

Atlatl weapon use by prehistoric females equalized the division of labor while hunting, experimental study shows

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Atlatl experiment on the Kent Campus with Bob Berg of Thunderbird Atlatl. Michelle Bebber is holding the radar gun. Credit: Metin I. Eren

A new study led by archaeologist Michelle Bebber, Ph.D., an assistant professor in Kent State University's Department of Anthropology, has demonstrated that the atlatl (i.e., spear thrower) functions as an

"equalizer," a finding which supports women's potential active role as prehistoric hunters.

Bebber co-authored an article "Atlatl use equalizes female and male projectile weapon velocity" which was published in the journal *Scientific Reports*. Her co-authors include Metin I. Eren and Dexter Zirkle (a recent Ph.D. graduate) also in the Department of Anthropology at Kent State, Briggs Buchanan of University of Tulsa, and Robert Walker of the University of Missouri.

The atlatl is a handheld, rod-shaped device that employs leverage to launch a dart, and represents a major human technological innovation used in hunting and warfare since the Stone Age. The first javelins are at least hundreds of thousands of years old; the first atlatls are likely at least tens of thousands of years old.

"One hypothesis for forager atlatl adoption over its presumed predecessor, the thrown javelin, is that a diverse array of people could achieve equal performance results, thereby facilitating inclusive participation of more people in hunting activities," Bebber said.

Bebber's study tested this hypothesis via a systematic assessment of 2,160 weapon launch events by 108 people, all novices, (many of which were Kent State students) who used both javelins and atlatls. The results are consistent with the "atlatl equalizer [hypothesis](#)," showing that the atlatl not only increases the velocity of projectile weapons relative to thrown javelins, but that the atlatl equalizes the velocity of female- and male-launched projectiles.

"This result indicates that a javelin to atlatl transition would have promoted a unification, rather than division, of labor," Bebber said. "Our results suggest that female and male interments with atlatl weaponry should be interpreted similarly, and in some archaeological contexts

females could have been the atlatl's inventor."

"Many people tend to view women in the past as passive and that only males were hunters, but increasingly that does not seem to be the case," Bebber said. "Indeed, and perhaps most importantly, there seems to be a growing consilience among different fields—archaeology, ethnography, and now modern experiments—that women were likely active and successful hunters of game, big and small."

Since 2019, every semester Bebber takes her class outside to use the atlatl. She noticed that females picked it up very easily and could launch darts as far as the males with little effort.

"Often males became frustrated because they were trying too hard and attempting to use their strength to launch the darts," Bebber said.

"However, since the atlatl functions as a simple lever, it reduces the advantage of male's generally greater muscle strength."

"Given that females appear to benefit the most from atlatl use, it is certainly within the realm of possibility that in some contexts females invented the atlatl," Bebber said. "Likewise, in some [primate species](#), females invent tool technologies for hunting as documented among the Fongoli chimpanzees."

More information: Michelle R. Bebber et al, Atlatl use equalizes female and male projectile weapon velocity, *Scientific Reports* (2023). [DOI: 10.1038/s41598-023-40451-8](https://doi.org/10.1038/s41598-023-40451-8)

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