

# Sublethal effects on motility seen in *Amblyomma americanum* treated with lotilaner (Credelio®)

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## Introduction

- Isoxazolines are a novel class of acaricides with a rapid speed of kill
- Ticks must feed on the host to ingest the acaricide; is the host exposed to pathogens during feeding?
- Sublethal effects of the isoxazoline lotilaner (Credelio®) are expected to shut down normal physiological processes
  - Reduced speed and duration of movement

## Materials and Methods

- Twelve purpose-bred beagles
  - Six treated with Credelio® according to labeled dose bands
  - Six untreated
- *Amblyomma americanum* ticks applied
  - Groups of five ticks removed from each dog
    - 2, 4, and 8 hrs
    - Movement of each tick was recorded
    - Total distance, mean velocity, and maximum velocity analyzed with EthoVision XT software

## Discussion and Conclusion

- There were significant differences between treated and untreated ticks at all three time points for total distance moved, and at 4 and 8 hrs for mean and maximum velocities
  - Figures 1 and 2
- While the control ticks showed no significant differences in the motility parameters with increased time, the treated ticks showed significant decreases in motility over time
  - Figures 3 and 4
- Tick motility was significantly altered by sublethal doses of lotilaner, which may indicate the impairment of other neuromuscular processes, such as feeding
  - Potentially reducing the risk of pathogen transmission to the host

## Acknowledgements

- Boehringer Ingelheim Veterinary Scholars Program
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# Ticks treated with Credelio® for ≤ 8 hrs showed decreased motility, which may indicate a reduced risk of pathogen transmission



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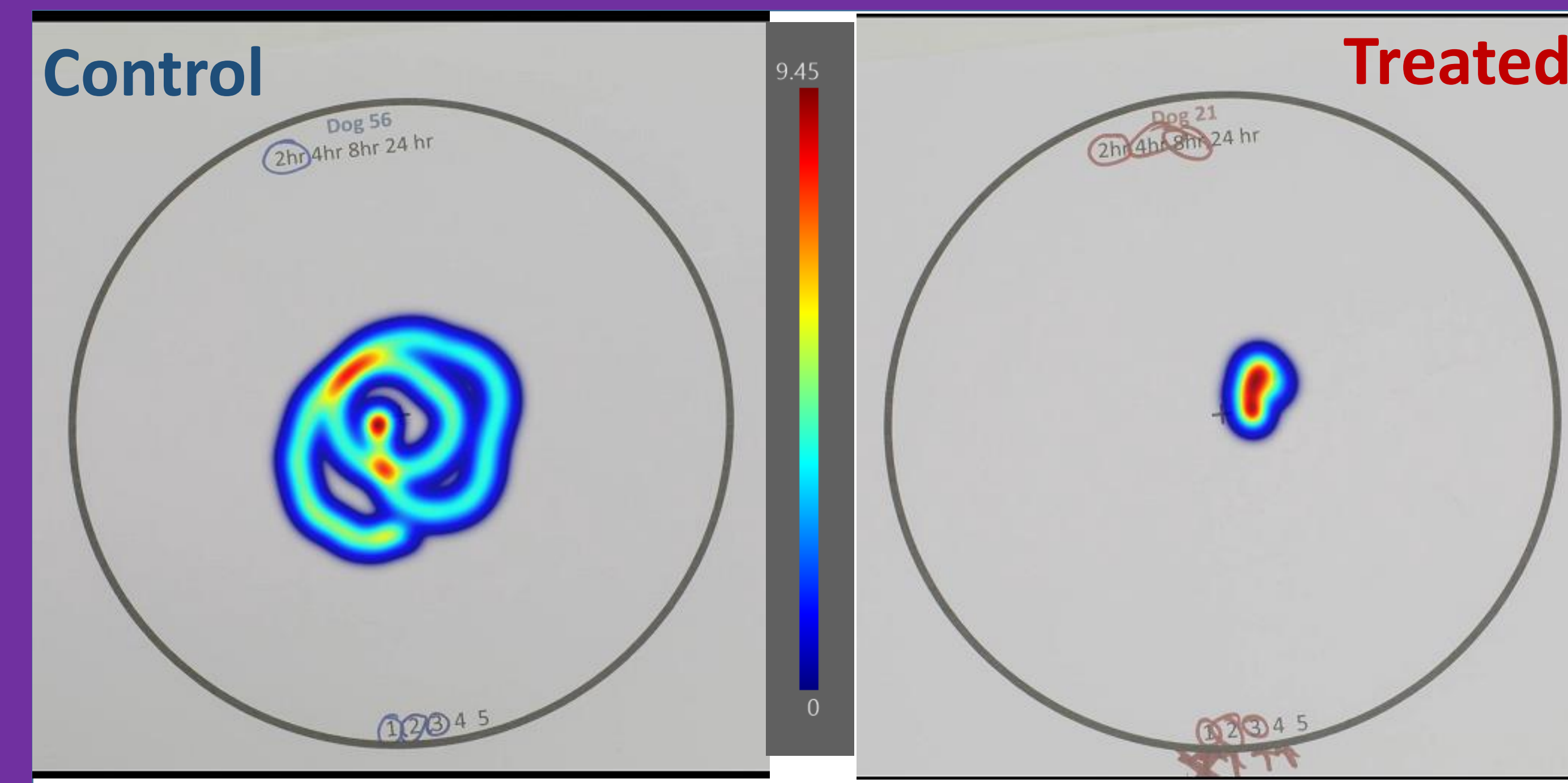
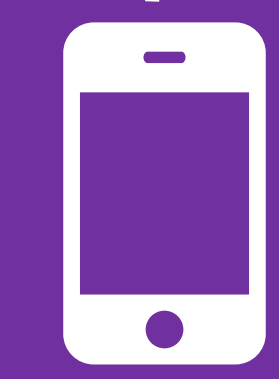


