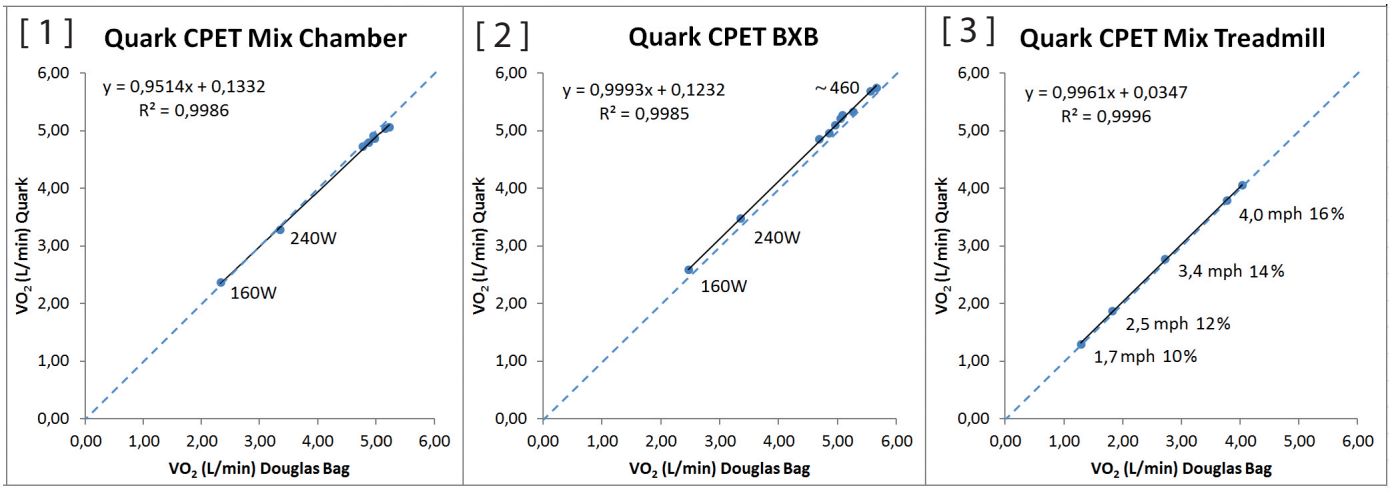
Quark CPET: Comparative Analysis of Validation Studies (VO_2)



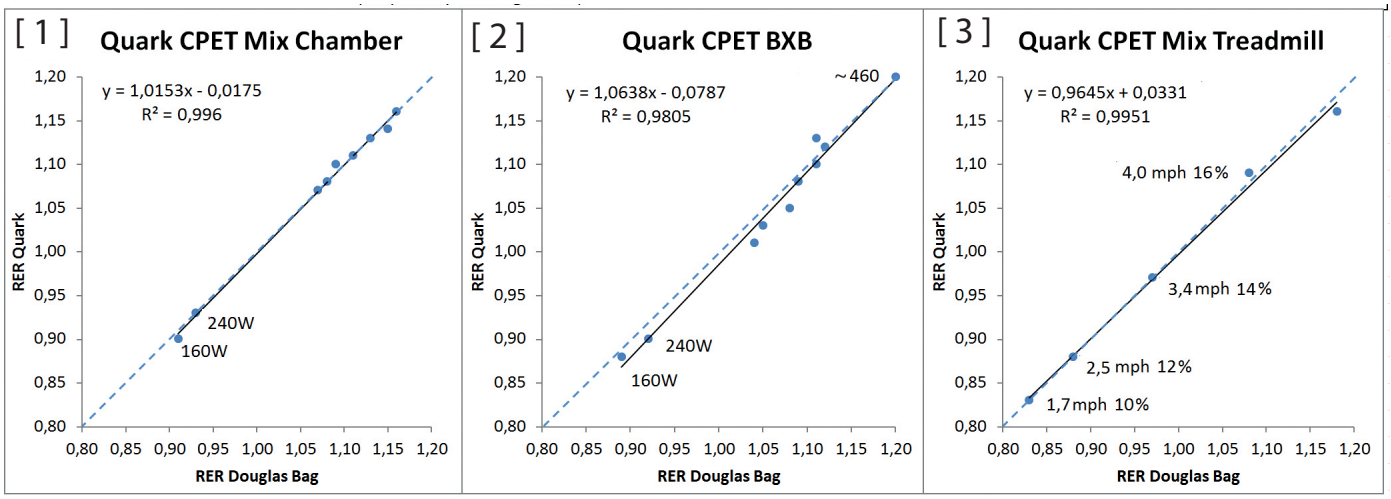
Quark CPET Mix Chamber				
Gullstrand et al. 2013				
Intensity (Watt)	VE (L/min)	VO_2 (L/min) DB	VO_2 (L/min) Quark	%Diff
160W	56	2,33	2,37	1,72
240W	80	3,36	3,28	-2,38
Max 1	148	4,78	4,72	-1,26
Max 2	157	4,88	4,79	-1,84
Max 3	162	4,98	4,86	-2,41
Max 4	170	4,96	4,91	-1,01
Max 5	183	5,16	5,04	-2,33
Max 6	193	5,22	5,06	-3,07
Max 7	204	5,21	5,06	-2,88
			Avg	**-1,72**

