# Influence of active transportation to school on daily physical activity: An investigation of children in Northeastern Ontario elementary schools

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## BACKGROUND

- Active transportation to school (ATS) (e.g., walking, cycling)[1] is a viable means of increasing physical activity (PA);[2,3] however, worldwide rates of ATS have declined in recent years, with 62% of Canadian parents indicating their children are typically driven to school[4]
- In Canada, according to the *Active Healthy Kids 2016 Report Card* less than 50% of Canadian children and youth engage in ATS[5]
- There is little evidence examining ATS in northern contexts, despite the suggestion that context-specific interventions are most beneficial for improving ATS[6]

## PURPOSE

- To assess whether PA accumulated through ATS predicts total daily PA, and if there was a difference in daily PA between children who engage in ATS compared to passive transportation to school (PTS)

## METHODS

- **Setting.** Mid-sized city (pop. 54,000) in Northeastern Ontario
- **Participants.** Students (ages 6 to 12; Table 1) were recruited from 2 schools (School 1: specialized for French immersion; School 2: neighbourhood) at 2 time points (April/May 2015, April 2016, June 2016)
- **Apparatus & Procedures.** Demographic and anthropometric data (i.e., sex, age, height, weight) were collected and used to initialize Actical wGT3X-BT accelerometers (Phillips – Respironics, OR, USA)


- **Data.** Acceleration counts (3Hz sampling rate) were summed and recorded on the device every 2 seconds. Sedentary (<100 counts/min) and active minutes were identified during the entire day, and during the 50-minute window before school. Active minutes were divided into light (100-1499 counts/min, moderate (1500-6499 counts/min), vigorous (>6500 counts/min, and moderate-to-vigorous (>1500 counts/min)[7]
- Distance travelled to school, and mode of transportation to school (i.e., ATS: walk, bike, scooter; PTS: car, bus) were collected
- **Data analysis.** ANCOVA were performed with *distance to school*, *age*, and *measurement on way to school* as covariates, and *transportation* and *school* as fixed factors

## RESULTS

- Measurement on the way to school positively predicted total daily measurements for all dependent variables except sedentary minutes
- Distance travelled to school did not predict any of the dependent variables
- At School 2, mean travel distance was shorter, more students engaged in ATS, and overall, students accumulated more active and light minutes
- Age positively predicted sedentary minutes; however, did not predict any other dependent variables

**Table 1.** Participant information

| | N | Age Mean ± SD | M : F | ATS : PTS | Distance (km) Mean ± SD |
|---|---|---|---|---|---|
| Total | 44 | 8.95 ± 1.93 | 20 : 24 | 13 : 31 | 2.91 ± 3.10 |
| School 1 | 19 | 9.05 ± 1.78 | 9 : 10 | 1 : 18 | 3.91 ± 3.57 |
| School 2 | 25 | 8.88 ± 2.07 | 11 : 14 | 12 : 13 | 1.98 ± 2.44 |

- Students who engaged in ATS accumulated significantly more total steps ($p$=.018; Fig. 1).

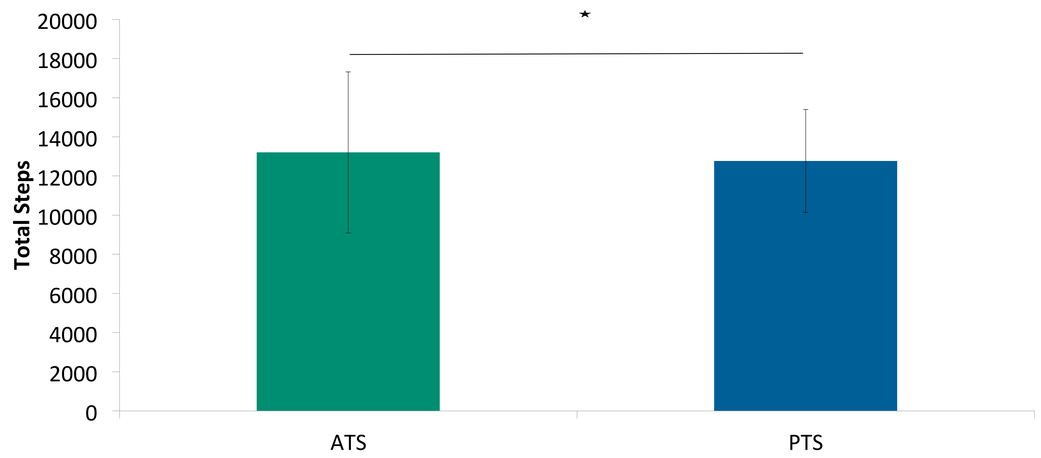


**Figure 1.** Total steps accumulated throughout the day.

- Students who engaged in ATS accumulated significantly more daily active ($p$=.011), and light minutes ($p$=.028) compared to those who used PTS. No differences emerged in sedentary ($p$=.493), moderate ($p$=.090), vigorous ($p$=.740), or moderate-to-vigorous minutes ($p$=.131; Fig. 2).

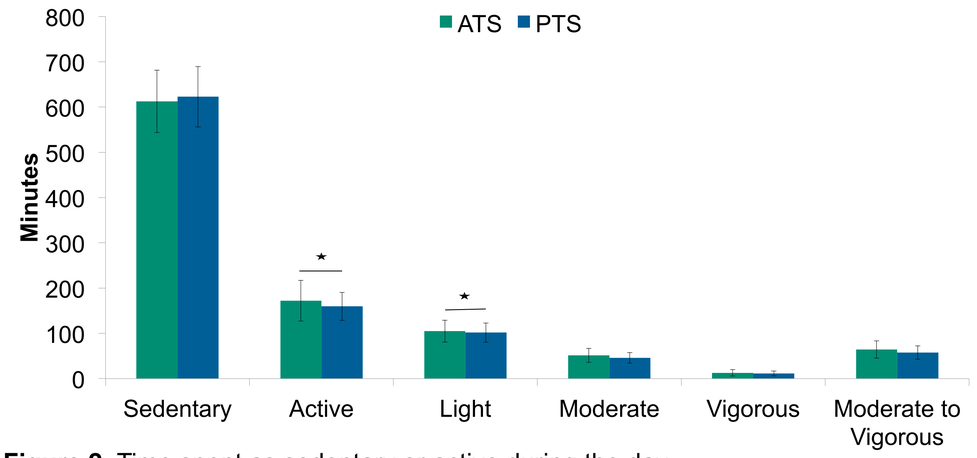


**Figure 2.** Time spent as sedentary or active during the day

## DISCUSSION

- Findings align with studies in larger urban/suburban areas (i.e., in Ontario, Canada, and worldwide) in that students who actively commute to school are generally more active and accumulate more active minutes throughout the school day[3,8]
  - ATS increased light intensity minutes, but did not change levels of MVPA
- Specific features of schools/neighbourhoods influence PA[9]
- Findings extend previous work from a sample of Canadian adolescents, indicating that ATS does not decrease sedentary time[10]

## CONCLUSIONS

- ATS is one way to help elementary students increase light activity, but may not augment or replace MVPA that should be happening at school, or elsewhere
- This study provides evidence to support policy initiatives to promote ATS and other initiatives that aim to increase PA in children and youth

## REFERENCES

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