

# Study shows advanced footwear technology positively impacts elite sprint performances

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Image: [Nicolas Hoizey](#). Credit: Nicolas Hoizey

A study [published](#) in *PeerJ* sheds light on the potential game-changing impact of advanced footwear technology (AFT) on elite sprint performances in track and field. The research, titled "The Potential

Impact of Advanced Footwear Technology on the Recent Evolution of Elite Sprint Performances," reveals the significant strides made in sprint performance and suggests that AFT has played a pivotal role in these improvements.

Elite track and field sprint performances have long been viewed as reaching a plateau as the boundaries of human physiology are tested. To further enhance sprinting capabilities, researchers have turned their attention to technological interventions, specifically the application of advanced footwear technology in sprint spikes. The study aimed to determine whether the use of AFT has led to notable improvements in sprint performances and the extent of these enhancements.

The research, authored by Dr. Joel Mason of Friedrich Schiller University Jena and colleagues, analyzed performance data from the years 2016-2019 and 2021-2022, focusing on the top 100 athletes in each sprint event as listed by World Athletics. Key findings from the study include:

1. No significant year-to-year differences in sprint performances were observed in any event before the introduction of AFT (2016-2019).
2. Following the release of AFT (in 2021 and 2022), there were significant improvements in eight out of ten sprint events, with enhancements ranging from 0.40% (men's 100m) to 1.52% (women's 400m hurdles).
3. The use of AFT was associated with [performance improvements](#) in six out of ten events, including men's and women's 100m, women's 200m, men's 110m hurdles, women's 100m hurdles, and women's 400m hurdles.

The study also noted that improvements were more pronounced in women's sprint events compared to men's sprint events, indicating that

AFT may have a greater impact on [female athletes](#).

In conclusion, this research offers compelling evidence that the recent evolution of elite sprint performances can be partially attributed to advances in footwear technology. These improvements are influenced by factors such as the specific [sprint](#) event, athlete gender, and potentially the level of the athlete, offering [athletes](#) an exciting opportunity to further enhance their performances and providing a challenge for World Athletics to preserve the integrity of the sport while still embracing developments in technology.

**More information:** Joel Mason et al, The potential impact of advanced footwear technology on the recent evolution of elite sprint performances, *PeerJ* (2023). [DOI: 10.7717/peerj.16433](https://doi.org/10.7717/peerj.16433)

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