**Introduction:** On-site workplace observations allow researchers to determine harmful aspects of work and implement mitigation strategies. Daycare workers are a specific population that may be at a high risk of injury due to the unique loads and postures assumed through work. The purpose of the current study was to examine daycare workers throughout a shift and identify potentially harmful tasks, in order to make recommendations on how to prevent injury risk in the workplace.

**Methods:** Data were collected for 17 female subjects (from 4 daycares) with a mean weight and height of 70.0 ± 14.0 kg and 163.5 ± 7.0 cm, respectively. Subjects were instrumented with a two dimensional postural Inertial Measurement Unit (IMU) [1] capable of monitoring pelvis and upper trunk orientation (not presented here) and trunk flexion/extension, lateral bending and twist. Postural and video data were recorded for the first half of the worker's shift (typically 3-4 hours).

**Results:** Amplitude Probability Distribution Functions (APDFs) were calculated for each motion and were averaged for each of the three child age groups and for the group as a whole. For forward flexion/extension (Fig 1) the baby and toddler groups showed forward flexion of 28.7º and 23.0º at the 50th percentile and 55.4º and 60.4º at the 90th percentile respectively, whereas the pre-school values were much lower at 15.3º (50th) and 41.0º (90th). A similar trend was noted in the lateral bending APDFs and no differences between groups were noted in the twist APDFs.

**Discussion and Conclusions:** There was a notable difference in trunk flexion-extension and in lateral bending between the age groups. The forward flexion results showed that for 10% of the shift, on average workers assumed postures of high flexion (>51º). Looking at each group individually suggests that working with the older children become less posturally demanding than the younger age groups. However, all groups demonstrated large forward flexed postures that could be harmful. Future work includes task specific posture data, from video, to be analyzed in order to isolate the tasks with the highest risk of injury as well as lifting posture analysis.

**References:**