The Association Between Active Transportation to School and Daily Physical **Activity Among Elementary Students Living in Northeastern Ontario**

V. Confesor, BPHE¹, B. Bruner, PhD¹, S. Scharoun, PhD¹, G. Raymer, R.Kin, PhD¹, D. Hay, PhD¹, K. Karvinen, PhD¹, L. Lévesque, PhD², S. Mantha, MSc³, A. Mayer, MPA³, G. Rickwood, PhD¹

¹School of Physical and Health Education, Nipissing University,²School of Kinesiology & Health Studies, Queen's University, ³North Bay Parry Sound District Health Unit

BACKGROUND

- Only 9% of 5- to 17-year-old children and youth in Canada accumulate the minimum recommendation of 60 minutes of moderate to vigorous physical activity (MVPA) at least 6 days of the week (1).
- Active transportation to school (ATS) can provide an opportunity to increase daily physical activity (PA); however, rates of ATS have declined over time (2).

RESULTS

- MVPA of total active minutes on the trip to school was significantly greater on ATS days, (F (1, 155) = 26.916, p < .001, η_{p}^{2} = .148) compared to days where passive transportation was used. Age was a positive predictor of MVPA (F (1, 155) = 13.691, p = .001, η_{p}^{2} = .081).
 - 60 50 utes in ()

CONCLUSIONS

- Active minutes, and more specifically MVPA minutes accumulated on the trip to school via ATS, are important contributors to daily PA.
- These findings align with research in larger urban and suburban areas, that report students who actively commute to school are generally more active and accumulate more PA throughout the whole day (4,5).

Most data examining ATS and its impact on PA has been from urban/suburban contexts with limited literature in other settings.

PURPOSE

To assess the contribution of ATS to total daily PA and MVPA among students living in a small city in Northeastern Ontario.

METHODS

Participants and Procedures

- Elementary students in a Northeastern Ontario city (population ~ 55,000) (N=36) ages 5-12 years (M_{age} = 8.81, SD = 2.03) participated at 3 time points (April/May 2015, April 2016, and June 2016).
- Participants were each fitted with an Actical wGT3X-BT accelerometer (Phillips – Respironics, OR USA) over their right hip on an elasticized waist belt during



Figure 1. MVPA accumulated during the 50-minutes before school, as a percentage of total active minutes on the trip to school.

MVPA on the trip to school of total daily active minutes was significantly greater on ATS days (F (1,155) = 49.442, p < .001, η_{p}^{2} = .242). Age was a positive predictor of MVPA (F (1,155) = 11.980, p= .001, $\eta^2_{p} = .072$).



- Walking and cycling to school may be associated with overall higher levels of daily PA in school-aged children when compared with children who travel to school by car or bus.
- The findings contribute to our understanding of the relationship of ATS and PA levels of students in a different geographical area (i.e., Northern).

IMPLICATIONS FOR POLICY AND PRACTICE

- This study provides good evidence to support policy initiatives to promote ATS as it is a valuable way to help elementary students meet their recommended daily PA levels.
- It is important for elementary schools and key ATS stakeholders in communities to work collaboratively to implement effective strategies that encourage ATS among students at an early age.

- their waking hours for 7 consecutive days.
- Accelerometer counts were summed and recorded on the devices every 2 seconds.
- \diamond Data representing each valid wear day (\geq 10 hours wear time) were obtained from school days only (158 total valid wear days; active transportation to school: n=76, passive transportation to school: n=82; wear days/participant: M=2.99, SD = 1.33, range: 1-7).
- The accelerometer data were downloaded from each device and analysed in Matlab (Mathworks, MA USA) to determine the time (in minutes) spent as sedentary or active (light-, moderate-, and vigorous-intensity activity) during the entire day, and during the 50minute window before school, using previously established accelerometer count 'cut points' (3).

Data Analysis

Analysis of covariance (ANCOVA) was performed with "age" as a covariate, and "transportation: active vs. passive" as a fixed factor.

- **Figure 2.** MVPA accumulated on the trip to school, as a percentage of total daily active minutes.
- Active minutes on the trip to school of total daily active minutes were significantly greater on ATS days (F (1, 155) = 24.007, p < .001, η_{p}^{2} = .134). Age was not a positive predictor of active minutes.





REFERENCES

- 1. ParticipACTION (2016). Are Canadian kids too tired to move? The 2016 ParticipACTION Report Card on Physical Activity for Children and Youth. Toronto.
- 2. Stone et al. (2012) Canadian School Travel Planning Intervention Results. Canadian Partnership Against Cancer and Green Communities Canada.
- 3. Colley et al. (2011). Physical activity of Canadian children and youth: Accelerometer results from the 2007 to 2009 Canadian Health Measures Survey. *Health Reports*, 22(1), 1-9.
- 4. Faulkner et al. (2009). Active school transport, physical activity levels and body weight of children and youth: A systematic review. Preventive Medicine, 48(1), 3-8.
- 5. Cooper et al. (2005). Physical Activity Levels of Children Who Walk, Cycle, or Are Driven to School. American Journal of Preventive Medicine, 29(3),

179–184.

Jueen's

Active transportation days Passive transportation days

Figure 3. Active minutes (i.e. at all intensities) accumulated during the 50-minutes before school, as a percentage of total daily active minutes.

This project was supported by a grant from the Canadian Institutes of Health Research (GIR-134235)

North Bay Parry Sound District Health Unit Bureau de santé du district de North Bay-Parry Sound

