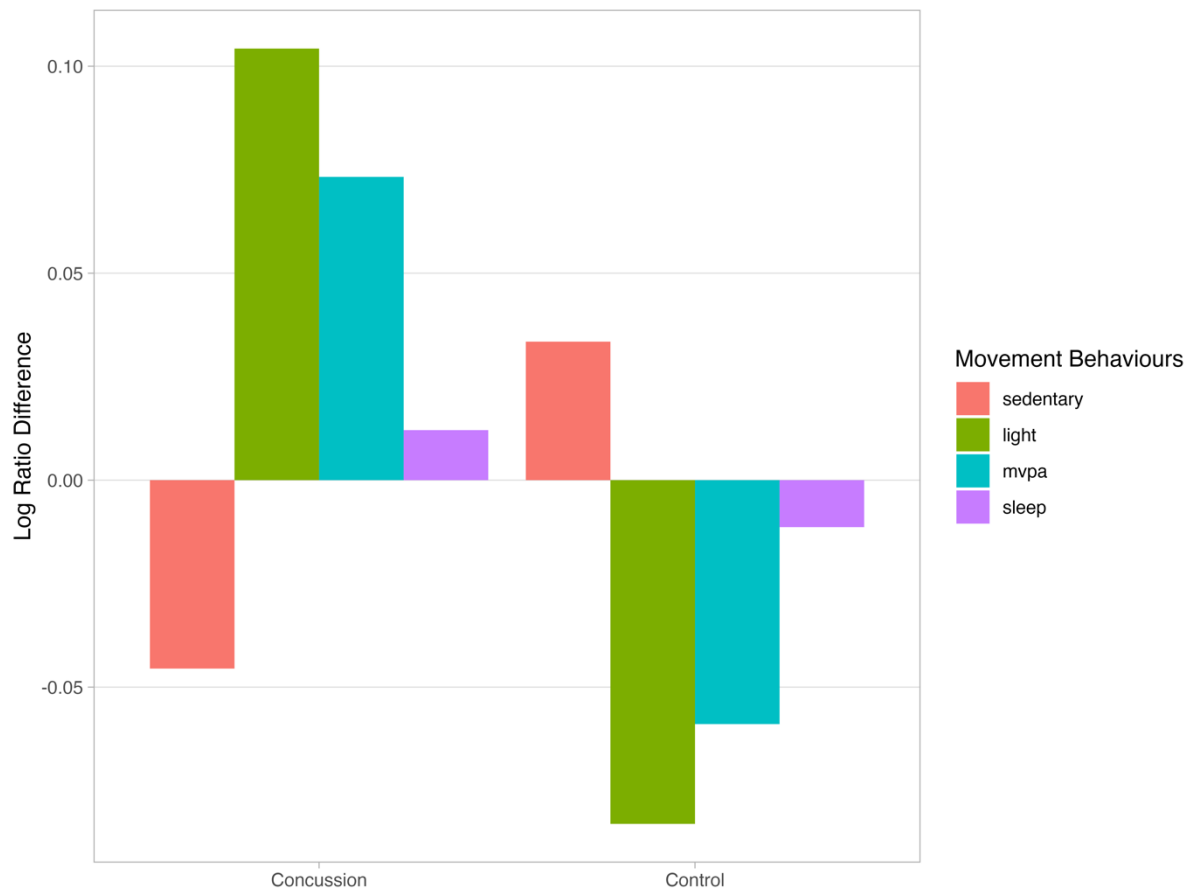# Supplementary Materials

Figure S1

Log Ratio Differences in Movement Behaviours for Concussions versus Controls

Note. The above figure illustrates the between-group differences in movement behaviours (sedentary behaviour, light PA, moderate-vigorous PA, and sleep) by comparing the log ratio mean of each group to the overall log ratio mean. Each bar represents the difference to the overall mean of both groups, for each respective movement behaviour (e.g., the concussion group engaged in less sedentary behaviour but more light PA, moderate-vigorous PA and sleep, compared to the overall mean).

Table S1

Models of the Relationship Between Movement Behaviour Compositions and Recovery Showing Different Levels of Adjustment

Isometric log-ratio predictor	Unadjusted Model			Adjusted Model (Age)			Adjusted Model (Age and BIST score)		
	β	P-value	R^2	β	P-value	R^2	β	P-value	R^2
Sed	-26.95	0.24	0.16	-28.06	0.24	0.05	-26.31	0.32	0.01
LPA	-15.02	0.42	0.16	-16.20	0.42	0.05	-13.25	0.54	0.01
MVPA	-8.58	0.64	0.16	-6.88	0.75	0.05	-9.73	0.67	0.01
Sleep	50.54	0.03*	0.16	51.15	0.03*	0.05	49.29	0.06	0.01

Note. Sed refers to the proportion of time spent in sedentary behaviour relative to the other movement behaviours, *LPA* refers to the proportion of time spent in light PA relative to the other movement behaviours, *MVPA* refers to the proportion of time spent in moderate-vigorous PA relative to the other movement behaviours, and *Sleep* refers to the proportion of time spent in sleep relative to the other movement behaviours. * indicates statistical significance at $p < .05$

Table S2

Compositional Isotemporal Substitution Model of Predicted Theoretical Changes in Movement Behaviours and their Impact on Recovery from Concussion

Movement Behaviour	Reallocated Time (mins)	Predicted Change in Recovery (days)	Lower 95% C.I.	Upper 95% C.I.
Sedentary	-60	3.82	-3.90	11.54
Light PA	-60	4.91	-11.37	21.19
MVPA	-60	6.94	-26.51	40.39
Sleep	-60	-8.74	-17.72	0.25
Sedentary	-45	2.86	-2.92	8.64
Light PA	-45	3.52	-8.15	15.19
MVPA	-45	4.67	-17.84	27.18
Sleep	-45	-6.48	-13.14	0.19
Sedentary	-30	1.90	-1.94	5.75
Light PA	-30	2.25	-5.21	9.71
MVPA	-30	2.85	-10.88	16.57
Sleep	-30	-4.27	-8.67	0.12
Sedentary	-15	0.95	-0.97	2.87
Light PA	-15	1.08	-2.51	4.68
MVPA	-15	1.32	-5.04	7.68
Sleep	-15	-2.11	-4.29	0.06
Sedentary	15	-0.95	-2.87	0.97
Light PA	15	-1.01	-4.37	2.35
MVPA	15	-1.17	-6.78	4.45
Sleep	15	2.07	-0.06	4.21
Sedentary	30	-1.90	-5.74	1.94
Light PA	30	-1.97	-8.48	4.55
MVPA	30	-2.21	-12.87	8.44
Sleep	30	4.11	-0.12	8.34
Sedentary	45	-2.85	-8.61	2.91
Light PA	45	-2.87	-12.37	6.64
MVPA	45	-3.16	-18.40	12.08
Sleep	45	6.12	-0.18	12.41
Sedentary	60	-3.80	-11.48	3.88
Light PA	60	-3.72	-16.06	8.62
MVPA	60	-4.03	-23.48	15.41
Sleep	60	8.09	-0.23	16.42

Note. For all reallocations, a negative value indicates a reduction in the corresponding movement behaviour, relative to all other movement behaviours, while a positive value indicates an increase. All reallocations with a * indicate a significant association with an alpha of 0.05.