
- UE Flexion-Abduction-External Rotation
- Scapula Posterior Depression

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**Example**

57 y/o female with history of 9 years of R knee pain underwent elective TKA 1 day prior. Also has 4 year history of L knee pain, 25 year history of back pain.

Examination:
- Pain: R knee 4/10 at rest, 10/10 with movement; L knee no complaints; no back pain at rest
- Observation: Moderate edema and bruising around knee joint, especially posteriorly
- Strength: B UEs 5/5; R knee ext 2/5; R hip abd/ext 3+/5; L knee ext 3+/5, limited by pain; L hip abd/ext 3+/5, onset of back pain with hip extension
- L LE A/PROM WFL; R knee Flex PROM (12° flex->51° flex); R knee Ext PROM (12° Flex - 8° Flex)
- Functional Movement
  - Supine to sit: Mod A 2/2 R knee and back pain
  - Sit to stand: SBA with FWW. Limited R LE weight bearing; early L knee extension followed by lumbar extension; c/o back pain
  - Gait: 110’ with FWW, supervised. Excess R knee extension throughout gait cycle; shortened R stance time; Increased lordosis and c/o back pain; Heavy UE use.
What are possible interventions?

Interventions

**MOVEMENT DEVIATIONS**

Pain Avoidance
- Limited R LE weight bearing during sit to stand and gait

Muscle guarding
- Knee extended throughout gait cycle

Poor lumbar stabilization
- Pain during all functional movements
- Excess lumbar lordosis during gait

**PNF INTERVENTIONS**

- R/L LE Extension-Abduction-Internal Rotation
- Resisted Seated Trunk Flexion/Extension
- Facilitated Sit to Stand
- R/L LE Flexion-Adduction-External Rotation
- R/L Mass Flexion
- R/L Pelvic Anterior-Elevation

CONTINUED™
Summary

Acute Care Physical Therapy

May be performed in a variety of settings
Consider the neuromusculoskeletal contributions or involvement in systems dysfunction
In the hospital setting time is limited so you must be efficient with your interventions
Gait speed, strength, fall rates, length of stay, return to function, reduced readmission can all be improved via PT intervention in the hospital setting
* PNF may provide a more efficient way of targeting both impairments in body structure/function and activity limitations
PNF Philosophy

1. Everyone has potential
2. An integrated approach that addresses whole person
3. A positive approach that focuses on what the patient/client **can** do
4. Interventions must be toward a specific functional goal
5. Incorporates the use of stronger body parts to strengthen weaker ones
6. Facilitate a maximal response
7. Use repetition to promote motor learning
8. An intensive program is required to promote the best outcome
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PNF Basic Principles

1. Patient Position
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3. Therapist Position/Body Mechanics
4. Appropriate “resistance”
5. Traction and Approximation
6. Quick Stretch
7. Irradiation
8. Normal Timing
9. Patterns of Facilitation
10. Visual Input
11. Verbal Input
Using the Patterns and Techniques

Patterns can be done in isolation or in combination with movements
  - Ex: UE Ext-Add-IR with rolling

Patterns can be done in multiple positions
  - Ex: UE Flex-Abd-ER in supine vs seated
  - Ex: LE Ext-Abd-IR in supine vs sidelying

Use PNF techniques to teach, modify, increase demand, or emphasize a functional activity
  - Ex: Rhythmic initiation or replication to teach a movement or pattern
  - Ex: Dynamic reversals for Pelvic Ant-Elev and Post-Dep to mimic gait cycle

Typical Trunk Responses

  - UE Extension -> Trunk Flexion
  - UE Flexion -> Trunk Extension
  - LE Extension -> Trunk extension
  - LE Flexion -> Trunk flexion

  - Scapular Elevation -> Trunk Lengthening
  - Scapular Depression -> Trunk Shortening
  - Pelvic Elevation -> Ipsilateral Shortening; Contralateral Elongation
  - Pelvic depression -> Ipsilateral Elongation; Contralateral Shortening
What can you do with PNF?

Analyze and improve the efficiency and effectiveness of human movement and function

Thank you!
Questions?

References


Smith BA, Fields CJ, Fernandez N. Physical therapists make accurate and appropriate discharge recommendations for patients who are acutely ill. Phys Ther. 2010;90(5):693-703.


References


References


