



Pectoralis Major and Minor: All You Need to Know About this Amazing Muscle

Description

Table of Contents

- [Anatomy and Structure of the Pectoralis Major and Minor](#)
- [Functions and Movements](#)
- [Common Injuries and Clinical Significance](#)
- [Rehabilitation and Strengthening](#)
- [FAQs](#)
- [References](#)

The [pectoralis major](#), a robust and fan-shaped muscle, firmly anchors itself on the anterior chest wall, lying beneath the breast tissue and shaping the front of the axilla^[1]. This muscle, along with its counterpart, the pectoralis minor, forms the core group of chest muscles, playing a pivotal role within the muscles of the chest. The incorporation of terms like 'pectoralis major and minor,' 'chest muscles,' 'muscles of the chest,' and 'pectoral' is crucial for understanding the anatomy and functions of these significant muscles^[1]. In this article, we delve into the intricate anatomy and structure of the pectoralis major and minor, explore their functions and movements, investigate common injuries, and outline comprehensive strategies for rehabilitation and strengthening.

Anatomy and Structure of the Pectoralis Major and Minor

The anatomy and structure of the pectoralis major and minor are foundational to understanding their function in the human body. This section breaks down the key aspects of these muscles:

Pectoralis Major:

- **Origin:**
 - Clavicular head: Anterior surface of the medial half of the clavicle^{[2][5][6]}.

- Sternocostal head: Anterior surface of the sternum, costal cartilages (1-7), the sternal end of rib 6, and the aponeurosis of the external oblique muscle [\[2\]\[5\]\[6\]](#).
- **Insertion:**
 - Crest of the greater tubercle of the humerus, with fibers converging into a flat tendon inserted into the lateral lip of the bicipital groove of the humerus [\[2\]\[3\]\[6\]](#).
- **Innervation:**
 - The lateral pectoral nerve supplies the clavicular head, and the medial pectoral nerve supplies the sternocostal head, both originating from the brachial plexus [\[2\]\[4\]](#).
- **Blood Supply:**
 - Arterial supply primarily through the thoracoacromial artery, a branch of the axillary artery [\[4\]\[5\]](#).

Pectoralis Minor:

- **Origin:**
 - Arises from the anterior surface of ribs 3-5, near their costal cartilages [\[7\]\[6\]](#).
- **Insertion:**
 - Inserts into the coracoid process of the scapula [\[7\]\[6\]](#).
- **Function:**
 - Plays a significant role in the movement of the shoulder, assisting in stabilizing the scapula by drawing it anteriorly and inferiorly toward the thoracic wall.

This detailed overview of the anatomy and structure of the pectoralis major and minor highlights their complexity and importance in the musculoskeletal system.

Functions and Movements

The pectoralis major and minor muscles are pivotal in facilitating a wide range of movements and functions that contribute to the mobility and stability of the upper body. Their roles are intricately connected to the actions and movements at the shoulder and scapulothoracic joints.

- **Pectoralis Major Functions:**
 1. **Adduction, Medial Rotation, and Transverse Adduction:** This enables the arm to move closer to the body, rotate inwardly, and move across the body at the glenohumeral joint [\[2\]\[3\]](#).
 2. **Flexion and Extension:** Assists in raising (flexion) and lowering (extension) the arm, with specific actions attributed to the clavicular (flexion) and sternocostal (extension) heads [\[1\]\[5\]](#).
 3. **Depression of the Shoulder Girdle and Elevation of the Thorax:** Plays a role in lowering the shoulder girdle and aiding in forced inspiration by elevating the thorax [\[2\]](#).
- **Pectoralis Minor Functions:**
 1. **Stabilization of Scapula:** By drawing the scapula anteroinferiorly against the thoracic wall, it contributes to the stabilization necessary for various [upper limb movements](#) [\[7\]](#).
 2. **Aiding in Deep Inspiration:** Facilitates breathing by pulling the scapula forward and downward, which in turn assists in lifting the first two ribs [\[6\]](#).

This comprehensive overview highlights the multifaceted roles of the pectoralis major and minor muscles in ensuring efficient movement and stability of the upper body, underscoring their significance in both daily activities and athletic performance.

