How Does Poor Posture Affect the Human Body?

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Kyphosis is the excessive curvature of the thoracic spine along the sagittal plane, creating a hunchback or slouching appearance. It is a pressing issue in modern society due to anatomical issues and negative habits, such as reliance on electronics, and can result in many complications including muscle fatigue and spinal disc damage. To analyze the effects of poor posture on the human body, an experiment was conducted in December 2017 by building six 75% scale human spine models with elastic bands stretched across vertebrae, representing muscles, and fluid-filled pipettes in place of cartilaginous discs. Three spines remained in proper anatomical as controls while the remaining three spines were altered in forward head deviation to simulate increasing severities of kyphosis. At each position, band lengths and disc fluid displacement were measured. Changes in bands lengths, converted to force using a spring scale, represent changes in muscle usage while changes in fluid displacement represent disc compression. Statistical analysis revealed that as posture is worsened, muscles in the back are overused while anterior muscles are weakened. It also revealed that poor posture causes disc compression and disc damage. Overall, this experiment showed that poor posture has significant negative effects on the entire vertebral column.

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