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The diagnostic accuracy of hip abductor strength in the fall risk of older persons

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Introduction/Background Persons aged over 65 years have an increased risk of falling and falls often trigger serious consequences like independency loss and increased mortality. An early detection of persons at risk of falling and a well-targeted fall prevention is thus of great interest. Previous studies showed that hip abductor strength is the muscle groups among all hip muscles, which is par-ticularly related to the fall risk of older persons. Therefore we aimed to investigate the diagnostic accuracy of hip abductor strength by using history of falls as the external criterion.

Material and method Hip abductor maximum voluntary isomet-ric strength (ABD MVIS) and rate of force generation (ABD RFG) were assessed with a dynamometer fixed to a custom made frame in 60 persons aged over 65 years. The diagnostic accuracy [sen-sitivity (sens), specificity (spec), positive predictive value (PPV), negative predictive value (NPV), positive and negative likelihood ratios (LR+,LR−)] was assessed at a clinically important 90% sensi-tivity level. Cutoff values were calculated.

Results Hip ABD MVIS (Sens. 90.6%, Spec. 57.1%, PPV 70.7%, NPV 84.2%, LR+ 2.11, LR− 0.16, cutoff value ≤ 1.06 N/kg) shows a slightly higher diagnostic accuracy than hip ABD RFG (Sens. 90.6%, Spec. 46.4%, PPV 65.9%, NPV 81.3%, LR+ 1.69, LR− 0.20, cutoff ≤ 8.47 N/kg/s). The results indicate that hip abductor strength shows a comparable diagnostic accuracy as other fall risk or mobility assessment tools (e.g. timed up and go test and short physical per-formance battery).

Conclusion Hip abductor strength shows a good diagnostic accu-racy to discriminate between older fallers and non-fallers and therefore might be an interesting parameter for fall risk prediction and a targeted intervention program. This very promising param-eter should further be investigated in prospective studies.
Keywords Diagnostic accuracy; Hip abductor strength; Older adult

Disclosure of interest The authors declare that they have no com-peting interest.

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