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A study of Injury Analysis Model for Hybrid III Type and Thoracic Injury Criteria for Elderly Korean Occupant

[1]Wanhee, Han[*], [1]Kiseong, Kim, [2]Younghan, Youn, [3]Kyonghan, Yoon
[1] Graduate school, School of Mechatronics Engineering, Korea University of Technology and Education, 307 Gajun-ri, Byungchun-myun, Choenan, Chungnam, 330-708, KOREA
[2] Professor, School of Mechatronics Engineering, Korea University of Technology and Education, 307 Gajun-ri, Byungchun-myun, Choenan, Chungnam, 330-708, KOREA
[3] Korea Automobile Testing and Research Institute, 625 Samjon-ri, Songsan-myun, Hwaseung-si, Gyeonggi-do, 445-871, KOREA

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ABSTRACT - According to 2005 national census, more than 65 year older population is about 10 % of total 48 millions population. In 2030, the elderly rate will be reached up to 23%. The statistical analysis of elderly traffic accident from the national policy report, the elderly fatalities was 2,183(33.3% of 6,563) in 2004. This was the double increase compared with 14 years ago. In 1994, elderly fatality was 1,748(17.3%). Elderly driver and passengers have a disproportionately higher crash involvement rate and commonly sustain more severe injuries than the other generation.

The current frontal impact regulation of Korean safety standard(KMVSS 102) is based on the FMVSS 208 to protect the motor vehicle occupant in the event of frontal crash type accidents. The injury criteria utilized in the regulation is based on 50%tile Hybrid III dummies in both driver and passenger sides. Therefore, no motor vehicle standards in Korean are designed to specially address the needs of elderly persons. Since the elderly population is rapidly increasing, it is more important to improve the our safety standard to mitigate elderly casualties.

A primary objective of the study is to develop a guideline or standard for elderly occupants protection with new injury criteria on the frontal impact regulation and to develop a elderly injury analysis model of Hybrid III type to evaluate the restraint systems as friendly seat belt to elderly occupants. The physical characteristics of elderly Korean occupant are relatively small and lighter than that of western elderly. Data from SizeKorea database (total surveyed number of subjects in SizeKorea database was 14,200 between 0 to 90 years old), the 50%tile height and weight of the subjects in target group(527 male sample) were 162.8 cm and 63kg, respectively.