



Characterization of Video-Recorded Falls Involving Children in a Childcare Setting

Danielle Cory¹, Gina Bertocci¹, Angela Thompson², Bret Hilt¹, Craig Smalley¹, Nathan Brown¹, Raymond Dsouza¹, Karen Bertocci¹, Keyonna McKinsey¹
1- Department of Bioengineering, University of Louisville, Louisville KY
2 - Department of Engineering Fundamentals, University of Louisville



This project was funded by Award No. 2017-DN-BX-0158, from the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect those of the Department of Justice. This project was supported by the University of Louisville IRB # 16.1030.

Background

- Difficult for clinicians to differentiate injuries resulting from accident vs. abuse, especially in non-verbal children^{1,2}
- Short distance fall is the most common falsely reported injury scenario when a child presents for medical care and the caregiver is concealing abuse
- There is a lack of reliably witnessed falls with known injury outcomes

Objectives

- 1: Characterize video-recorded short distance falls involving young children and identify injury outcomes.
- 2: Identify the primary body region(s) impacted during the fall

Methods

- Conducted observations of two childcare classrooms with children aged 12-25 months
- Captured fall events via video recordings using 3 digital cameras per room.
 - Each video-recorded fall was characterized.
 - Characterizations were analyzed for frequency of each outcome
- Primary impacts to body regions were determined
 - Defined as the body region qualitatively judged to dissipate the greatest amount of fall energy as the child impacted a surface

References

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Results

- 100 video-recorded falls involving 8 children
- Children aged 17-25 months (mean \pm SD: 20 \pm 2 months)
- 62% female, 38% male
- 65% of falls involved males and 35% of falls involved females
- No injuries occurred in any of these falls

CHARACTERIZATION OF VIDEO-RECORDED FALLS

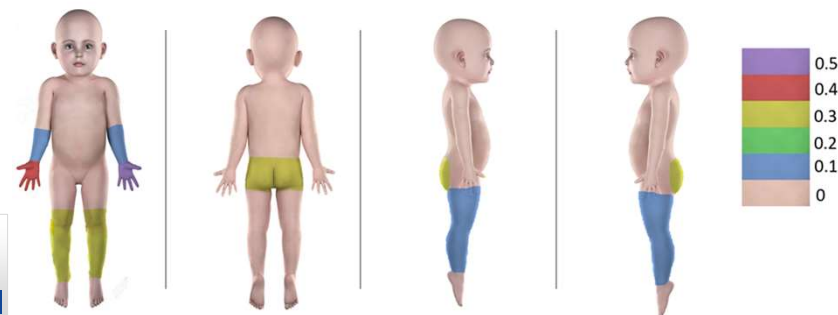
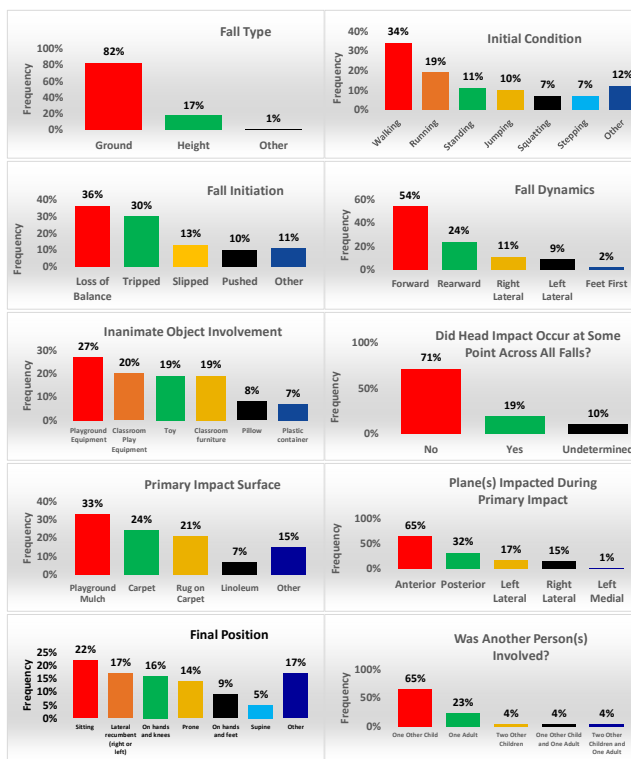


Figure 1: Rate of primary impact to body regions in pediatric falls (n=100 falls)

Discussion

- The falls in this dataset provided an overall understanding of the common characteristics experienced in common short-distance falls
- Most falls resulted in impacts that involved a combination of a lateral body plane with either the anterior or posterior body planes
 - It was extremely rare for falls to involve multiple planes of impact that were opposite each other
 - Previous studies^{2,3,5} have also indicated that short-distance falls do not result in impact to opposite body planes

Clinical and judicial relevance

- The developed body region impact map may help investigators better understand the commonly impacted body regions/planes involved in common pediatric short-distance falls
- Primary impact region may be the body region(s) with the greatest potential for injury/evidence of impact (e.g. bruise)
- This may improve their ability to assess whether a fall history provided by a caregiver could adequately explain a child's presenting injuries

Limitations

- Involved a small sample of the first 100 falls from a larger study
- All falls occurred in a supervised, safe childcare setting

Future work

- Ongoing data collection at the same childcare center including collection of injury incident reports

Conclusions

- The falls in this dataset provided an overall understanding of the common dynamics and body region impacts that are experienced in common pediatric short-distance falls in a childcare setting
- None of these falls produced any injury

This knowledge could potentially aid in the differentiation of accidental versus abusive injuries in the presence of a fall history