

P58 DEVELOPMENTAL AND ADULT RISK FACTORS ASSOCIATED WITH DECLINE IN GRIP STRENGTH FROM MIDLIFE TO OLD AGE: A BRITISH BIRTH COHORT STUDY

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Background Maintenance of muscle strength with age enables independent living for longer and may protect against chronic disease. Developmental and adult factors are associated with level of adult grip strength but evidence about their influence on its decline is sparse. We used longitudinal data to test whether birthweight, motor and cognitive development and patterns of pubertal growth were associated with trajectories of adult grip strength, and operated independently or on the same pathways as adult factors.

Methods The sample comprised 3058 men and women (6975 observations) in the MRC National Survey of Health and Development, a population-based British birth cohort study with up to three measures of grip strength from 53 to 69 years. Developmental factors included birthweight, maternal reports of motor milestone attainment, childhood cognitive test scores, and growth parameters of size, tempo and velocity. Covariates included lifetime social class, and adult height, BMI, verbal memory test scores, educational qualifications, health conditions and behaviours. We fitted multilevel models with the intercept and slope as random effects, included a linear age term, controlled for adult height and tested for age and sex interactions with each factor; then adjusted the developmental factors for each adult factor.

Results In men, heavier birthweight and childhood weight, beginning to walk 'on time', and later puberty, and in women, earlier age at first standing, were associated with stronger grip strength (but not its decline) independently of other developmental and adult factors. In women, there was an association between higher childhood cognition and stronger grip strength (but not its decline) which was attenuated by education. Men of higher childhood cognition showed a slower decline in grip strength (by 0.068 kg/year, 95% confidence interval (CI) 0.024, 0.11 per 1SD, $p=0.003$): this latter association was attenuated by adult verbal memory which became increasingly positively associated with grip strength at later ages (by 0.10 kg/year, 95% CI 0.061, 0.15 per 1SD, $p<0.001$). In contrast, the positive association between adult BMI and grip strength in men weakened (by -0.057 kg/year, 95% CI $-0.11, -0.0056$ per 1SD, $p=0.03$).

Conclusion Patterns of growth, motor development and lifetime cognition have persisting associations with grip strength between midlife and old age. Associations with cognition strengthened over this 16 year period suggesting that grip strength increasingly reflects neural ageing processes. Interventions that promote muscle development by targeting developmental factors, or maintain muscle strength by targeting adult risk factors should increase the chance of an independent old age.

P59 RISK FACTORS FOR INCIDENT FALLS IN OLDER MEN AND WOMEN: FINDINGS FROM THE ENGLISH LONGITUDINAL STUDY OF AGEING

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Background Falls are a major cause of disability and death among older people, particularly women. Cross-sectional surveys suggest that some risk factors associated with a history of falls may be sex-specific but whether risk factors for incident falls differ between the sexes is unclear. This study investigated risk factors for incident falls and whether they differ between men and women.

Methods Participants were 3298 men and women (aged 60 years and over at Wave 4) who took part in the Waves 4–6 surveys of the English Longitudinal Study of Ageing. At Wave 4, they provided information on previous falls, sociodemographic, lifestyle, behavioural and medical factors, and had their physical and cognitive function assessed. Data on self-reported incident falls during the four-year follow-up period were collected at Waves 5 and 6. Relative risks (RR) for the association between baseline characteristics and incident falls were derived using sex-specific Poisson regression models with robust variance estimation. Factors associated with falling ($p<0.20$) were included in sex-specific mutually-adjusted models. Analyses were performed among men and women separately and relative risks were adjusted for previous falls before Wave 4.

Results Overall, 633 (41.8%) men and 863 (48.4%) women experienced an incident fall between Waves 4 and 6. In mutually-adjusted models, older age was the only factor associated with increased risk of incident falls in both sexes. Some factors were only predictive of falls in one sex, namely more depressive symptoms (RR (95% CI) 1.03 (1.01, 1.06)), incontinence (1.11 (1.00, 1.24)) and never having married in women