

- The maximum impulse was better predicted with a scaling method assuming that the stiffness (force-deflection) does not scale.

VI. REFERENCES

- [1] World Health Organization. (2015) Global Status Report on Road Safety 2015.
- [2] Institute for Traffic Accident Research and Data Analysis. (2015) Traffic Accident Statistics 2015 (in Japanese).
- [3] European Enhanced Vehicle-safety Committee. (1998) EEVC Working Group 17 Report - Improved test methods to evaluate pedestrian protection afforded by passenger cars.
- [4] Liers, H. Benefit Estimation of the Euro NCAP pedestrian rating concerning real world pedestrian safety. Proceedings of 21st ESV Conference, 2009, Stuttgart (Germany), Paper Number 09-0387.
- [5] Strandroth, J., Rizzi, M., Sternlund, S., Lie, A., Tingvall, C. (2011) The Correlation Between Pedestrian Injury Severity in Real-Life Crashes and Euro NCAP Pedestrian Test Results. *Traffic Injury prevention*, **12**(6): pp.604–13.
- [6] Takahashi, Y., Asanuma, H., Yanaoka, T. Development of a Full-Body Human FE Model for Pedestrian Crash Reconstructions. *Proceedings of IRCOBI Conference*, 2015, Lyon (France).
- [7] Ministry of Health, Labour and Welfare. (2013) National Health and Nutrition Survey 2012 (in Japanese).
- [8] Robbins, D.H. (1983) Anthropometric Specifications for Mid-sized Male Dummy, Volume 2. The University of Michigan Transportation Research Institute, Report Number UMTRI-83-53-2.
- [9] Konosu, A., Issiki, T., Tanahashi, M., Suzuki, H. Development of a Flexible Pedestrian Legform Impactor Type GT (Flex-GT). *Proceedings of 20th ESV Conference*, 2007, Lyon, France, Paper Number 07-0178.
- [10] Konosu, A., Issiki, T., Takahashi, Y. Evaluation of the Validity of the Tibia Fracture Assessment using the Upper Tibia Acceleration Employed in the TRL Legform Impactor. *Proceedings of IRCOBI Conference*, 2009, York (UK).
- [11] Takahashi, Y., Ikeda, M., Imaizumi, I., Kikuchi, Y., Takeishi, S. Validation of Pedestrian Lower Limb Injury Assessment using Subsystem Impactors. *Proceedings of IRCOBI Conference*, 2012, Dublin (Ireland).
- [12] Takahashi, Y., Imaizumi, I., Asanuma, H., Ikeda, M. Responses of the Flexible Legform Impactor in Car Impacts. *Proceedings of IRCOBI Conference*, 2013, Gothenburg (Sweden).
- [13] Untaroiu, C., Meissner, M. *et al.* (2009) Crash reconstruction of pedestrian accidents using optimization techniques. *International Journal of Impact Engineering*, **36**(2): pp.210–19.
- [14] United Nations. Addendum 126: Regulation No. 127 – 01 series of amendments to the Regulation, 2015, Document Number E/ECE/324/Rev.2/Add.126/Rev.1–E/ECE/TRANS/505/Rev.2/Add.126/Rev.1.
- [15] Takahashi, Y., Matsuoka, F., Okuyama, H., Imaizumi, I. (2012) Development of Injury Probability Functions for the Flexible Pedestrian Legform Impactor. *SAE International Journal of Passenger Cars - Mechanical Systems*, **5**(1): pp.242–52.
- [16] Eppinger, R. Prediction of Thoracic Injury Using Measurable Experimental Parameters. *Proceedings of the International Conference on Experimental Safety Vehicles*, 1976, London (UK).

