1. ABSTRACT

This diploma thesis refers to human body composition and its alterations by physiological and pathological processes that occur during different stages of life. Fat mass, fat free mass and total body water represent the major components of the human body which are modified during infancy, childhood, puberty, pregnancy and adulthood. Bioelectrical Impedance Analysis (BIA), Dual Energy Absorptiometry (DEXA), Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) are some methods which are utilized for the qualitative and quantitative assessment of the body composition according to nutritional and pathological state of each individual, targeting the optimal clinical outcome. During growth, the amount of total body water elevates through infancy but it gradually declines in the next stages of life. Fat mass or total body fat possesses higher values during infancy, pregnancy and aging whereas it increases preferentially in female population at puberty. Muscle mass is elevated significantly in males during puberty and declines gradually due to aging. Osteoporosis, obesity and wasting diseases such as anorexia, cachexia and sarcopenia provoke severe disturbances in body composition compartments resulting in high rates of morbidity and mortality of the population.