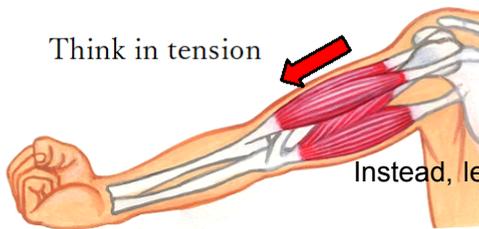
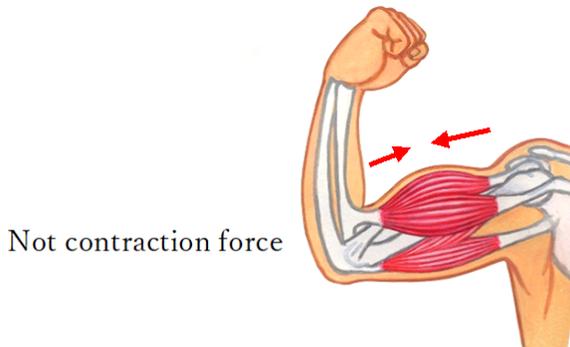


No.9 "Muscle Tension"

"Muscle tension" instead of "muscle contraction force"  
 How do muscles work, contract?  
 Thinking in terms of tension...



Usually human movement and performance are considered as "muscle contraction force."

Instead, let's think in terms of "muscle tension".

The place to see is "bone".

Muscles are attached to the bones. Especially scapula, large and small, has many muscles attached to it. When the scapula is moved by the weight of the arm, it creates tension in the attached muscle groups.

"Tension" is not the force caused by muscle contraction, but the force caused by pulling.

This function of "tension" is important. When looking at human movements and movements, let's first look at the movement of bones, not how bones and joints move due to muscle contraction. How do bones move?

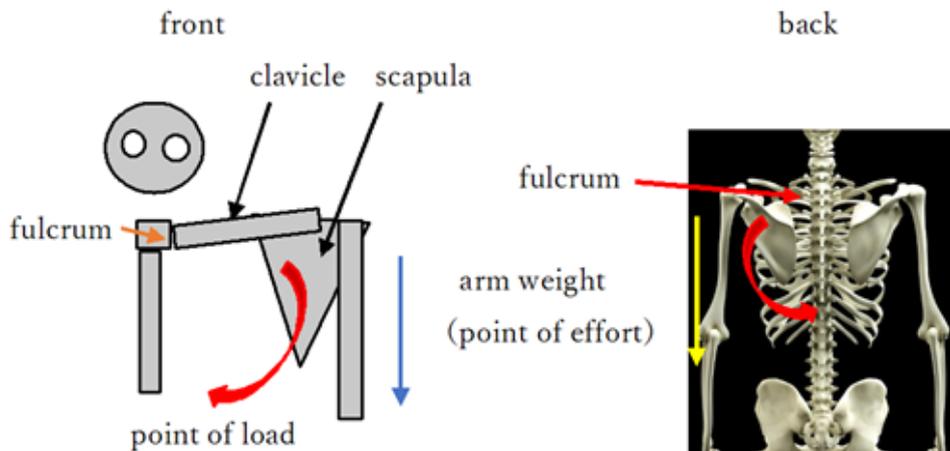
It is also important to consider how muscles are pulled when bones and joints move, and how muscle "tension" is brought out by bone movement.

- ☆ Watch the movement of "bone", not the movement of "muscle"!
  - ☆ Think in terms of "muscle tension" instead of "muscle contraction force"!
- It is necessary to take this perspective

Let's think in a standing position.

"bone" In this case, we will look at the movement of "scapula".

