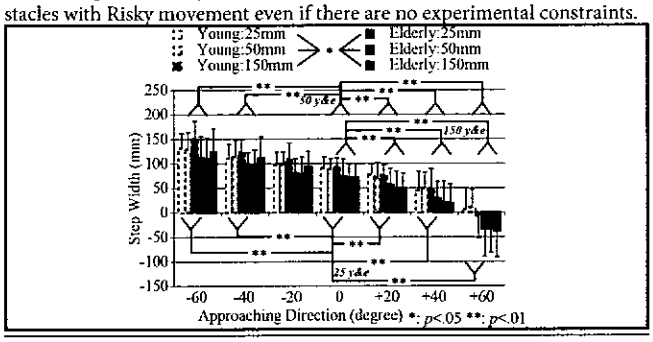
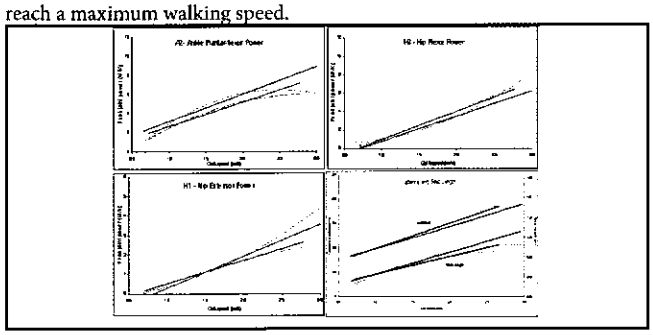
avoidance movement. Ten young and 10 elderly participants were asked to step over the obstacle with various heights (25, 50, and 150mm) while they approaching from 7 different directions (-60 to +60 degrees). Participants repeated each obstacle condition for 5 times, total of 63 trials. Kinematics while the participants step over the obstacles was recorded using 3-D motion capturing system, and was compared the following parameters among the conditions: toe clearances, step length, and step width. The results revealed that the approaching direction to the obstacles do not critically affect to the obstacle-avoidance movement in terms of tripping risks, but it (especially for +60 condition) critically affect to the movements in terms of loss-of-balance. Moreover, present study confirmed that people actually stepped over the obstacles with Risky movement even if there are no experimental constraints.



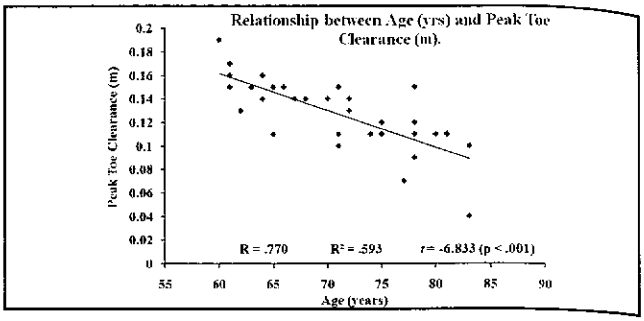
P343 SPEED EFFECT ON JOINT POWERS IN AGING GAIT.
Cofre, Lythgo (650)

Ankle plantar flexor (A2), hip extensor (H1) and hip flexor (H3) joint power generation are important factors in human gait. It is well known gait speed and ageing alters joint kinetics during walking. Ageing gait has been associated with decreased ankle joint function and increased hip muscle activity. However, it is not known whether this effect of speed upon join kinetics is the same for older and young adults. This study investigated the effect of speed on A2, H1 and H3 joint powers in a group of young (YG) and older adults (OG) walking over a range of speeds. Participants walked at seven speed conditions. Peak joint powers were calculated and regressed as a function of gait speed. All joint powers were affected by speed. The OG increased H3 more than the YG, whereas the YG increased more A2 than the OG. At speeds over 1.5 ms-1 the OG increased cadence more than the YG, whereas the YG increased step length more than the OG. This shows that the OG relied more on hip flexor muscles and increases in cadence to reach a maximum walking speed.



