



INVESTMENTS IN EDUCATION DEVELOPMENT

knee flexion. The One-sample t-test showed significantly lower knee flexion angle in sagittal plane than 30 degrees in go landing ($p = 0.0$) and reverse landing only. The reverse and go landing may be harmful for ACL due to single-leg landing in mediolateral direction with significantly lower knee flexion at instant of first peak of GRF.

Determination of dependence of radiographs magnification on the BMI

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X-rays are used for preoperative planning and clinical studies. X-rays have different magnification depending on the distance of the subject from a shield. The aim of the study was to determine whether there is a correlation between images magnification and the BMI. About 60 images of the standard (a ball of known diameter and constant distance from a shield) and the implanted hip joint heads from three hospitals were measured. The result of this study is that the magnification of standard is constant. The dependence of the measured hip joint head magnification on the BMI is statistically significant. Each set of images has a different magnification but the gain of magnification per unit of the BMI is similar.

Effect of the different positioning of Proximal Femur Nail on fixation of proximal femur fracture during cyclical loading

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The objective of this work is to compare the effect of the different positioning of Proximal Femur Nail (PFN) on fixation of proximal femur fracture during cyclical loading. The subject of analysis is an unstable fracture with large posteromedial comminuted area. We considered five possible positions for the PFN fixation system, where one of them is known as the optimal position. We carried out a stress analysis of the bones, stress analysis of the PFN and the preservation of the proper behavior of the PFN. For this work we undertook a computational analysis using Finite Element Method.

The effect of destabilization upright positions on human respiratory function

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The research was focused on finding connections stabilizing function of the body on the respiratory function. The research group consisted of 14 healthy young subjects. During the measurement, which lasted 60 " (one standing on the ground and second on balancing rotating segment), the proband of the camera to assess the variability upright positions (3D trajectories C7) and also was picked Spiro record volume of exhaled air. Watching these two phenomena that have natural variability and body resolves the situation by keeping the individual functions within a certain tolerance band. The destabilization caused by standing on unstable surface, resulted in deflections increase, especially in the anteroposterior direction, the selected reference vertebra C7. Moreover, the increased frequency corrected fluctuations in the ratio of about 1:6. The role of maintaining upright positions increased variability of individual breaths, caused an increase in isolated larger tidal volumes and shorter expiratory phase of breathing and the slight increase in respiratory rate.

The biomechanic influence on vessel's physiology and pathophysiology

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The study of biomechanical characters of vessels a them modeling cause the new information about behavior this anatomical structures. Recently discovered vessel quality, angiosynizesis and self-excited wall vessel vibration have an influence on behavior understand part of cardiovascular system. Recently discovered biomechanical vessel duality has an influence on physiology and pathophysiology vessel system in different anatomical systems of body, e.g. central nervous system area. Physiological aspects: in hemodynamic regulation - Starling resistor, in hemodynamic - combination bridging veins, any venous brain system and venous brain sinuses - primarily cavernous sinus (physiological jewelry box) - as pulsing pump, the effect on liquorodynamic brain system - increased production(plexus chorioideus), resorbcion (basal system- arachnoithelial tissue on skull base, convexity system as standby system), the effect of movement of brain on bridging veins, exchange cross-section, influence on brain microcirculation by way oncotic and osmotic pressure during local metabolism, the effect for aim increase function selected brain part- by way physical influences on muscular vein type - the contraction and exchange microcirculation into drainage areas - influence brain part with superior function in the siame time (under exam - fMRI, MSI, SISCOM, PET, SPECT).The self-excited oscilation: cleaning wall, the effect for blood flow, the inflace of physical effect between layers - biomechanical border double layers, resolution of problem imperfect absolute smoothness innersurface vessel wall, mixing fluids, at fluid with particles reduction particle clustering, the protection before Karman vortex street. The effect of Karman vortices, vortex streets, on boundary two layers of fluid with different speed come about so-call Kelvin-Helmholtz instability, which demonstrates by form Karman vortices, whose density increases by fractals, the fluid until go to turbulence mode. Pathophysiological problems: