

SURGICAL INTERVENTIONS & POST OPERATIVE PHYSICAL THERAPY MANAGEMENT

INDICATIONS FOR SURGICAL INTERVENTION

Many acute, recurring, and chronic musculoskeletal conditions are managed successfully with conservative measures, such as rest, protection with splinting or use of assistive devices, medication, therapeutic exercise, manual therapy, functional training, and the use of physical agents or electrotherapy.

INDICATIONS FOR SURGICAL INTERVENTION

However, surgical intervention is the best treatment option when a conservative program has not been successful in adequately modifying impairments or restoring function, or if the severity of a patient's condition is beyond the level that is appropriate for conservative management

ASSISTIVE DEVICES

- How To Use
- Measurement
- Ascending / Descending Stairs



SURGICAL INTERVENTIONS & POST OPERATIVE PHYSICAL THERAPY MANAGEMENT



INDICATIONS FOR SURGICAL INTERVENTION FOR EXTREMITIES & SPINE

Incapacitating pain at rest or with functional activities

Marked limitation of active or passive motion

Gross instability of a joint or boney segments

Joint deformity or abnormal joint alignment

Significant structural degeneration

Chronic joint swelling,

Failed previous management

Significant loss of function leading to disability as the result of any of the preceding factors

MSK DISORDERS

Pain

Deformity

Instability



TO ACHIEVE OPTIMAL LEVEL OF FUNCTIONAL OUTCOMES AFTER SURGERY

1. Pt. education
2. Direct intervention By PT
3. Long term self-management



A close-up photograph of a person's hand resting on their knee. The person is wearing a black digital watch with a black strap. The watch face is green and shows the number '19:21'. The background is a blurred indoor setting.

Total Knee Replacement:

