The Motor Unit Number Index (MUNIX) in sarcopenic patients

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INTRODUCTION
The cause of sarcopenia is still not fully understood. A multifactorial aetiology is discussed. Neurodegenerative aspects in the genesis of sarcopenia, such as loss of motoneurons, have not yet been explored to a sufficient extent.

METHOD
The Motor Unit Number Index (MUNIX) is a method for assessing the number and size (Motor Unit Size Index - MUSIX) of Motor Units (MUs) using the Compound Muscle Action Potential (CMAP) and the Surface electromyographic Interference Pattern (SIP). This method was used to study the hypothenar muscle in the right hand of 27 sarcopenic patients.

RESULTS
The mean MUNIX (111±51) of all investigated sarcopenic patients lies between the mean MUNIX of healthy persons and the mean MUNIX of ALS patients. 25% of sarcopenic patients exhibit pathologic values for both MUNIX (<80) and MUSIX (>100 μV). A strong correlation (r=0.75, p<0.001) between MUSIX and the reciprocal value of MUNIX was identified.

CONCLUSION
It was demonstrated for the first time by applying the MUNIX technique that loss of motoneurons plays a pathogenic role in the onset of sarcopenia. This was shown in 25% of sarcopenic participants who exhibited pathologic values for both MUNIX and MUSIX. Nerve sprouting seems to be an important mechanism of compensation for loss of motoneurons, reflected by the strong correlation between MUNIX and MUSIX. Use of MUNIX leads to the identification of a distinct subgroup of sarcopenic patients, which might have a major impact on future diagnostic and therapeutic concepts.