

# **Sensible Physical Limitations after Epidural Patching Procedures or Surgery**

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# Introduction

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- Spontaneous Intracranial Hypotension Patient
- Wife and Mother
- Physical Therapist (Belpre, OH)

# What Are The Common Treatments For CSF Leaks?

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- Bedrest
- Abdominal Binder
- Fibrin Glue Injection
- **Epidural Blood Patching**
- **Surgical CSF Leak Repair**



What Does the Research  
Tell Us About Physical  
Therapy Rehabilitation?

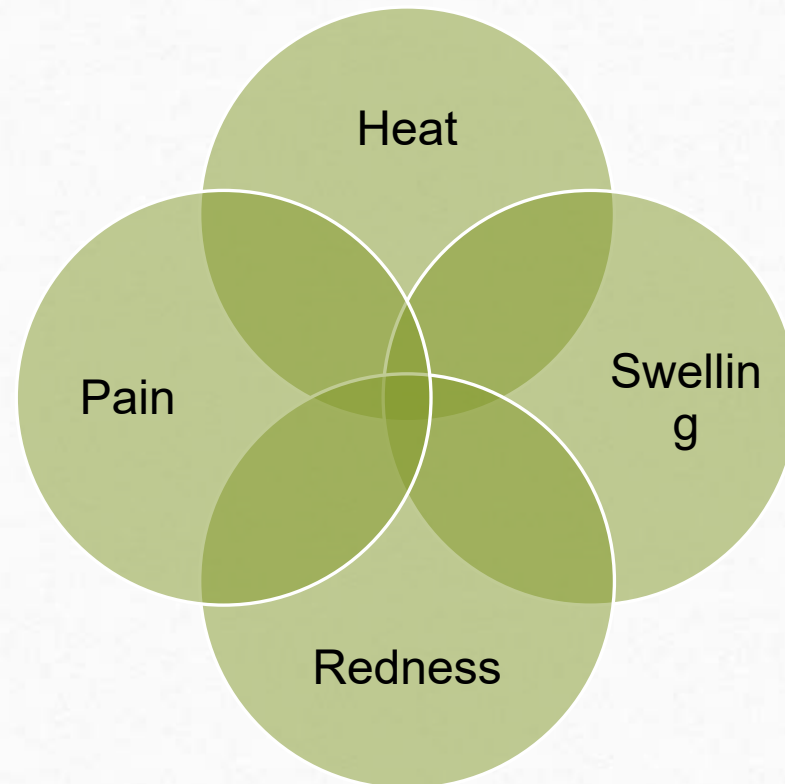


# The Phases of Inflammation and Healing

- **Inflammatory phase** - prepares the wound for healing
- **Proliferation phase** - rebuilds the damaged structures
- **Maturation phase** - modifies the scar tissue into its mature form

# The Acute Phase (Inflammatory Phase)

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## Inflammatory Phase Continued Day 2-4

- Inflammation starts to subside
- Reabsorption of the clot
- Increase in granulation tissue (new healthy tissue)

# Proliferation Phase (Day 4-21)

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Scar formation begins

The wound is covered

The wound regains  
strength

New blood vessels are  
formed



## Maturation and Remodeling (Day 21-60)



Remodeling of  
the scar

Collagen  
thickens and  
strengthens

# Guiding Principles

1

Allow time for  
healing/scarring to  
occur

2

Do not strain,  
stretch, or shear  
weak dural tissue

3

Increasing  
intraabdominal  
pressure increases  
intracranial pressure



# After A Patch or Repair

You may experience pain

You need to communicate  
your needs with your  
healthcare team

You may be encouraged to  
lay flat

You may be issued  
precautions



# Common Precautions Immediately After a Procedure

Avoid	Keep	Face	Sit	Weight	Use	Walk
Avoid bending, lifting, and twisting	Keep your back straight during all movements (bend from knees and hips)	Directly face the tasks you are performing	Sit using correct posture	Maintain your weight lifting restriction	Use a pillow between your knees when you are on your side	Try to take short walks throughout the day (avoid prolonged sitting or laying)

