ICC=intraclass correlation. Data is presented as Mean (SD)									
		Average				Best			
Measure		30%	50%	60%	70%	30%	50%	60%	70%
AV (m/s)	$ICC_{3,1/k}$; $ICC_{2,1/k}$; p	0.989;0.922;0.977	0.986;0.986;0.363	0.986;0.982;0.191	0.968;0.975;0.790	0.982;0.983;0.508	0.976;0.977;0.516	0.972;0.963;0.111	0.960;0.965;0.898
Mean (SD)	Set 1	0.8 (0.2)	0.7 (0.1)	0.7 (0.1)	0.6 (0.1)	0.8 (0.2)	0.7 (0.1)	0.7 (0.1)	0.6 (0.1)
	Set 2	0.8 (0.2)	0.7 (0.1)	0.6 (0.1)	0.6 (0.1)	0.8 (0.2)	0.7 (0.1)	0.7 (0.1)	0.6 (0.1)
PV (m/s)	$ICC_{3,1/k}$; $ICC_{2,1/k}$; p	0.978;0.980;0.490	0.982;0.974;0.138	0.983;0.979;0.196	0.956;0.966;0.932	0.976;0.978;0.537	0.943;0.950;0.789	0.941;0.928;0.136	0.885;0.896;0.716
Mean (SD)	Set I	1.3 (0.3)	1.2 (0.2)	1.1 (0.2)	1.0 (0.2)	1.3 (0.3)	1.1 (0.2)	1.1 (0.2)	1.0 (0.2)
	Set 2	1.3 (0.3)	1.2 (0.2)	1.1 (0.2)	1.0 (0.2)	1.3 (0.3)	1.1 (0.2)	1.1 (0.2)	1.0 (0.2)
D (cm)	$ICC_{3,1/k}$; $ICC_{2,1/k}$; p	0.934;0.942;0.496	0.994;0.988;0.052	0.981;0.985;0.700	0.988;0.978;0.081	0.852;0.868;0.916	0.849;0.839;0.237	0.770;0.779;0.461	0.960;0.954;0.113
Mean (SD)	Set 1	54.7 (6.1)	54.0 (5.7)	53.5 (6.6)	52.7 (7.0)	55.1 (6.1)	53.2 (5.4)	52.8 (5.9)	52.5 (5.6)
	Set 2	53.9 (5.9)	53.2 (6.2)	53.8 (6.3)	53.8 (5.7)	54.9 (6.9)	54.6 (5.2)	54.1 (7.5)	53.4 (5.7)

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High Intensity Exercise Targets Can Only Be Prescribed Accurately With Multidimensional Assessment Tests

C. Mac Cassin[1], Jinger S. Gottschall[2], Neal A. Henderson[1]. [1]*Wahoo Fitness, Atlanta, GA.* [2]*University of Colorado, Boulder, CO.* (Sponsor: W. Larry Kenney, FACSM)

The American College of Sports Medicine recognizes the benefits of high intensity interval training (HIIT) for the improvement of health, fitness, and performance. They also support the recent surge in research focused on HIIT to refine our understanding of the relationship between frequency, duration, and intensity. The current literature provides valuable information towards this goal correlated with demographics (age, sex) utilizing various singular intensity assessments (functional threshold, maximal aerobic, anaerobic). However, it is optimal to utilize an integrated protocol with diverse participants to provide more concrete guidelines specific to various training targets.
PURPOSE: To evaluate the connection between demographics and intensity to provide accurate training parameters for maximal gains in health, fitness, and performance. We hypothesize that the correlation between peak cycling power over varying durations is significantly different depending on sex and age.
METHODS: Seven thousand, one hundred and sixty-two individuals (3581 men, 3581 women matched for age) completed a single session, multidimensional indoor cycling test to assess neuromuscular power (NMP; 2, 7-second sprints), maximal aerobic power (MAP; 5-minute maximal effort), functional threshold power (FTP; 20-minute maximal effort) and anaerobic power (AP; 1-minute maximal effort).
RESULTS: In agreement with our hypothesis, there was a statistically significant effect for sex (male, female; p-value < 0.0001) and age category (20-29, 30-39, 40-49, 50-59, 60-69 years; p < 0.0001) as well as a significant interaction between sex and age category (p < 0.0001) for each of the four power intensities (watts/kg). More specifically, power significantly decreased with age and the decline was greatest at the highest intensity (NMP) for both sexes. Also, the decrease in power with advancing age was significantly less in women compared to men apart from NMP.
CONCLUSIONS: Our data demonstrates that all peak power durations progressively decline with age and women maintain their aerobic power more than men. Due to these significant interactions, high intensity exercise targets can only be prescribed accurately with multidimensional assessment tests.

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Major League Pitching Performance Is Poorly Predicted By Prevailing Metrics

Isabel A. Terra, J.P. Wong, Nathaniel J. Holmgren, Aida V. Novoa, Courtney D. Jensen. *University of the Pacific, Stockton, CA.*

As scientific analysis continues to supplant subjectivity in sport drafts, the predictors of pitching success in professional baseball remain improvable.
PURPOSE: To evaluate the pitching performance of first-round draft picks in Minor League (MiLB) and Major League (MLB) Baseball.
METHODS: 1,000 MLB pitchers drafted between 1965 and 2014 were selected for analysis; all players had a minimum of 3 complete MLB seasons. There were 362 starters, 315 relievers, and 80 closers; 243 served multiple roles. We evaluated MiLB and MLB performances of all pitchers and tested the effect of draft pick on outcomes using linear regression models, holding potential confounders constant. Dependent variables were: earned run average (ERA), ERA+, runs allowed per 9 innings (RA9), winning percentage (W%), fielding independent pitching (FIP), and strikeouts per 9 innings (K9). Analyses were conducted on the total sample as well as players drafted after the year 2000 (N=396).
RESULTS: There were 404 pitchers drafted in the first round; draft round number ranged from 1 to 69 (mean: 7.3 ± 9.8). Mean years in MiLB were 10.1 ± 4.4 and mean years in MLB were 8.0 ± 2.8. Across the total sample, holding constant draft year and pitcher class (e.g., starter, reliever), first-round picks had 0.233 higher ERA in MiLB (p<0.001; 95% CI: 0.153 to 0.313), 0.386 higher ERA in MLB (p<0.001; 95% CI: 0.304 to 0.469), a 0.217-point increase in MiLB RA9 (p<0.001; 95% CI: 0.129 to 0.306), a 0.398-point increase in MLB RA9 (p<0.001; 95% CI: 0.308 to 0.489), a reduction in MiLB W% by 2.239 percentage points (p<0.001; 95% CI: -3.393 to -1.085), and a reduction of 2.435 percentage points in MLB W% (p<0.001; 95% CI: -3.466 to -1.405). Additional MLB metrics predicted by first-round draft status were a reduction in ERA+ by 8.304 points (p<0.001; 95% CI: -10.333 to -6.275), a 0.244-point increase in FIP (p<0.001; 95% CI: 0.175 to 0.312), and 0.302 fewer K9 (p=0.002; 95% CI: -0.492 to -0.113). In the subsample analysis, controlling for pitcher class, the direction of every relationship was preserved. Significance was retained in MiLB ERA (p=0.016), MLB ERA (p<0.001), MiLB RA9 (p=0.078), MLB RA9 (p<0.001), MLB ERA+ (p=0.002), MLB FIP (p=0.001), and MLB K9 (p=0.045).
CONCLUSIONS: The qualities that predict a first-round draft pick for MLB pitchers do not predict success in MiLB or MLB.