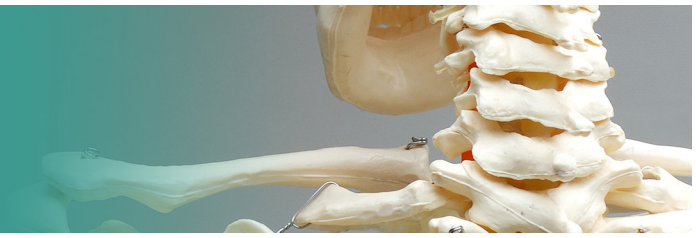
Intelligent Fitness™

Anatomy Focus



Understanding the Deltoids

Deltoid is the large triangular muscle that gives the shoulder its rounded contours. It is divided into three distinct parts: anterior, posterior and the middle. The most developed of the three, the middle part, is also the only one to have a multipennate fibre arrangement. These attributes suit its role in holding the arm in an abducted position during many functional activities.

The attachments and actions

The fibres of all three parts share a common attachment at the deltoid tuberosity on the lateral aspect of the humerus. The middle fibres run from the lateral aspect of the acromion, and as such their only action on the shoulder is abduction. The anterior and posterior fibres originate from the anterior lateral third of the clavicle and the inferior edge of the spine of the scapula respectively. Whilst both parts work with the middle fibres to abduct the shoulder, their remaining actions are opposing: the anterior fibres produce flexion, medial rotation and horizontal adduction; the posterior fibres extend, externally rotate and horizontally abduct.

Do you know?

When considering these actions it is important to remember the orientation of the axes within the shoulder joint. Abduction/adduction and flexion/extension all occur in planes at 45° to the sagittal and frontal planes.

Points to consider

Weakness in deltoid can result in the inability to abduct the shoulder against resistance, and may also lead to an overuse of supraspinatus and/or excessive elevation of the shoulder girdle. Severe weakness can lead to downward subluxations, particularly when heavy loads are carried.

Whilst strength can be developed in each of the three parts through the appropriate movements, a focus on the larger middle portion is most useful for function. These middle fibres are best developed through abduction, the first 10-20° of which is initiated by supraspinatus, before the deltoid takes over. As the shoulder increasingly abducts and the emphasis of the movement shifts to elevation and upward rotation of the shoulder girdle, the shoulder should be allowed to rotate laterally.

When considering the range through which to work, it is vital that supraspinatus is not neglected and that any dominance in upper trapezius is not exacerbated. Abduction, whatever the range, should NOT be combined with medial rotation as this would focus on the anterior fibres and would be likely to cause impingement of the rotator cuff tendons (primarily supraspinatus), the long head of biceps brachii, the subacromial bursa and the glenohumeral joint capsule. Indeed as the shoulder approaches full abduction, a slight lateral rotation should be encouraged.

Do you know?

The commonly performed ‘shoulder’ stretch where the arm is pulled in across the body, is for most individuals inappropriate. This stretch targets the posterior fibres of deltoid and middle trapezius, both of which are, in most individuals, already lengthened.

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