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INTRO

- Research on repetitive head impacts (RHI) has lacked in diversity, generalizability, comparison, and objective outcome measures.
- Gait is negatively impacted by neurotrauma and positively impacted by physical activity.
- **To determine the effects of prolonged RHI exposure on measures of gait among early-middle aged males and females.**

METHODS

1. N = 113 across 4 groups: 1) No RHI exposure, not active (NON); 2) No RHI exposure, active (NCA); 3) RHI exposure, active (HRS); 4) Prolonged RHI exposure, active (RUG).
2. Single Task (ST) and dual task (DT) gait using inertial measurement units. Dual task cost (DTC) calculated for all variables (double support, gait speed, stride length).
3. Groups compared using one-way ANCOVA on all outcomes using known covariates and RHI exposure (career duration)

RESULTS

- A significant effect for group existed for ST gait speed (p=0.034) and ST double support (p=0.026). **No post-hoc observed differences.**
- **No significant adjusted group differences on all outcomes.**

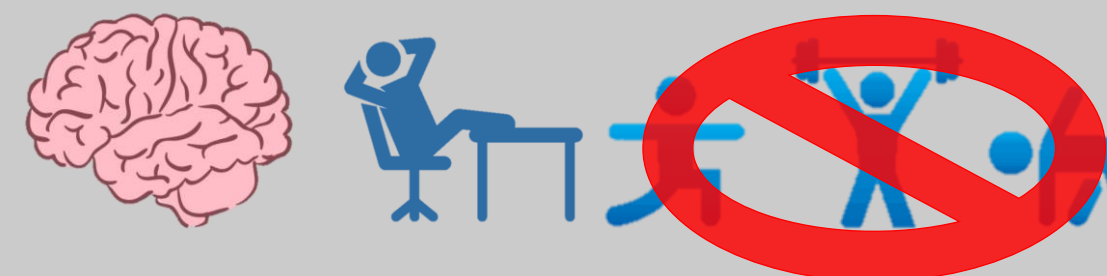
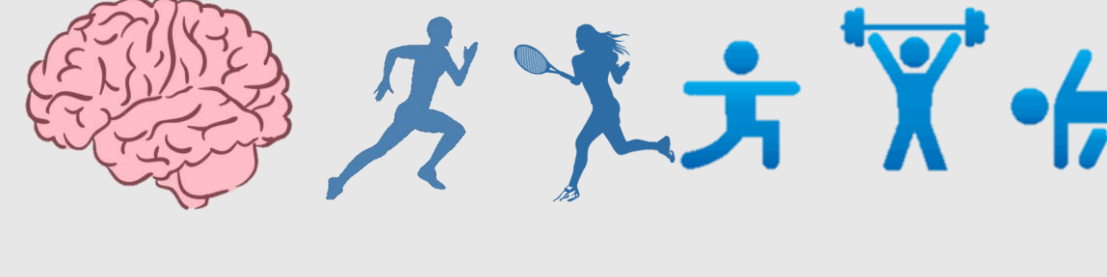


DISCUSSION

- When accounting for lifetime RHI exposure, physically active individuals with a history of RHI of prolonged RHI exposure do not have worse gait performance in early to mid-adulthood.
- Potential neuroprotective effects of exercise.

