

## **SIMULATED HEAD AND NECK RESPONSES WITH EOD HELMET AND COLLAR PROTECTION**

Ming Cheng, Jeffrey Levine, Jean-Philippe Dionne, Aris Makris

*Med-Eng, 2400 St. Laurent Blvd., Ottawa, Ontario, K1G 6C4, Canada*

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Blast-induced Traumatic Brain Injury (TBI) is considered as the signature injury in recent military conflicts and represents a significant potential threat to bomb technicians. In a previous study, the global head kinematics of a Hybrid III mannequin located in front of a rigid wall was subjected to explosive blast through an FEA model. The mannequin was struck by both the incident blast wave and the reflected blast wave travelling in the opposite direction. Detailed sagittal and transverse models of the human head were subjected to a similar reflecting wall loading scenario to compare the global kinematic response with the tissue-level response. The findings from this study emphasized the need to consider blast confinement and the surrounding environment in the development of blast injury criteria for the head and brain.

The current study extends the previous investigation by considering the effect of personal protective equipment, namely an Explosive Ordnance Disposal (EOD) Helmet and Collar. The same FEA model, this time equipped with EOD protection, was subjected to the same explosive blast loading. In addition to further generalizing the findings from the previous study, the current results also provided insight into the effectiveness of EOD helmet systems in reducing loading to the head and neck.