

(Written to appeal to the common sense of parents regarding the health and safety of their children, themselves, and their parents)

## **‘Safe Falling Should Be Required Training in Schools’**

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There have been too many injuries and deaths from falling that could have been avoided by simple educational programs. There is wide agreement that many, if not most, fall related injuries and deaths could have been avoided. For instance, children (and untrained adults and seniors) when falling backwards naturally tend to land on an outstretched straight arms with the thumb turned outward ... a behavior that is almost certain to cause wrist, arm, elbow, or shoulder injury. This type of injury can almost completely be avoided by absorbing the fall across a larger surface area, e.g., by initiating a roll, and by making contact with the ground using a bent arm with the thumb turned inward. Why doesn't everyone know this? Why aren't we doing something to get the word out and train children (as well as their parents and grand parents) to acquire safe falling skills (and provide opportunities to maintain these skills once learned)?

Much like swimming proficiency should be required for everyone living near water, safe falling ability should be a required educational proficiency for everyone walking on land. Further, this should be a trans-generational requirement: many adults and seniors in our society need remedial training having missed this preparation in childhood. A strategic plan to train teachers to teach safe falling to everyone is much needed, NOW.

Falls happen, at all ages, and the probability of resulting injury is greatly influenced by safe falling experience... those with falling skill tend to sustain little or no damage. This means **injuries from falling can be prevented by fall training** yet this is not emphasized in physical education curricula and not even in most national and international fall preventions programs, mostly because of a lack of adequately trained instructors and facilities designed for practicing safe falls. Therefore, until such training is mandated by government requirements and integrated into existing school systems families may benefit greatly by participating in alternatives that provide varying levels of training in every community in the form of private schools offering courses in martial arts, trampoline-tumbling, gymnastics, etc.

### **Problem**

Falls are the leading cause of fatalities and injury-related hospitalizations among Hawaii senior citizens 65 years and older. There are too many fatalities (in 1998, 4.7 deaths/100,000 in the US; 5.6/100,000 in Hawaii) and injuries from falls that could have been prevented by the training of safe falling habits/skills/maneuvers.

### **Importance**

This problem affects everyone in Hawaii—all those at risk of falling for whatever reason in the coming year. Although all ages are involved, the significance of this problem might best be viewed from the oldest and frailest first.

Falls are a major threat to health, independence and quality of life of Hawaii seniors (age 65 and older) and the leading cause of fatal injuries and injury-related hospitalizations. Although falls can happen to everyone, the rate of injuries from falls among the elderly is disproportionate to the rest of the population and the situation is even worse in Hawaii. In 1998, there were 4.7 deaths per 100,000 population caused by falls (age adjusted to the year 2000 standard population). In Hawaii at this time there were 5.6 deaths per 100,000 population. For the elderly

in Hawai'i, fatal and nonfatal falls contribute more to death and disability than all other causes. Fall prevention programs for seniors such as home safety monitoring, exercise, balance/skills building, and medication management are effective in reducing fall frequency and injury severity but these programs only benefit a small proportion of Hawaii's elderly population. (Information from the Hawaii Statewide Fall Prevention Consortium and the Healthy People 2010 Program to Reduce Deaths From Falls and Fall-Related Injuries)

Fatalities and injuries from falls vary by age group in terms of the circumstances surrounding the incident. In adults, deaths and injuries are most often connected to occupational activities. Occupational safety and health fall prevention programs, usually involving work environment modifications and safety education, have significantly reduced reported losses but the author has heard of no systematic attempts at employee safe fall training. In children, losses are most associated with sporting and other risk-taking activities, often performed on hard, unprotected surfaces with little or no safety gear used. Extreme and gravity sports have become popular and increased incident statistics. Current educational training in safe falling and fall prevention does not appear successful. Infants are usually inexperienced, untrained, unprotected, and truly victims of the environments created by adults. Infant losses are tragic and such losses could be dramatically reduced by safe fall education of adults (and their children).

Sadly, to know that many of the injuries and fatalities from falling can be avoided by training children (as well as adults and seniors) in safe falling techniques and then NOT doing so is foolish. Attention will be given to this safe fall education because of its importance, but it is a shame that it is slow in coming. If the knowledge is available, the puzzling question is, 'why have we not fixed this problem sooner?'

### **Cause**

There are many reasons why humans are poor fallers but the main reason is that safe falling ability is learned and most individuals are not proficient because they have not had the opportunity to learn, have refused to try, or have tried and have been unsuccessful in acquiring necessary skills. Among the list of excuses for not knowing how to fall safely are:

- There are no comprehensive books and curricula on fall training that can be generalized across students of all ages and abilities;
- Current teachers did not receive safe fall training at their universities when they were being certified to teach ... generally there is a shortage of teachers qualified to teach safe falling activities;
- Throughout the US there has been a decreased emphasis on physical education and PE priorities have gone to other activities that are perceived as more enjoyable by students;
- Schools often lack soft mats and other surfaces for training safe landings; and
- ***It is not required*** (i.e., it is not mandated in schools or the workplace)!

