

Paper ID:	1571068742
Paper Title:	Determining the Optimal Parameters for Preventing Backward Falls Using a Human Movement Dataset: An Investigative Study
Authors:	Keito Romteera Yoneyama (King Mongkut's Institute of Technology Ladkrabang, Thailand)
Email:	66156001@kmitl.ac.th

Abstract

Falls are a major health concern, particularly for the elderly, as they often lead to severe injuries like hip fractures. Fortunately, there are a lot of publicly available datasets that can offer valuable insights regarding the mechanics of falls and activities of daily living. This study aims to determine the optimal prevention threshold for backward falls using available datasets, thereby avoiding any fall-related injuries. The methodology employed in this study involves identifying the prominent peaks of acceleration and angular velocity on the graph. The Pythagorean Theorem is used to calculate the resultant acceleration, while differences are computed to determine the changes in angular velocity. The results from 150 samples shows that the acceleration for the prevention threshold range is between 3.016m/s^2 - 4.308m/s^2 and the average angular velocity is 0.522rad/s - 0.746rad/s which not only prevents a person from falling backward but will also be able to distinguish between activities of daily living. In conclusion, using existing dataset can offer essential knowledge into fall detection and servers as a foundation for determining the optimal fall prevention threshold.
