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#### Keywords

ADHD, Children, HRV, Breathing Technique.

#### O171

##### Can older adults accurately perceive affordances for a stepping forward task? Differences between faller and non-faller community-dwelling older adults

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#### Background

Different studies framing an ecological approach to perception [1] have tried to understand how people, mostly children [2] and adults [3], perceive their action limits, in other words, what an environment affords related on individual characteristics. However, studies about older adults seem to be scarcer [4–7], particularly studies focused on whether or not faller and non-faller older adults can accurately perceive affordances for a stepping forward task.

#### Objective

The purpose of this study was to determine if older people could accurately perceive affordances for the task of stepping forward. The relationship between real and estimated maximum distance was explored in community-dwelling older adults, comparing fallers with non-fallers.

#### Methods

A sample of 347 community-dwelling older adults (age  $73.02 \pm 6.40$  yr; non-fallers: 57.9%, fallers: 42.1%) with the absence of cognitive impairment participated in the study. Participants were asked to predict their maximum distance for a stepping forward prior to performing the task. Absolute Percent Error (APE), Absolute Error (AE) and Error Tendency (ET) were calculated accordingly (2.8). APE measured deviation percentage from accurate perceptions, AE indicated the discrepancy (in cm) between estimation and real performance. ET indicated the direction of the error (under- or overestimation bias).

#### Results

On average, non-faller estimated ( $63.7 \pm 15.5$  cm) and performed ( $70.7 \pm 14.9$  cm) greater distances than faller (estimation:  $57.1 \pm 14.5$  cm; real:  $61.7 \pm 14.6$  cm) older adults. No statistically significant differences were observed in APE (fallers:  $7.2 \pm 12.4$  %; non-fallers:  $9.6 \pm 12.5$  %). However, differences in AE were significant between faller ( $6.7 \pm 5.9$  cm) and non-faller ( $9.6 \pm 12.5$  cm) older adults ( $p = .001$ ).

Old people had a huge tendency to underestimate (77.2%) the maximum distance achieved in a stepping forward. The results show a significant association between ET and being faller ( $\chi^2(1) = 6.407$ ,  $p = .01$ ). Despite general participants exhibit an underestimation tendency, this tendency is greater in non-fallers (61.6% vs 38.4%). Further, there were fewer non-fallers than fallers overestimating their ability to step forward (45.6% vs 54.4%).

#### Conclusions

Older adults displayed a tendency to underestimate the maximum distance they can stepping-forward. The bias of overestimation is more frequent in fallers, whereas persons who underestimated tend to do not fall, suggesting that they have a protective behaviour which avoids falls. Data evidence that older adults can perceive what the environment affords, which is in agreement with an ecological perspective to perception and action.

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#### Keywords

Aging, Falling, Perception of affordances, Gait.

#### O172

##### A new affordance perception test to explain falls occurrence: preliminary results of stepping-forward task

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#### Background

Falls cause injury, dependence, and death. Identify the subjects that are potential fallers is essential for a successful prevention. Researchers developed several models and tests in order to diagnose individual's risk of falling [1, 2]. Risk factors such as environmental hazards, strength, balance or dual tasks are commonly tested. However, their discriminative power is limited, indicating a gap which these tests do not address. The assessment on the perception of affordances for individual's ability to perceive the critical boundary action [3, 4], may fill this gap.

#### Objective

To analyse the appropriateness of a new stepping-forward test to explain fall occurrence in community-dwelling adults, that assess perception and action boundary.

## Methods

Participants were 266 women and 81 men aged  $73.0 \pm 6.4$  years. They were assessed for fall occurrence (yes vs. no), and for stepping-forward and perception boundaries. Participants judged their maximum stepping-forward distance prior to the performance of the estimated task. Absolute Error (AE) [estimated – real] (cm) and Absolute Percent Error (APE) (%) were computed, and the Error Tendency (ET) was classified (underestimation vs. overestimation) [5, 6].

