

## **Abstract**

This thesis deals with the issue of ultrasound diagnostics and ultrasound-guided interventional procedures in selected pathological changes of the upper limb. Ultrasound examination directly in specialists' offices, including rehabilitation physicians, has been a worldwide trend in the last two decades. The main advantages include the possibility of assessing the pathological findings directly related to the clinical examination. The benefit is speeding up the establishment of an accurate diagnosis and initiating adequate treatment. Indirectly, the costs associated with examination by other imaging techniques and therapy are reduced. This thesis aims to present diagnostic and therapeutic options for selected morphological changes in the upper limb, including less common pathologies, such as case reports of intramuscular haemangiomas, whose diagnosis was significantly contributed by ultrasound examination. In addition to diagnosis, ultrasound is used to navigate interventions, increasing the safety and effectiveness of these procedures. The research part of this thesis is focused on identifying the optimal site of median nerve injection in carpal tunnel syndrome. This study is a prospective, randomized, blinded study with 46 patients with carpal tunnel syndrome. We compared the effect of two technical modifications of ultrasound-navigated injections between the flexor tendons or the median nerve hydrodissection. No significant difference was observed in the parameters studied (subjective patient assessment, electrophysiological examination, sonographic measurement of cross-sectional area) between the groups. Considering the findings, the injection between flexor tendons can be recommended, especially to novice sonographers, because of the lower risk of median nerve injury. A subobjective of this paper is to present a modified injection technique of the hypertrophied annular pulley from the interdigital space and, in the form of review papers, to describe the ultrasound examination and navigated therapy of pathologies in the elbow and carpal region.