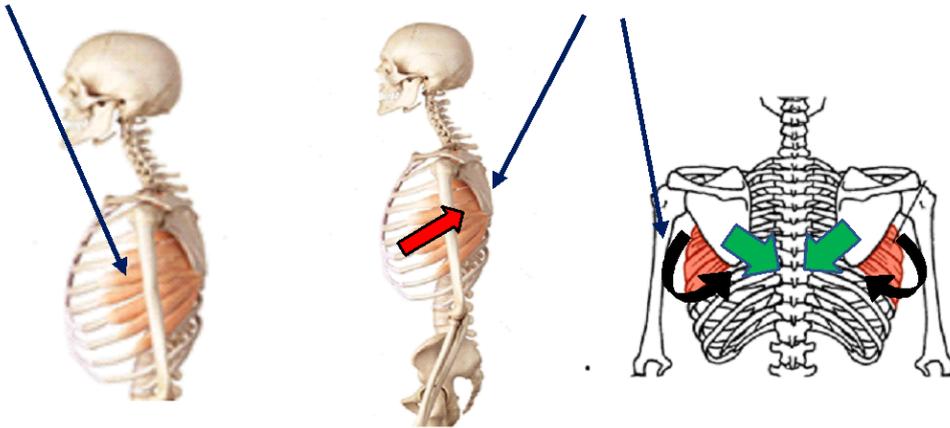
As I mentioned last time, the weight of the arm lowers the scapula to the spine.



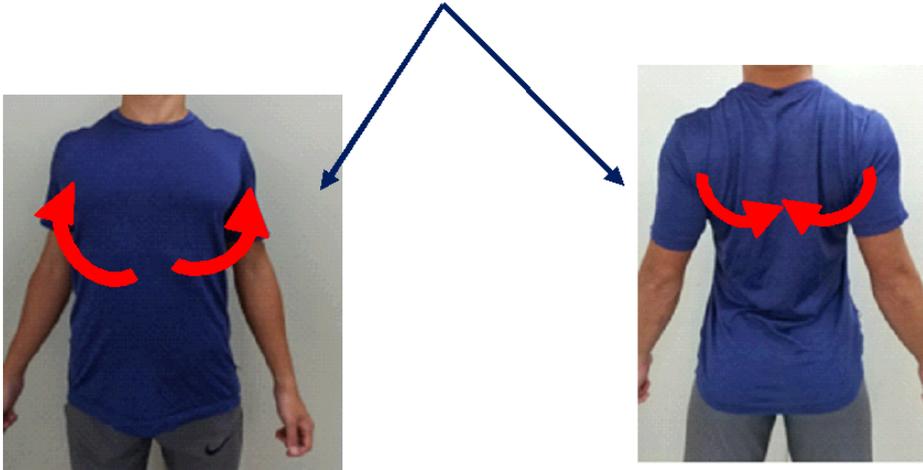
Now, let's pick up the muscle "Serratus anterior" attached to the scapula from the rib.

serratus anterior

The serratus anterior muscle is tensioned when the scapula is pulled towards the spine.



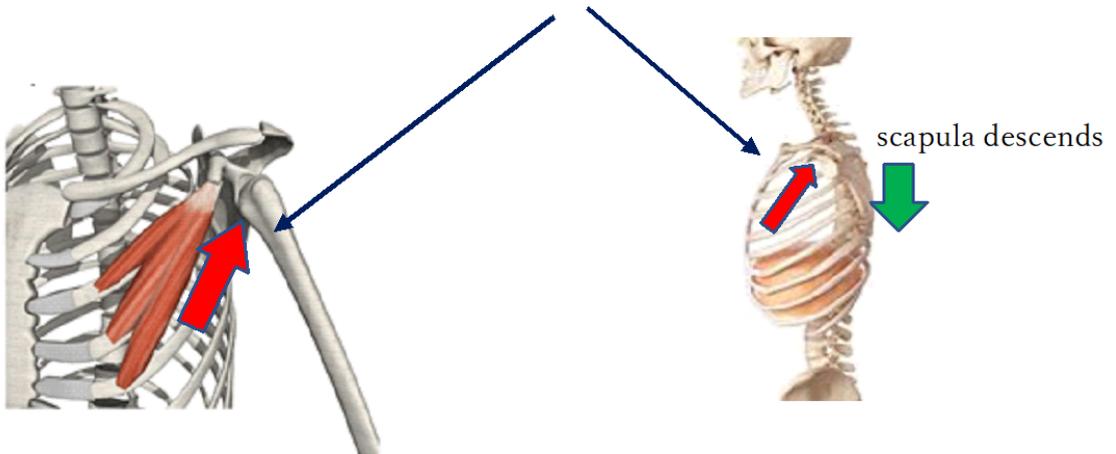
Tension in the serratus anterior muscle expands the ribcage.