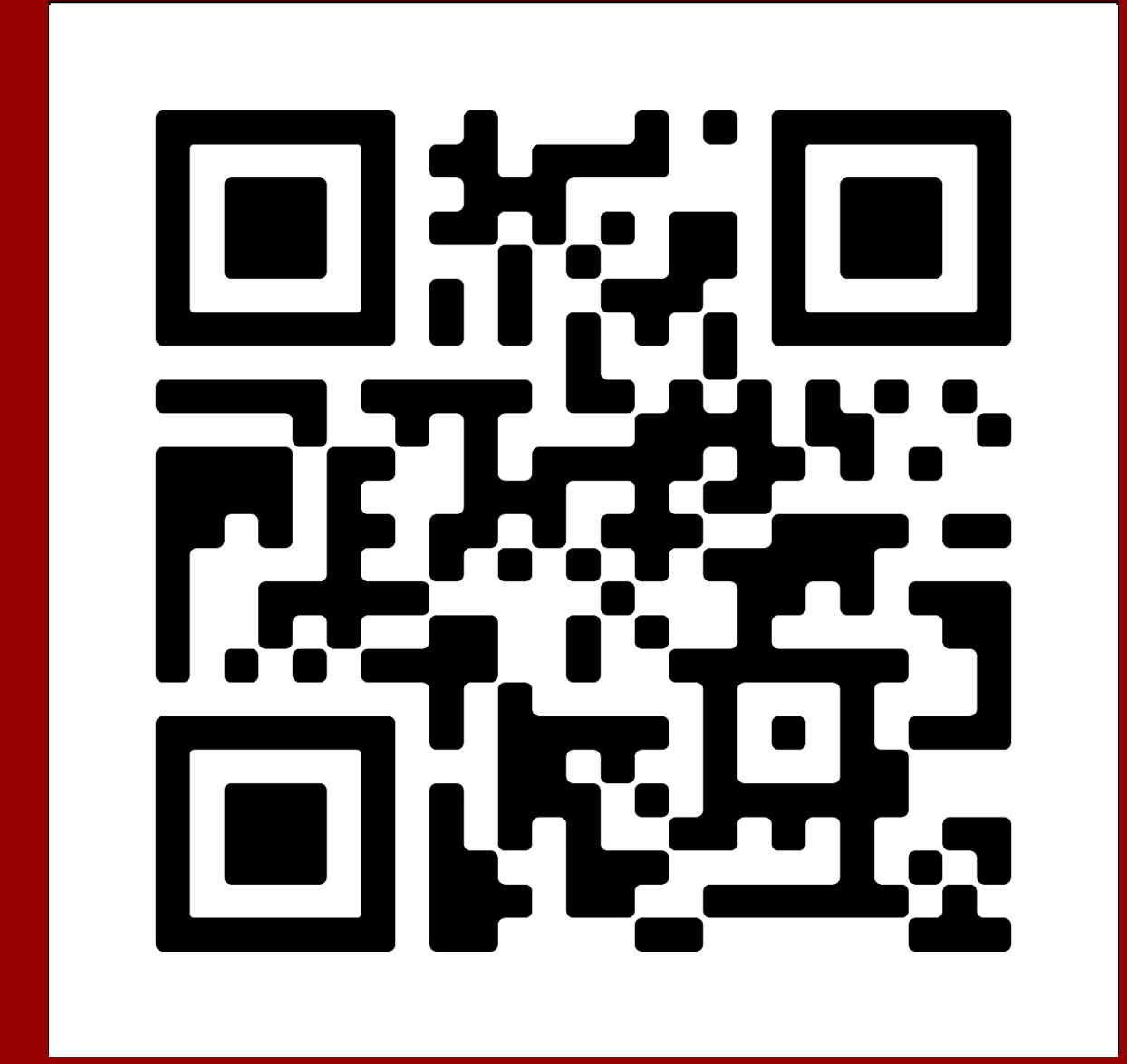
Table 1. Baseline Participant Characteristics by Group

	NON (N=28)	NCA (N=29)	HRS (N=29)	RUG (N=27)
Age	35.4 ± 14.2	33.9 ± 10.8	33.3 ± 8.4	38.1 ± 13.0
Sex (M/F)	9/19	11/19	17/11	16/11
Concussion History (%)	25.0%	37.9%	62.0%	70.4%
Age of First Exposure to Contact Sports	N/A	N/A	8.0 ± 3.5	13.3 ± 6.6
Contact Sports Career Duration (years)	N/A	N/A	14.5 ± 9.3	16.3 ± 12.0

Table 2. Visual Group Inclusion Criteria

Group	Description
Non-athletes (NON)	
Non-contact athletes (NCA)	
High-Risk Sport Athletes (HRS)	
Rugby Players (RUG)	

Collision sport career duration is unrelated to early- to mid-life gait in physically active individuals.



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Figure 1. Single Task Gait Speed by Group

