Insufficient physical activity (PA) in the youth can lead to adverse health outcomes, such as cardiovascular diseases and obesity.1,2 Adolescents living in rural areas may be at an even greater risk of low levels of PA.3

We used data from a school-based wellness intervention called Motivating Adolescents with Technology to Choose Health (MATCH) to evaluate demographics and environmental factors that may impact self-reported PA in adolescents attending middle schools across rural NC.

**Methods**

- Used existing data from 40 middle schools in 2018 located mainly in rural, Eastern North Carolina.
- Selected independent variables from existing cross-sectional data from Fall 2018 MATCH participants (N=2799).
- Determined self-reported PA from a validated questionnaire on behavior and dichotomized results into those achieving 1, 5, and 7 days of 60 min. PA per week.
- Used scale determined from previous study to select environmental factors based on school and location that may impact adolescent PA levels (Table 1).
- Each school was assigned an environmental score from 1-5 (higher = better environment).
- Analysis: Bivariate correlations, chi-square analysis, and multiple regression models to evaluate associations between environment, sex, race, weight category, age, Body Mass Index (BMI), fitness, and self-reported PA.

**Background**

- Associations between the environmental variables and self-reported PA yielded statistically significant but extremely weak (r ≤ 0.2) relationships.
- However, school PE and PACER (r = .27, p < .0001) were positively correlated.
- Regression models showed self-reported PA was significantly associated with school PE (p < .001) and race (p < .0001).
- X² analysis showed percentage of students who reported 60 minutes of PA for 5 (p < .0001) or 7 (p = .0307) days per week was significantly different across school PE categories (Figure 2).
- Additionally, it was found that 85% of adolescents did not get 60 minutes of PA per day, as recommended by the CDC.

**Results**

**Table 1. Country and School Level Determinants for PA**

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Description</th>
<th>Level</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td>Adequate access to locations</td>
<td>County</td>
<td>County Health Rankings &amp; Roadmaps</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>PA exercises available outside of regular PE time</td>
<td>School</td>
<td>School Survey</td>
</tr>
</tbody>
</table>

**Figure 1.** Unpaired t-test and ANOVA analysis between Sex (p < .0001), Race (p < .0001), and Weight Category (p < .0001) with Self-reported days of 60 min. of PA.

**Figure 2.** % of students who reported 60 minutes of PA for at least 5 or 7 days a week based on School PE opportunity (y=analysis, p ≤ .0001, p = .0307).

**Table 2. Characteristics of 2018-2019 MATCH Participants and Baseline BMI z-Score, Fitness Testing (PACER), and Self-Reported PA**

**Conclusions**

- 85% of adolescents at rural schools in NC are not getting the recommended amount of PA, which is at least 60 min. of PA per day.
- Adolescents in rural NC report low PA.
- Some groups are at a higher risk, reporting less PA than others, especially female, black, over-weight, and obese participants.
- Students at schools with more PE report more days of 60 min. of PA- this may be an opportunity for policy change efforts.

**Limitations**

- Data from participants about physical activity are self-reported.
- Information to assess school environment was limited to county-level sources.
- Data are from 2018, which does not represent any potential changes due to Covid-19.

**Next Steps**

- Next steps: compare to post Covid-19 data
- Compare PA levels of adolescents in rural NC, before and after the pandemic.
- Investigate changes in associations between independent and dependent variables.

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**References**


**Table 3.** Characteristics of 2018-2019 MATCH Participants and Baseline BMI z-Score, Fitness Testing (PACER), and Self-Reported PA.