

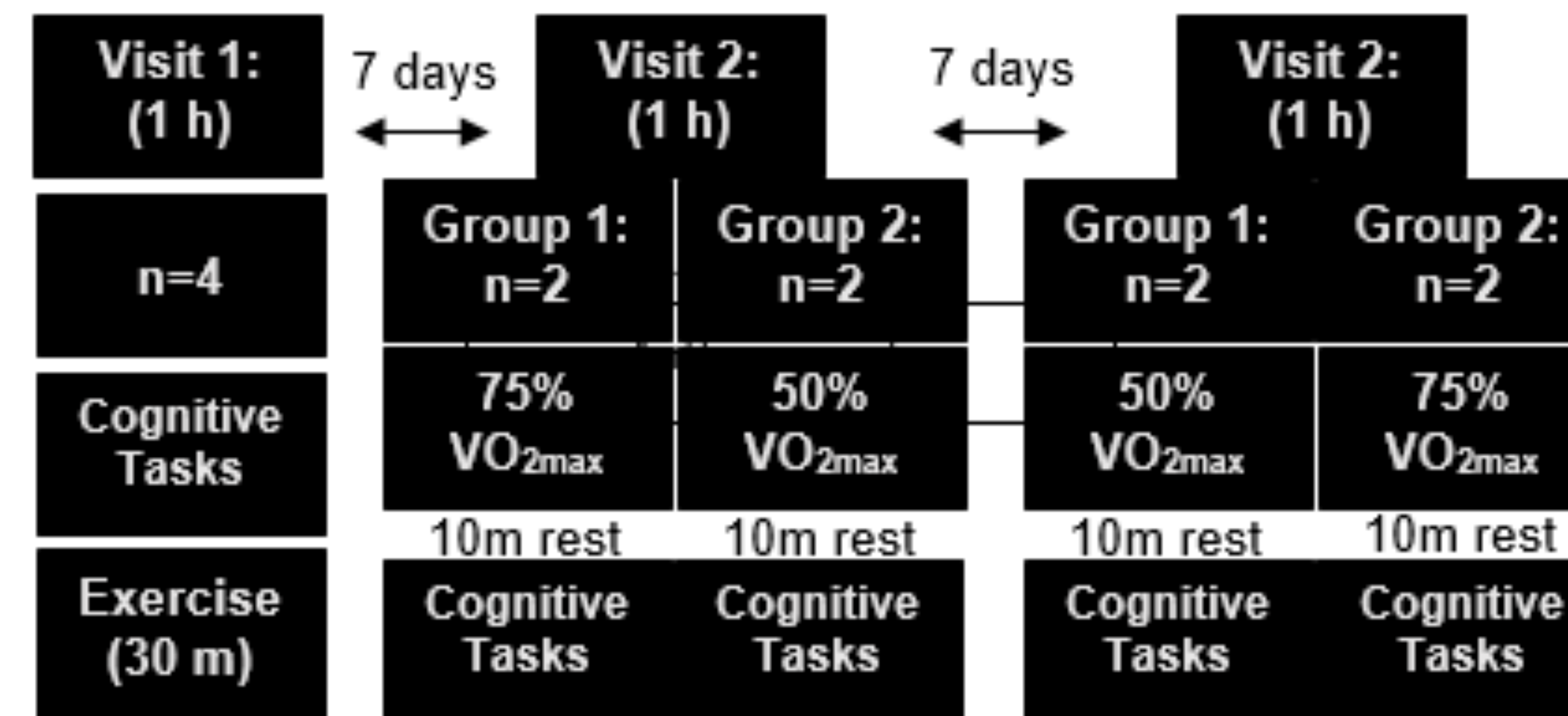
Abstract

Purpose: The purpose of this study is to examine the effects of two different exercise intensities on various aspects of cognition. **Methods:** Four children (female=2, male=2, 8-14 years old) have participated in this study, which required three separate visits. The first visit consists of a VO_{2max} test and four cognitive tasks. Visits 2 and 3 consist of a 15-min exercise bout followed by the four cognitive tasks. Visits 2 and 3 are identical except for the intensity of exercise (50% [moderate-intensity] or 75% [vigorous intensity] of VO_{2max}). **Results:** Reaction time improved following vigorous intensity compared to moderate intensity in some participants, but not others. Memory did not improve following either exercise intensity compared to baseline. Attention improved following vigorous intensity compared to baseline and moderate intensity. **Conclusion:** Exercise improves some aspects of cognitive performance compared to baseline, but it is difficult to identify a consistent effect of exercise intensity with the small sample size.