# Getting Into A Car

- Stand facing away from the seat
- Reach back to ensure you are in contact with the surface
- While keeping your spine straight, pull your legs into the car





# Getting Out of A Car

- Keep your spine straight as you move your legs out of the car
- Scoot to the edge of the chair and slowly stand up while keeping your back straight





# Sitting Down From Standing

- Make sure you feel your bed or chair on the back of your legs
- Keep your back straight as you SLOWLY lower yourself
- Do not bend trunk forward



# Getting Back In Bed

- Sit on the edge of your bed
- Keeping your spine straight, slowly lower yourself toward your pillow as you lift your legs into the bed
- Roll as a unit onto your back





# Moving In Bed

- Turn your body as a unit without twisting





# Getting Out of Bed

- Log roll and lower your legs over the edge of the bed
- Push yourself into a sitting position while keeping your



spine straight

# Standing Up From Sitting

- Move to the edge of the bed
- Ensure your back remains straight
- Use your arms to push yourself upright





# Picking Something Up From the Floor





# Washing Your Face



- Stand up straight while you wash your face.
- Use one wash cloth for soap
- Use a clean wash cloth to rinse
- Do not bend forward

# Brushing Your Teeth



- Use two cups:
  - One for rinsing
  - One for spitting
- Do not bend over to spit in the sink



# Bathing





# Guiding Principles for Rehabilitation

- Avoid activities that cause dural tension
- Avoid joint traction/distraction
- Avoid joint mobilizations around injection or surgical site
- Avoid deep myofascial release/massage around injection or surgical site
- Avoid breath holding during all strengthening activities
- Avoid the use of machines for therapeutic exercise
- Avoid rotational core stabilization activities
- Avoid increased headache with therapeutic exercise
- Avoid using force to increase ROM
- Avoid sit-ups (stabilization should be performed in neutral with gentle abdominal stabilization)

# Dural Tension Tests

**Straight  
Leg  
Raise**

**Seated  
Slump**

# Dural Tension Straight Leg Raise Test

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Knee extension

Hip flexion

To increase tension:

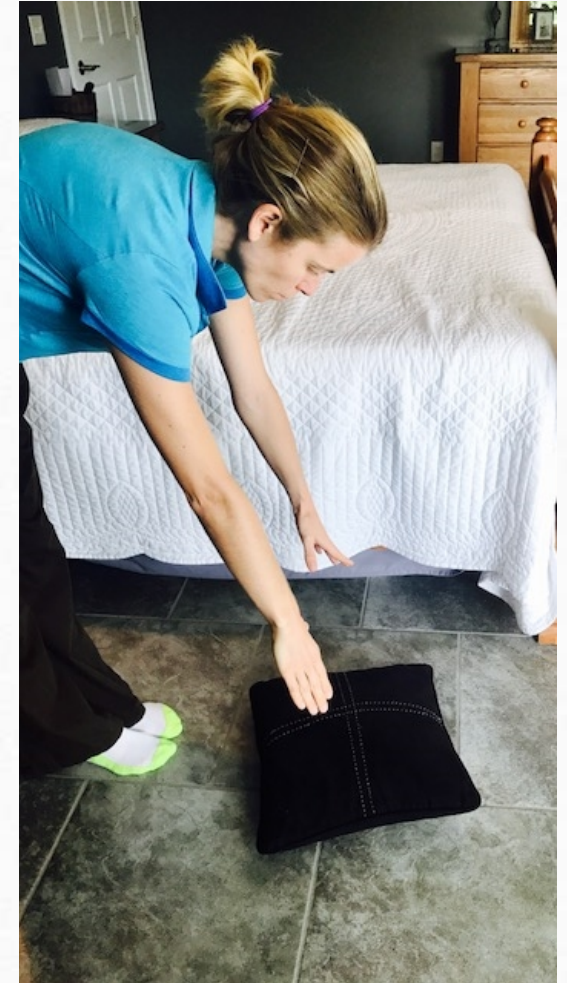
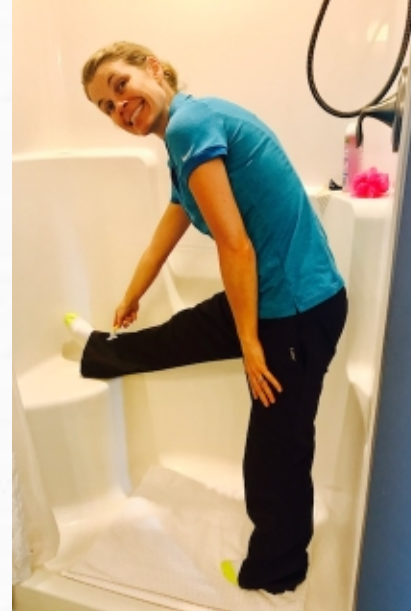
- Cervical flexion
- Hip internal rotation
- Ankle dorsiflexion