Common Injuries and Clinical Significance

Pectoralis major tendon rupture, though relatively rare, presents a significant concern, particularly for athletes engaged in rigorous physical activities. This injury predominantly affects young, physically active males, primarily in their third and fourth decades of life, and can have a profound impact on their athletic performance and daily activities^{[8][10]}.

Key Aspects of Pectoralis Major Tendon Rupture:

- **Common Causes:** Most frequently occurs during [weightlifting](#), especially the bench press's downward phase. Other activities such as martial arts, gymnastics, and football also pose risks^{[9][10]}.
- **Symptoms and Diagnosis:** Symptoms include pain in the chest and upper arm, weakness, deformity, and extensive visible bruising. Diagnosis is primarily through physical examination and confirmed via MRI or ultrasound^[9].
- **Treatment and Rehabilitation:** Surgical intervention is generally required to reattach the tendon to the bone, with a recovery period of about six months. Initial immobilization in a sling is followed by a carefully structured rehabilitation program, including pendulum exercises and graduated passive and active exercises^{[9][11]}.

For athletes and young individuals, surgery is typically necessary to ensure a full return to strength and function. However, non-surgical treatment may be considered for elderly patients or those with partial tears. This injury's differential diagnosis includes several other conditions, highlighting the importance of accurate diagnosis and tailored treatment strategies^{[10][11]}.

Rehabilitation and Strengthening

Rehabilitation and Strengthening exercises for the pectoralis major and minor muscles are essential for recovery from injuries and for enhancing overall chest muscle strength. These exercises aim to improve flexibility, strength, and function of the chest muscles and surrounding areas.

Flexibility and Stretching Exercises:

- **Pectoralis Stretch:** Enhances flexibility of the chest muscles.^[12]
- **Thoracic Extension:** Improves upper back flexibility and posture.^[12]
- **Thoracic Stretch:** Aids in relieving tightness in the upper back.^[12]

Strengthening Exercises:

- **Push Ups and Knee Push Ups:** Strengthen the pectoralis major muscle.^[13]
- **Resistance Band Adduction:** Targets the pectoralis major and minor for improved muscle tone.^[13]

- **Pectoral Dumbbell Pull on Swiss Ball:** Focuses on pectoralis major strengthening and stability. [\[13\]](#)

Scapular and Shoulder Stability Exercises:

- **Scapular Squeeze and Mid-Trap Exercise:** Enhance scapular stability, crucial for shoulder health. [\[12\]](#)
- **Quadruped Arm/Leg Raise:** Strengthens the core and improves scapular stability. [\[12\]](#)
- **Rowing Exercise:** Strengthens the back muscles, supporting the pectoralis muscles. [\[12\]](#)

Incorporating these exercises into a rehabilitation or strengthening program can significantly contribute to the health and function of the pectoralis major and minor muscles, improving overall upper body strength and flexibility.

FAQs

What roles do the pectoralis major and minor muscles play?

The pectoralis major and minor muscles are primarily responsible for the adduction and internal rotation of the arm at the shoulder joint. When acting separately, the clavicular part of the muscle assists in lifting the extended arm to a 90° angle, and the sternocostal part aids in lowering the flexed arm by drawing it down.

Which artery is located between the pectoralis major and minor muscles?

The thoracoacromial artery, which traverses through the clavipectoral fascia and extends its four branches, is found between the pectoralis major and minor muscles. Specifically, the pectoral branch runs in the space between these two muscles.

What nerves are situated between the pectoralis major and minor muscles?

The medial pectoral nerve, which often communicates with the intercostobrachial nerve and may pass through the pectoralis minor muscle in 50% to 100% of cases, is located between the pectoralis major and minor muscles. The lateral pectoral nerve provides innervation to the upper part of the pectoralis major muscle, while the medial pectoral nerve supplies the lower part.

Is there another name for the pectoralis minor muscle?

The pectoralis minor muscle, a thin and triangular muscle found beneath the pectoralis major in the upper chest area, is also known by its Latin name, "pectoralis minor." It originates from the third to fifth ribs and attaches to the coracoid process of the scapula, with the medial pectoral nerve providing its innervation.

References

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