VII. APPENDIX

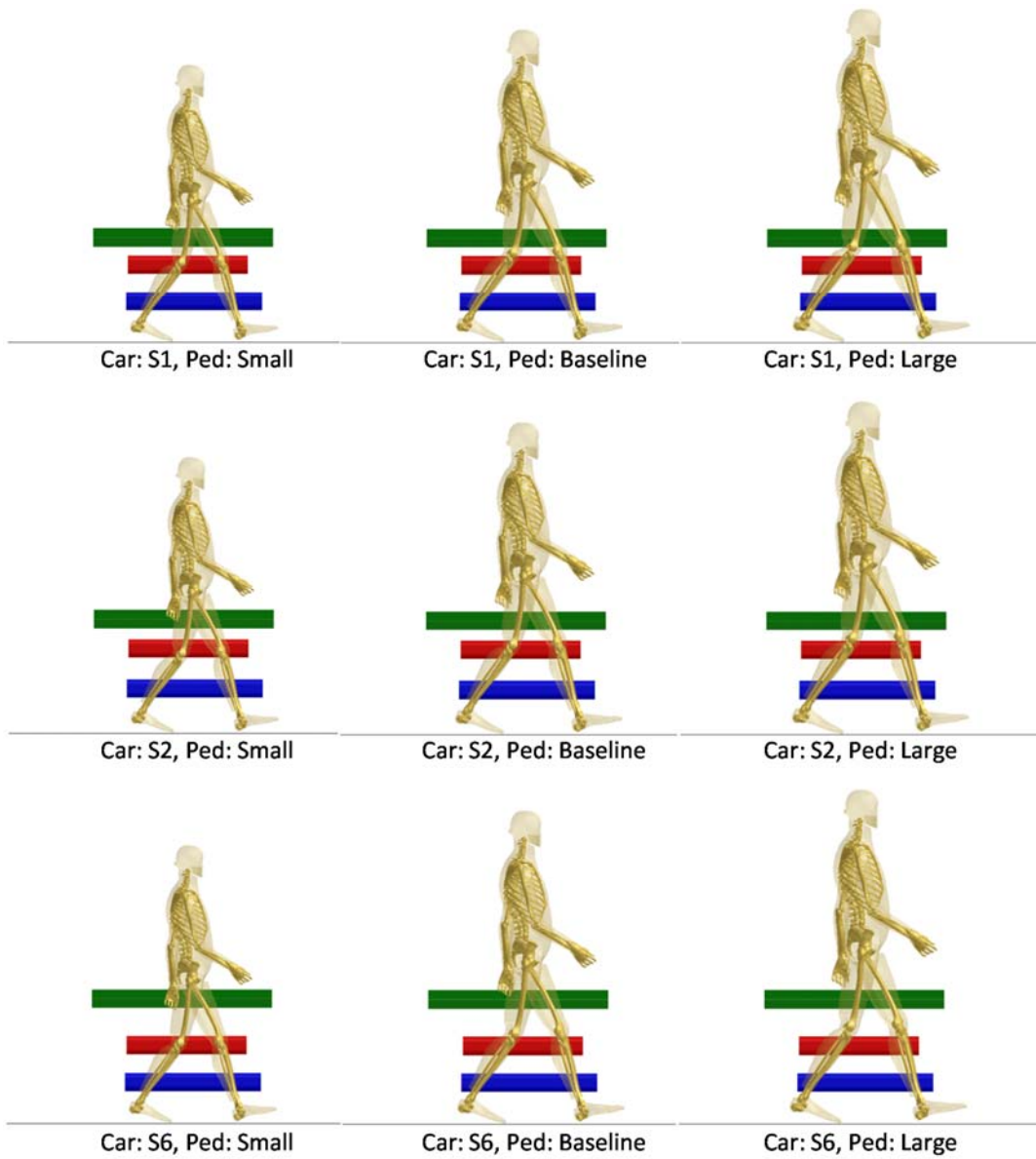


Fig. A1. Impact simulation setup for all combinations of three simplified car models and three pedestrian models.

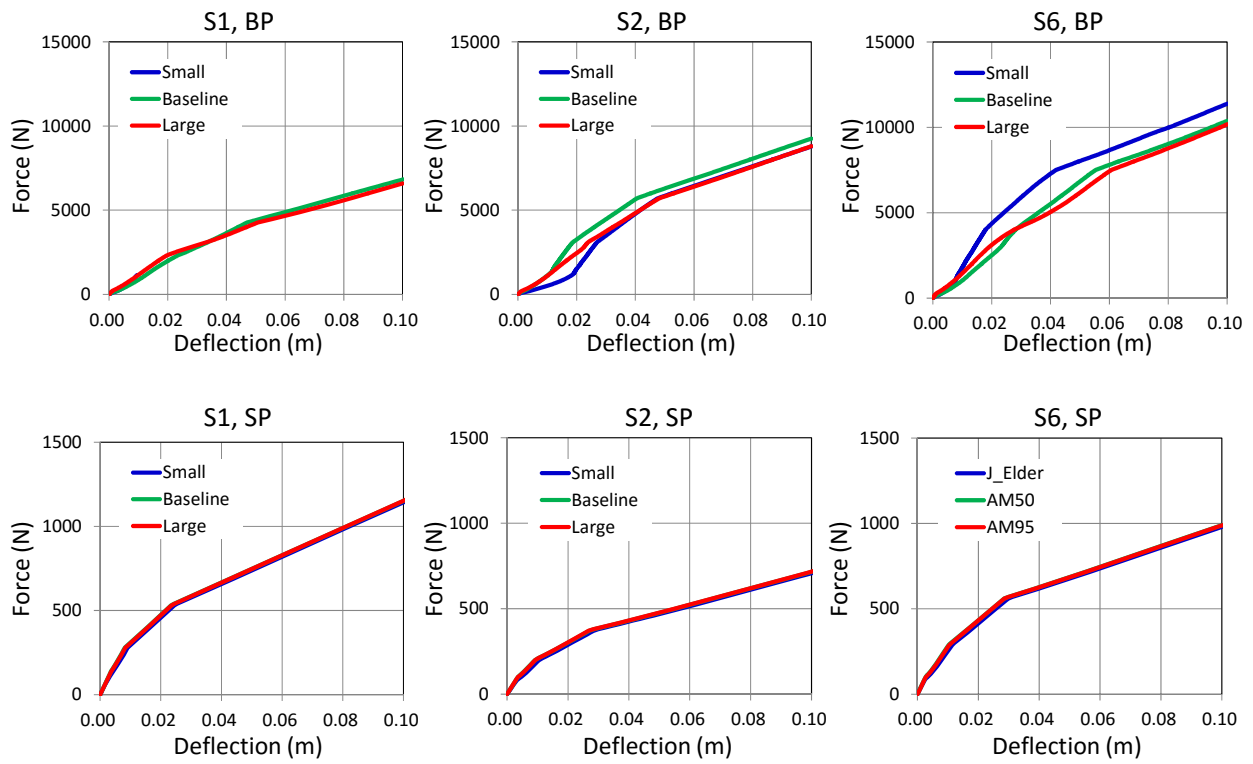


Fig. A2. Comparison of combined stiffness curves between pedestrian models in different sizes.