### **Proposed Solution**

**Education**—teach everyone how to fall safely. 'Everyone' is the key word. The training must be 'required' or everyone will not receive it. The willing can help the unwilling, but eventually the benefits will be convincing. Some will become great fallers, and should demonstrate their skill, while others will remain unskilled and at risk, but even those that do not acquire the ability will have the knowledge of proper techniques (to convey to others), can make better choices about their personal health and safety, and can take action in many other ways. The steps in this proposed educational strategic plan are simple:

1. **Research** to derive the essential knowledge and the most efficient method of imparting the information and training Hawaii citizens;

2. **Pilot testing** the proposed curriculum and training procedures and revising as appropriate;
3. **Beta testing** curricula and pedagogy to a larger population and revising as appropriate based on information from students and professionals in the field (pediatricians, geriatricians, teachers, coaches, sports masters, wise leader, etc.);
4. **Initiating campaign** to raise public awareness and obtain support for legislation;
5. **Law made requiring safe fall training** for students and made available to everyone else in Hawaii; and finally
6. **Full implementation.**

### Interim Fix

Readers should go where they can in their community to investigate opportunities for training in safe falling. For instance, there are 12 gymnastics clubs on Oahu (18 total in the state), all equipped with soft mats and personnel trained in the flipping and rolling of children; numerous dojos for martial arts that have a wealth of experience in break-fall training; and established seniors programs in fall prevention.

### Local Action Taken

In 1999 Hawaii Academy, a private school for lifetime fitness that has gymnasiums and qualified personnel for teaching fall training, initiated research and clinical services to investigate intervention strategies and fall techniques for reducing fall frequency and the severity of injury from falls for individuals of all ages and abilities. Years of pilot testing innovative ergonomic and sport related approaches to falling techniques has led to development of a practical fall training curriculum that is undergoing beta testing this year before being integrated into the Academy's physical education, recreation, and competitive athletics programs (involving 1000 students). The current challenge is identifying efficient ways to train (and certify) instructors of different ages and backgrounds who will then teach students across a wide spectrum of ages and abilities.

Since 1999, each Monday morning a group of seniors have been gathering to exercise with the author and share stories of their struggle to cope with aging, disease, injury, and other assaults on their activities of daily living and independence. Significant improvements in balance and stability have serendipitously accompanied falling and rolling repetitions on soft mats, especially in seniors 80-100 years of age. Probably most gratifying has been seeing numerous cases of dramatic recovery of many lost functions, including balancing ability, and reports of fall incidents that resulted in no injury (typically students brag in senior exercise classes about falling well). Experience with the oldest and frailest first has helped develop instructional methods that can now be advocated for students of all ages.

### Progress To Date

**Investigation of Existing Methods of Safe Falling.** 'Breakfall' techniques like Ukemi-Waza from Judo and Sutemi-Waza from Jujutsu and Jiu Jitsu were introduced in the late 1800s to permit martial arts training without serious injuries. However, martial arts are performed on relatively hard mats compared with the skills cushions and 'crash pads' in gymnastics. Nonetheless, there is a long history of safe fall techniques in many fields of the martial arts.

Other fields possessing specialized training methods include the military (e.g., parachuting and other special operations); occupations with safety programs; professional stunters, acrobats, and entertainers; and numerous sports where participants have contact with the ground, including gymnastics (artistic, trampoline-tumbling, rhythmic, acrobatics, and group), ball sports (volleyball, football, soccer, basketball, baseball, etc.), all-star cheer, to name a few. All have

developed some sort of 'boot camp' training for safe falling. There are many programs yet to be examined with useful information that have not been integrated into a common pool of knowledge.

**Development of Essential Principles of Safe Falling and Landings.** A set of comprehensive rules, laws, and principles are needed that generalize to most activities. A common vocabulary, based on physics and biomechanics, will be helpful in facilitating communication. It will be especially valuable to consolidate, simplify, and package the final information for ease of comprehension and recall. For instance, Ukemi and Sutemi advocate two basic principles: (1) when landing on the ground, try to land with as much body-surface-area at once as possible, thereby reducing pressure to any one individual body part, and (2) do not allow any particularly vulnerable part of your body to land with full force. In other words, spread the fall over a large area of the body by slapping and landing flat (or rolling).

Falling can describe a body moving through space but usually depicts states of transition from being balanced on one's feet to ground contact with any part of the body other than the feet. Such flights can be classified by direction or contact surfaces such as front fall, back fall, side fall, front-side fall, back-side fall, shoulder-hip rock/roll, and hip-shoulder rock/roll with and without trajectories (traveling forward, backward, and sideward). Free fall is when the fall direction is straight down, i.e., with no travel trajectory (vertical decent rate= $9.8 \text{ m/s}^2$ ). Essentially, falling with travel is converted to rolling (called Uke in Aikido), of which there are many types, and falling without travel (free falling) has only three options: (1) absorb the force with one's limbs, if strong enough and capable of such a feat; (2) transfer energy to generate a roll (if possible) thereby distributing the force over a larger surface area sequentially; or (3) 'slap' the ground with as large a surface area as possible at the exact instant of contact.