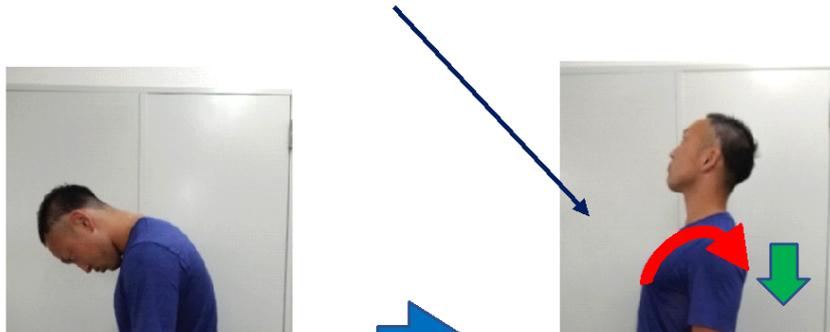
Let's pick up another muscle attached to the scapula this time from the ribs.

pectoralis minor

The lowering of the scapula creates tension in the pectoralis minor muscle.

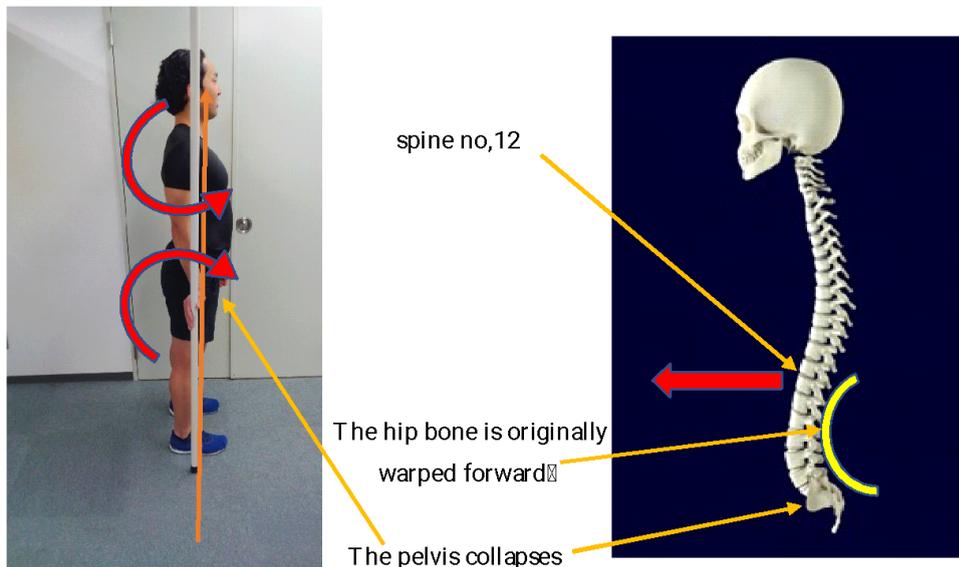


The chest is lifted by the tension of the pectoralis minor muscle.



In this way, instead of thinking about the contraction force of the muscles, we think about how they work as a result of the muscles being pulled and stretched when the bones move.

In the standing position, the tension of Serratus Anterior, Pectoralis Minor moves the rib cage to be widened and the movable point "Thoracic Spine No,12 (transition of thoracic and lumbar vertebrae)" is pushed forward.



This is the mechanism by which the movement of the scapula generates tension in the muscles and transmits force to Thoracic Spine No,12. Of course, it's not just the two muscles I gave as an example. In addition, muscle groups attached to humerus and clavicle work in the same way.

The complex structure of the arm is a structure that uses gravity to support the weight of the arm with the skeleton, and then transmits force to thoracic spine No.12 to move it.

This time, I looked at the standing posture. The principle is the same for other movements, such as walking, running, jumping, kicking, throwing, and hitting.

SCAPPULA is the "transmission" of the human body.

It adjusts and changes the magnitude and direction of the force of the load applied to the hands and arms, and transmits it to the center of the body, Thoracic Spine No,12, and transmits the output from the center of the body to the extremities of the body.

