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## Prevention of musculoskeletal injuries in gastrointestinal endoscopists

#### Tadej Durič

Charles University, Czech Republic

Gastroenterologists are exposed daily to musculoskeletal (MSK) stress during upper and lower gastrointestinal endoscopy, both during routine endoscopies and during long, demanding therapeutic procedures. There is evidence that endoscopyrelated MSK injuries are becoming more common, particularly in the back, neck, shoulders, elbows, and hands. The aims of the study were to identify the most stressed muscle groups during endoscopy; to measure their activity using surface electromyographical (EMG) sensors; to detect areas of muscle overload; and identify the number of microbreaks taken in specific muscles. Furthermore, we measured differences in the loading of these muscle groups with and without the use of special support systems such as a belt-like holder. Measurements were performed on 15 subjects (7 experienced endoscopists and 8 non-endoscopists). Due to a small sample size, inside each group we achieved inconclusive results regarding

statistically significant differences in different muscle groups. We increased the sample size by comparing all participants with and without the belt support system, disregarding their endoscopic background. There was a statistically significant difference (p<0.05) in muscle tension and in levels of microbreaks in the muscles of the left forearm, biceps, and trapezius muscle. No statistically significant difference was observed in the muscle tension and level of microbreaks in the left deltoid muscle in muscle tension (p>0.05). We hypothesize that the increased level of muscle loading and decreased level of microbreaks in the deltoid muscle is due to different muscle activity and different shoulder movements. Additionally, the deltoid muscle is not connected to the kinetic chain of body posture and stabilization. It is our belief that MSK injuries in gastrointestinal (GI) endoscopy can be prevented with the use of a belt-like support system.

#### Biography

Tadej Durič, MD, gastroenterology specialist, is focused in interventional gastroenterology and endoscopic procedures. He is qualified in gastroscopy, colonoscopy, polypectomy, ERCP, EUS+FNA, ESD, eFTR etc. After earning his medical degree at the University of Maribor in 2012, he became a resident of gastroenterology at University clinical centre Maribor from 2013 until 2019. In 2020 he proceeded with his career in LKH Wagna (Austria). In 2021 he returned in homeland and is currently employed in Medical centre Rogaška and general hospital Slovenj Gradec as an interventional endoscopist. He is interested in the design and development of novel endoscopic techniques and instruments. To pursue this goal, he is currently enrolled as a Ph.D. student at the 3rd Faculty of Medicine, Charles University, Prague, Czech Republic.