

Figure 1. Subject set up on the strength-testing chair.

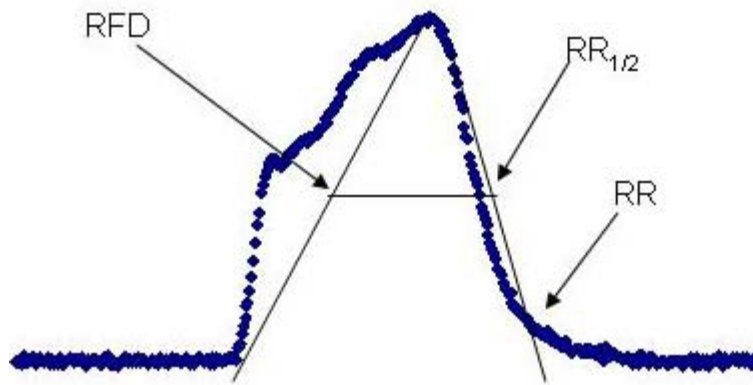


Figure 2. Calculation of RFD, $RR^{1/2}$ and RR on individual torque outputs. RFD = rate of force development, RR = rate of relaxation.

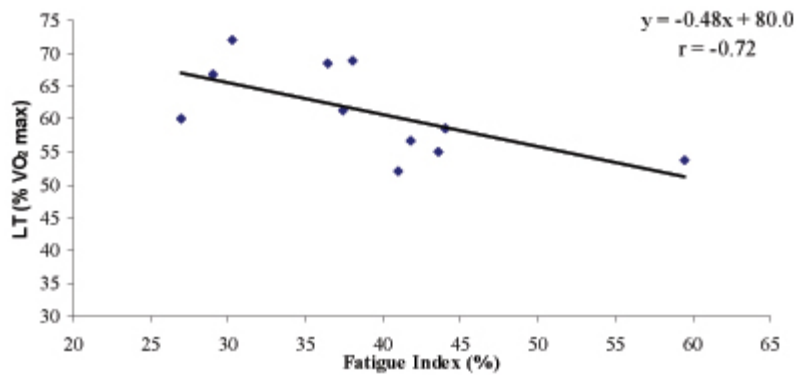


Figure 3. Relationship between lactate threshold (LT) and the fatigue index.

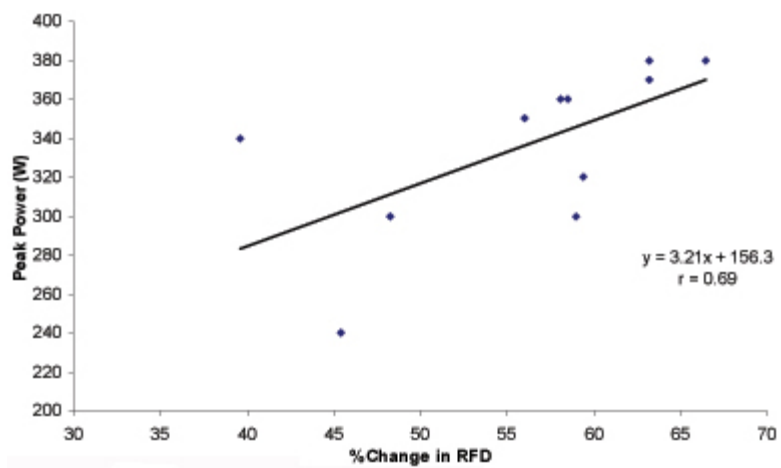


Figure 4. Relationship between peak power and the % change in rate of force development (RFD).

Table 1. Data for endurance performance determinants and muscle characteristic measures (mean \pm standard deviation).

	Mean	SD
VO ₂ max (ml·kg·min ⁻¹)	55.3	8.8
Peak Power (W)	336.4	42.9
LT (%VO ₂)	61.3	6.8
GME (%)	18.4	1.0
Fatigue Index (%)	39.6	8.9
% Change in RFD	44.2	15.9
% Change in RR	48.8	26.9
% Change in RR _{1/2}	36.3	17.1

VO₂max = maximum oxygen consumption,
 LT = lactate threshold, GME = gross mechanical
 efficiency, RFD = rate of force development,
 RR = rate of relaxation.

Table 2. Test-retest reliability of rate of force development, rate of relaxation, % change in RFD, % change in RR and % change in RR ½.

	t test	95% CI	95% CI	Bias	Random Error	ICC [3,1]	ICC CI Lower	ICC CI Upper
Fatigue Index	-.26	-10.27	8.37	-.95	17.4	.87	.34	.98
% Change in RFD	-.56	-14.30	8.95	11.60	62.2	.72	.02	.95
% Change in RR	.30	-23.00	29.5	3.26	55.7	.14	-.63	.77
% Change in RR ½	-1.06	-2.58	1.01	-.37	1.00	.92	.60	.99

ICC = intraclass correlation coefficient, RFD = rate of force development, RR = rate of relaxation.

Table 3. Relationships between the fatigue index and measures of endurance performance.

	Regression	R ²	r	p Value
LT	$-.48x + 80.0$	.40	-.72	<0.01
Peak Power	$-1.17x + 384.2$	.14	-.52	NS
GME	$-.07x + 21.0$	.33	-.60	NS
VO ₂ max	$-.02x + 5.0$	.06	-.29	NS

LT = lactate threshold. GME = gross mechanical efficiency.
 VO₂ max = maximum oxygen consumption.