Fig 5. Example heat maps created by the EthoVision XT software. Darker blue represents less time spent in the area, and darker red represents more time spent in an area.



## Results

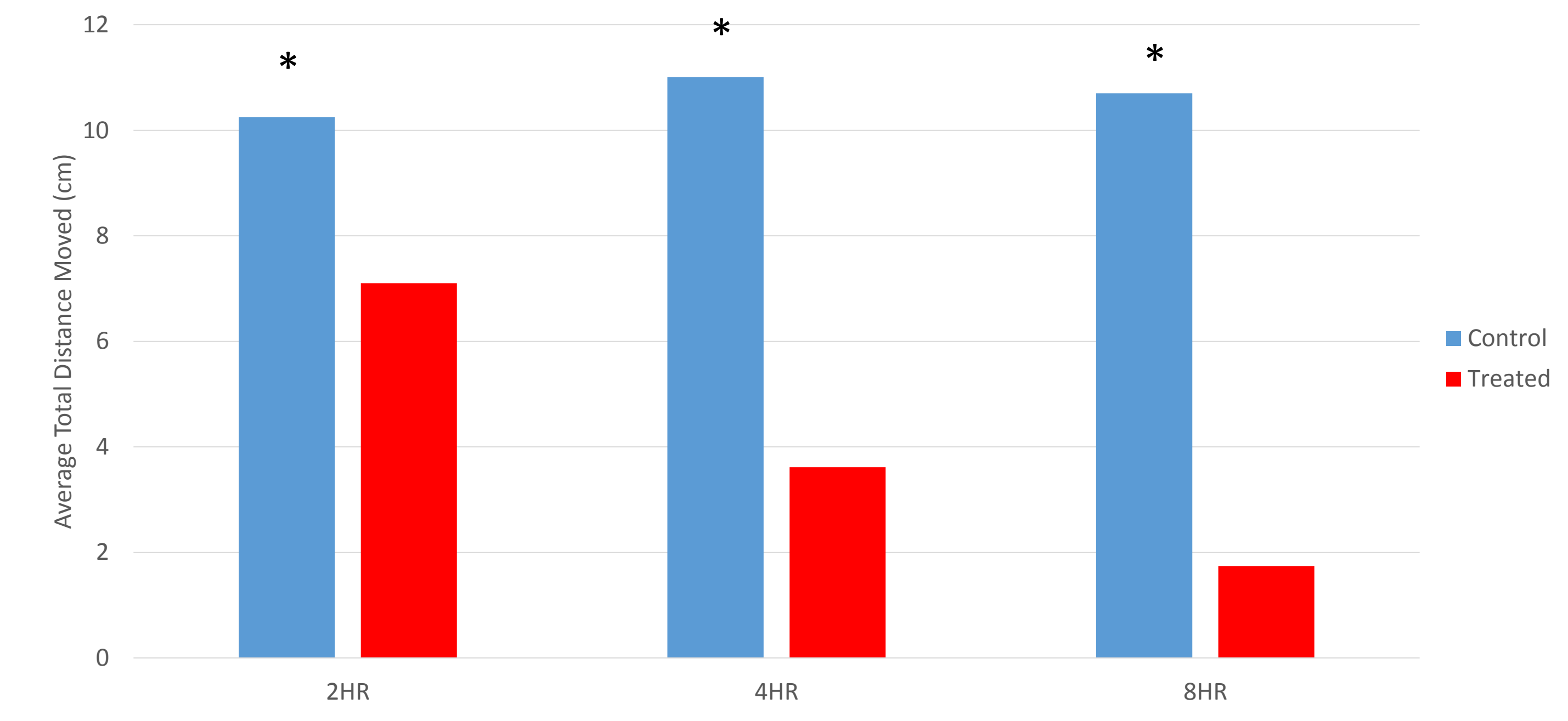


Fig 1. Average distance traveled for treatment and control groups at 2, 4, and 8 hrs. \* indicates a significant difference between treatment and control groups (p < 0.05).

