

Gender Differences in O₂ Pulse During Single Set vs. Multiple-set Resistance Exercise

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Purpose: To compare O₂ pulse in males and females during single and multiple set upper body resistance training. **Methods:** A total of 24 subjects (12 ♂, 12 ♀) mean age (\pm SD) 21.4 (\pm 1.3) years, performed both a 1 and 3-set, 5-exercise, 10-repetition, upper body protocol (bench press, lat pulldown military press, biceps curl, triceps pushdown). Loads were set at 70% of their 1-repetition maximum using a lifting cadence of 15 reps·min⁻¹. A minimum of 48 hours elapsed between testing sessions. Breath-by-breath data were recorded via a portable, telemetry metabolic measurement system. **Results:** Two-way repeated measures ANOVA was used to analyze differences between sets and genders. Data (mean \pm SD) are presented in the table below:

Set #	Bench Press		Lat Pulls		Military Press		Tricep Press		Bicep Curl	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
1- set Mn	6.41	4.96	8.78	4.83	8.71*	4.17	7.04*	3.72	6.95*	3.99
SD	3.53	2.84	4.94	2.60	4.98	2.25	3.26	2.07	3.85	2.04
3- set Mn	7.00	5.65	8.12	5.13	5.60	3.90	5.88	3.69	5.74 [#]	3.89
SD	3.94	3.03	4.32	2.56	3.07	2.35	2.78	1.85	2.94	1.99

Sign. Diff. ($p < 0.05$) * between genders, # between sets

There were significant differences in O₂ pulse between genders in the smaller muscle group exercises. Between single and 3 set differences were only seen in the males for the bicep curl exercise. Variations in O₂ pulse during exercise represent changes in stroke volume and arterial-mixed venous O₂ difference. **Conclusion:** The significantly higher O₂ pulse recorded during the smaller muscle exercises were possibly due to increased sympathetic drive.