Background

- ❖ Acute exercise has been shown to improve cognitive performance in adults.
- ❖ There is limited research on the effect of acute exercise on cognitive performance in children, particularly using well-controlled settings with true measurements of exercise intensity.
- ❖ Understanding the effect of exercise intensity on cognition could provide insight into the potential cognitive benefits of physical activity in children.

Methods



COGNITIVE TASKS

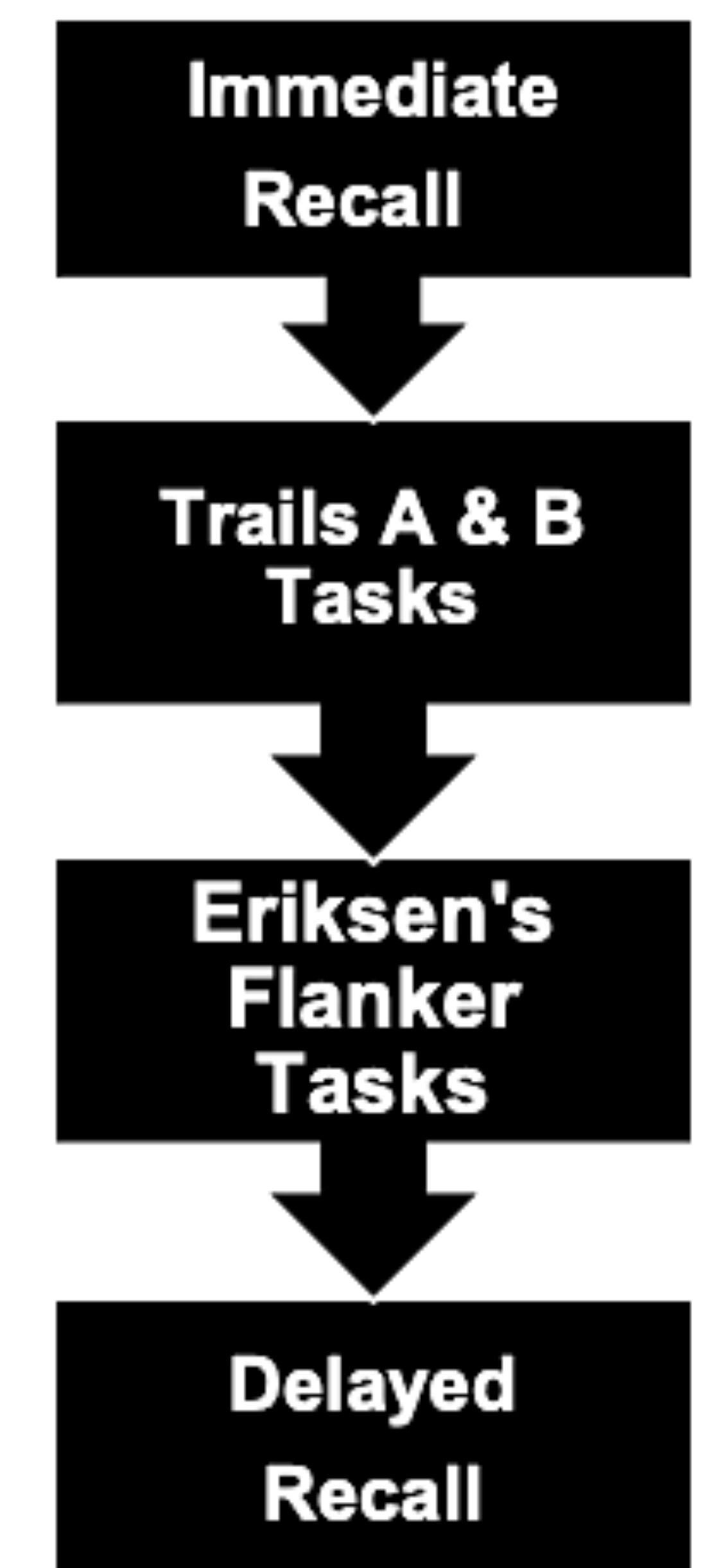


TABLE 1. Subject characteristics

Participants	Sex (F/M)	Age (yr)	MO (yr)	BMI %	VO2max (ml/kg/min)
1	F	13.9	1.871	90	33.1
2	F	8.2	-2.976	65	36.8
3	M	12.2	-2.098	28	42.5
4	M	10.5	-2.969	91	38.7

MO=maturity offset; BMI %=body mass index percentile (age and sex); VO_{2max} =maximum rate of O2 consumption.