# Activities That Mimic Straight Leg Raise

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- Shaving in the Shower
- Standing Hamstring Stretching
- Incorrectly Bending



# Dural Tension Seated Slump Test

Full thoracic and lumbar  
flexion

Neck flexion

Knee extension

Ankle dorsiflexion

Hip internal (medial rotation)





# Activities That Mimic Seated Slump

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Hamstring stretching



Reading with feet elevated in recliner



Long sitting in a bathtub



Long sitting in bed



# Preferred Sitting Position

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- Make sure hips touch the back of chair
- Make sure feet touch the floor
- Support your spine

# Preferred Sleeping Positions

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- When on your back, use a pillow under your knees to align your spine
- When on your side, use a pillow between your knees to align your spine



# Avoid Joint Traction/Distraktion

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**A force applied to the body to separate the joint surfaces and elongate soft tissue.**



# Avoid Joint Mobilization or Deep Massage

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Skilled manual techniques applied to joints at varying speeds and amplitudes to decrease pain and increase joint capsule range of motion.



# Avoid Holding Your Breath

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Increased  
intraabdominal  
pressure  
increases  
intracranial  
pressure




**Avoid Using  
Machines**




# Avoid Using Force to Obtain ROM

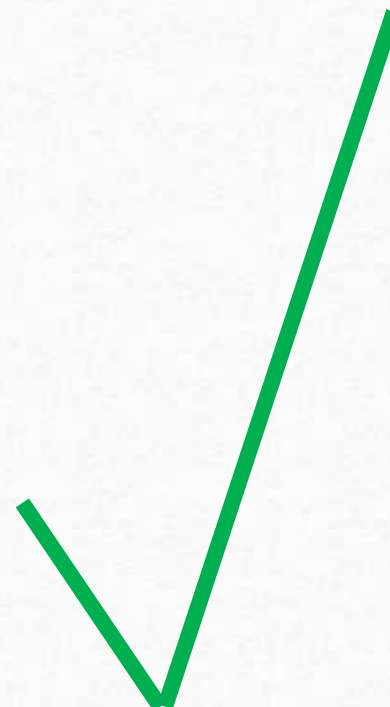
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We do not want to strain, stretch, or shear weak dural tissue



# Avoid Sit Ups





# Goals of Phase 1

1

Ensure independence with ADLs and IADLs

2

Decrease post-surgical inflammation, pain, and muscle guarding

3

Decrease local sensitivity

4

Minimize deconditioning

5

10 pound lifting restriction during therapy and ADLs

## **Phase 1 – Protective**

**Education regarding ADL limitations/modifications**

**Modalities to decrease inflammation, pain, muscle guarding (ultrasound, electrical stimulation, ice)**

**Gentle massage/scar desensitization (avoid deep massage)**

**Graduated treadmill walking program is initiated (avoiding surgical site pain or headache)**

**Home TENS instruction if indicated**



# Criteria for Progression to Phase 2

Compliant with ADL  
limitations/modifications

Compliant with pain  
management  
techniques

Independent with  
TENS application

Decrease residual pain and muscle guarding

Advance aerobic conditioning

Initiate gentle ROM (mid-range)

