INTRODUCTION

Background:
The forward facing position increases injury risk to the lower extremity.
• The legs can collide with the front seat back, especially in a frontal collision.

Project Objectives:
• Evaluate the anthropometric characteristics of the ankle in children 4-7 and 8-12 year-olds and compare values to the current 6 and 10 year-old ATDs.
• Evaluate ankle range of motion (ROM) in plantar flexion, dorsiflexion, inversion, and eversion.
• Evaluate ankle stiffness using an isokinetic dynamometer in plantar flexion, dorsiflexion, inversion, and eversion.

RESULTS

Results:
• The volunteer data collected supports current 6 & 10 year-old ATD anthropometry.
• The data shows between group differences in ROM in some dorsiflexion and inversion measurements.
• The data provides evidence that ankle ROM in the 4-7 year-olds is consistently greater than the 8-12 year-olds.
• Stiffness in the 4-7 year-olds was significantly less than the 8-14 year-olds.
• Stiffness targets were developed for future use in the development of a more biofidelic ATD ankle.

Conclusions
The volunteer data collected will be used in future projects for the development of a more biofidelic child ATD ankle and leg.

PRESENTATIONS


Range of Motion and Stiffness of the Pediatric Ankle and Implications for Current ATDs (Oral Presentation). International Research Council on the Biomechanics of Injury Conference (IRCOBI), Gothenburg, Sweden, September 11, 2013.


PUBLICATIONS
