

## Physiological Aging Changes

### References:

1. Arking, R. *Biology of Aging : Observations and Principles*. 2<sup>nd</sup> ed. Sunderland, MA: Sinaur Associates, Inc.,1998
2. Digionvanna A. *Human Aging: Biological Perspective*. 2<sup>nd</sup> ed. Boston, MA: McGraw-Hill, 2004

Physiological System	Age-Related Changes	Associated Functional Changes
Integumentary	Thinning of epidermis Decreased # of collagen fibers Decreased # of sweat glands Decreased # of sensory neurons in skin	Increased susceptibility of infection Decreased rate of wound healing Tissue easier to damage Decreased thermoregulation Decreased manual dexterity
Skeletal System	Protein & minerals in bone matrix change Bone more rigid and brittle Decrease in trabecular & cortical bone Thinning of cartilage in joints Decrease in central region of vertebral body Collagen of intervetebral joints becomes stiffer	Increased risk of fracture Decrease in height Decreased joint mobility Joint pain due to thinning of cartilage Increased rigidity of spine – postural changes
Muscular System	Decreased ability of cell to be stimulated by neuron Decrease in number of muscle cells (Type II more than Type I) Decrease in number & size of mitochondria	Decreased ability to respond to rapid movements Decreased ability for power Decreased strength Decreased function / impaired ADL's
Cardiovascular System	Decrease in max HR Stiffer, dilated, thicker heart Accumulation of lipids in arteries Decreased ability of arteries to dilate	Decreased efficiency and increased O2 demand Decreased ability to respond to temperature changes

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Physiological System	Age-Related Changes	Associated Functional Changes
Respiratory System	<ul style="list-style-type: none"> <li>Weakening of muscles of respiration</li> <li>Decrease in minute volume due to stiffness of thorax</li> <li>Decreased vital capacity</li> <li>Decreased rate of diffusion</li> <li>Decreased in FEV</li> <li>Decrease in max breathing</li> </ul>	<ul style="list-style-type: none"> <li>Increased risk of aspiration</li> <li>Decreased efficiency</li> <li>Increased risk of sedentary lifestyle</li> <li>Decreased max VO<sub>2</sub></li> </ul>
Eyes & Ears	<ul style="list-style-type: none"> <li>Decreased transparency of cornea</li> <li>Cornea becomes flattened</li> <li>Decreased fluid production</li> <li>Decreased # and length of cones</li>   <li>Increased ear wax</li> <li>Decrease in number of several types of cells</li> <li>Eardrum becomes stiffer</li> </ul>	<ul style="list-style-type: none"> <li>Difficulty seeing objects close – bifocals</li> <li>Decreased adaptation to changing light</li> <li>Loss of independence</li>   <li>Decreased ability to hear all frequency of sound (especially high frequency)</li> <li>Decreased ability to localize sound</li> <li>Increased risk of falls / decreased balance reactions</li> </ul>
Nervous System	<ul style="list-style-type: none"> <li>Gradual decline in sensory functions</li> <li>Decrease in number of motor neurons</li> <li>Reflexes slowed</li> </ul>	<ul style="list-style-type: none"> <li>Delayed reaction times – increased risk of falls or injury</li> <li>Inability to enjoy aromas of foods</li> <li>Slowing of voluntary movement</li> </ul>