Acrobatics involves ground contact with the hands (called springing) or the feet (called flipping). Handsprings can be forward, backward or sideward (also called cartwheels). Flips can be forward, backward, sideward, twisting, and diagonal, both with and without trajectories (traveling forward, backward, and sideward as 'gainers').

'Fear of Falling', another important issue, diminishes with increasing 'successful' falling experiences. Much in the way psychotherapy uses systematic desensitization to cope with phobias (i.e., extinguish anxiety panic responses), with successful falls come confidence, relaxation, and reduced fear. This ultimately leads to improved mobility patterns, safer transports, more travel, better overall health from increased physical activity, an extended sphere of social contacts, and an enhanced quality of later life.

**Pilot Training Classes to Develop Pedagogy** is under way with seniors on Mondays, 10-11:30am. Currently there are 35 seniors (60-97 yrs) in this exercise class that serve as volunteers for testing safe fall techniques. Also, monthly workshops are scheduled throughout 2005 and there will soon be graduates of our teaching certification program. (for more information phone 842.5642)

**Preparation to Launch the Safe Falling Campaign.** A plan is being developed to heighten public awareness, interest, and support followed by solicitations to government and funding agencies for help in the effort of making safe falling information and training available to as many people in Hawaii as possible.

To sign up to receive more information on local development of safe falling curricula and training (certification) programs, email your name, address, email address, phone contacts, etc., to [director@hawaiiacademy.com](mailto:director@hawaiiacademy.com) with the subject written as 'Add me to the safe falls mailing list.'

## Conclusion

All children should learn how to fall safely and practice falling techniques throughout their lives. However, the current focus on falling is almost entirely on senior citizens and the prevention of falls, probably because the consequence of falls by children is much less expensive than the costs of fatalities and medical care of the elderly caused by falls. Our seniors of tomorrow are our children today so it only makes sense to simultaneously teach fall training to young and old alike. However implemented, the sooner we start teaching techniques in safe falling the sooner we will see reductions in medical care needs (read this as reduced cost to everyone). The loss prevention rationale should be sufficient grounds for arguing this case. Having families exercise together and having shared multi-generational activities is a social bonus.

Safe falling should be required training in schools according to national and local strategic plans but it may be some time until this happens. Meanwhile, parents should be encouraged to enroll their entire family in programs that teach rolling and falling in some form, if even for a only a short exposure. There are many private gyms, studios, and dojos that provide lessons in gymnastics, trampoline-tumbling, martial arts, acrobatics, and stunting. Everyone in the family should benefit from finding a nearby program and learning techniques of safe falling that helps prevent or reduce injuries from future falls. Those that are already participating in such activities must be vigilant in maintaining safe falling habits. Anyone who can recall a fall-related death or injury that could have been avoided if the injured or deceased had safe fall training should feel guilty about not doing something more if they see such events happen again and again. The author is acting to prevent future guilt by initiating a safe fall training campaign in Hawaii. If the reader shares such guilt, please join the campaign to make available safe falling education. We can all do a great deal to prevent unnecessary injuries and deaths. Someday we will have educational curricula for improving falling ability. If Hawaii currently has the worst fallers in the US, wouldn't it be gratifying to reverse this statistic? It's possible with a commitment to this one single educational mandate.

Because we stand and move upright, on a very small base of support, stability is easily compromised. **FALLS ARE INEVITABLE but INJURIES ARE PREVENTABLE.** Everyone should learn to fall well, i.e., with skill and confidence, without injury! We must enhance our 'fitness to fall.' Do what you can for your family and yourself, NOW.

## Safe Falling Workshops:

- **Safe Falling Workshops** at Hawaii Academy (\$30/session for participants; \$75/3sessions for instructor certification): Almost monthly through 2008... ([to register phone 842.5642](tel:842.5642)).

## References

Rose, D.J. (2003). FallProof! A comprehensive balance and mobility training program. Chicago, IL: Human Kinetics.  
Runyan, C.W. (1998). Using the Haddon matrix: Introducing the third dimension. *Injury Prevention*, 4, 302-307.

## Websites

[www.stopfalls.org](http://www.stopfalls.org)  
Educators

FALL Prevention Center of Excellence – Information for Researchers and

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<sup>i</sup> Dr Vercruyssen, Director of Hawaii Academy, a private school for lifetime fitness, human sciences, and technology, is a member of the Hawai'i Statewide Fall Prevention Consortium (est. 2003), which provides organizations, professionals, caregivers, advocates and interested individuals involved in fall prevention the opportunity to network, share information and collaborate on projects that reduce the incidence and severity of fall injuries in our aging population. Hawaii Academy teaches falling, rolling, flipping, and twisting to students of all ages (1-100+ yrs) and abilities (beginners to world class athletes) as part of its trampoline-tumbling, gymnastics, and fitness curricula (for more information phone 842.5642 or visit [www.hawaiiacademy.com](http://www.hawaiiacademy.com)).