ALSPAC update - physical activity and obesity
Avon Longitudinal Study of Parents and Children (ALSPAC)

- Mothers with an EDD April 1991 & Dec 1992
- Living in Avon in South West England
- ~14,000 pregnant women enrolled
- ~12,000 families still involved in some way
- ~5,000 - 8,000 children have attended annual clinics since age 7
• Information collected by

  • self-completion questionnaire- carers and children
  • medical records
  • biological samples
  • hands-on measurements- Focus clinics
  • physical activity and DXA from 2003-2008 at ages 12, 14 and 16
• What is the relationship between PA and obesity as children go through adolescence?

• Accelerometry and DXA at ages 12, 14 and 16

• Cross-sectional analyses

• Longitudinal analyses using MLM
Longitudinal PA and obesity measures

<table>
<thead>
<tr>
<th>Age</th>
<th>PA</th>
<th>Fat mass</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>12y</td>
<td></td>
<td>~5500</td>
<td></td>
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<tr>
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<td></td>
<td>~3800</td>
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<tr>
<td>16y</td>
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Odds ratio of being obese by quintile of MVPA in boys aged 12

Adjusted for: Age, height, height squared, maternal education, social class, birthweight, gestational age, smoking in pregnancy, obesity of mother, sleep pattern, TV viewing and pubertal stage.

Longitudinal PA and obesity measures

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Associations between PA and obesity from ages 12 to 14

Change in fat mass with increased MVPA

-14.6% for boys, -12.4% for girls
-11.9% for boys, -9.8% for girls
-9.1% for boys, -5.2% for girls
-2.4% for boys, -2.3% for girls

+15 mins/day MVPA at 12yrs, fat mass at 12yrs
+15 mins/day MVPA at 12yrs, fat mass at 14yrs
+15 mins/day MVPA at 14yrs, fat mass at 14yrs
+15 mins/day change in MVPA 12-14yrs, change in fat mass 12-14yrs

Riddoch et al, BMJ, 2009
## Associations between PA and obesity from ages 12 to 16

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Change in fat mass from ages 12 to 16
Change in total activity from ages 12 to 16
Changes in MVPA from ages 12 to 16
Associations between change PA and change fat mass from ages 12 to 16

-13.5%  -7.3%

+15 mins/day mvpa at 12yrs, fat mass at 16yrs girls

-13.5%  -2.4%  -2.3%

+15 mins/day mvpa at 12yrs, fat mass at 16yrs boys

+15 mins/day change in mvpa, change fat mass 12-16yrs girls

+15 mins/day change in mvpa, change in fat mass 12-16yrs boys
Conclusions

- Cross-sectional association at age 12
- MVPA strongest association with later fat mass and obesity
- Change in PA at 12 associated with change in fat mass at 16
- Changes small but potentially important
Conclusions

- Direction of association strongest for PA → obesity/fat mass
- Weak association for obesity → PA
- Is this relationship the same at all ages? (c.f. Earlybird)
- What happens during the transition from adolescence to adulthood?
• Steve Blair
• George Davey Smith
• Alex Griffiths
• Sam Leary
• Andy Ness
• Chris Riddoch
• Kate Tilling

• ALSPAC staff
• ALSPAC participants

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• [www.bristol.ac.uk/alspac/](http://www.bristol.ac.uk/alspac/)