

Supplemental digital content 5

Title: Modeling the recovery of W' in the moderate to heavy exercise intensity domain.

Authors: Vijay Sarthy M Sreedhara¹, Faraz Ashtiani¹, Gregory M. Mocko¹, Ardalan Vahidi¹, Randolph E Hutchison²

¹ Department of Mechanical Engineering, Clemson University, Clemson, SC 29634, USA

² Department of Health Sciences, Furman University, Greenville, SC 29613, USA

This document contains data and analysis details of A_3 versus W'_{SK2} and W'_{BAR}

Abbreviations used in the document

A_3 – Actual W' remaining at the end of the recovery interval.

d – Cohen's effect size.

n – Number of data points/observations.

P_{rec} – Recovery power, L – low, M – medium, H – high.

t – Test statistic from the Independent samples t-test.

t_{rec} – Recovery duration.

W'_{bal} – Amount of W' remaining.

W'_{BAR} , W'_{SK2} – W'_{bal} predicted by BAR and SK2 models respectively.

Subject-wise data for A_3 , W'_{SK2} , and W'_{BAR}

Table SDC-5.1 A_3 , W'_{SK2} , and W'_{BAR} for all subjects*

Subject	P_{rec}	t_{rec} , minutes	A_3 , kJ	W'_{SK2} , kJ	W'_{BAR} , kJ	$A_3 - W'_{SK2}$, kJ	$A_3 - W'_{BAR}$, kJ
1	L	2	10.063	11.135	11.186	-1.072	-1.123
	L	6	11.999	12.010	12.012	-0.011	-0.013
	L	15	11.375	12.028	12.028	-0.653	-0.653
	M	2	7.327	8.619	9.419	-1.291	-2.091
	M	6	7.540	10.742	11.459	-3.202	-3.919
	M	15	7.724	11.886	12.009	-4.161	-4.285
	H	2	5.453	7.007	7.699	-1.554	-2.246
	H	6	5.886	8.251	9.731	-2.365	-3.845
	H	15	5.248	9.783	11.398	-4.535	-6.151
2	L	2	10.169	9.175	9.079	0.994	1.090
	L	6	11.842	10.076	10.065	1.766	1.778
	L	15	10.407	10.102	10.102	0.305	0.305
	M	2	8.631	7.938	8.232	0.693	0.399
	M	6	9.563	9.671	9.820	-0.108	-0.258
	M	15	8.550	10.093	10.099	-1.544	-1.549
	H	2	8.040	6.512	7.099	1.528	0.941
	H	6	8.884	7.969	8.868	0.915	0.016
	H	15	4.363	9.569	9.967	-5.205	-5.603

Table SDC-5.1 (continued) A_3 , W'_{SK2} , and W'_{BAR} for all subjects*

Subject	P_{rec}	t_{rec} , minutes	A_3 , kJ	W'_{SK2} , kJ	W'_{BAR} , kJ	$A_3 - W'_{SK2}$, kJ	$A_3 - W'_{BAR}$, kJ
3	L	2	14.676	13.985	14.325	0.691	0.351
	L	6	13.674	15.068	15.084	-1.395	-1.411
	L	15	17.772	15.092	15.092	2.680	2.680
	M	2	11.455	11.937	13.071	-0.483	-1.617
	M	6	11.844	14.503	14.940	-2.660	-3.097
	M	15	13.161	15.078	15.092	-1.917	-1.930
	H	2	10.208	9.899	11.385	0.308	-1.178
	H	6	11.081	12.356	14.115	-1.275	-3.035
	H	15	9.380	14.462	15.045	-5.081	-5.665
4	L	2	4.481	5.485	5.080	-1.004	-0.599
	L	6	5.161	5.645	5.618	-0.485	-0.457
	L	15	4.633	5.646	5.646	-1.013	-1.013
	M	2	3.802	4.654	4.363	-0.852	-0.561
	M	6	4.956	5.507	5.350	-0.552	-0.394
	M	15	2.629	5.644	5.635	-3.015	-3.006
	H	2	1.164	3.808	3.835	-2.644	-2.671
	H	6	1.145	4.550	4.626	-3.405	-3.481
	H	15	0.072	5.481	5.509	-5.410	-5.437
5	L	2	6.618	7.459	7.134	-0.841	-0.516
	L	6	6.644	7.838	7.819	-1.194	-1.175
	L	15	5.674	7.841	7.841	-2.167	-2.167
	M	2	6.184	5.944	6.027	0.240	0.157
	M	6	7.072	7.270	7.349	-0.198	-0.277
	M	15	5.697	7.811	7.820	-2.114	-2.123
	H	2	5.463	5.016	5.296	0.447	0.167
	H	6	5.204	5.945	6.456	-0.741	-1.252
	H	15	1.574	7.078	7.498	-5.504	-5.924
6	L	2	7.475	8.172	8.027	-0.697	-0.552
	L	6	7.539	9.095	9.070	-1.556	-1.531
	L	15	8.704	9.137	9.137	-0.433	-0.433
	M	2	5.971	7.189	7.324	-1.218	-1.354
	M	6	8.416	8.804	8.867	-0.387	-0.451
	M	15	7.575	9.130	9.133	-1.555	-1.558
	H	2	5.429	5.883	6.328	-0.454	-0.899
	H	6	5.553	7.381	8.019	-1.828	-2.466
	H	15	5.086	8.741	9.010	-3.655	-3.924
Mean			7.523	8.835	9.115	-1.312	-1.593
SD			3.549	2.971	3.104	1.836	1.966

