Trajectories of healthy ageing phenotype of older Britons 2004-203

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Population ageing demanding healthy and active ageing

- Population ageing
- Biomarkers-based foundation of healthy ageing: healthy ageing phenotype & healthy ageing index
- Broad based organ systems: cardiovascular function, glucose balance, lung function, lipid metabolism, inflammation system
Women’s advantage in life expectancy: but not in allostatic load (US, Yang & Kozloski 2010 JGMS)?
ELSA waves 2, 4, 6, \( N = 14812 \)

- The primary longitudinal ageing study in England
  [www.ifs.org.uk/elsa](http://www.ifs.org.uk/elsa)

- A spectrum of outcomes and indicators including biomarkers

- Covariates: sex, age, wealth, social class (manual), education, social support, social connection, household size, marital status, chronic conditions (COPD, cancer, angina . . .), smoking, drinking, physical exercise
Healthy ageing phenotype (Lara et al 2013)

- arterial blood pressure
- fasting glucose & glycated haemoglobin
- forced expiratory volume in 1 s
- waist circumference
- HDL cholesterol, triglycerides
- C-reactive protein
- sum of tertiles codes (0, 1, 2): higher – healthier
Empirical distribution of healthy ageing phenotype: gender difference

![Graph showing empirical distribution of healthy ageing phenotype for male and female]
Estimates of linear mixed model and selection model

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<tr>
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<th>Mixed model</th>
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<th>Selection model</th>
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<tbody>
<tr>
<td></td>
<td>$\beta$ [CI]</td>
<td>$\beta$ [CI]</td>
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<tr>
<td><strong>Sex, Female</strong></td>
<td>3.691 [2.760,4.622]</td>
<td>2.545 [1.446,3.644]</td>
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<td><strong>Age</strong></td>
<td>-0.242 [-0.352,-0.131]</td>
<td>-0.028 [-0.043,-0.013]</td>
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<td><strong>× Female</strong></td>
<td>-0.051 [-0.065,-0.037]</td>
<td>-0.035 [-0.051,-0.019]</td>
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<tr>
<td><strong>Current smoker</strong></td>
<td>-0.685 [-0.858,-0.513]</td>
<td>-0.672 [-0.909,-0.435]</td>
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<tr>
<td><strong>Drink daily</strong></td>
<td>0.412 [0.307,0.517]</td>
<td>0.509 [0.359,0.658]</td>
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<td><strong>Physical activ.</strong></td>
<td>0.237 [0.174,0.301]</td>
<td>0.374 [0.285,0.463]</td>
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<td><strong>Intermediate</strong></td>
<td>0.137 [-0.028,0.303]</td>
<td>0.161 [-0.059,0.381]</td>
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<td><strong>Managerial</strong></td>
<td>0.070 [-0.089,0.228]</td>
<td>-0.009 [-0.190,0.172]</td>
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<td><strong>High school</strong></td>
<td>0.342 [0.190,0.493]</td>
<td>0.270 [0.086,0.454]</td>
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<td><strong>College</strong></td>
<td>0.582 [0.399,0.765]</td>
<td>0.449 [0.223,0.676]</td>
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<td><strong>Middle wealth</strong></td>
<td>0.298 [0.169,0.426]</td>
<td>0.339 [0.169,0.508]</td>
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<td><strong>Wealthiest</strong></td>
<td>0.641 [0.502,0.780]</td>
<td>0.705 [0.510,0.900]</td>
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Predicted healthy ageing phenotype
Predicted allostatic load (ELSA waves 2, 4, 6)
Biomarkers in social survey

• Socially structured at different stages of the lifecourse: occupation and education
• A half-puzzle: women are not always on top
• Selection model reduces the puzzle but doesn’t resolve it
References and Q & A

- Tampubolon. 2015. Repeated systemic inflammation was associated with cognitive deficits in older Britons. *Alzheimer’s & Dementia*. 10.1016/j.dadm.2015.11.009