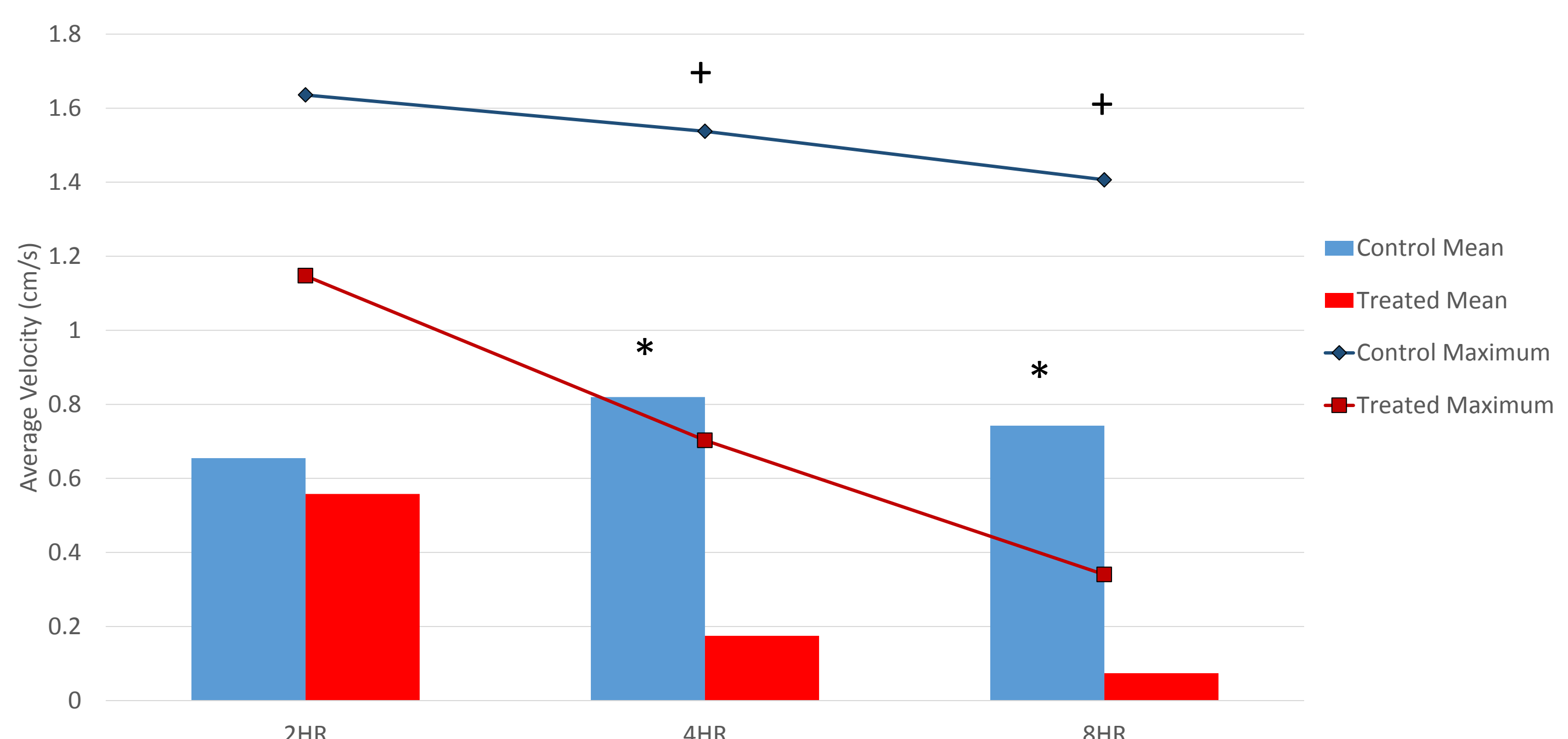


Fig 2. Average mean velocity and average maximum velocity for treatment and control groups at 2, 4, and 8 hrs. \* indicates a significant difference between treatment and control groups for average mean velocity (p < 0.05). + indicates a significant difference between treatment and control groups for average maximum velocity (p < 0.05).

