

## The Evolution of Speed by Henry Aviles

The evolution of speed as a concept in training and athletics has traversed significant developments over the years, highlighting how our understanding of movement and performance continues to transform. I first began teaching speed development in 2010, embarking on a journey that would see my insights evolve from a simplistic view of speed to a more intricate understanding of its dynamics. By 2017, my analysis of speed training methodologies led me to identify the limitations of a two-dimensional approach to speed that had dominated the athletic landscape since the 1960s. This perspective primarily focused on linear acceleration and deceleration, failing to account for other critical dimensions of movement essential to athletic performance.

By the time I reached the 2010s, my understanding had crystallized into a more comprehensive three-dimensional framework that broadened the scope of speed training. This framework encompassed not only linear movements but also lateral and vertical dynamics, emphasizing that speed is not merely a function of straight-line running but a complex interaction of multiple movement vectors. However, the real breakthrough in my understanding occurred in 2018 when I incorporated a four-dimensional framework into my coaching philosophy. This model emphasized multi-directional movements and real-time dynamics, showcasing that speed is deeply contextual and response-oriented. It is shaped by the environment and the varying conditions encountered by athletes in their respective sports.

As I delved deeper into the intricacies of speed training, I began to appreciate the pivotal role of the transverse plane in movement dynamics. The transverse plane, which divides the body into upper and lower halves, plays an essential role in how athletes generate power and execute movements. I have come to understand that all actions are interconnected, revealing how the frontal and sagittal planes function as extensions of the transverse plane with specific biases that enhance athletic performance. For instance, a celebrated athlete like Usain Bolt perfectly exemplifies this interconnectedness; his acceleration pattern underscores how the harmonious interplay of lateral and rotational forces contributes to his remarkable forward motion. On a smaller scale, consider a baseball player attempting to steal a base. The synergy of lateral and rotational forces is crucial for facilitating swift linear motion, underscoring the importance of multi-dimensional training strategies.

My reflections on speed training have evolved to suggest that speed is not merely a physical attribute, such as raw sprinting power, but a complex intrinsic capability. This capability is significantly shaped by our interactions with the surrounding environment, reinforcing the idea that effective athletic training must account for external conditions, such as surface texture, incline, and atmospheric elements. I have recognized that the complexity of speed is layered, fundamentally requiring an adaptable framework to unlock its full potential and enhance athlete performance.

As my explorations progressed, I delved into the concept of biotensegrity, which emphasizes a balance between tension and compression within the body. This notion, in alignment with the spinal engine theory, posits that the spine itself acts as the core initiator of all movement. Understanding this paradigm has greatly enhanced my approach to training, as I have come to see that initiating movement through the spine generates axial rotation at ball-and-socket joints, such as the shoulders and hips. This mechanistic foundation enables athletes to shift their center of mass effectively, facilitating optimal force transfer and momentum usage. Moreover, the resultant spinal sequencing engenders torque across all joints, creating a blend of tension and compression that invigorates connective tissues and enhances overall structural integrity, ultimately culminating in a powerful elastic response during athletic performance.

The transition to this top-down approach has significantly contrasted with my previous methodologies, which focused primarily on isolated speed drills and linear sprinting practices. By prioritizing spine training—understanding its independent and interdependent forces—I have achieved notable improvements in enhancing athletes' speed and overall performance. The evolution of my training regime has not only yielded impressive results in increasing speed but has also led to a remarkable track record of minimizing injuries among athletes. This trend underscores the profound effects of a well-structured anatomical understanding of movement, allowing athletes to perform optimally while reducing their risk of injury.

In conclusion, I have come to assert a simple yet powerful axiom: when the spine is mobilized appropriately, all subsequent movements naturally align toward a transverse mode of execution. The evolution of speed encapsulates a broader journey of understanding movement as a complex interplay of forces and biomechanics, with

evaluating the transverse plane and the role of spinal dynamics emerging as key components. As I continue to refine my approach and integrate these principles into my training, the advancements in speed training I espouse represent not merely reactionary frameworks aimed at enhancing athletic performance but also a holistic understanding aimed at optimizing athlete safety and longevity. I remain dedicated to exploring the intricate relationships that govern speed, biomechanics, and overall athletic performance in greater depth, a journey that I feel is just beginning, "The Evolution of Speed."