Background
Maintaining healthy ageing (HA) is a crucial priority in older adults worldwide, given global population ageing, increased number of years living with disability, and the need for new treatments. Omega-3 polyunsaturated fatty acids (n3-PUFAs) from seafood and plants exert favourable physiologic effects that could benefit HA. However, relationships between n3-PUFA and HA are not well-established, especially using serial biomarkers which provide highly objective measures.

Methods
We investigated the longitudinal association between serial circulating n3-PUFAs and maintenance of HA in the Cardiovascular Health Study, evaluating 2342 older U.S. adults with mean age 75 years and successful HA to-date at baseline in 1992–93. Individual plasma phospholipid n3-PUFAs (expressed as% of total fatty acids) including alpha-linoleic acid (ALA), eicosapentaenoic acid (EPA), docosapentaenoic acid (DPA), and docosahexaenoic acid (DHA) were quantified using gas chromatography in 1992–93, 1998–99, and 2005–06. HA was defined as survival free of cardiovascular disease, cancer, lung disease, and severe chronic kidney disease, with no difficulties with activities of daily living and intact cognitive function (Mini-Mental State Examination >80th percentile); dying with a lifetime meeting this criteria was also considered as HA. Events were centrally adjudicated or determined from medical records and diagnostic tests. Multivariable-Cox proportional hazards models with time-varying covariates evaluated the association between time-varying, cumulative average n3-PUFAs and unsuccessful HA.

Results
During 22 years of follow-up, 267 (11%) participants experienced successful HA. After multivariable-adjustments, the interquintile range of total n3-PUFAs and seafood-derived n3-PUFAs was associated with lower risk of unsuccessful HA by 17% (0.74%–0.93 95% CI, p=0.002) and 16% (0.75%–0.94 95% CI, p=0.002), respectively. Individually, EPA, DPA and DHA each associated with lower risk of unsuccessful HA by 12% (0.80%–0.97 95% CI, p=0.009), 14% (0.77%–0.97 95% CI, p=0.010) and 15% (0.76%–0.96 95% CI, p=0.009), respectively. Plant-derived ALA levels were not significantly associated with HA. Sensitivity analyses including freedom from atrial fibrillation, milder chronic kidney disease, and diabetes within the HA definition did not appreciably alter results.

Conclusion
Among older adults with mean age 75 years and HA to-date, a higher cumulative level of circulating seafood-derived n3-PUFAs (combined and individually), but not plant-derived ALA, was associated with maintenance of HA. These novel findings support guidelines for increased fish intake among older adults; and need for further investigations into plausible biological mechanisms and interventions for effects of n3-PUFAs on maintenance of HA.
Methods Data from waves 1 (2009–2011, n=6051), 2 (2012, n=5487) and 3 (2014–2015, n=4623) of the Irish Longitudinal Study on Ageing (TILDA), a stratified probability sample prospective cohort, was analysed. Frequency of participation in seven social activities (‘Go to films, plays, concerts’, ‘Attend classes or lectures’, ‘Travel for pleasure’, ‘Play cards, bingo or games’, ‘Go to pub’, ‘Eat out of house’ and ‘Participate in sport or exercise’) was collected. Depressive symptoms were assessed using the 8-item Centre for Epidemiological Studies Depression (CESD) scale, and chronic disease count included self-reported doctors’ diagnosis of cardiovascular (heart attack, angina, stroke, transient ischaemic attack, heart failure) and non-cardiovascular chronic conditions (high blood pressure, diabetes, arthritis, lung disease, osteoporosis). Multilevel mixed effects logistic regression modelling was employed to assess the effect of changes in 1) chronic disease count and 2) depressive symptoms on each item of social participation (defined as monthly participation or less) over three waves, adjusted for socio-demographic and health covariates.

Results Mean age at baseline was 63.2y and 46.9% of the sample were male. Rates of social participation remained stable across waves. Each additional chronic disease accrued was associated with decreased participation in ‘Attend classes or lectures’ (Odds Ratio (OR): 0.86, 95% CI: 0.74–0.99) and ‘Participate in sport or exercise’ (OR: 0.86, 95% CI: 0.77–0.97) and an increase in ‘Go to pub’ (OR: 1.28, 95% CI: 1.09–1.50). A one unit increase in depressive symptoms over time was associated with decreased participation in ‘Participate in sport or exercise’ (OR: 0.96, 95% CI: 0.93–0.99) only.

Conclusion This longitudinal analysis suggests that deterioration of physical and mental health may influence specific domains of social participation in community dwelling older adults. Holistic approaches to disease management and mental health interventions in older age should include programmes to facilitate and maintain social and leisure time activities.

Policy analysis

OP73 SYSTEMS SCIENCE FOR CARIBBEAN HEALTH: THE DEVELOPMENT OF A SYSTEM DYNAMICS MODEL FOR GUIDING POLICY ON DIABETES IN A RESOURCE LIMITED SETTING

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Background Type 2 diabetes (T2DM) is a major cause of morbidity and mortality in the Caribbean and a threat to development. Halting its rise by 2025, a WHO target, requires interventions addressing the determinants of unhealthy diet and physical inactivity. The objective of this project is to engage with stakeholders in the development of a system dynamics (SD) simulation model on the effect of different policy interventions on diabetes prevalence and mortality in the Caribbean.

Methods Following SD methodology, we used a mixed methods approach to combine interviews (n=13) with stakeholders from multiple sectors across four countries (Barbados, Belize, Jamaica, and Saint Vincent and the Grenadines) with existing data on regional NCD policy and quantitative evidence. An additional twenty-two interviews from stakeholders in 7 Caribbean countries that were conducted as part of an ongoing policy evaluation study were also reviewed. Participants were sampled from existing contacts and their referrals. Analysis was guided by iterative thematic analysis using a grounded approach.