

sternal precautions physical therapy

sternal precautions physical therapy plays a crucial role in the recovery process for individuals who have undergone sternotomy, a surgical procedure involving the division of the breastbone. This comprehensive guide delves into the essential aspects of sternal precautions physical therapy, explaining why they are vital, what they entail, and how physical therapy can significantly aid in regaining strength, mobility, and function. We will explore the typical timeline, common exercises, and strategies for a safe and effective return to daily activities, addressing common concerns and offering valuable insights for patients and caregivers alike. Understanding these precautions is paramount to preventing complications and promoting optimal healing after cardiac or thoracic surgery.

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Understanding Sternal Precautions

Sternal precautions are a set of guidelines designed to protect the healing sternum after a sternotomy. The sternum, or breastbone, is surgically divided to access the heart or lungs during various surgical procedures, most commonly coronary artery bypass surgery or valve replacement. Healing of the sternum involves knitting back together, a process that can take several weeks to months. During this critical healing phase, the sternum is vulnerable to excessive stress and strain, which can lead to complications such as sternal dehiscence (separation of the sternal halves) or delayed healing.

The primary goal of sternal precautions is to limit the forces that pull or push on the sternum, allowing it to heal properly and regain its structural integrity. These precautions are not merely suggestions; they are essential directives that patients must adhere to diligently. They aim to prevent any movement that could disrupt the surgical site and

compromise the bone's healing process. Understanding the rationale behind these restrictions empowers patients to actively participate in their recovery and make informed decisions about their activities.

Common restrictions include avoiding pushing or pulling with the arms, lifting objects heavier than a certain weight (often a gallon of milk or around 5-10 pounds), and movements that involve wide arm swings or reaching behind the back. The specific limitations can vary slightly depending on the surgeon's protocol and the individual patient's healing progress, but the underlying principle remains consistent: protect the sternum.

The Role of Physical Therapy Post-Sternotomy

Physical therapy is an indispensable component of recovery following sternotomy. While surgical intervention addresses the primary medical condition, physical therapy focuses on restoring the patient's functional capacity and overall well-being. A physical therapist is trained to assess the patient's condition, develop a personalized rehabilitation plan, and guide them through exercises and activities that promote healing and prevent secondary complications.

The role of physical therapy extends beyond simply strengthening muscles. It involves educating patients on sternal precautions, teaching proper body mechanics for everyday tasks, and addressing any pain or mobility issues that may arise. Therapists work to improve respiratory function, which can be compromised after chest surgery, and gradually reintroduce movement to prevent stiffness and deconditioning.

By implementing a structured and progressive approach, physical therapists help patients regain confidence and independence. They monitor the patient's progress, making adjustments to the treatment plan as needed, and ensure that the rehabilitation is tailored to the individual's specific needs and recovery pace. This tailored approach is crucial for a successful and comprehensive recovery.

Key Components of Sternal Precautions Physical Therapy

Sternal precautions physical therapy is a multifaceted approach that addresses various aspects of recovery. It is not a one-size-fits-all program but rather a dynamic plan that evolves with the patient's healing. The core components are designed to be safe, effective, and promote a gradual return to normal function.

Education on Sternal Precautions

One of the first and most critical aspects of physical therapy is thorough education regarding sternal precautions. Therapists will explain the importance of these precautions, the specific movements to avoid, and the rationale behind them. This includes demonstrating safe ways to perform essential daily activities, such as sitting up from bed, walking, and dressing, without putting undue stress on the sternum.

Mobility and Range of Motion Exercises

Gradual restoration of mobility and range of motion is a key objective. Initial exercises focus on gentle movements to prevent stiffness and improve circulation. As healing progresses, the therapist will introduce more challenging exercises to regain strength and flexibility in the arms, shoulders, and upper back. The emphasis is always on controlled movements and avoiding any strain on the sternum.

Breathing and Respiratory Exercises

Chest surgery can often lead to shallow breathing and a reduced ability to take deep breaths, increasing the risk of lung complications like pneumonia. Physical therapists are skilled in teaching deep breathing exercises, incentive spirometry techniques, and coughing strategies to improve lung capacity and function. These exercises are vital for overall recovery and preventing respiratory issues.

Gait Training and Balance Exercises

For patients who experience weakness or deconditioning, gait training is essential. This involves re-educating the body on proper walking mechanics, improving balance, and increasing endurance. As strength returns, therapists will progress to more challenging balance exercises to reduce the risk of falls, which could be detrimental to sternal healing.

