



Aging Associated Changes in Bones and Muscles

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DESCRIPTION

Age-related changes such as wrinkles and gray hair are inevitable. Changes in muscles, bones and joints were also considered inevitable. However, researchers warn that many factors associated with aging are due to inactivity, and that engaging in physical activity can help reduce or reverse the risk of disability and chronic disease. During process of aging individuals may lose size and strength, contributing to fatigue, weakness, and decreased exercise tolerance. This is caused by several factors working together. Muscle fibers decrease in number and shrink in size. Muscle tissue is replaced more slowly, and the lost muscle tissue is replaced by tough fibrous tissue. Nervous system changes lead to a loss of muscle tone and contractility.

Bone is a living tissue. Bone structure changes with age, which leads to loss of bone tissue. Low bone mass means weaker bones, putting them at greater risk of fractures from sudden impacts or falls. Bones become less dense with age, in women; menopause causes bone tissue to lose minerals. In men, osteoporosis progresses as sex hormones gradually decline. At joints, the bones do not touch directly. They are buffered by the cartilage that lines the joint (articular cartilage), the synovial membrane around the joint, and the lubricating fluid within the joint (synovial fluid). As we age, the amount of lubricating fluid in our joints decreases and the cartilage becomes thinner, making joints stiffer and less flexible. The ligaments also tend to shorten and lose some flexibility, making the joints feel stiff.

Some older people have reduced reflexes. This is often caused by

changes in the muscles and tendons, rather than changes in the nerves. Decreased knee or ankle jerk reflexes can occur. Involuntary movements such as muscle tremors and fine movements called as fasciculations are more common in the old aged people. Older people who are not active may have weakness or abnormal sensations. People who are unable to move on their own, or who do not stretch their muscles with exercise, may get muscle contractures. The joints become stiffer and less flexible. Fluid in the joints may decrease. The cartilage may begin to rub together. Minerals may deposit in and around some joints (calcification). This is common around the shoulder. Hip and knee joints may begin to lose cartilage (degenerative changes). The finger joints lose cartilage and the bones thicken slightly. Finger joint changes, most often bony swelling called osteophytes, are more common in women. These changes may be inherited. Person appears to be lean as body mass decreases. This decrease is partly caused by a loss of muscle tissue (atrophy). The speed and amount of muscle changes seem to be caused by genes. Muscle changes often begin in the 20s in men and in the 40s in women. Lipofuscin (an age-related pigment) and fat are deposited in muscle tissue. The muscle fibers shrink. Muscle tissue is replaced slowly. Lost muscle tissue may be replaced with a tough fibrous tissue. This is most noticeable in the hands, which may look thin and bony. Muscles are less toned and less able to contract because of changes in the muscle tissue and normal aging changes in the nervous system. Muscles may become rigid with age and may lose tone, even with regular exercise.

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