Why Physical Therapy
Before Surgery
Is Important

Take Forward

www.MoveForwardPT.com

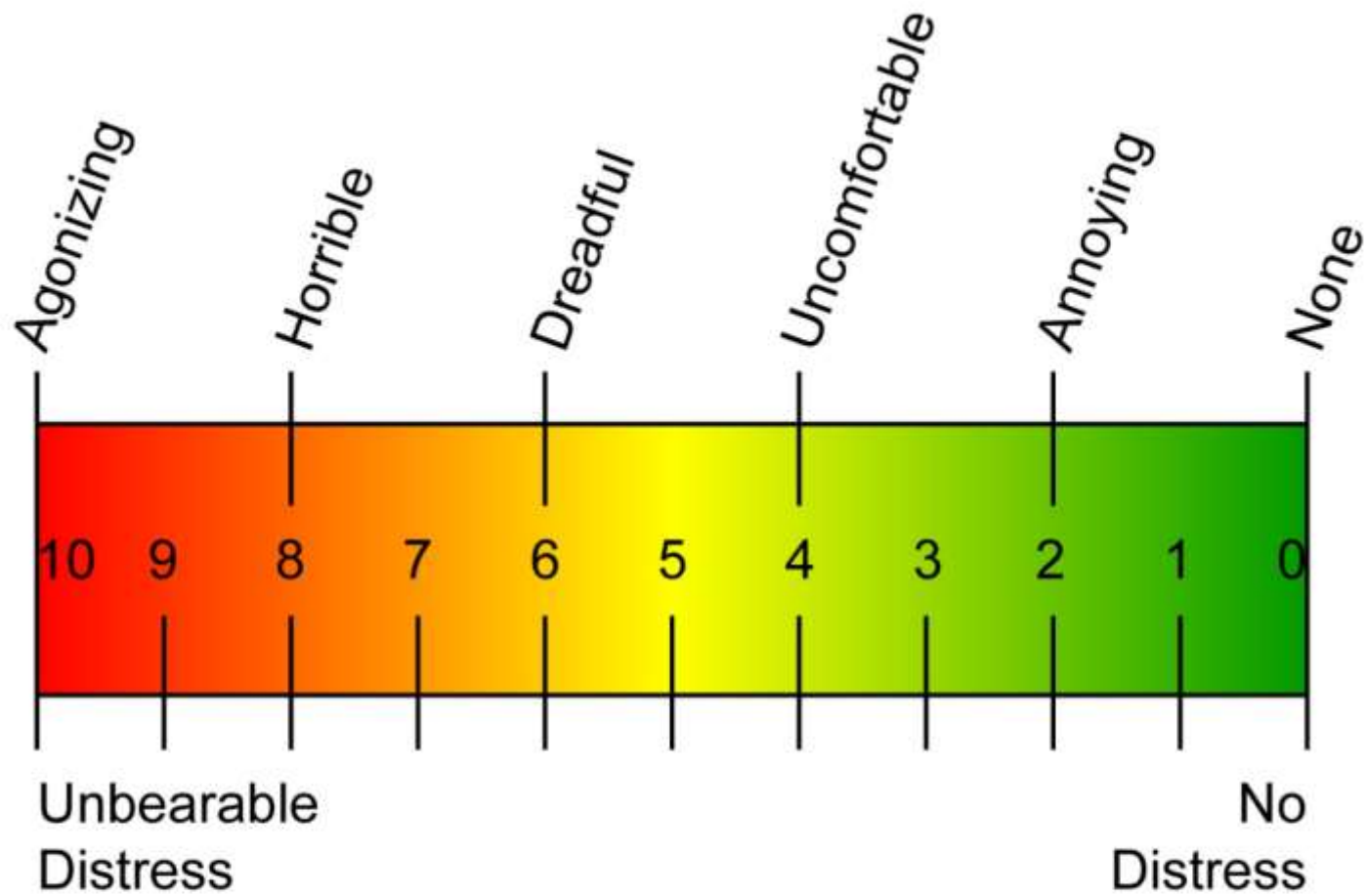
BENEFITS OF PRE OP CONTACT WITH PATIENT

Examination and evaluation of a patient's preoperative impairments and functional status to establish a **baseline** for documenting postoperative improvement

Needs , demands , concerns ,anticipated goals and so expected outcomes

For establishing rapport for enhanced continuity of care after surgery

Patient Education : scheduled surgery
+Components of Post OP Rehab



Task _____

Date _____ Start _____ End _____

EXAMINING AREAS

Pain

ROM

Joint Integrity

Integrity of the Skin

Muscle performance

Posture

Gait analysis

Functional Status

COMPONENTS OF PREOPERATIVE PATIENT EDUCATION

Overview of the plan of care.

Postoperative precautions

Bed mobility and transfers

Initial postoperative exercises.

Gait training.

Wound care

EXTENDED PRE OP EX PROGRAM

Rational for Implementing Pre OP Ex Plan

To reduce Impairments Strength & ROM deficits sec to Chronic condition to achieve optimum post OP Functional outcome

Helpful incase of prolong immobilization and reduce Wt bearing after Surgery

POST OPERATIVE COMPLICATIONS



EARLY & LATE COMPLICATIONS

WITHIN 6 MONTHS OR LATE

Pulmonary complications

DVT & PE

Subluxation / dislocation after Joint surgery

Restricted motion from adhesion & scar tissue formation

Failure / displacement / loosening of internal fixation devices

PULMONARY COMPLICATIONS

Post Anesthesia

Pain meds

Bed bound Pt

- Deep breathing
- Upright posture
& Early ambulation



Iliac vein

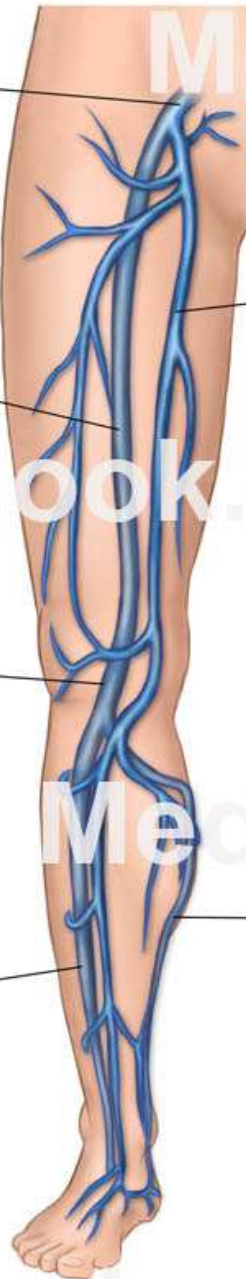
Femoral vein

Popliteal vein

Tibial vein

Greater saphenous vein

Lesser saphenous vein



DEEP VEIN THROMBOSIS & PE

L/E venous thrombosis in

Superficial (saphenous)

Deep veins

(Femoral/popliteal/iliac)

