 Personalized Blood flow restriction (BFR) rehabilitation is a new and novel technique that utilizes a specialized tourniquet system to reduce vascular flow in and out of an exercising limb to induce strength and hypertrophy responses at very low loads. BFR shows promising ability to activate muscle protein synthesis at these very low loads, which may serve as a powerful tool to mitigate the atrophic effects of anabolic resistance. Increased up-regulation of MSC’s seen with BFR compared to low-level exercise under free-flow conditions may lead to rehabilitation guidelines at the cellular level.

Furthermore, intermittent bouts of muscle ischemia in the absence of exercise have demonstrated protective effects of remote organs such as the heart and kidneys. Recently, similar protocols, termed Ischemic Preconditioning (IPC), have been applied to the extremities before or after strenuous exercise bouts and demonstrated a protective effect on muscle tissue and a more rapid return of physical performance and strength measures.

The purpose of this educational session is to (1) review the available BFR and IPC basic science and evidence, (2) discuss the potential clinical application within military and civilian rehabilitation settings, and (3) provide detailed case examples of the application of these treatment interventions.