"3D volume rendering" anatomical study of human locomotor system

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The present study offers the possibility to highlight the human locomotor system by using medical imaging high quality techniques. Particularly, "Three-dimensional (3D) volume rendering" and "Surface rendering" techniques are considered an important tool and a good alternative in comparison to traditional methods. By using of specific algorithms, "Direct volume rendering", transforms conventional two dimensional (2D) magnetic resonance features into volume data sets of three-dimensional images. This method can be used to evaluate, bone-, cartilage-, muscle-, tendon- tissues and their relationships for clinical, educational and research purposes; in fact the technique provides the possibility to evaluate simultaneously multiple tissues, conserving the original image data. No other image reformatting technique so accurately highlights each anatomic relationship and preserves soft tissue definition. A further aim of our study is to obtained an adjournable Database Processing System used for statistical analysis and interactive teaching too. For such aim we started with RMN-images (1,5 Tesla) acquired by one stack of 1.50-mm slices, from healthy and pathological subject, that were processed with surface/volume rendering techniques used "Volview 2.0 graphic software" interfaced with various hardware and software systems, volume rendering engine and multi-threaded parallel rendering support.