| 59 | CHILDREN ON ALL-TERRAIN VEHICLES: DEVELOPMENT OF SIMULATED CRASH SCENARIOS FOR EDUCATIONAL INTERVENTION |

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Background All-terrain vehicle (ATV) rollover crashes are associated with major injuries and deaths. ATV and rider kinematics in rollover incidents are poorly understood. Computer simulation techniques for modelling crash events provides an opportunity to

evaluate and improve the vehicle dynamic performance to prevent injuries.

Objectives To develop computer simulation models of ATV rollover events of child and adult riders using previously validated model of an adult-sized ATV.

Methods Simulations of ATVs with biofidelic models of 6-year-old and 10-year-old child riders were produced using MADYMO software. Crash simulations of ATVs under varying conditions of speed and slope were produced with underlying assumptions of grip and surface conditions. Video animations/movies were developed from the simulations.

Results The validated computer model of the ATV demonstrated rollover crashes at 10 MPH and 30° with the child riders. This study standardises a methodology for differing scenarios of ATV use and for injury pattern analysis. Validation of models for grip strength and tire/surface contact interaction are planned.

Significance The validated computer model of an adult-sized ATV and video animations demonstrating dynamic performance of ATVs with child riders provides a potential educational tool to convey risks and promote safety. These models may support studies of injury patterns and improved designs for ATVs and protective gear.