*Subject 7 excluded due to reasons discussed in the manuscript.

Results

A_3 and W'_{SK2} :

Table SDC-5.2 Mann-Whitney U test results for A_3 and W'_{SK2}

W'_{bal}	Mean $\pm$ SD	n	Shapiro-Wilk p-value	Mann-Whitney U test results				
				Mean rank	U	z	p-value	η^{2*}
A_3	7.523 $\pm$ 3.549	54	0.540	48.13	1802	2.114	0.035	0.083
W'_{SK2}	8.835 $\pm$ 2.971	54	0.022	60.87				

*Calculated as $z^2/n = 2.114^2/54$ (1,2)

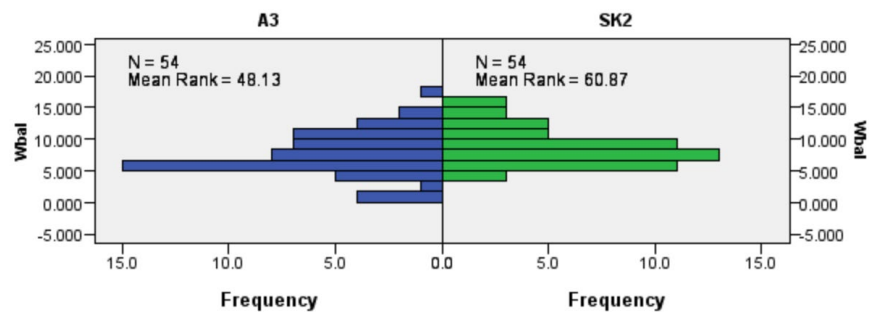


Figure SDC-5.1 Dissimilar frequency distributions of A_3 and W'_{SK2}

A_3 and W'_{BAR} :

Table SDC-5.3 Mann-Whitney U test results for A_3 and W'_{BAR}

W'_{bal}	Mean $\pm$ SD	n	Shapiro-Wilk p-value	Mann-Whitney U test results				
				Mean rank	U	z	p-value	η^{2*}
A_3	7.523 $\pm$ 3.549	54	0.540	47.18	1853.5	2.430	0.015	0.109
W'_{BAR}	9.115 $\pm$ 3.104	54	0.027	61.82				

*Calculated as $z^2/n = 2.430^2/54$ (1,2)

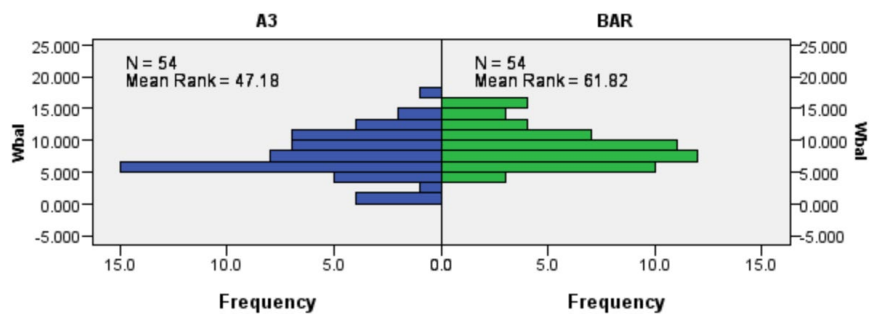


Figure SDC-5.2 Dissimilar frequency distributions of A_3 and W'_{BAR}

References

1. Fritz CO, Morris PE, Richler JJ. Effect size estimates: Current use, calculations, and interpretation. *J Exp Psychol Gen.* 2012;141(1):2–18.
2. Tomczak M, Tomczak E. The need to report effect size estimates revisited. An overview of some recommended measures of effect size. *Trends Sport Sci.* 2014;1(21):19–25.