Results and Discussion

TABLE 2. Eriksen Flanker Task

Participant	Base		50%		75%	
	RT	ACC	RT	ACC	RT	ACC
1	491.7	0.98	458.72	0.95	511.9	1.00
2	700.88	0.99	626.97	0.98	665.57	0.99
3	479.95	0.83	422.64	0.81	397.89	0.72
4	589.51	0.99	597.46	0.99	553.57	0.95

RT=Reaction Time; ACC=Accuracy.

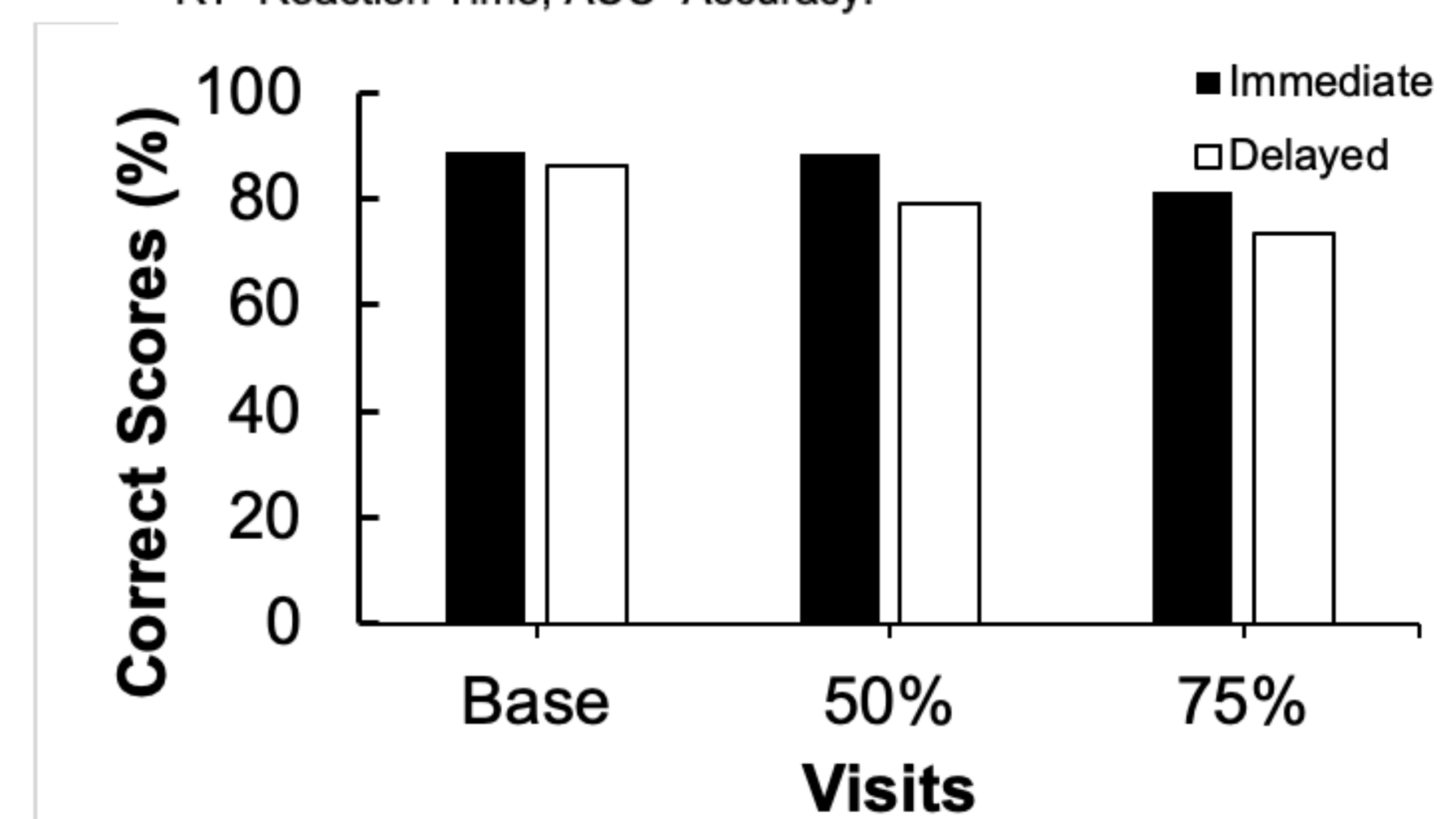


FIGURE 1. Comparison of mean correct recall scores (measured in percentile) during the three visits

