This thesis pursues the function of human skeletal muscle. It describes the sarcomere and current theories of the muscle contraction. In addition to conventional sliding sarcomere theory the new large – scale model is included. It is called rotational theory and it works on the basis of rotating helical molecules which are functionally coupled. Muscle reaction to stretching in dependence on the stretch length and velocity are folded in. The chapter Neural Commands is not comprehensive. Its purpose is to review the differences between neural control of concentric and eccentric contraction, respectively. Following parts summarize the integration of eccentric contraction into human movement, instantaneous reactions and adaptation processes. The last theoretical part deals with subjective perception of stress during predominantly concentric and predominantly eccentric exercise. The applied part consists of the outcomes of measurement of peak and averaged heart rate before and after bouts of running with predominantly concentric (uphill running) and predominantly eccentric (downhill running) exercise. Subjective rate of physical and psychical condition were registered at identical situation using visual analogue scale. Twelve high school students were measured.