Mechanisms of Injury

Effect of Body Orientation to Blast on Risk of Post Concussive Symptoms among Active Duty Service Members

Researchers from DVBIC, sponsored by the NICoE, investigated whether the postconcussive symptoms of active duty Service Members were affected by the body's orientation to a blast wave. Animal models of blast exposure have previously demonstrated that front (head-on) or top blast exposure increases overpressure through the brain more than left, right, or bottom exposure, resulting in greater intercranial pressure. This greater pressure may increase the likelihood of associated neuropathology and symptomatology following a TBI. Study participants were military Service Members with a reported history of one or more blast-related mTBI (n = 1,134); only the most recent mTBI was examined in the study. Participants were between one and 24 months post-injury and symptoms were measured with the Neurobehavioral Symptom Inventory. For individuals with no prior history of blast exposure, a front or top orientation to a blast that resulted in mTBI was associated with increased neurobehavioral symptoms. This study suggests that body orientation to blast may be an important characteristic to consider during clinical assessments to help understand neurobehavioral sequelae from blast-related mTBIs.