LoInf group. These markers were reduced in both groups at follow-up, consistent with reduced stress. However, the attenuation level was significantly different between the two groups. Kynurenate, that indicates activation of the immune system, was higher in HiInf group and remained elevated over 6 months follow-up. Polyamines with anti-oxidant activity and boosting autophagy activities were declined more significantly in the LoInf group presumably indicating more response to bodily anti-oxidant activity compared to the HiInf group. Arachidonic acid-derived eicosanoids, mediators of the immune response, were significantly elevated at baseline in the LoInf while oxidative stress markers were increased more in HiInf group. Branched-chain amino acids (BCAAs), the essential amino acids abundant in muscle, were elevated at baseline in the LoInf compared to HiInf group. Conclusion: Both groups showed an increase in anti-oxidative stress while LoInf group showed more reduction in oxidative stress and immune cell activity. Reduced intermediate compounds of BCCA suggest that their catabolism was attenuated following hip fracture in LoInf.

THE ASSOCIATION BETWEEN D3CR MUSCLE MASS AND MORTALITY IN COMMUNITY-DWELLING OLDER MEN

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We have shown that men with low muscle mass assessed by D3Cr (deuterated creatine) dilution are more likely to have worse physical performance and incident fractures, injurious falls and disability. However, the relation between D3Cr muscle mass and mortality is unknown. With data from Year 14 Visit of the MrOS study (N=1400, mean age 84.2 yrs), proportional hazards models estimated the risk of mortality (hazard ratio and 95% CI) by quartiles of D3Cr muscle mass (standardized to body mass); we calculated p for trend across quartiles. Models were adjusted for age, race, clinical center, alcohol use, smoking status, comorbidities, activity, percent fat, exhaustion, and cognitive function. Cause of death was centrally adjudicated. Over 3.3±0.8 years of follow-up, 197 (14.1%) men died. Men in the lowest quartile of D3Cr muscle mass/wgt were 2.8-fold more likely to die than men in the highest quartile (HR: 2.8, 95% CI: 1.6, 4.9; p for trend<.001). The HRs for each cause-specific mortality outcome were of similar magnitude to the HR for overall mortality: cancer death (HR, Q1 vs Q4: 2.2, 95% CI: 0.7, 7.1; p trend =0.140); CVD death (HR, Q1 vs Q4: 3.7, 95% CI: 1.3, 10.5; p trend =0.008); or non-cancer non-CVD death (HR, Q1 vs Q4: 2.4, 95% CI: 1.0, 5.6; p trend=0.019). We conclude that low muscle mass assessed by D3Cr dilution is a strong risk factor for mortality in older men, providing additional evidence that low muscle mass is an important risk factor for adverse health outcomes.

THE PROBLEM OF INTEGRATING OF BIOLOGICAL AND CLINICAL MARKERS OF AGEING

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The number of potential biological markers of ageing increases dramatically especially with the development omics technologies. These biomarkers are not generally independent from each other and also related to clinical markers of aging that also could be markers of some illnesses. We discuss three ways of integrating biological and clinical markers of ageing: a frailty index (FI), indices of biological age, and a statistical distance as a measure of physiological dysregulation. We shows that FI has a strong theoretical support in the complex dynamical network model of the ageing process. The theory allows to explain why the interdependence of variables (representing the attributes of health) is essential for understanding of the basic properties both of the FI and of ageing such as a Gompertz law of mortality. Further progress in the field will go hand-in-hand with the development of new technologies that allow more data to be collected and interpreted.

THE ASSOCIATION BETWEEN MODERATE-TO-VIGOROUS PHYSICAL ACTIVITY AND MUSCLE OXIDATIVE CAPACITY IN OLDER ADULTS

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Age-related decline in muscle oxidative capacity negatively affects muscle function and mobility, which may lead to disability and frailty. Whether exercise and other life-style practices reduce age-related decline in muscle oxidative capacity is unclear. We assessed whether, after accounting for age, higher daily physical activity levels are associated with greater muscle oxidative capacity. Participants included 384 adults (54.7% women) aged 22 to 92 years from the Baltimore Longitudinal Study of Aging. Muscle oxidative capacity was measured in vivo using phosphorous magnetic resonance spectroscopy. We determined the time constant for phosphocreatine recovery (τPCr, in seconds) after exercise, with lower values of τPCr reflecting greater oxidative capacity. Time spent in moderate-to-vigorous physical activity (MVPA) was assessed using accelerometers that participants wore for 5.9 ± 0.9 consecutive days in the free-living environment. In linear regression models, older age was associated