3-D printing creates knee model for evaluating patellar disorders and surgical approaches

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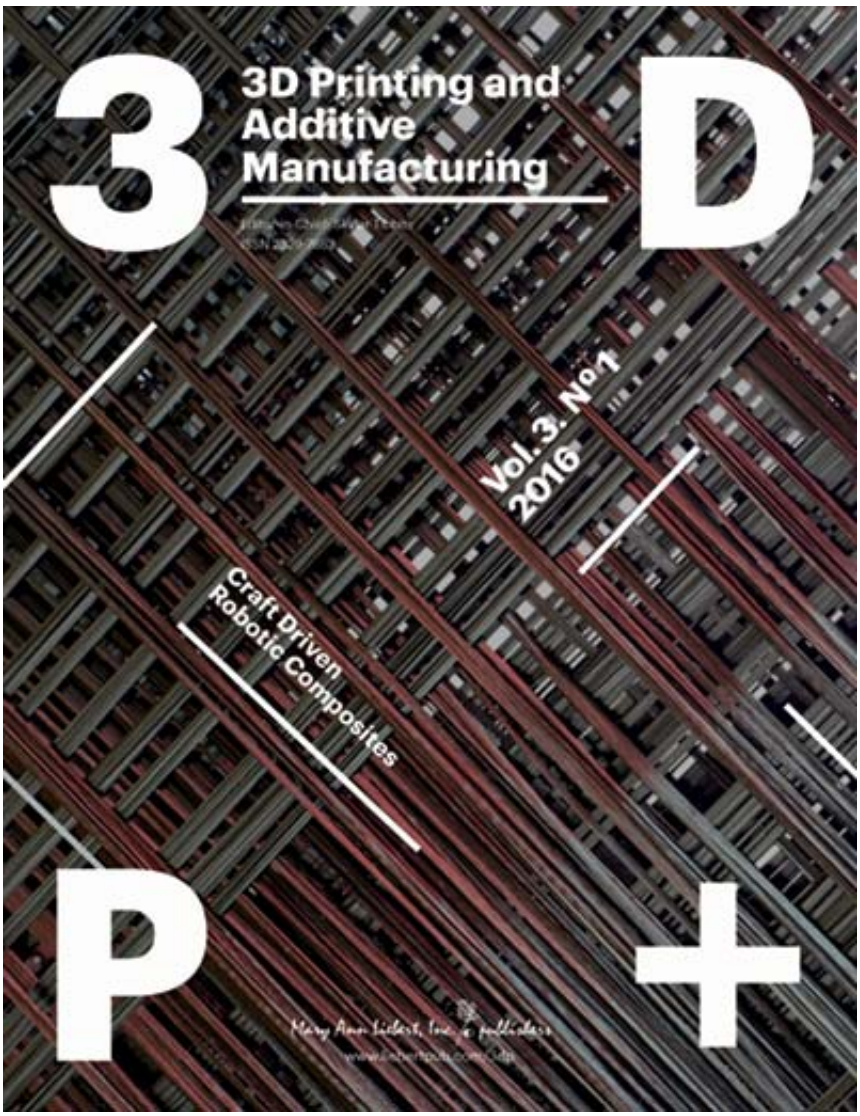

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A new, low-cost approach to building a knee model for studying knee pain and impaired mobility caused by abnormal movement of the patella uses a 3D printer to create a femur, tibia, patella, and the navigation system to guide knee reconstruction. The reconstructed knee model closely simulates the movement of the patella observed in cadaver knee models, as reported in the study published in *3-D Printing and Additive Manufacturing*.

The article "A Novel Approach for Patellofemoral Tracking Using a Knee Model Reconstructed with a Three-Dimensional Printer", describes the use of magnetic resonance imaging (MRI) scans of a real knee to develop the computer-aided design software files used by a 3D printer to create the three main components of the knee and a navigation system for combining them with artificial ligaments and a tendon.

Coauthors Gian Luca Gervasi, Roberto Tiribuzi, and Marco Freddolini, Irtal Nicola Cerulli-LPMRI, Arezzo, Italy, Anastasios Georgoulis, University of Ioannina, Greece, and Giuliano Cerulli, Università Cattolica del Sacro Cuore, Rome, Italy, present the results of static experiments using a motion tracking system to measure the position of the patella as different loads and forces are applied to the knee model at various degrees of flexion.

More information: Gian Luca Gervasi et al. A Novel Approach for Patellofemoral Tracking Using a Knee Model Reconstructed with a Three-Dimensional Printer, *3D Printing and Additive Manufacturing* (2016). DOI: 10.1089/3dp.2015.0016

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