

Kinematic Comparisons of Strike Performance in Sand Boas (*Gongylphis colubrinus*).

Elva Wright & David Penning

For many snakes, striking plays a fundamental role in both predatory and defensive behaviors. With few exceptions, current literature focuses largely on snakes striking from a terrestrial location or in an aquatic environment. However, these two locations do not represent all of the ecosystems in which snakes are found. Several major lineages of snakes have become specialized for subterranean lifestyles. Using high-speed cameras and motion capture software, we describe and quantify the predatory strike behavior of Kenyan sand boas (*Gongylphis colubrinus*) in order to better understand the diversity of strike performances seen in snakes. We quantified five different variables that describe a snake's strike. Snakes (n=6) struck from very short distances (1.3 ± 0.72 cm; mean \pm SD) and reached their target very quickly (18 ± 3 milliseconds). Snakes produced high velocities (max velocity = 1.26 ± 0.53 m/s) and accelerations (144 ± 46.8 m/s²). Strike distance and duration display a negative relationship. Shorter strikes took less time than longer strikes. In general, measures of strike velocity and acceleration were positively correlated. Strikes with higher average accelerations had higher average and maximum velocities. Sand boa strike durations were significantly shorter than values reported on rattlesnakes from the literature. However, the strike distances measured from rattlesnakes are significantly longer than those of sand boas. Future comparison made on strike performance data should consider the correlative nature of strike variables when making inferences about multi-species comparisons.