Thrombus

Superficial Vs Deep Veins

- Embolus
- PE

RISK FACTORS FOR DVT

Post OP / Post # immobilization

Prolong Bed rest

Sedentary Life Style/ Extended episode of sitting during air travel

Trauma to Venous Vessel

Limb Pralysis

Active malignancy in past 6 weeks

H/O DVT or PE

Advanced age

Obesity

CHF

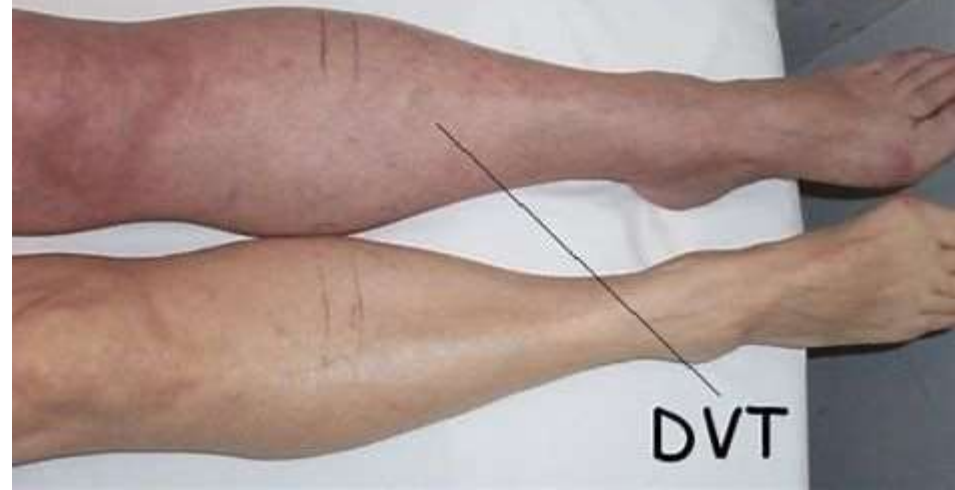
Pregnancy / contraceptives

DVT SIGN & SYMPTOMS

Dull ache / severe pain

Swelling

Changes in skin temperature / color (heat & redness)



❑ During Early stages only 25-50% can be identified by above mentioned

✓ In case of distal DVT pain in knee region (non specific)

➤ Homan's sign

➤ Ultrasonography

➤ Venous duplex scanning

➤ Venography

HOMAN'S SIGN



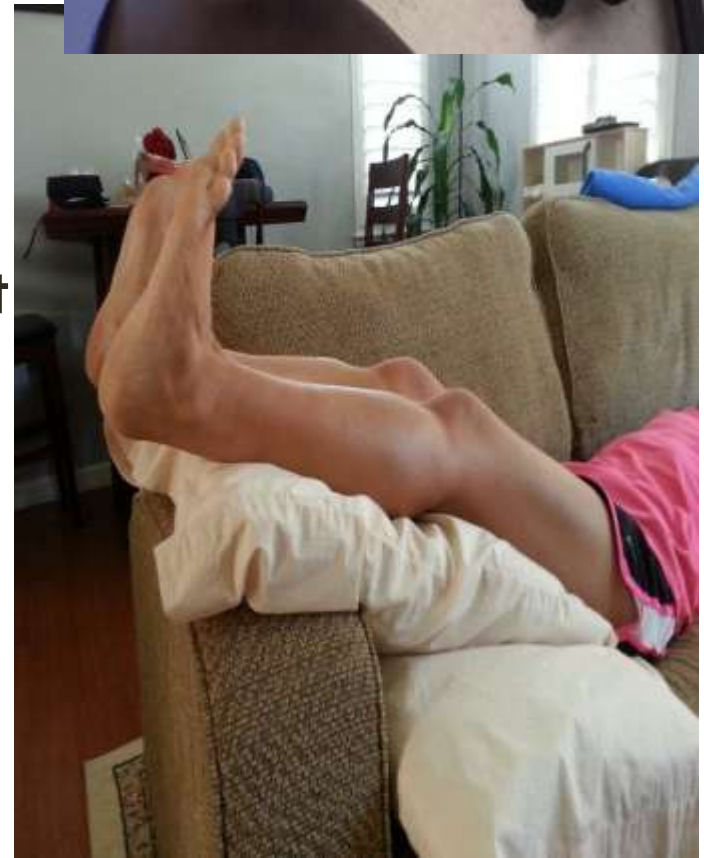


PE SIGNS & SYMPTOMS

- ✓ Possible consequence of DVT
- ✓ Size of embolus / extent of lung / cardio-pulmonary condition
- ✓ Sudden onset of SOB(Dyspnea), Shallow Breathing (tachypnea) , pain in lateral aspects of chest that increases with deep breathing & coughing
- ✓ Swelling in L/Es, **anxiety, fever , excessive sweating (diaphoresis), a cough, and blood in the sputum (hemoptysis)**
- ✓ immediate medical referral

REDUCING RISK OF DVT

- Prophylactic use of anti coagulant therapy for high risk patient (L/E surgery, bed bound patient)
- Elevating Legs
- No prolong sitting e long leg cast
- Early ambulation
- Active Ankle-Pump Ex
- Compression Stockings
- Sequential compression units





Pressure stockings



Stockings are tightest at the ankle





BENEFIT OF THIS ACTIVITY ?



