Joints

The word "joint" means to unites. All bones move at joints, which are the connections between bones. The shape of the bones and the attachments dictate the direction of movement at each joint, so they have varying degrees of mobility. All joints experience compression in weight bearing and elongation in un-weighted stretching.

To work with joint alignment, we are looking at whether the bones at any joint have a clear and responsive relationship, especially in weight bearing, or in any case when forces flow through them. We are also concerned as to whether or not they have freedom of movement or whether they are constricted in some way. The range of motion is most free when weight passes through the center of each joint. Movement exists at each joint, no matter how fibrous and tightly connected, or freely moveable it is.

There are three main classes of joints:

Fibrous, which tightly hold bones together and are basically non-movable. The sutures of the skull are fibrous joints.

Cartilageous, which connect bones or aspects of growing bones with cartilage and fibrous connective tissue. The discs between the vertebrae are considered 'fibrocartilageous joints,' as well is the symphysis pubis between the two pubic bones.

Synovial, which involve cartilage covered bone ends articulating within a fluid filled capsule that is lined with a membrane that secretes the fluid, called synovial fluid. Most of the joints we use to move are synovial joints.

The shape of their articulating surfaces categorizes the synovial joints. The categories are: ball and socket, hinge, saddle, ellipsoidal, pivot, and gliding. (See ACB p. 22)

<u>Parts of a Typical Synovial Joint</u>

Articulating Bones
Articular Cartilage
Synovial Membrane
Synovial Cavity
Joint Capsule

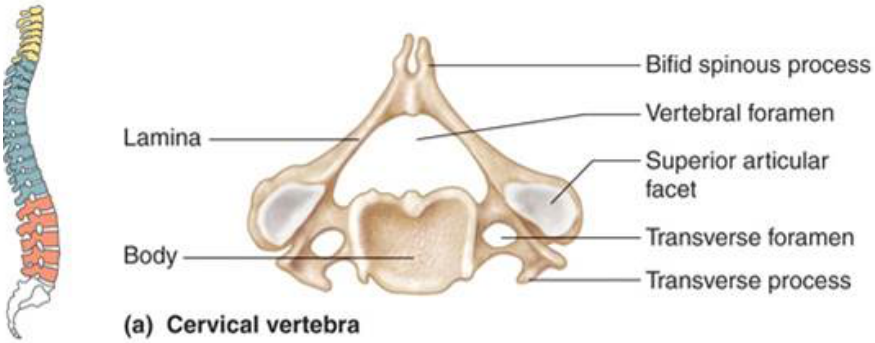
Ligament
Bursa

Muscles with Tendons

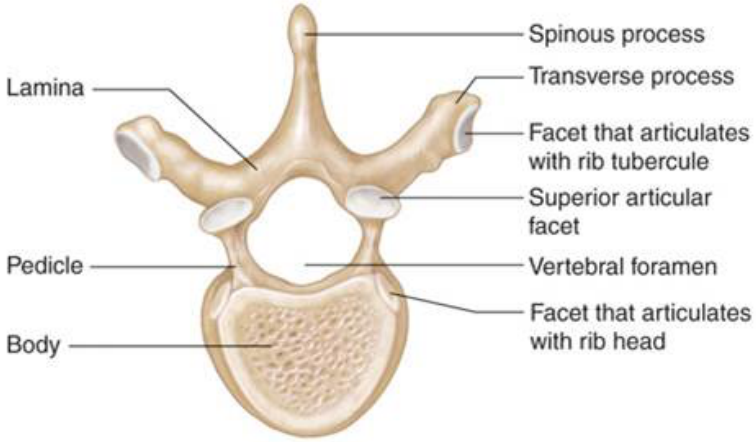
There are also blood vessels and nerves that motor muscles and pass through the areas where joints are located.