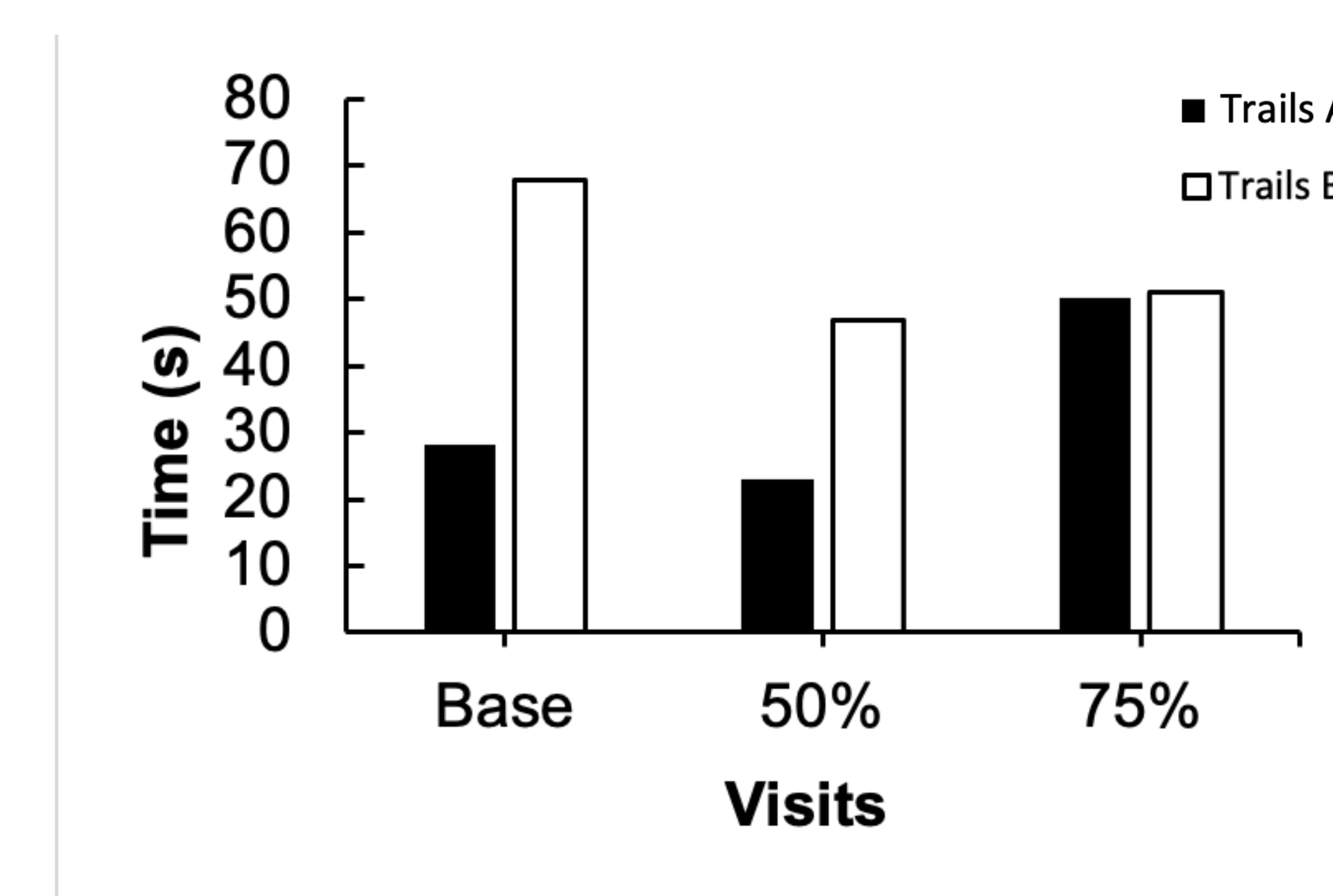


FIGURE 2. Comparison of average times (s) for each visit for Trails A and B tasks.

- ❖ These data are preliminary; we hope to add more participants (n=20).
- ❖ These data suggest that all intensities of exercise do improve cognition compared to baseline.
- ❖ It is difficult with a small sample size to identify distinctions in cognitive performance following different exercise intensities.