CLINICAL TIP



In addition to medical/pharmacological management with administration of early postoperative, anticoagulant drugs, one minute of active ankle pumping exercises performed at regular intervals during the day has been shown to increase venous blood flow (for up to 30 minutes after exercise) and decrease venous stasis in the calf after total hip replacement surgery.

Therefore, ankle pumping exercises are thought to decrease the risk of developing a DVT. Early ambulation (before day 2) after surgery also promotes circulation and reduces the risk of a DVT.

MANAGEMENT OF DVT

□ Acute Care management

Complete Bed rest


Pharmacological management

Elevating L/Es

Guarded compression stockings

During bed rest Ex is contraindicated = pain & venous congestion

The reported time frame for bed rest varies from 2 days to more than a week



During the period of bed rest, exercises usually are contraindicated because movement of the involved extremity may cause pain and is thought to increase congestion in the venous channels when tissues are inflamed.

However, the optimal timing of when it is prudent to discontinue bed rest and resume ambulation after initiating anticoagulant therapy is in question.

WHEN TO START AMBULATION IN PATIENT WITH DVT?



SYSTEMATIC REVIEW OF LITERATURE



Early ambulation started within 24 hrs ,
after initiating anticoagulant therapy does
not increase incidence of PE in Pt without
existing pulmonary embolism

Cautious ambulation in existing PE

Compression garment use in all subjects under study

The results also revealed that early ambulation is
associated with more rapid resolution of pain and
swelling



Pandas who get
enough sleep,
do not have dark
circles.

BOX 12.8 MANAGEMENT GUIDELINES—
Deep Vein Thrombosis and Thrombophlebitis

Structural and Functional Impairments

- Dull ache or pain usually in the calf.
- Tenderness, warmth, and swelling with palpation

Plan of Care

Interventions

- | | |
|---|--|
| 1. Relieve pain during the acute inflammatory period. | 1. Bed rest, pharmacological management (systemic anticoagulant therapy); elevation of the affected lower extremity, keeping the knee slightly flexed. |
| 2. As acute symptoms subside, regain functional mobility. | 2. Graded ambulation with legs wrapped in elastic or nonelastic bandages or when pressure-gradient support stockings are worn. |
| 3. Prevent recurrence of the acute disorder. | 3. Continuation of appropriate medical and pharmacological management. Use of strategies to prevent DVTs. |

CONTRAINDICATIONS: Passive or active motion or application of moist heat; use of a sequential pneumatic compression pump.

PRECAUTIONS: Following discharge but while continuing anticoagulant medication, avoid contact sports and high fall risk physical activities

Posterior/Posterolateral Approaches

ROM

- Avoid hip flexion $> 90^\circ$ and adduction and internal rotation beyond neutral.

ADL

- Transfer to the sound side from bed to chair or chair to bed.
- Do not cross the legs.
- Keep the knees slightly lower than the hips when sitting.
- Avoid sitting in low, soft chairs.
- If the bed at home is low, raise it on blocks.
- Use a raised toilet seat.
- Avoid bending the trunk over the legs when rising from or sitting down in a chair or dressing or undressing.
- When bathing, take showers, or use a shower chair in the bathtub.
- When ascending stairs, lead with the sound leg; when descending, lead with the operated leg.
- Pivot on the sound lower extremity.
- Avoid standing activities that involve rotating the body toward the operated extremity.
- Sleep in supine position with an abduction pillow; avoid sleeping or resting in a side-lying position.