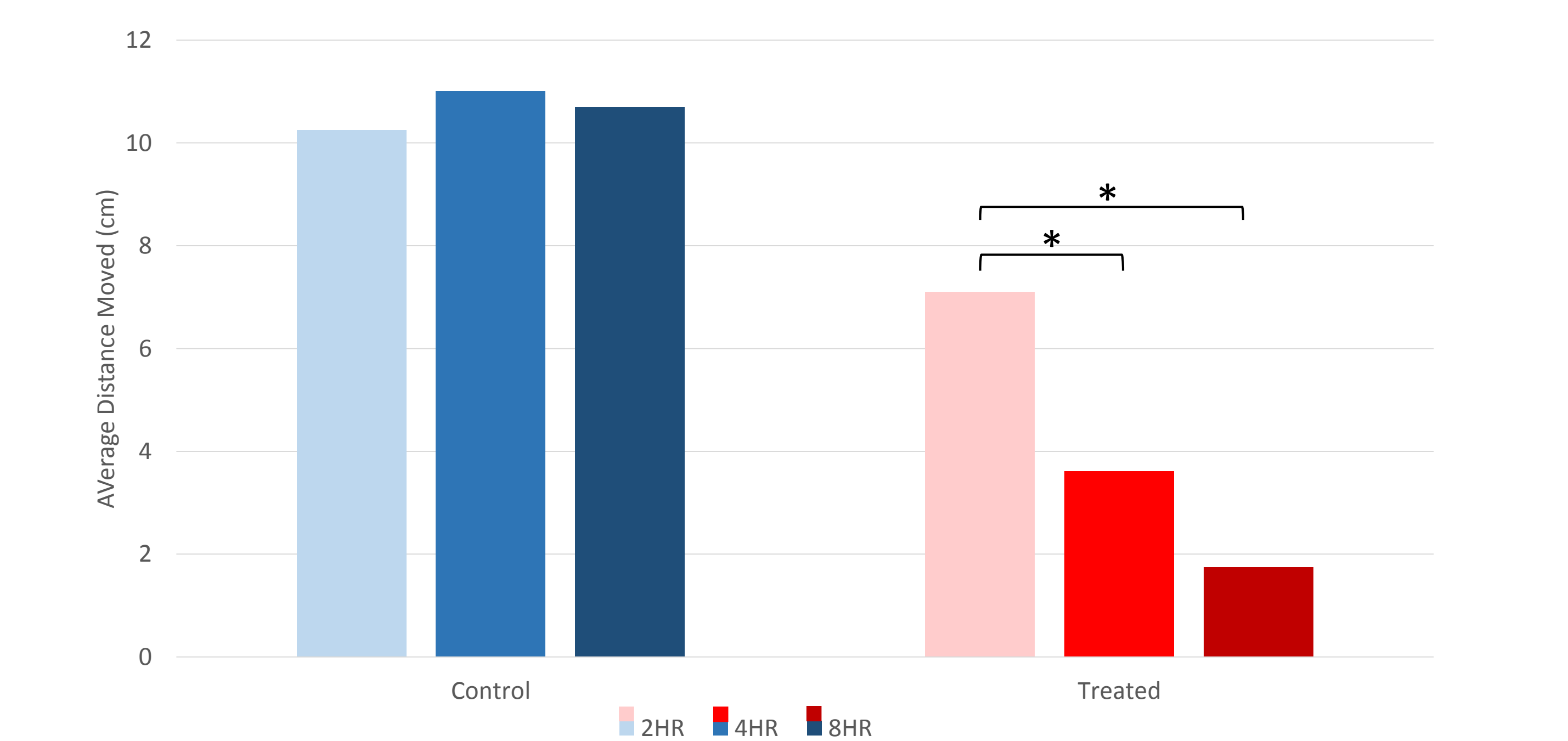


Fig 3. Average total distance moved for treatment and control groups. \* indicates a significant difference between time points (p < 0.05).

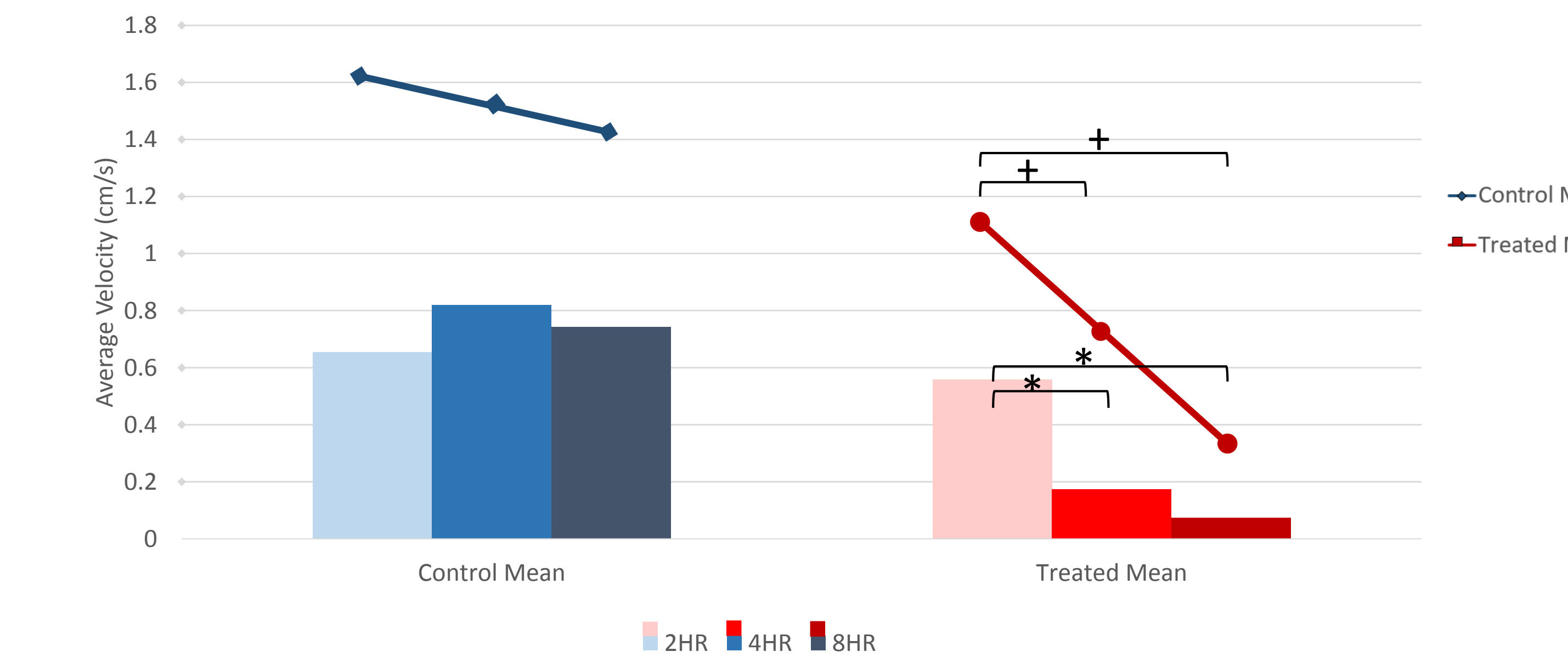


Fig 4. Average mean velocity and average maximum velocity for treatment and control groups \* indicates a significant difference between time points for average mean velocity (p < 0.05). + indicates a significant difference between time points for average maximum velocity (p < 0.05).