BATTING METRICS

Average time to contact (from the start of the forward downswing to impact) in softball ranges from **0.14 to 0.22 seconds**, depending on skill level, with faster times indicating more efficient swings. Elite, professional, and college players typically achieve contact in **0.14–0.18 seconds**, while high school and younger players generally fall within **0.15–0.22 seconds**.

Typical Time to Contact Ranges by Level (Softball)

- **Professional/College:** 0.14–0.18 seconds
- **Travel Ball (16U-18U) / HS Varsity:** 0.15–0.21 seconds
- **Travel Ball (12U-14U) / HS JV:** 0.16–0.22 seconds
- **Recreational:** 0.18–0.25 seconds

Key Factors Influencing Time to Contact

- **Total Decision Time:** Hitters have roughly 0.35–0.40 seconds to react to a pitch, decide to swing, and make contact.
- **Swing Efficiency:** A faster time to contact (closer to 0.13–0.14s) often indicates a more efficient, direct swing path.
- **Age and Development:** Younger players (youth) usually take longer, in the 0.17–0.23 second range.
- **Pitch Speed:** Higher velocity pitches (e.g., 60+ mph) require faster, more compact swings compared to slower speeds.

Average softball bat speeds generally range from 49–63 mph for high school varsity players and 58–70 mph for college players, with elite hitters exceeding 70-80 mph. Youth (10u-12u) typically see 38–52 mph, while professional players reach 63–80 mph. Batting speed increases with strength, age, and improved kinetic linkage.

Fastpitch Bat Speed Ranges (Average)

- **Recreational:** 32–46 mph
- **Travel Ball (12u-14u):** 38–52 mph
- **High School JV:** 42–56 mph
- **High School Varsity:** 49–63 mph
- **College:** 58–70 mph
- **Professional:** 63–80 mph

Average exit velocity (EV) in softball varies significantly by age and competitive level. For high school athletes, a consistent EV of **70 mph** is often considered the "gold standard" for attracting Division I college

recruiters.

Average Exit Velocity by Age Group

The following benchmarks represent typical ranges for average and elite fastpitch softball players:

Age / Level	Average Range (mph)	Elite / Good Goal (mph)
10u – 12u	35 – 50	55+
13u – 14u	45 – 60	65+
JV High School (15u)	55 – 70	75+
Varsity HS (16u–18u)	60 – 75	80+
College (D1–D3)	65 – 80	85 – 90+

Sources: Bat Digest, MVP Cages

Key Benchmarks & Recruitment Standards

- **Recruiting Minimums:** Division I programs generally look for **70+ mph**, while Division II and III programs often aim for **67+ mph** and **65+ mph** respectively.
- **College Averages:** Most active college players average between **65–73 mph** during game play.

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- **Home Run Power:** A ball hit at **63 mph** with a 31-degree launch angle can clear a 200-foot fence under ideal conditions.
- **Professional Peaks:** The record for hardest-hit softball off a tee is **92 mph** (Crystal Bustos), while in-game peaks typically reach around **85 mph**.

Factors Influencing Exit Velocity

- **Bat Speed vs. Exit Velo:** While WIN Reality notes that bat speed drives results, exit velocity is always higher because it accounts for the ball's incoming speed and the bat's "trampoline effect".
- **Measurement Tools:** Readings can vary based on whether you use a Pocket Radar, Rapsodo, or HitTrax system.
- **Launch Angle:** For maximum offensive output (the "Barrel" zone), players aim for an EV of **67+ mph** paired with a launch angle between **20–38 degrees**

Rotational Acceleration (RA) measures how quickly you accelerate the bat barrel from your launch position into your swing rotation. In softball, average scores typically range from **8g to 15g**, depending on age and skill level.

Rotational Acceleration Benchmarks (in G-force)

These standards, primarily tracked via Blast Motion sensors, categorize hitters based on how "fast" their swing develops:

Level of Play	Average Range (g)	Elite / High (g)
Youth (12u - 14u)	8 – 11	14+
High School Varsity	10 – 13	16+
College (D1–D3)	12 – 15	20+
Professional	15 – 18	25+

Sources: Driveline Baseball, Blast Motion Metrics

In softball batting, "Power" (measured in Watts or kilowatts, kW) is a metric primarily tracked by Blast Motion sensors that combines **bat speed**, **bat mass**, and **acceleration** during the downswing.

Average Power Benchmarks (kW)

The following ranges represent typical power outputs across different competitive levels:

Level of Play	Average Power Range (kW)	Elite Power (kW)
Youth (12u – 14u)	0.8 – 2.2 kW	2.2+ kW
HS Junior Varsity	1.25 – 2.45 kW	2.5+ kW
HS Varsity	1.65 – 2.85 kW	3.0+ kW
College (D1–D3)	2.5 – 4.0 kW	4.5+ kW
Professional	3.4 – 4.6 kW	5.0+ kW

Sources: Blast Connect Metrics, Discuss Fastpitch Forums

Peak Hand Speed (PHS) measures the maximum speed of the bat handle (typically 6 inches from the knob) during the swing. In softball, average PHS typically ranges from **13 mph to 27 mph** across different skill levels.

Average Peak Hand Speed Benchmarks

According to analysis from Blast Motion, these are the typical ranges for softball hitters:

Level of Play	Average Range (mph)
Youth (12u – 14u)	13 – 21 mph
HS Junior Varsity	14 – 22 mph
HS Varsity	16 – 24 mph
College (D1–D3)	20 – 26 mph
Professional	21 – 27 mph

Key Metrics & Insights

- **Optimal Timing:** Peak Hand Speed typically occurs just before impact, near the "commit time" when the wrists begin to unhinge.
- **Rotational Connection:** High hand speed should be a result of efficient body rotation. If the hands are "powering" the swing independently of the torso, it often leads to inconsistent results and lower overall bat speed.
- **Recruiting Averages:** Elite college programs often look for hitters who can consistently reach the **23–26 mph** range to handle high-velocity pitching.
- **Slappers vs. Power Hitters:** On average, power hitters exhibit slightly higher PHS (~29 mph) compared to slappers (~26 mph) at the elite college level.