Pain Management

Pain is a common post-operative concern. Physical therapists can employ various pain management techniques, including therapeutic modalities like heat or cold therapy, gentle manual therapy, and guidance on proper positioning to minimize discomfort. They also work with patients to understand their pain levels and how to manage them effectively throughout the recovery process.

Stages of Recovery and Corresponding Physical Therapy

The recovery process after sternotomy is typically divided into stages, with physical

therapy interventions tailored to each phase. This phased approach ensures that the patient's body is not overloaded while progressively building strength and mobility.

Early Post-Operative Stage (Weeks 1-4)

In the initial weeks, the focus is on protecting the sternum and promoting basic mobility. Physical therapy interventions will likely include:

- Gentle range of motion exercises for the extremities, avoiding any forceful movements of the upper body.
- Deep breathing exercises and coughing techniques to maintain lung function.
- Assisted ambulation (walking) for short distances, with emphasis on proper posture and balance.
- Education on activity restrictions and safe transfers.
- Pain management techniques.

Intermediate Recovery Stage (Weeks 4-12)

As the sternum continues to heal, the intensity and complexity of exercises gradually increase. This stage typically involves:

- Progressive strengthening exercises for the upper extremities, starting with very light resistance and focusing on controlled movements.
- Increased duration and frequency of walking.
- Balance exercises to improve stability.
- Introduction of functional mobility training, such as safely reaching for objects within prescribed limits.
- Continuing respiratory exercises.

Late Recovery and Return to Activity Stage (3 Months Onward)

Beyond three months, the sternum is generally well-healed, allowing for a more aggressive return to normal activities. Physical therapy will focus on:

- Advanced strengthening and endurance exercises.
- Sport-specific or hobby-specific training if applicable.
- Further refinement of movement patterns to prevent re-injury.
- Full return to daily activities, including driving, household chores, and exercise, as guided by the physical therapist and physician.

Common Exercises and Movements

Physical therapists prescribe specific exercises to aid in sternal precautions recovery. The key is that these movements are performed cautiously and within the defined limitations.

Arm Raises (Forward and Sideways)

These exercises are performed with slow, controlled movements, lifting the arms only to a height that does not cause strain or pain at the sternum. Initially, the range of motion may be very limited, gradually increasing as healing progresses.

Scapular Retractions

This involves squeezing the shoulder blades together, which helps to improve posture and strengthen the muscles of the upper back without directly stressing the sternum. It's a crucial exercise for counteracting rounded shoulders that can occur from inactivity.

Elbow Flexion and Extension

Bending and straightening the elbows is a fundamental movement that can be performed with or without light resistance. This helps to maintain strength and flexibility in the arms.

Gentle Torso Twists

Very mild and controlled torso twists may be introduced later in the recovery process. The emphasis is on rotation through the mid-back, not the lumbar spine, and should never involve any forceful or jerky movements.

Walking

As mentioned, walking is a cornerstone of recovery. It promotes cardiovascular health, improves circulation, and helps to prevent stiffness. The duration and pace of walks are

gradually increased.

Importance of Breathing Exercises

Following sternotomy, breathing can become shallow due to pain, the surgical incision, and the effects of anesthesia. This can lead to a range of respiratory complications, making breathing exercises a critical component of sternal precautions physical therapy.

Deep diaphragmatic breathing, also known as belly breathing, is a primary technique taught. It involves inhaling deeply through the nose, allowing the abdomen to rise, and exhaling slowly through pursed lips. This type of breathing utilizes the diaphragm more effectively, maximizing lung expansion and improving oxygen exchange.

Incentive spirometry is another common tool. An incentive spirometer is a device that helps patients practice taking slow, deep breaths. By aiming to lift a piston or float a ball within the device, patients are encouraged to inhale deeply, which helps to keep the alveoli (tiny air sacs in the lungs) open and prevents them from collapsing.

Effective coughing techniques are also taught to help clear secretions from the lungs. Patients are instructed on how to take a deep breath and then cough forcefully, but in a controlled manner, often using a pillow to splint (support) their incision to reduce discomfort. Regular practice of these breathing exercises is essential for preventing issues like pneumonia, atelectasis (lung collapse), and bronchitis, thereby facilitating a smoother overall recovery.

Pain Management Strategies

Managing pain effectively is crucial for patient comfort, compliance with physical therapy, and promoting healing. Physical therapists work collaboratively with the medical team to address post-operative pain.

Non-pharmacological approaches often include:

- **Therapeutic Modalities:** Application of heat or cold therapy can help reduce inflammation and muscle soreness.
- **Manual Therapy:** Gentle mobilization techniques or soft tissue massage in surrounding areas, avoiding direct pressure on the sternum, can help alleviate muscle stiffness and pain.
- **Positioning:** Proper body positioning can significantly reduce strain on the sternum and surrounding muscles. Therapists guide patients on the best ways to sit, lie down, and sleep.

