

Elite athletes often shine sooner or later—but not both

May 31 2013

An Indiana University study that compared the performance of elite track and field athletes younger than 20 and those 20 and older found that only a minority of the star junior athletes saw similar success as senior athletes.

The researchers think physical maturation is behind the disparity, with [athletes](#) who mature early reaping the benefits early, seeing their best times, jumps and throws at a younger age than Olympians, many of whom mature later.

"You see it in a lot of sports," said Robert Chapman, assistant professor in the IU School of Public Health-Bloomington and a former cross country coach at IU. "Elite performers in senior sports tend to be the ones who mature later. But it's hard to measure, particularly in men, the rate at which they mature. I had a very successful runner grow 4 inches in college while he ran for me."

The study, led by Joshua Foss, a graduate student in [exercise physiology](#), and co-authored by Chapman, will be discussed on Friday during the American College of [Sports Medicine](#) annual meeting in Indianapolis. It examined the career performance of 65 male finalists and 64 female finalists of the 2000 Junior World Championships and a comparable number of finalists at the 2000 Olympics. They analyzed competition data for the junior athletes from the 12 years after the 2000 Junior World Championships and at least 12 years of data for the senior athletes from before and after the 2000 Olympics. The athletes were

finalists in the 100-, 200-, 1,500- and 5,000-meter races, long jump, high jump, discus throw and shot put.

Here are some of the findings:

- Senior athletes performed best at a significantly later age than their junior counterparts in all four men's event groups and three of four women's event groups.
- Compared to the star junior athletes, the senior athletes showed a significantly greater percentage of improvement in lifetime best performance compared to their best performances as junior athletes in six of eight groups.
- 23.6 percent of the junior athletes studied went on to medal in the Olympics.
- 29.9 percent of the Olympians studied won medals earlier in their career while competing in the Junior World Championships.

Variability in maturation rates and potential differences in performance as athletes age can pose a challenge for recruiting coaches. Coaches anecdotally have known this was an issue, Chapman said, but the IU study bolsters it with data. He said the findings also are relevant in light of how sports organizations and national sport governing bodies budget their limited funds. Focusing their spending on junior athletes will not necessarily result in Olympic champions as the juniors age.

Foss will discuss his findings during a poster presentation from 3:30 to 5 p.m. Friday, May 31, in Hall C.

Provided by Indiana University

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