

## **ABSTRAKT BAKALÁŘSKÉ PRÁCE**

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**Title:** The Proposal and Implementation Assistive Devices for Patients with Acquired Brain Injury Using 3D Printer

### **Abstract:**

Background: Acquired brain injury cause disability, which influences human self-sufficiency. Self-sufficiency can be increased by assistive devices. 3D printing technology seems to be appropriate alternative for creating tailor-made compensatory aids. Foreign organizations are forming the trend.

Goal formulation: The main goal is to create tailor-made assistive devices for patients with acquired brain injury using a 3D printer. The partial goal is an assessment of the financial and technical demands of the technology for ordinary occupational therapy practice.

Methodology: For five patients with acquired brain injury was created a tailor-made compensatory aid as a part of the bachelor's thesis and printed using 3D printing. The aids were focused on activities of daily living that the patients were not able to perform without the aid.

Results: Six self-feeding aids have been created. One aid had to be redone after testing. One patient needed a soft aid that 3D printing cannot produce. The created aids allowed four patients to engage the paretic upper limb in self-feeding.

Conclusion: 3D printing is a very promising technology usable in the daily practice of majority of the healthcare areas. Its main advantages include the possibility of creating a tailored model for the patient and adapting the device based on the development of the patient's abilities, availability, and for most aids also price.

**Key words:** 3D printing, assistive devices, occupational therapy, acquired brain injury