

Non-Intrusive Fall Protection Device, System, and Method

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Seniors 65 and over are five times more likely to have a fall-related injury than any other injury. In the U.S., 1/3 to 1/2 of people over age 65 will experience some kind of fall in any given year and 9,500 of them will die as a result. The elderly represent more than one third of all hospital injury admissions, and more than 80% of these injuries are caused by falls. Consequences of serious falls include death, substantial medical expenses, loss of independence, or having to move into a nursing home. One in eight people in the US is age 65 or over. And the age 85 and over group is the fastest-growing group. Hospital stays are usually twice as long as those from non-fall injuries. 60% of all falls occur in private homes. 60% of nursing home residents are prone to fall. The chart below shows vividly, the degree to which seniors are much more prone to death by falling than any other age group.

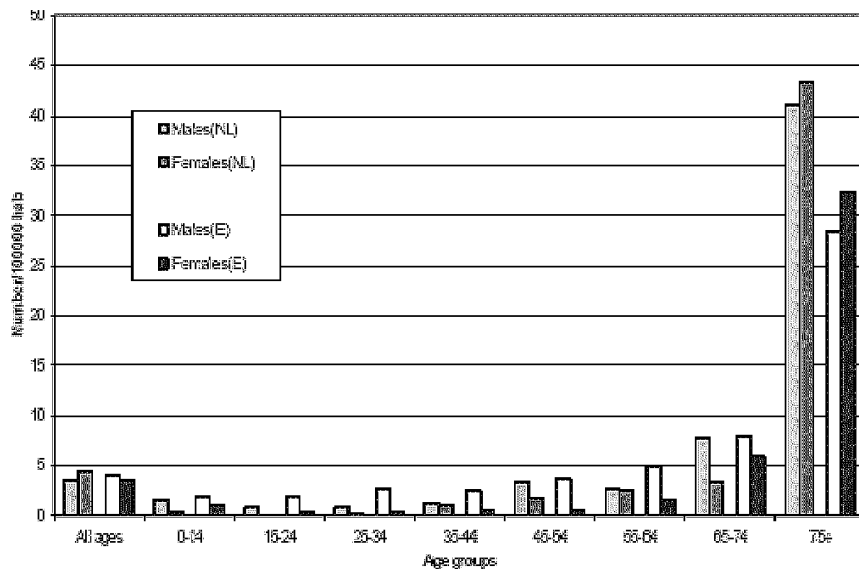


Figure 1.1 Deaths caused by accidental falls grouped by age as reported by the World Health Organization (WHO). NL: The Netherlands (1997). E: Spain (1995).

In the U.S. the direct cost of falls was \$20.2 billion in 1994. This figure is expected to rise to more than \$43 billion in 2020 and some studies suggests this will climb to over \$240 billion by 2040. Potentially larger are looming nursing home costs which are expected to soar with the “graying” of the “Baby Boomers.” If people can comfortably live at home, fewer burdens will be placed on the nation’s healthcare and insurance system to support them and the new generation of seniors can maintain their highly desired independence for a longer period of time and remain contributing members of society.

The device and system described in this patent covers the use all sensors known to be useful for human body motion, including video cameras, and microwave and acoustic imaging, as well as very small sensors that might be worn on the body, which would sense the onset of a fall and change the immediate environment in such a way as to minimize injury from the fall. To the best of our knowledge, this patent is extraordinarily broad in scope. All other fall protection systems require some effort on the part of the user, and are intrusive in various ways. Among the devices described include several embodiments of floors which change “state” in response to a human falling from load bearing to cushioning, as well as employment of airbag-type systems.

It also is not limited to home care systems for the elderly, but could be used in any place where falling from a walking or standing position is of concern, which might also include government offices, playgrounds, reception areas, and nursing homes.

In addition to the immediate benefits of reducing fall injuries in elderly, because of the required tracking system, it also presents an opportunity to integrate with other “smart” home devices and concepts which have heretofore been difficult to market. Large companies in this market, such as Intel, searching for new markets for its new generations of chip sets would be a possible partner.

