Setting the Body in Motion

Here's how your 230 joints coordinate to help you get a move on.

by LeRoy Perry, Jr., D.C.

Every day your body does something truly remarkable, and you probably never give it a second thought. A miracle of mechanical engineering, your musculoskeletal system allows you to move through space, which is simply amazing. With bones, muscles, and joints designed for all sorts of derring-do, your body moves like a well-choreographed play, and your joints make up the cast. Basically, skeletal muscles are attached to bones; when muscles contract, they pull on the bone and movement occurs at the joint. It is your joints that are the real action heroes of this play.

Technically called articulations, joints are where two bones meet. You have 230 joints and 206 bones in your body, and every bone—save one—articulates with at least one other bone. (The exception is the hyoid bone in your throat.) Your body also contains cartilage, a tough flexible tissue that forms your ears and nose, connects the ribs to the sternum, and covers the ends of bones.

Ligaments fasten bone to bone at the joint, where cartilage helps prevent friction between them. In joints that move, extra protection comes from a capsule that encloses the joint like a sleeve. The capsule is lined with synovial membrane, which secretes a thick slippery fluid to help lubricate the joint. Tendons attach muscles to bones, and a small, cushionlike sac called a bursa is found wherever tendons cross bones. The best example of this amazing configuration is the knee—the knee is so beautifully designed that it has yet to be fully replicated by man. Your knees will carry you through one to three million steps a year and can hold up to five times your body weight.

Major Joints

Throughout your skeleton, you have three basic types of joints:

- **Immovable** or fibrous joints are found between bony plates in your skull and are also the joints that hold your teeth in your jawbone.
- **Partially movable** or cartilaginous joints move a bit and are linked by cartilage; examples are your vertebrae and your ribs at your sternum.
- **Freely movable** or synovial joints move in many directions and are filled with synovial fluid.

Joints That Move

Freely movable joints are further broken down into the following five types:

- **Ball-and-socket joints** like your shoulders and hips have the most freedom of movement: the end of one bone is rounded and fits into the hollow of another bone. Because these joints permit such a large range of motion, they are relatively weak and prone to strain and injury.
- **Saddle joints** allow for all movement except rotation and look like a rider sitting in a saddle. You'll find this type of joint where your thumb meets your hand.
- **Hinge joints** move backward and forward—and these joints get a lot of use! Your knees, elbows, and knuckles are examples.
- **Pivot joints** have the ability to rotate and can be found where a cylinder-shaped bone pivots within a ring formed by another bone. The best example is found between the first and second vertebrae in your neck, which allows you to turn your head from side to side.
- **Gliding joints** are the least moveable of all joints in this category. Flat or slightly curved bones slide over each other in gliding joints. The carpal bones in your wrist and tarsal bones in your ankle are examples.

According to the U.S. Centers for Disease Control and Prevention, physical activity decreases joint discomfort, improves joint function, and delays disability. Furthermore, you can improve the health of your joints by maintaining a healthy weight. And by keeping your cartilage well-nourished and providing your body with the resources it needs to produce synovial fluid, you will promote your ability to stay active and mobile. JOL

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