<table>
<thead>
<tr>
<th>Study Design</th>
<th>Within-participants design that compared performance on test between 2 conditions: bout of exercise vs. seated reading. Collected data on 2 separate occasions.</th>
</tr>
</thead>
</table>
| Variables Measured |  - Task performance (median reaction time & response accuracy)  
  - Event-related potentials (P3 & ERN-error related negativity)  
  - Academic performance |
| Measurement Methods |  - Task performance: modified Eriksen flanker task (press button with left thumb if fish points left; press button with right thumb if fish points right; second condition: press button opposite of direction of fish; 100 trials)  
  - ERP (Neuroscan Synamps 2 amplifier)  
  - Academic performance (Wilde Range Achievement test 3rd ed.) |
| Participant Characteristics |  - ADHD group: 20 (6 female) age 8-10  
  - Healthy match control: 20 (6 female) same SES, age, sex, pubertal status |
| Results |  - Both groups had greater response accuracy after exercise  
  - Both groups larger P3 amplitude following exercise vs. reading  
  - ERN the same for both groups after exercise  
  - Both groups better academic performance following exercise |
### Applied Health Sciences Research Question:

What is the effect of aerobic exercise on attention in adolescents with ADHD?

<table>
<thead>
<tr>
<th>Matrix</th>
<th>Pontifex, Saliba, Raine, Picchietti, &amp; Hillman, 2013</th>
<th>Source #2</th>
<th>Source #3</th>
</tr>
</thead>
</table>
| **Significance** | ■ Single bouts moderate aerobic exercise might help treat ADHD without drugs  
■ Findings support hypoarousal model of ADHD: attentional deficits might be because of under arousal of CNS in ADHD since ADHD scored lower on all variables overall  
■ tasks requiring inhibitory control require more attentional resources, so ADHD performed lower than healthy, but exercise helped ADHD allocate resources | | |
| **Limitations** | 20-min bout of exercise, so unsure of how long these changes last after exercise | | |
| **Gaps or Weaknesses** | ■ Small sample  
■ Restricted to children 8-10 years of age | | |
| **Strengths** | ■ Within-participants design to limit individual variations | | |

### References