



## Short Communication

# A Preventive Approach for Fall Injury Innovative Integration of Chinese Tai Chi and Mat Dance

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### Abstract

The purpose of this study is to design daily training method act as a drill, in preventing fall injuries for versatile people, by applying the traditional Chinese Tai Chi with mat dance. These daily training approaches are designed specifically integrated with some selected mat and dance exercises for fall injury prevention, taking the major safety principles of Tai Chi; such as awareness of Yin and Yang, sensibility, flexibility, and sustainable connection in circular motion.

### Keywords

Preventive; Fall injury; Chinese Tai Chi

## Introduction

In this study, the daily training methods are designed base on implemented of Tai Chi safety principles with some selected mat and dance exercises to help fall injury prevention. Furthermore, the techniques of the simple training methods will help dancers and coaches to improve trainees' fitness and pursuing the wellness. Why use Tai Chi principles in the prevention of fall injury? The fundamental Principles of Tai Chi are: awareness of Yin and Yang, sensibility, flexibility, sustainable connecting, following, in circular motion. These concepts and principles are all applicable and necessary in fall injury prevention and were from the classic "Treaty of Tai Chi Chuan" by Wang, Tsung-Yueh who introduced Tai Chi Chuan in Honan during the Chien-lung period (1736-95) of the Ching Dynasty.

Many Tai Chi coaches regard Tai Chi as movement of art for wellness, and did not emphasis enough on prevention of fall or fall-related injury problems. In daily life, people are more likely to fall when they are in bathrooms, on stairs, in kitchens, walking, playing sports, or working. People may learn some of the dance exercises and mat movements to implement the Tai Chi principles for dealing with the fall injury problem [1,2]. The comprehensive promotion of the advantage of Tai Chi to prevent falling on the ground will reduce the fall damage that may occur at any time and at any place in people's daily life.

Tai Chi, as meditation in motion, promotes serenity through gently flowing. The research shown, it can improve some illness such as depression, stroke, high blood pressure, cardiopulmonary function, anxiety, boost self-esteem, sleep disturbance and etc. [3]. Tai Chi exercise programs have been reported to reduce the rate and risk of falls. It is worthy to advocate and promote Tai Chi exercises to improve health benefits including: balance, self-defense, meditation, relaxation, flexibility, awareness, healing, rehabilitation, and whole body coordination [4]. Especially, it is a leisure type of learning and it can lifelong learning.

By designing a daily training method or drill to prevent fall injuries for people of all ages and gender, is the focus of this study. In this study, founded most of these falls are from slips, accidents, unsteady gaits, weaknesses or due to certain medical conditions [5-7]. Compared to acute illness and hazardous activities, the environment could result in a higher rate of the risk of falls for the reason that falling could be happening everywhere [5,8,9]. Therefore, it is crucial to develop some kind of well-established multi-factorial intervention programs for people to do exercise daily at home or a community to reduce fall injuries.

The scenarios of falls are classified into five settings: height (below waist, above the waist till top of head); speed (slow, moderate, rapid); direction (front, rear, side); force (small, moderate, strong); landing portion (head, shoulder, torso, limbs). Selected dance as well as mat exercises are designed to fit all ages to practice to develop the ability of executing bending joints, rolling torso and pivoting body plus curling the whole body for protection of vital body part in landing. All selected training exercises are used to build up sufficient strength, flexibility, coordination, reflex, balance, resistance against impact and motor learning [10].

Some researcher [4,11-14] have pointed out that there are effective ways to improve the static and dynamic balance in elderly people to reduce the fear of falls, and that training Tai Chi are proven to be effective than other training methods for preventing falls in at risk populations. Ancient Chinese Tai Chi practice reduces the risk of deadly falls by 43% and 50%, also that there are many factors for falling, and a great percentage of falls of elderly. Thus, for elders, Tai Chi should be an overall exercise program that includes individualized aerobic and self-healing training [15].

### The compliance of Tai Chi principle for training

Why use Tai Chi principles in the prevention of fall injury? The fundamental principles of Tai Chi are: awareness of Yin and Yang, sensibility, flexibility, sustainable connecting, following, in circular motion. These concepts and principles were written in the "Treaty of Tai Chi" by Wang, Tsung-yueh who introduced Tai Chi Chuan in Honan during the Chien-lung period (1736-95) of the Ching Dynasty. The Tai Chi exercise is a great way for maintenances of general health. It's usually demonstrated as a form of low impact physical exercise and gentle full body workout to decrease the risk of falls, boost overall well-being, improve mobility, balance, coordination, mental alertness, and enhance cognitive function [16-18].

Thus, the Tai Chi exercise developed hundreds of years in China is based on the Taoism philosophy that the right exercises complying

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with the Way (Tao or Do-Japanese) can achieve maximal happiness of life. Tai Chi as the supreme grand ultimate cosmic law applied in series of graceful physical movements combines deep breathing and meditative relaxation techniques, expressing slow gentle movements, and maintaining upright balanced postures as well as displaying body movements in circular shapes [19].

