

Anatomical network analysis reveals centralities in human biomechanical structure

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The anatomical structure of the human body is a highly complex system for the large amount of components and the relationships and interactions between these. Today there are tools that allow us to deal with this complexity and the network is certainly one of the most used. The use of the network model for the analysis of complex systems has already been used in the nineteenth century by Etienne Geofrey Saint Hilaire as part of the morphological biology. Recently they have been reconsidered because of the possibilities of analysis and interpretation of mathematics that they offer still nowadays (1,2). The anatomical network presented here consists of 2294 anatomical parts interconnected by 7196 links between bones, muscles, fasciae, joint capsules, ligaments and tendons. Hence, all this structures refers to the biomechanical structure of the locomotor system. The topological analysis of the network allows us to develop new applications in the context of the study and the anatomical evaluation of the locomotor system related to reachability, connectivity and brokerage of the various body parts.

References

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Keywords

Anatomical network; biomechanics; locomotor system.