Introduce unresisted postural stretching and strengthening

20 pound lifting restriction during therapy and ADLs

## Goals of Phase 2



## **Phase 2 – Protective Reactivation**

**Continue modalities to decrease inflammation, pain, muscle guarding if indicated**

**Continue gentle massage/scar desensitization if indicated**

**Progression of treadmill walking program (avoiding surgical site pain or headache)**

**Introduce postural stretching/strengthening progression (avoiding activities that promote dural tension)**

# Criteria for Progression to Phase 3

Independent/compliant  
with HEP

Independent with pain  
management  
techniques

Ability to perform a  
minimum of 20  
repetitions of each  
activity without surgical  
site pain or headache  
exacerbation

Ability to ambulate for a  
10 minute duration  
without surgical site  
pain or headache  
exacerbation

Demonstration of  
proper postural  
alignment without  
cueing



## Goals of Phase 3

01

Advance aerobic conditioning

02

Slowly ween from lifting restrictions

03

Progress strengthening/  
stabilization

04

Education regarding body mechanics during functional and job tasks

05

Initiate gentle work reconditioning if indicated

### **Phase 3 – Strengthening**

**Progress aerobic conditioning as tolerated (may include treadmill, stationary bike, and elliptical trainer)**

**Advance strengthening/stabilization incorporating external resistance (exercise band and dumbbell weights only)**

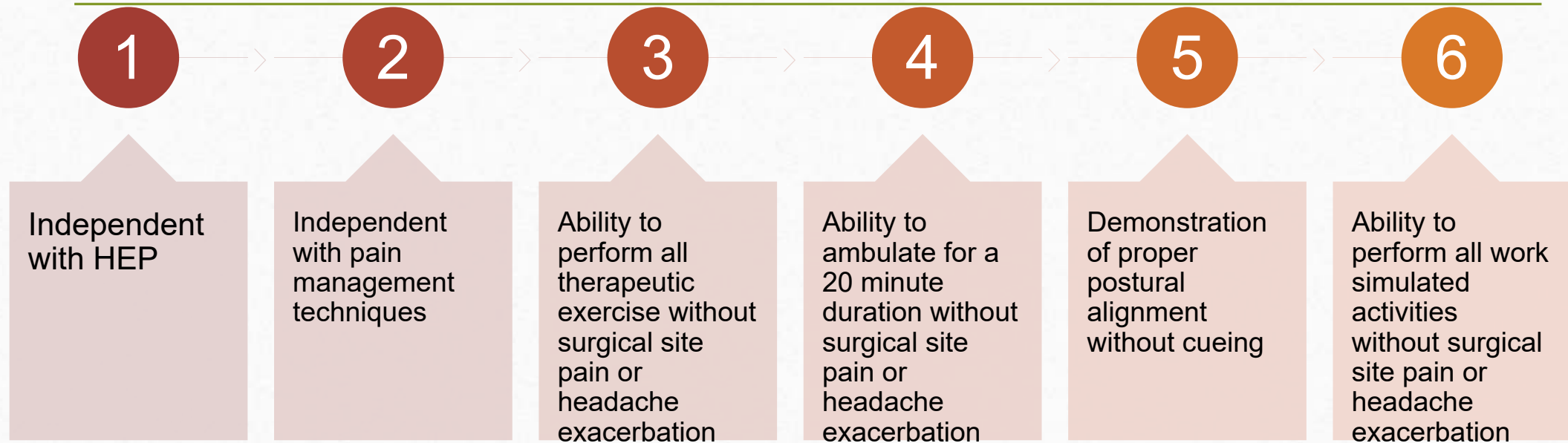
**Education regarding posture during work/leisure activities**

**Education regarding correct lifting mechanics**

**Initiate and progress work simulated activities (lifting, pushing, pulling, and carrying) in order to ensure a safe return to work.**



## Criteria for Discharge from Physical Therapy



# The Restrictions Debate

Mechanism of Injury

Connective Tissue Disorder

Prior Level of Function

Type of Repair

Comorbidity

Age

Nutrition

Psychological Factors

Persistence of Pain



# Questions