- **Activity Modification:** Educating patients on which activities to avoid and how to modify others to minimize pain is paramount.
- **Breathing Techniques:** As mentioned, deep breathing can also help manage pain by promoting relaxation and improving oxygenation.

Medications, such as analgesics and anti-inflammatory drugs, are prescribed by the physician, and physical therapists monitor their effectiveness and discuss any concerns with the patient and medical team. A comprehensive pain management plan allows patients to participate more actively in their rehabilitation, leading to better outcomes.

Returning to Daily Activities

The journey back to normal daily activities after sternotomy requires patience and adherence to sternal precautions. Physical therapy plays a vital role in guiding this transition safely and effectively.

Initially, patients will be advised to avoid activities that involve pushing, pulling, or lifting objects heavier than a prescribed weight. This includes tasks like:

- Opening heavy doors
- Pushing a lawnmower
- Carrying heavy grocery bags
- Lifting children or pets
- Straining during bowel movements

As strength and healing progress, guided by the physical therapist, patients can gradually reintroduce these activities. The therapist will assess their functional capacity and provide specific strategies for performing tasks safely. For example, when reaching for an object, they might advise using smaller steps to get closer rather than overextending the arms.

Driving is often restricted initially, typically for 4-6 weeks, depending on the surgeon's clearance. This is because sudden braking or steering can put stress on the sternum. Similarly, returning to recreational activities and exercise is a progressive process. A physical therapist will create a personalized plan for returning to these activities, ensuring that the sternum is adequately healed and the patient has regained sufficient strength and endurance.

When to Seek Further Guidance

While physical therapy provides expert guidance, it's essential for patients to be aware of warning signs and know when to seek additional advice from their physical therapist or physician. Prompt attention to any concerning symptoms can prevent complications and ensure a smooth recovery.

Key indicators to report include:

- Increased or new chest pain, particularly at the sternal site.
- Any clicking, popping, or grinding sensation at the sternum.
- Increased redness, swelling, warmth, or drainage from the surgical incision.
- Fever or chills.
- Shortness of breath that worsens or is not relieved by rest.
- Any sensation of instability or movement at the sternum.
- Significant weakness or numbness in the arms or hands.
- Difficulty performing prescribed exercises without pain or strain.

Open communication with the healthcare team is crucial throughout the recovery process. Don't hesitate to voice concerns or ask questions, as this proactive approach is fundamental to achieving the best possible outcome following sternotomy.

Frequently Asked Questions

What are sternal precautions, and why are they important after sternotomy surgery?

Sternal precautions are a set of guidelines designed to protect the healing sternum after a median sternotomy (surgical separation of the breastbone), typically performed during open-heart surgery. They are crucial to prevent excessive stress on the healing bone, which can lead to sternal dehiscence (opening) or non-union, causing pain and delayed recovery.

What is the primary goal of physical therapy when implementing sternal precautions?

The primary goal of physical therapy with sternal precautions is to facilitate early, safe mobilization and functional recovery while protecting the integrity of the healing sternum. This involves regaining strength, range of motion, and endurance without compromising the

sternal wound.

What are the common movement restrictions typically included in sternal precautions?

Common restrictions include avoiding pushing or pulling with the arms, lifting objects heavier than 5-10 pounds, reaching overhead or behind the back, and twisting the torso. The exact restrictions can vary based on the surgeon's protocol.

How can physical therapists help patients manage pain while adhering to sternal precautions?

Physical therapists can employ various pain management strategies, including proper positioning, deep breathing exercises, gentle range of motion within precautions, education on energy conservation techniques, and recommending appropriate pain medication use as prescribed by the medical team.

What are the key exercises or activities that physical therapists will incorporate into a sternal precaution program?

Early exercises often focus on gentle, isolated movements of the limbs, deep breathing exercises, ankle pumps, and isometric exercises for major muscle groups (like quadriceps and glutes). As healing progresses, therapists introduce more functional activities like sit-to-stand transfers and short walks, always respecting the precaution limits.

How long do sternal precautions typically last?

Sternal precautions usually last for 6 to 8 weeks, but this can vary. The duration is determined by the individual's healing progress, the surgeon's protocol, and the presence of any complications. Patients should always follow their surgeon's and physical therapist's specific guidance.

What are the signs or symptoms that might indicate a problem with sternal healing, and what should patients do?

