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## APPLICATIONS OF 3D PRINTING IN PEDIATRIC REHABILITATION PRODUCTS

*Keywords: Rehabilitation Engineering, 3D Printing, Rapid Prototyping*

This paper is a review article that summarizes the current state of understanding on additive manufacturing role within a pediatric rehabilitation products manufacturing.

Children with temporarily (due to an injury or illness) or permanent disabilities need certain rehabilitation equipment which help them to adjust with the environment, e.g., orthosis, stabilizers, remolding helmets, crutches, wheelchairs, orthopedic corsets etc. Due to several criteria such as: fast-changing body proportions of growing patients, product customization for a different disability stage, patient's safety, affordable price, lightweighting, ergonomic and child-friendly design, etc. there is a need for a holistic approach in meeting individual children's needs for technology. Huge progress at the application of engineering sciences to design and develop technological solutions to problems confronted by individuals with disabilities was caused by implementing rapid prototyping and additive manufacturing into the whole process. Rapid prototyping is the fast fabrication of a physical part using computer aided design (CAD) and a variety of manufacturing technologies - especially additive manufacturing - so-called three dimensional printing (3D printing). Currently, there are a number of rehabilitation products for children on the market that were manufactured by 3D printing.

The article analyzes and discusses the method and conclusions in previously published studies and also shows examples of 3D printed rehabilitation products dedicated for children. The paper mentions also the main innovative companies working in a field of pediatric rehabilitation engineering who implementing rapid prototyping methods (such as 3D printing, 3D scanning) into the designing process. This study describes some recent major advances and discoveries and makes suggestions of where the manufacturing process of rehabilitation devices might go next by implementing 3D printing as a main manufacturing method.