Many different martial arts and sports have their ways of preventing fall injuries. For example, ball games, dance, Kungfu, Wushu, Sanshou (Sanda), karate, Taekwondo, wrestling, Aikido, Judo, Cardio Tai-chi, and Shuaijiao (Shuai-chiao) all have their protective methods. In reality, Historically Tai Chi principles have been used in Wushu or Kung Fu (Chinese Martial Arts) widely. This method is designed with integrate many years of experience from these martial arts, and adopt some dance moves to make Tai Chi more artistic and comprehensive.

### Appropriate for fall prevention in basic skills

To design the fall prevention training, it mainly considers the angle and speed generated during the actual fall and the adaptation to different ages. All selected training exercises are to meet the need in building up sufficient strength, flexibility, coordination, reflexes, balance, resistance against impact and motor learning. All of fall movements are classified into five settings: height, speed, direction, force, and landing portion. Some mat and dance exercises are designed to fit all ages to practice and to help to prevent injuries. The daily training methods are designed base on implemented of Tai Chi safety principles with some selected mat and dance exercises to help fall injury prevention. Furthermore, the techniques of the simple training methods will help dancers and coaches to improve trainees' fitness and pursuing the wellness. The following training actions, instructors or individual training, can be tailored to different ages, physical strengths, and health conditions to choose the appropriate action to exercise.

First stage is to use low position to strengthen the thigh muscles and hamstring to promote lower limb muscle strength and walking ability.

Rolling: (1) Put your feet together, embrace your hands, and shake back and forth (Figure 1). (2) Cross your legs, grab your feet with your hands and shake your body; like the tumbler rolling action, rolling around a big circle (Figure 2).

Blooming: Let body lay flat, wave both hands and legs in large circle movements, then do the opposite direction (Figure 3).

Kneeling Superman: Get down on your hands and knees with a straight back, straighten your right hand forward, lift your left foot backward, look forward, move for a few seconds and then change the other side (Figure 4).

Second stage is to put the emphasis on balance which is the ability to maintain a steady state in each action or posture, and can reduce the risk of falls.

Golden Rooster Stands On One Leg: This is a curved position of the body, posing one leg with the other leg extended. It is a difficult posture to stand on one leg for beginners to learn, but can promote stability, fluidity, and coordination (Figure 5).

Seesaw: Spread out hands and arms with feet clapped, then push the whole body to rock left and right (Figure 6).

Third stage is to develop the ability of executing bending, rolling torso and pivoting body plus curling the whole body for the protection

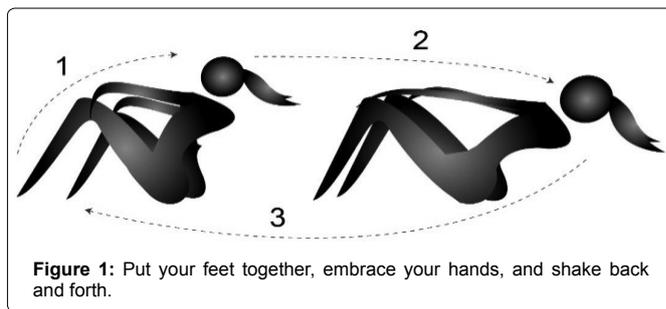


Figure 1: Put your feet together, embrace your hands, and shake back and forth.

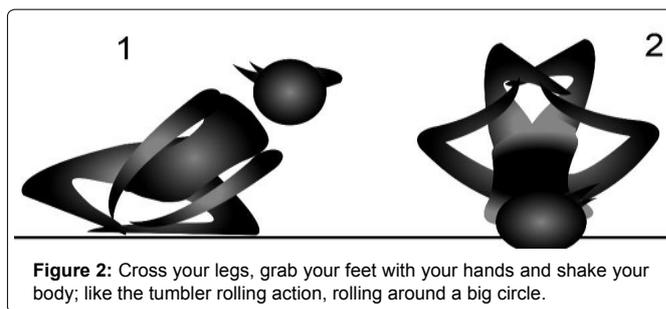


Figure 2: Cross your legs, grab your feet with your hands and shake your body; like the tumbler rolling action, rolling around a big circle.

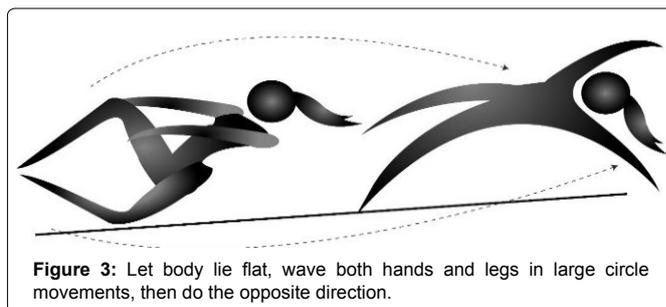


Figure 3: Let body lie flat, wave both hands and legs in large circle movements, then do the opposite direction.



