

TITLE: Precision Form Training™ and Brain-Body-Voice [BBV] Systems: Priming the Systems for Warfighter Operational Readiness with Real-time Protocols, inclusive of the Proprioceptive System and Voice Mechanism

ABSTRACT: When priming the systems for warfighter operational readiness and decision making under pressure or threat, it is necessary to consider the combined performance level of all (human) systems. To date, current protocols for HPOIP [human performance optimization and injury prevention] have yet to fully integrate real-time evaluation and training protocols targeting the proprioceptive system simultaneously with performance of the vocal/glottal mechanism by monitoring physiological effects. Thus, to further enhance a whole body (holistic) system for warfighter operational readiness, with support from doctoral research and evidence-based practice(s), a more comprehensive Brain-Body-Voice [BBV] System that includes both the proprioceptive system and vocal mechanism should be considered.

The proprioceptive system, in context of a psychophysical discipline (i.e. Brain-Body), plays a significant role in sensorimotor control and neural feedback loop. The proprioceptive system is directly related to the central nervous system [CNS] via CNS proprioceptor sites, and with self-facilitated BBV training protocols, allows for real-time self-assessment, if corrective action is needed for performance optimization. The efficacy of a BBV protocol can be a stand-alone tool or integrated to further enhance other training protocols or methods; with or without data analytics from sensor-based metrics that assess performance level with proprietary KPERFORM™ algorithms.

The vocal/glottal mechanism coupled with performance of the proprioceptive system, can act as a gateway for all psychophysical disciplines, because it sits at the intersection between the CNS (e.g. Vagus Nerve) and 'breath to bloodstream' (e.g. O2 saturation). There are neural feedback loops associated with the vocal/glottal mechanism connected to both the vagus nerve and the sensorimotor system. Through the lens of sport science, since we can target performance of the proprioceptive system, we can thereby also optimize the biomechanical system for stability and power simultaneously. This new approach to priming the systems for performance readiness by targeting the proprioceptive system before the biomechanical system, can be activated with a unique neuromuscular sequencing with matched breath patterns in a BBV protocol such as Precision Form Training™ [PFT].

This poster presentation will focus on introducing considerations to optimizing the neural feedback system via Precision Form Training™ (PFT) targeting performance of the proprioceptive system coupled with the vocal/glottal mechanism, thereby improving the neural feedforward system for overall human performance optimization and injury prevention. The PFT/BBV protocol will be discussed via training parameters that target the proprioceptive field, center of pressure (COP), the use of breath perturbations for core strength and power, and the importance of eye focus and laryngeal stabilization.

The PFT protocol, supported by BBV, enables the warfighter to assess and self-correct in real-time by monitoring human systems accessible to them. Delivered with strength and conditioning training tools (i.e. exercises and programs), the warfighter would be able to not only optimize their neuromusculoskeletal systems, but also monitor and control performance of the vocal mechanism 'gateway', activating additional systems (e.g. O2 saturation level), for a more comprehensive approach to priming combined systems for operational readiness.

The approach to training by simultaneously optimizing biomechanics and neurophysiology, can further inform the discipline of neuromechanics. With the rapid rate of development in sensor-based technologies for human performance and human-machine teaming, considering all human (i.e. analog), digital and combined systems (i.e. phygital) will be critical. Thus, considering real-time algorithms that optimize the BBV gateway for priming combined human systems, may enhance the rules-based system that informs the machine learning (ML) and AI for Human Performance related technologies