Signs of potential sternal issues include increasing chest pain, clicking or popping sensations from the sternum, redness or discharge from the incision site, or a feeling of instability in the chest. Patients should immediately contact their surgeon if they experience any of these symptoms.

How do physical therapists educate patients and their caregivers about sternal precautions?

Education is a cornerstone. Therapists provide verbal and written instructions, demonstrate

safe movement techniques, explain the rationale behind the precautions, and answer questions. They also teach how to safely perform daily activities like dressing, bathing, and transferring to and from chairs or beds.

What is the role of 'hug the pillow' technique in sternal precautions?

The 'hug the pillow' technique involves holding a pillow or folded blanket against the chest during activities that might otherwise cause strain, such as coughing, sneezing, or sitting up. This provides support and reduces movement across the sternum, thereby minimizing pain and protecting the healing bone.

When can patients expect to resume more strenuous activities or exercise after adhering to sternal precautions?

After the initial 6-8 week period and with clearance from their surgeon, patients can gradually reintroduce more challenging activities. Physical therapy will guide this progression, often involving strengthening exercises, endurance training, and sport-specific preparation as appropriate, ensuring the sternum is adequately healed to tolerate the increased demands.

Additional Resources

Here are 9 book titles related to sternal precautions in physical therapy, each with a short description:

1. *The Sternum Stabilized: A Physical Therapist's Guide to Post-Surgical Mobility*

This book offers a comprehensive overview of the anatomical and biomechanical considerations following sternotomy. It details the essential principles of sternal precautions, outlining specific exercises and activities to promote safe and effective recovery. The text emphasizes early mobilization strategies and progression to functional independence while minimizing risk of sternal dehiscence.

2. *Cardiac Rehab Essentials: Integrating Sternal Precautions into Patient Care*

This resource focuses on the critical role of physical therapists in cardiac rehabilitation programs after sternal procedures. It explores the psychological and physiological impact of cardiac surgery on patients and how sternal precautions guide the rehabilitation process. The book provides practical protocols for assessing patient readiness for different exercises and managing potential complications.

3. *Chest Wall Mechanics and Rehabilitation: A Clinical Handbook*

Delving into the intricacies of chest wall function, this handbook equips therapists with advanced knowledge relevant to sternal precautions. It examines the biomechanics of breathing and upper body movement in the context of sternal healing. The text offers evidence-based strategies for restoring strength, flexibility, and pain-free movement post-sternotomy.

4. Post-Thoracic Surgery Recovery: Optimizing Functional Outcomes

This book provides a multidisciplinary perspective on recovering from thoracic surgeries, with a significant portion dedicated to sternal precautions. It highlights the collaborative efforts between surgeons, nurses, and physical therapists to ensure optimal patient outcomes. The text details patient education, pain management, and progressive exercise programs designed to expedite return to daily activities.

5. Sternal Precautions in Practice: Evidence-Based Protocols for Physical Therapists

This highly practical guide translates research into actionable clinical protocols for managing patients on sternal precautions. It offers clear, step-by-step instructions for exercise prescription, activity modification, and patient education. The book emphasizes the importance of individualizing care based on patient factors and surgical complexity.

6. The Healing Sternum: Therapeutic Interventions for Post-Operative Recovery

This title explores the physiological processes involved in sternal healing and how physical therapy interventions can support this crucial phase. It details various manual therapy techniques, therapeutic exercises, and pain management modalities suitable for patients adhering to sternal precautions. The book aims to empower therapists to facilitate efficient and safe sternal healing.

7. Cardiopulmonary Physical Therapy: A Patient-Centered Approach to Recovery

While broader in scope, this book significantly addresses the recovery of patients undergoing cardiac surgery who require sternal precautions. It emphasizes the interconnectedness of cardiopulmonary health and musculoskeletal recovery. The text offers strategies for improving respiratory function, managing fatigue, and facilitating safe upper extremity use post-sternotomy.

8. Advanced Sternal Precautions: Navigating Complex Cases and Complications

This advanced text caters to experienced physical therapists managing patients with more complex sternal precautions scenarios. It discusses managing patients with comorbidities, previous sternal instability, or those requiring revision surgeries. The book provides insights into advanced assessment techniques and modified exercise progressions to address challenging recovery paths.

9. Empowering Patients: Self-Management Strategies for Sternal Precautions

This resource focuses on empowering patients to actively participate in their recovery by understanding and adhering to sternal precautions. It offers practical advice for patients on safe daily activities, home exercises, and recognizing potential warning signs. The book aims to foster patient independence and reduce reliance on continuous clinical supervision once precautions are understood.

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