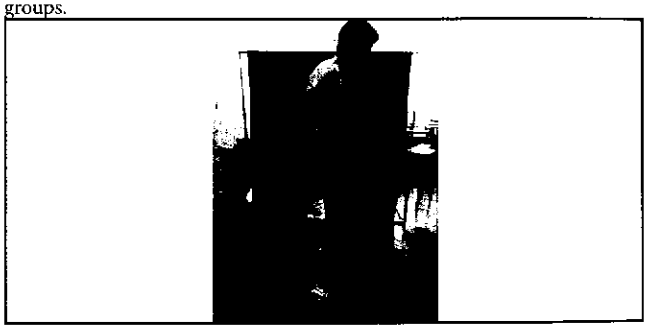
P344 THE EFFECTS OF HEALTHY AGEING PROCESSES ON THE FUNCTIONAL MEASURES OF LEVEL GAIT.
Alcock, O'Brien, Vanicek (1128)

Older adults are living longer, healthier lives than ever before. Age-related losses of lower-limb strength and postural control lead to decreased gait function. However, research exploring the rate of this decline throughout older age is limited. The aim of this study was to quantify the changes in functional gait parameters that occur throughout older age. Biomechanical data were collected during level walking from 37 healthy older women during level gait. Linear regression analyses were used to quantify the relationship between age and peak gait variables. Age significantly predicted ($p<.05$) gait speed, stride length, step length, double limb support time, peak toe clearance, knee ROM, and ankle ROM according to the linear regression model. Significant reductions in gait speed, stride length, and double limb support duration indicate adaptations aimed at improving stability during dynamic motion, and significant reductions in toe clearance pose implications for the risk of experiencing a fall. Findings indicate that throughout older age a continuous decline in gait function occurs. This decline can be moderately well predicted/explained by age but other, as yet unknown, factors contribute. Reduced function may lead to falls, so identifying other contributing factors is essential for future work.



P350 KINEMATICAL AND NEUROMUSCULAR ASSESSMENT OF THE ROWING EXERCISE IN THE UPRIGHT POSITION WITH BARBELL TO IMPROVE MUSCLE STRENGTH AND MUSCLE ENDURANCE IN GROUP FITNESS CLASSES.
Mejias, Cruz, Barbosa (56)

The aim was to assess the interaction between kinematics and neuromuscular responses of subjects performing the rowing exercise with barbell in group fitness classes with different external loads and cadences. Fifteen male subjects performed nine sets of nine repetitions of the selected exercise (fig 1). Sets were composed by a pair wise combination of different external loads (5, 10 and 20 [kg]) and cadences (1, 2 and 4 musical beats) in a randomized order. Kinematical data was collected with an electrogoniometer and it was assessed the: (i) absolute duration of each exercise repetition; (ii) minimum relative angle between the arm and forearm during the flexion action. Neuromuscular data was collected with superficial electromyography and it was computed the EMG amplitude (aEMG), the EMG room mean square (RMS) and the activation time of five muscles from the arm and trunk. Increasing cadence decreased the absolute duration of the exercise cycle. There was no significant interaction between the joint angle and the external load nor the cadence. Increases in the external load and in the cadence imposed a RMS increase as well. It was also verified a significant interaction among the aEMG and the external load in the four muscle groups.



P351 CONDUCTION VELOCITY ESTIMATION DEPENDS ON THE LOCATION WHERE SURFACE EMGS ARE DETECTED FROM THE MEDIAL GASTROCNEMIUS MUSCLE.
Ritzel, Gallina, Vaz, Gomes, Merletti, Vieira (145)

The propagation of action potentials might be detected in surface electromyograms (EMGs), exclusively when an array of electrodes is positioned parallel to the muscle fibers. The medial gastrocnemius (MG) muscle, however, is pinnate. Its oblique architecture does not allow for the surface electrodes to run parallel along its fascicles. Nevertheless, recent evidence showed propagating potentials in surface EMGs recorded at the most distal MG regions, where fascicles and skin surface appear to be parallel. By recording surface EMGs across the whole MG muscle (16 x 7 electrodes matrix) of 12 subjects we investigated where physiological values of conduction velocity (CV) might be estimated in the MG muscle. Regardless of the intensity of isometric plantar flexion exerted (10%, 30% or 60% of the maximal effort), subjects showed CV values within the physiological range of 3-7m/s. These values were predominantly concentrated at the most distal MG region. Specifically, the distribution of physiological CV values was centered at 2.7 – 0.7 cm (mean + SD) from the bottom row of electrodes. Our results show that physiological CV might be estimated in the pinnate MG muscle. However, physiological estimates of CV can be obtained only from the distal populations of MG motor units.