## Results

Univariate binary regression analysis showed that all the described variables explain significantly fall occurrence ( $p < 0.05$ ). Data showed that, for each additional cm estimated in the stepping-forward test, the likelihood of falling decreased on 2.9%, OR: 0.971 (95%CI: 0.957-0.986), and for each additional cm performed in the test, this likelihood decreased on 4.0%, OR: 0.960 (95%CI: 0.945-0.975). Furthermore, data showed that for each additional cm computed as AE, the likelihood of falling decreased on 3.6%, OR: 0.964 (95%CI: 0.933-0.996), and for each additional 1% computed as APE this likelihood decreased on 0.9%, OR: 0.991 (95%CI: 0.969-1.013). Finally, data showed that subjects reporting an ET of underestimation were less 47.7% likely for falling, OR: 0.523 (95%CI: 0.315-0.867), than subjects showing an ET of overestimation.

## Conclusions

The new stepping-forward affordance perception test evidenced to be useful to determine the risk of fall occurrence. A higher estimation of maximum distance achieved or a higher real performance on the test were associated with a lower risk of falling. Further, a higher AE and an underestimation tendency showed to be associated with a decreased risk of falling. This suggests that is the marge of security provided by the higher performance ability, in contrast with a lower perception of affordance, which is protective and avoids falls.

## Acknowledgements

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## Keywords

Aging, Falling risk, Boundary action, Perception.

## Poster Communications

### P1

#### Prevalence of low back pain in surfers: associated factors

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## Background

Paddling in surf consists on the movement that the surfer most performs during practice, and this repeated movement, associated with a spinal hyperextension posture, may predispose to the occurrence of injuries.

## Objective

The aim of this study was to verify the prevalence of low back pain in surfers, and its associated factors.

## Methods

The sample consisted of 50 Algarve surfers, 40 (80%) males, aged between 9 and 57 years ( $24.26 \pm 12.41$  years). The measurement instruments consisted on a questionnaire and on the use of the KINOVA software for movement analysis. The questionnaire contained questions about the socio-demographic characteristics of the population and about the occurrence of low back pain (at the moment, over a 12-month period and during all surfing practice). Surfers were demarcated with a tape on D8 and at the base of the sacrum. Surfers were filmed while performing the paddling movement, in the sea, using their own boards. The movement movies recorded were analysed. A line was drawn between two points, while another line was projected on the board, establishing an angle. Data analysis was performed through the application of binary logistic regression, the method entered used as a binary outcome variable for the prevalence of low back pain during all surfing practice.

## Results

8 (16%) surfers reported low back pain at the moment of data collection, 16 (32%) reported low back pain in the last 12 months, and 23 (46%) surfers reported that they had felt low back pain throughout all their surfing practice. Spinal hyperextension angles varied between  $14^\circ$  and  $38^\circ$  ( $23.04^\circ \pm 4.73^\circ$ ). Female surfers presented a higher risk of sustaining surfing-related injuries than males (odds ratio= 1.36; 95%CI: 0.33-5.55;  $p = 0.671$ ), individuals who had surfed for less than five years were at 2.6 (95%CI: 0.82-8.20;  $p = 0.103$ ) more risk than those who had surfed for more than 5 years, surfers with ages equal or upper to 18 years revealed 1.15 (0.38-3.49;  $p = 0.811$ ) odds than younger surfers, those who didn't participate in the championships had 1.57 (0.50-4.83;  $p = 0.442$ ) more chances compared to those who participated, and surfers with an spinal hyperextension angulation above  $23^\circ$  revealed 1.04 (0.34-3.19;  $p = 0.945$ ) to be more likely to develop low back pain.

## Conclusions

There was a high prevalence of low back pain in the surfers analysed. Thus, it is necessary to have a better biomechanical analysis of the paddle movement of surfing.

## Keywords

Low back pain, Prevalence, Surf.

### P2

#### Assessment risk of work-related musculoskeletal disorders according to the RULA method in Nurses

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## Background

In what concerns Occupational Health, the most recurrent injuries are musculoskeletal disorders, which are frequently associated with risk factors, such as, repetition of the task and handling of loads. Among health professionals, nurses are the most affected.