Quark CPET BXB				
Gullstrand et al. 2013				
Intensity (Watt)	VE (L/min)	VO_2 (L/min) DB	VO_2 (L/min) Quark	%Diff
160W	57	2,47	2,58	4,45
240W	80	3,36	3,47	3,27
311 ± 33	131	4,69	4,85	3,41
Max 2	138	4,86	4,96	2,06
Max 3	150	4,96	5,09	2,62
Max 4	157	5,05	5,21	3,17
Max 5	169	5,09	5,27	3,54
Max 6	183	5,27	5,32	0,95
Max 7	191	5,56	5,68	2,16
460 ± 52	195	5,66	5,74	1,41
			Avg	**2,70**

Quark CPET Mix Treadmill					
Nieman et al. 2013					
Speed (mph)	Grade (%)	VE (L/min)	VO_2 (L/min) DB	VO_2 (L/min) Quark	%Diff
1,7	10	25	1,29	1,29	0,00
2,5	12	70	1,82	1,87	2,75
3,4	14	110	2,72	2,77	1,84
4,0	16	140	3,78	3,79	0,26
Max		170	4,04	4,05	0,25
				Avg	**1,02**

COSMED Quark CPET stationary metabolic cart versus Douglas bag analysis based on 3 different validation studies

Quark CPET: Comparative Analysis of Validation Studies (RER)



Quark CPET Mix Chamber				
Gullstrand et al. 2013				
Intensity (Watt)	VE (L/min)	RER DB	RER Quark	%Diff
160W	56	0,91	0,90	-1,10
240W	80	0,93	0,93	0,00
Max 1	148	1,07	1,07	0,00
Max 2	157	1,08	1,08	0,00
Max 3	162	1,09	1,10	0,92
Max 4	170	1,11	1,11	0,00
Max 5	183	1,13	1,13	0,00
Max 6	193	1,15	1,14	-0,87
Max 7	204	1,16	1,16	0,00
			Avg	**-0,12**

Quark CPET BXB				
Gullstrand et al. 2013				
Intensity (Watt)	VE (L/min)	RER DB	RER Quark	%Diff
160W	57	0,89	0,88	-1,12
240W	80	0,92	0,90	-2,17
311 ± 33	131	1,04	1,01	-2,88
Max 2	138	1,05	1,03	-1,90
Max 3	150	1,08	1,05	-2,78
Max 4	157	1,09	1,08	-0,92
Max 5	169	1,11	1,10	-0,90
Max 6	183	1,20	1,20	0,00
Max 7	191	1,12	1,12	0,00
460 ± 52	195	1,11	1,13	1,80
			Avg	**-1,09**

Quark CPET Mix Treadmill					
Nieman et al. 2013					
Speed (mph)	Grade (%)	VE (L/min)	RER DB	RER Quark	%Diff
1,7	10	25	0,83	0,83	0,00
2,5	12	70	0,88	0,88	0,00
3,4	14	110	0,97	0,97	0,00
4,0	16	140	1,08	1,09	0,93
Max		170	1,18	1,16	-1,69
				Avg	**-0,15**

COSMED Quark CPET stationary metabolic cart versus Douglas bag analysis based on 3 different validation studies

References

1. QUARK CPET MIX CHAMBER: Gullstrand L., Lindberg T., Elgh T. Validity of the COSMED Quark CPET respiratory gas analyzer with Mixing Chamber analysis system. [independent validation study] 2013.
2. QUARK CPET BXB: Gullstrand L., Lindberg T., Alonso J. Validity of the COSMED Quark CPET respiratory gas analyzer with Breath By Breath analysis system. [independent validation study] 2013.
3. QUARK CPET MIX TREADMILL: Nieman D.C., Austin M.D., Dew D et al. Validity of COSMED's Quark CPET Mixing Chamber System in Evaluating Energy Metabolism During Aerobic Exercise in Healthy Male Adults. Research in Sports Medicine. 21:136–145, 2013.