**BOX 12.5 MANAGEMENT GUIDELINES—
Postoperative Rehabilitation**

Structural and Functional Impairments:

- Postoperative pain because of disruption of soft tissue
- Postoperative swelling
- Potential circulatory and pulmonary complications
- Joint stiffness or limitation of motion because of injury to soft tissue and necessary postoperative immobilization
- Muscle atrophy because of immobilization
- Loss of strength for functional activities
- Limitation of weight bearing
- Potential loss of strength and mobility of nonoperated joints

Maximum Protection Phase

Plan of Care

Interventions

- | | |
|--|--|
| 1. Educate the patient in preparation for self-management. | 1. Instruction in safe positioning and limb movements and special postoperative precautions or contraindications. |
| 2. Decrease postoperative pain, muscle guarding, or spasm. | 2. Relaxation exercises.
Use of modalities such as transcutaneous electrical nerve stimulation (TENS), cold, or heat.
Continuous passive motion (CPM) during the early postoperative period. |
| 3. Prevent wound infection. | 3. Instruction or review of proper wound care (cleaning and dressing the incision). |
| 4. Minimize postoperative swelling. | 4. Elevation of the operated extremity.
Active muscle pumping exercises at the distal joints.
Use of compression garment.
Gentle distal-to-proximal massage. |

**BOX 12.5 MANAGEMENT GUIDELINES—
Postoperative Rehabilitation—cont'd**

Plan of Care

Interventions

- | | |
|--|--|
| 5. Prevent circulatory and pulmonary complications, such as deep vein thrombosis, pulmonary embolus, or pneumonia. | 5. Active exercises to distal musculature.
Deep-breathing and coughing exercises. |
| 6. Prevent unnecessary, residual joint stiffness or soft tissue contractures. | 6. CPM or passive or active-assistive ROM initiated in the immediate postoperative period. |
| 7. Minimize muscle atrophy across immobilized joints. | 7. Muscle-setting exercises. |
| 8. Maintain motion and strength in areas above and below the operative site. | 8. Active and resistive ROM exercises to nonoperated areas. |
| 9. Maintain functional mobility while protecting the operative site. | 9. Adaptive equipment and assistive devices. |

Moderate Protection/Controlled Motion Phase

Plan of Care

1. Educate the patient.
2. Gradually restore soft-tissue and joint mobility.
3. Establish a mobile scar.
4. Strengthen involved muscles and improve joint stability.

Interventions

1. Teach the patient to monitor the effects of the exercise program and make adjustments if swelling or pain increases.
2. Active-assistive or active ROM within limits of pain. Joint mobilization procedures.
3. Gentle massage across and around the maturing scar.
4. Multiple-angle isometrics against increasing resistance. Alternating isometrics and rhythmic stabilization procedures. Dynamic exercise against light resistance in open- and closed-chain positions. Light functional activities with operated limb.

Minimum Protection/Return to Function Phase

Plan of Care

1. Continue patient education.
2. Prevent re-injury or postoperative complications.
3. Restore full joint and soft-tissue mobility, if possible.
4. Maximize muscle performance, dynamic stability, and neuromuscular control.

Interventions

1. Emphasize gradual but progressive incorporation of improved muscle performance, mobility, and balance into functional activities.
2. Reinforce self-monitoring and review the signs and symptoms of excessive use; identify unsafe activities.
3. Joint stretching (mobilization) and self-stretching techniques.
4. Progressive strengthening exercises using higher loads and speeds and combined movement patterns. Integrate movements and positions into exercises that simulate functional activities.

BOX 12.5 MANAGEMENT GUIDELINES—
Postoperative Rehabilitation—cont'd

Plan of Care

Interventions

5. Restore balance and coordinated movement.

5. Progressive balance and coordination training.

6. Acquire or relearn specific motor skills.

6. Apply principles of motor learning (appropriate practice and feedback during task-specific training).

PRECAUTIONS: In addition to the precautions already addressed that relate to the stages of tissue repair and healing, there are several additional precautions that are of particular importance to the postoperative patient.

- Avoid positions, movements, or weight bearing that could compromise the integrity of the surgical repair.
- Keep the wound clean to avoid postoperative infection. Monitor for wound drainage and signs of systemic or local infection, such as elevated temperature.
- Avoid vigorous/high-intensity stretching or resistance exercises with soft tissues, such as muscles, tendons, or joint capsules, that have been repaired or reattached for at least 6 weeks to ensure adequate healing and stability.
- Modify level and selection of physical activities, if necessary, to prevent premature wear and tear of repaired or reconstructed soft tissues and joints.

SUBLUXATION/DISLOCATION

MODIFIED EXERCISES, SPLINTS, ADL





POST REDUCTION # 1

RESTRICTED MOTION FROM ADHESIONS &



FAILURE/DISPLACEMENT/LOOSENING OF INTERNAL FIXATION

