Main Findings

- The greatest bat speed increase of any study (+10%) came from over/underload bat training (specifics under last link)
- 2 rep maximum bench press, front squat, and straight bar deadlift are highly correlated with bat speed
- Height, weight, muscle mass, grip strength, back muscle strength, and overhead medicine ball throw distance are highly correlated with bat speed
- Sprint speed and jumping ability aren't correlated with bat speed
- Rotational and full-body medicine ball exercises significantly increase bat speed
- Swinging on deck bats within +- 12% of your game bat weight increased in-game bat speed, heavy warm up donuts decreased bat speed
- 7 – 12 weeks of weight training significantly increased bat speed
- Less advanced players should prioritize strength development and hitting regularly, while advanced players should prioritize speed/power development (plyometrics and olympic lifts) along with specific hitting drills (like over/underload bat training)
- Directly training grip strength doesn't increase bat speed
- Correlations between bat speed, swing mechanics, and mobility haven't been explored

how 2 rep max squat, deadlift, and bench values correlate with bat speed

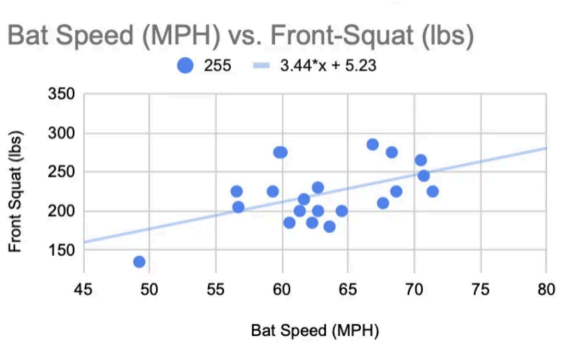
- Measured 2 rep max of front squat (from pins), straight bar deadlift, bench press (from pins), and bat speed of 23 players on the same team
- Team's average bat speed was 63.9 mph

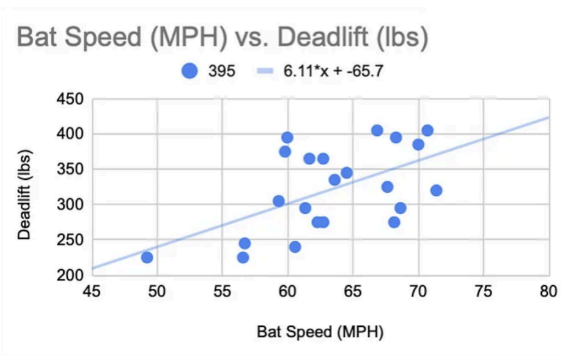
** higher r values and variance percentages indicate higher correlations with bat speed

- Front squat correlation: r = 0.529 28.0% variance
- Straight bar deadlift correlation: r = 0.589 34.7% variance
- Bench press correlation: r = 0.462 21.3% variance

Equations (x = bat speed in mph, y = lift in lbs) ** these basically tell you what PRs to target if you want a certain bat speed

- Front squat equation: y = 3.44x + 5.23
- Straight bar deadlift equation: y = 6.11x – 65.7
- Bench equation: y = 2.04x + 57.2
- Highest bat speed player (73.1 mph): 240 lb bench, 395 lb deadlift, 255 lb front squat





how grip strength, incline bench, and body weight correlate with bat speed

- Studied 31 D1 baseball players who weighed an average of 198 lbs

** higher r values and percentages indicate greater correlations with bat speed

- Grip strength: r = 0.37, variance = 13.69%
- Incline bench: r = 0.40, variance = 16.00%
- Body weight: r = 0.41, variance = 16.81%

upper body strength and bat speed correlations

- Measured bat speed, max bench, bench power (how fast they could bench light weight), and isokinetic chest press
- Subjects were 30 HS baseball players
- Max bench variance: 34.81%
- Bench power variance: 16.81%
- Isokinetic chest press variance: 26.52%
- The players were split into two groups– group 1 was average hitters, group 2 was home run hitters
- Group 2 (the powerful group) had much better max bench and chest press metrics relative to their body weight

78 college players, hella metrics and bat speed correlations

- measured height, weight, muscle mass, grip strength, back muscle strength, 30m sprint, standing long jump, and backward overhead medicine ball throw of 78 collegiate baseball players
- Divided players into three groups based on high/medium/low bat speed, and compared the groups

- Compared to the slow bat speed group, the fastest bat speed group had much greater muscle mass, height, grip strength, back muscle strength, and backward overhead medicine ball throw distance
- There weren't noticeable differences in 30m sprint or standing long jump measures between any of the groups

impact of medicine ball training on bat speed

- Put 24 HS players into group 1, and 25 HS players into group 2
- Both groups trained for 12 weeks, lifting weights and taking lots of swings
- In addition to lifting and hitting, group 2 did rotational and full-body medicine ball exercises 3x / week (group 1 didn't)
- They measured bat speed at the start and end of the study, and group 1 increased 3.6%, while group 2 increased 6.4%

meta-analysis findings

- Swinging on-deck bats within +- 12% of game bat weight increases in-game bat speed
- Using either very heavy or very light warm up bats decreases bat speed
- The highest increase in bat speed found in any study (10%) was from an over/underload training experiment. Participants took 50 swings with a light bat, 50 with a heavy bat, and 50 with their game bat 4x per week for 12 weeks (150 total swings per session). light/heavy bats were within +- 12% game bat weight. Group 1 took dry swings, and group 2 hit batting practice, but everything else was the same. Group 1 increased bat speed by 6%, and group 2 increased bat speed by 10%.
- Less advanced players should focus on strength development and hitting regularly, while advanced players should prioritize plyometric, medicine ball, and specific bat speed training
- Four different studies measured how weight training affects bat speed over periods ranging from 7 – 12 weeks. All four groups did heavy training (80 – 85% 1RM loads) for at least 4 weeks. Bat speed increases ranged from 3.2 – 7.9%.
- Several studies have found that specific grip strength and forearm training (outside of grip/forearm stimulation from regular weightlifting) doesn't increase bat speed or exit velocity
- Increasing hip and torso rotational power with medicine ball exercises significantly increases bat speed
- Assuming a 30 oz game bat, warm up bats and over/under load training bats should be between 27 and 34 oz
- Don't use heavy donuts in the on-deck circle, they decrease bat speed
- Players with the highest bat speeds tended to be tall and strong with lots of muscle mass
- For optimal results, players should start with general training (strength development with compound lifts), then progress to special training (olympic lifts, plyometrics, and other speed/power focused work), and finally specific training (over/underload bat training, other specific hitting drills).