International Conference on Safety and Mobility of Vulnerable Road Users: Pedestrians, Motorcyclists, and Bicyclists

Jerusalem, Israel, May 30-June 2, 2010

Title: DEVELOPMENT OF COMPUTATIONAL MODELS AND DATABASES TO INVESTIGATE PEDESTRIAN RELATED ACCIDENTS

Presenting Author: <u>Bruno Martins</u>

Authors: J. M. Dias 1;B. A. Martins 1;

<u>Affiliation</u>
1. Mechanical Engineering Department, Technical University of Lisbon, Lisbon, Portugal,

Abstract:
The number of accidents with pedestrians in Portugal has been decreasing in the past years; however it's still a problem. Having this in mind, a study was made about these accidents between 2006 and 2008; an observation study regarding the behavior of drivers and pedestrians when confronted with the time intervals of signals, on signalized crossroads; a questionnaire to drivers and pedestrians to determine their knowledge, behavior and risk evaluation skills. Using Microsoft Access, two databases were created applying the PENDANT and ANSR models of info gathering. The main goals were to interact with information in a much easier, safer and organized way, particularly in case of a statistical analysis. Examples of real accident reconstructions were presented. This made possible to show the variety of parameters that influence this kind of work. Using an existent model of an accident with a pedestrian with multibody and FEA on MADYMO, the influence of the pedestrian speed on the post-impact dynamics and on the injuries sustained was studied. One concludes that the fact of just knowing how to behave on the road isn't sufficient to prevent accidents. This was not only detected on the statistical analysis but also was detected while assessing the results of the questionnaires. On the observation study became clear that one of the causes for risk behavior is linked to the signal times on crossroads. It was determined that there's a link between pedestrian speed and both his injuries and his first body part that hits the ground.