Vertebra and Discs

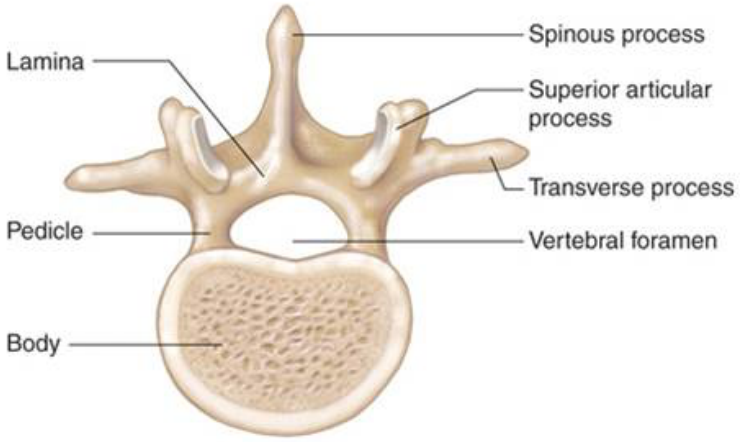
The bodies of the spinal vertebrae are linked by discs of cartilage. These discs can be compressed and expanded to a slight degree to allow for flexion, extension, lateral flexion, and rotation. They also cushion the force of weight through the spine. In the case of constant misalignment of vertebrae, a disc or discs may become over-compressed and may incur structural damage. Freeing movement of vertebrae, gently in all directions within the natural range of motion of each of these vertebral joints encourages weight to fall more centrally through the body of each vertebrae.



(a) Cervical vertebra



(b) Thoracic vertebra



(c) Lumbar vertebra

Cogwheels and Initiation
The way in which we conceptualize and visualize a joint will affect the way in which we move it. The knee is often conceptualized as a hinge. When you consider something that is three dimensional to act like a hinge, this asks that thing to bend like folding a nearly one dimensional piece of paper. It will shorten one side and lengthen the other. The can set up an imbalance in the joint space.

To work with a joint in a balanced way space needs to be created. Then the three-dimensinoality and shapes of the bones can next come into awareness. If the bone ends are considered to remain in ewual relationship thorugh the joints rqange of motion, then the full surface area of the joint will circumscribe more range of motion. Also there will be more continual support for force and wieght bearing.

The is sometimes called, “cogwheeling” in the joint. It is the image of gears smoothly meshing as they turn.

Give pressure. Give space, take out the slack evenly. Stabilize the first bone and move the other. Stabilize the second bone and move the first. Move both bones in maintaining evedn joint space as much as possible. Notice what the differences are.

Initiate at one end of the bone. Initiate at the other end of the bone. Initiate at both ends at once. Notice the differences.

Bend knee. Establish image of double ball and socket joint at the knee. Bend the knee with this imaging. Notice the differences.

Drawing the Joints

- Draw a simple stick figure with appendages radiating in an X.
- Identify the cenger of gravity, usually in pelvis.
- Indicate: spine, shoulders, hips, elbows, knees, ankles, wrists, fingers, toes, jaw.
- Draw a circle around the central zone of the body, equidistant from the center of gravity. This cengtral zone includes cartilageous joints of the spine. Their funcion, carried out by the psoas and abodminals (we will study shortly), is to integrate and position the body for movement. All o the other joints we indetify wil be synovial joints.
- Pass the circle of the first perimeter thorugh gthe shoulder and hip sockets; these are ball and socke jionts (with 3-D movement). Their function in the body is to establish direction of movement.
- Pass the circle of the second perimeter through the elbows and knees; thay are hinger joints (with generally 2-D movement) for fulfilling range of motion.
- Pass the third circle through the gliding joints of the wrists and ankles. These allow for movement refinement and shock absorption.
- Pass the foruth circle through the small hinge joints of the fingers and toes. Their function si articulation, manipulation, and indication. Include the jaw in this zone.
- Look at your drawing. Stand and image each zone in relation to your body’s center.