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 Bertocci2, Keyonna McKinney1
1 - Department of Bioengineering, University of Louisville, Louisville KY
2 - Department of Engineering Fundamentals, University of Louisville

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Background
• Difficult for clinicians to differentiate injuries resulting from accident vs. abuse, especially in non-verbal children
• 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

Results
• 100 video-recorded falls involving 8 children
  • Children aged 17-25 months (mean ± SD: 20 ± 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

<table>
<thead>
<tr>
<th>Fall Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground</td>
<td>53%</td>
</tr>
<tr>
<td>Height</td>
<td>27%</td>
</tr>
<tr>
<td>Other</td>
<td>19%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initial Condition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground</td>
<td>49%</td>
</tr>
<tr>
<td>Height</td>
<td>34%</td>
</tr>
<tr>
<td>Other</td>
<td>17%</td>
</tr>
</tbody>
</table>

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 studies1-5 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

References