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Title: Determination and comparison of ventilatory parameters in anaerobic threshold and the critical load

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Body: Background: The anaerobic threshold (AT) and critical power (CP) (Hill,2002; 2004) are tools that can be used in the prescription of aerobic training, but they are not applied for resistance exercises (RE), especially in special populations such as the elderly. Furthermore, little is known of the relationship between these parameters and maximum workload (1RM) in RE and the ventilatory behavior during the execution of these intensities. Objectives: to determine the AT and the critical load (CL) for exercise on leg press and compare the behavior of ventilation (VE) and oxygen consumption (VO₂) during these intensities in healthy elderly. Methods: We studied healthy men (69±4 years), who underwent: 1) a 1 repetition maximum (1RM) test on Leg Press and, 2) the crescent test for determining the AT through VE, 3) the constant load test in the AT, 4) on different days, three high-intensity resistance exercise constant load tests (60%, 75% and 90% 1RM) in order to obtain CL by linear regression: load X reverse of time (duration of exercise until fatigue) and 5) the constant in the test CL. Results: On average, it was determined that the value of AT was ~ 30% 1RM and CP ~ 52%1RM. Regarding the execution of each intensity was obtained (on average) that VE reached 32.7 l/min in the AT, while in the CP was 41.6 l/min (p <0.05). As for the VO₂, was obtained 1.1 l/min in the AT and 0.99 l/min in CL (p <0.05). Conclusion: These findings demonstrate that VE increases as the intensity is increased, but the VO₂ exhibit the opposite behavior. Thus, it can be concluded that both tools can be determined in the RE, and should be used as training objective. Financial Support: 2009/01842-0.