

The findings also indicate that low severity impact tests for helmets in addition to tests at high levels of impact are unnecessary. Testing on a number of current helmet models suggests that helmet response to impacts within prescribed helmet capabilities is largely determined by the maximum severity test and the deceleration criterion set for any single impact severity in that range. Within that range, the peak deceleration versus impact severity for all the helmets tested is approximately linear; the designer can choose the range of severities and possibly the slope at which peak deceleration increases throughout that range but not much else. Tests and well selected criteria based on the most severe impacts for which the helmet is to be effective should be sufficient to establish reasonable compliance with the deceleration limits identified for injury reduction at all levels of impact severity. The concern that helmets might be somehow “excessively optimized” increasing the risk of injury in low severity crashes is baseless.

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