

عنوان مقاله:

Development of a Biomedical Neckbrace through Tailored Auxetic Shapes

محل انتشار:

مجله ایتالیایی علوم و مهندسی، دوره 1، شماره 3 (سال: 1396)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

Objectives This work concerned the study of auxetic materials are cellular structures with negative Poisson's ratio, therefore bending, instead of stretching, when pulled, therefore offering support. **Methods/Analysis** Nature is able to develop irregular cellular structures, making them denser only when needed and sparser in other areas and this experience has been applied to the development of structure with auxetic geometries other than the classical bow-shaped one. **Findings** The study of these inherent characteristics of nature allowed the development of three innovative auxetic patterns, not existing in literature, modifying their structure to optimize their function, starting from the study of elementary geometrical shapes to arrive to auxetic unitary cells formed by concave polygons, united to other geometrical elements so to obtain auxetic structures both of multicellular type and of node-link type. **Novelty/Improvement** The knowledge acquired about novel auxetic structures has been applied to the development of an innovative neckbrace for orthopaedic purposes, which is comfortable, in that it is flexible, resistant, anatomical and transpiring

کلمات کلیدی:

Auxetic; Poisson s Ratio; Neckbrace; Koch's Curve; Bio-inspiration

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<https://civilica.com/doc/705062>

