

OA/UNE Human Performance Lab

The Wingate Test for Anaerobic Power

Why test for anaerobic power?

Anaerobic power reflects the ability of the adenosine triphosphate and phosphocreatine (ATP-PCr) energy pathways to produce energy for muscle contraction. This system is depleted quickly and is used for short bursts of intense power output. Sprint or track cyclists, sprint runners, hockey players, and other athletes that use short, high-intensity efforts benefit from training this system. For example, a cyclist who has a high peak and average power will be strong sprinter. How long they can effectively sprint would depend on their anaerobic fatigue. The Wingate test requires the subject to pedal a mechanically braked bicycle ergometer for 30 seconds, at an "all out" pace. Your test provides the following valuable data about your anaerobic system.

Anaerobic Peak Power (PP) represents the highest mechanical power generated during any 3-5 second interval of the test.

Relative peak power (RPP) is determined simply by dividing peak power by body mass and is expressed as W/kg

Anaerobic capacity (AC) is the total amount of work accomplished over a 30-second bout.

Anaerobic fatigue (AF) is the percentage decline in power compared with the peak power output over the 30 sec test.

**PERCENTILE NORMS FOR AVERAGE AND PEAK POWER FOR
PHYSICALLY ACTIVE YOUNG ADULTS**

% Rank	AVERAGE POWER				PEAK POWER			
	Male		Female		Male		Female	
	W	W·kg ⁻¹	W	W·kg ⁻¹	W	W·kg ⁻¹	W	W·kg ⁻¹
90	662	8.24	470	7.31	822	10.89	560	9.02
80	618	8.01	419	6.95	777	10.39	527	8.83
70	600	7.91	410	6.77	757	10.20	505	8.53
60	577	7.59	391	6.59	721	9.80	480	8.14
50	565	7.44	381	6.39	689	9.22	449	7.65
40	548	7.14	367	6.15	671	8.92	432	6.96
30	530	7.00	353	6.03	656	8.53	399	6.86
20	496	6.59	336	5.71	618	8.24	376	6.57
10	471	5.98	306	5.25	570	7.06	353	5.98

From Maud, P.J., and Schultz, B.B.: Norms for the Wingate anaerobic test with comparisons in another similar test. *Res. Q. Exerc. Sport*, 60:144, 1989.