Platform: Classic (PL)

Monday, 13 May 2019 08:30

PL-1980

Room K

PL-1980 HIP ABDUCTOR STRENGTH AND ITS ABILITY TO DIFFERENTIATE BETWEEN OLDER PERSONS AT RISK OF FALLS AND NON-FALLERS

Gafner SC[1,2], Bastiaenen CHG[3], Ferrari S[4], Gold G[5], Terrier P[6], Hilfiker R[7], Allet L[1,8]

[1]HES-SO//University of Applied Sciences and Arts of Western Switzerland, Physiotherapy, Geneva, Switzerland, [2]Research program Functioning and Rehabilitation CAPHRI, Maastricht University, Epidemiology, Maastricht, Netherlands, [3]Research Program Functioning and Rehabilitation CAPHRI, Maastricht University, Epidemiology, Maastricht, Netherlands, [4]University Hospitals and University of Geneva, Department of Internal Medicine Specialties, Geneva, Switzerland, [5]University Hospitals and University of Geneva, Department of Rehabilitation and Geriatris, Geneva, Switzerland, [6]Independent Researcher, Sion, Switzerland, [7]HES-SO Valais-Wallis. University of Applied Sciences and Arts Western Switzerland Valais, Physiotherapy, Valais, Switzerland, [8]University Hospitals and University of Geneva, Department of Community Medicine, Geneva, Switzerland

Background: Falls are an important trigger of independency loss and increased mortality in persons aged over 65 years. The earliest possible detection of persons at risk of falling is important so that physical therapists can plan and start a targeted fall prevention and rehabilitation. Hip muscle strength is said to be associated with older persons' fall risk but so far it is unclear which muscles out of the hip muscle group play the most important role in the fall risk of older people.
Purpose: We aimed to a) investigate which hip muscle group strength shows an acceptable level of distinction between older fallers and non-fallers (defined based on fall history) and b) investigate the diagnostic accuracy of the most important hip muscle group compared to the same external criterion (fall history) and other fall risk assessment tools.
Methods: We measured the maximum voluntary isometric strength (MVIS) and the rate of force generation (RFG) of the six hip muscle groups (hip abductors (ABD), adductors, internal and external rotators, extensors, and flexors) in 60 older people. The area under the curve (AUC) to evaluate the parameter with the highest ability to distinguish between fallers and non-fallers was calculated and its diagnostic accuracy investigated at a clinically important 90% sensitivity level. Cut-off values were calculated for clinical use.
Results: Of all the assessed hip muscle groups, hip ABD MVIS showed the highest discriminative value (area under the curve ABD MVIS 0.825, 95% confidence interval: 0.712-0.938). Hip ABD MVIS (sensitivity (sens) 90.6%, specificity (spec) 57.1%, positive predictive value (PPV) 70.7%, negative predictive value (NPV) 84.2%, positive likelihood ratio (LR^+) 2.11, negative likelihood raito (LR^-) 0.16, cut-off 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, cut-off ≤ 8.47 (N/kg/s)). Compared to published values of other fall risk or mobility assessment tools (e.g. short physical performance battery or timed up and go test) hip abductor strength shows a comparable diagnostic accuracy.
Conclusion(s): Hip abductor strength is among all hip muscle groups the one which best distinguishes between fallers and non-fallers. We thus encourage physical therapists to routinely assess hip frontal plane strength which seems an interesting parameter for fall risk assessments and might also shape and target fall risk prevention programs.
Implications: One of the challenges that physical therapy will face in the coming years is the assessment and treatment of diseases and potential risk factors for injuries of the drastically increasing population aged over 65 years. Hip abductor strength is an easy to measure and target parameter in the context of fall risk which seems to be very promising for the detection and treatment of persons at risk of falls. Therefore, if the importance of this parameter can further be proven in a prospective study, physical therapist should pay attention to this modifiable factor and include its assessment and treatment in their everyday clinics.
Key-Words: Accidental falls, measurement study, diagnostic accuracy
Funding acknowledgements: The study was funded from an internal grant of the University Of Applied Sciences of Western Switzerland.
Ethics approval: Did this work require ethics approval?: Yes
Institution: Commission cantonal d'éthique(CCER)
Ethics Committee: Ethical commission of Geneva
Ethics number: 14-235