Figure 4: Kneeling Superman: Get down on your hands and knees with a straight back, straighten your right hand forward, lift your left foot backward, look forward, move for a few seconds and then change the other side.

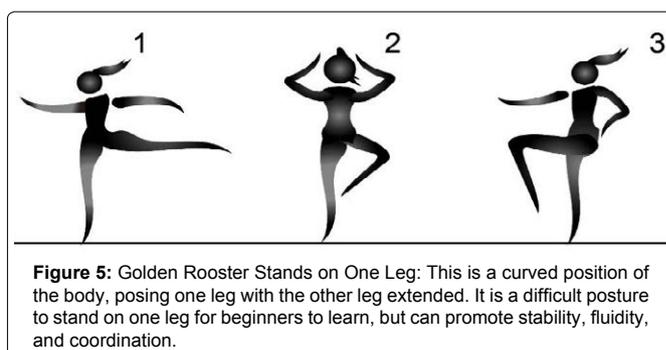


Figure 5: Golden Rooster Stands on One Leg: This is a curved position of the body, posing one leg with the other leg extended. It is a difficult posture to stand on one leg for beginners to learn, but can promote stability, fluidity, and coordination.

of vital body parts when landing. The falling techniques to practice Yielding to the Ground mainly refer to The Official Cardio Tai-Chi Textbook [18] and Fundamentals of Shuai Chiao-The Ancient Chinese Fighting Art [19].

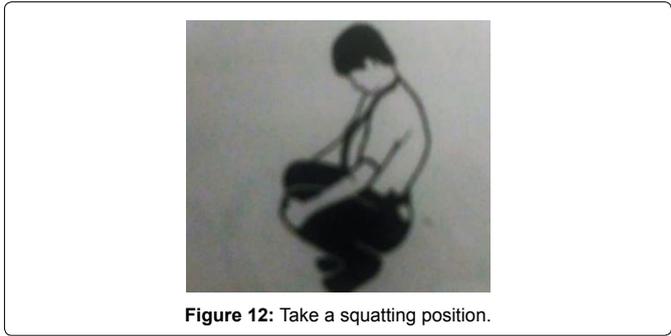
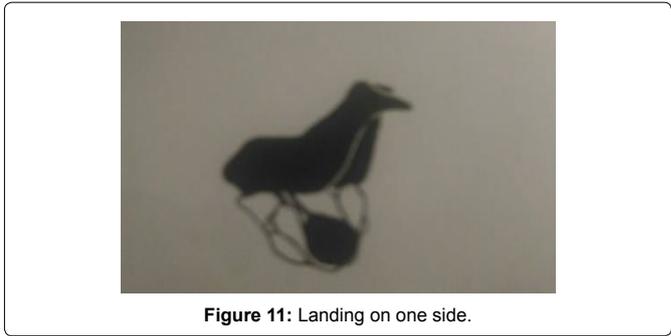
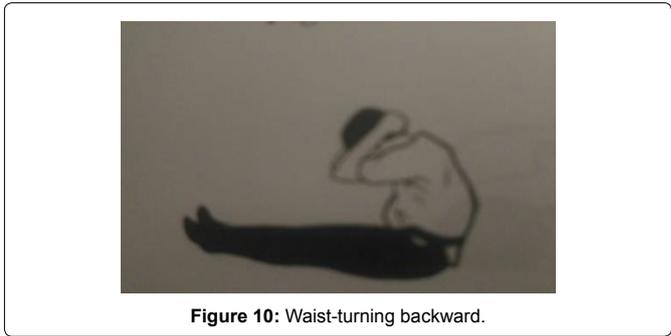
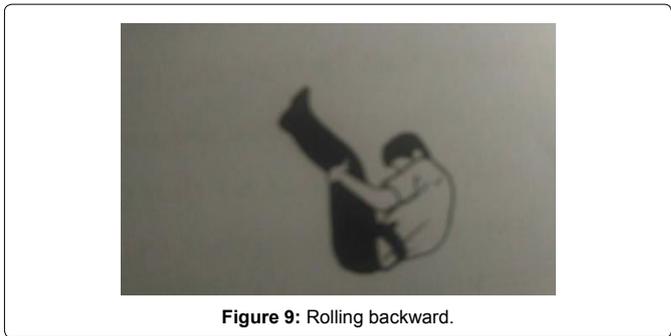
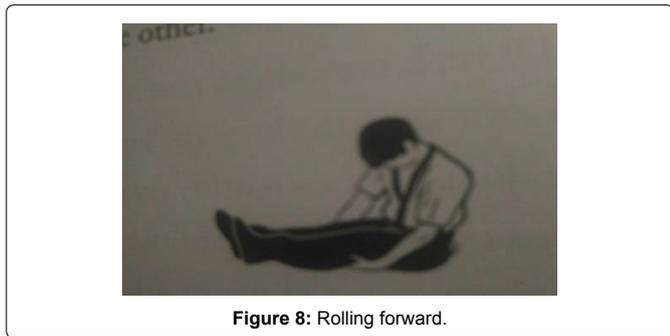
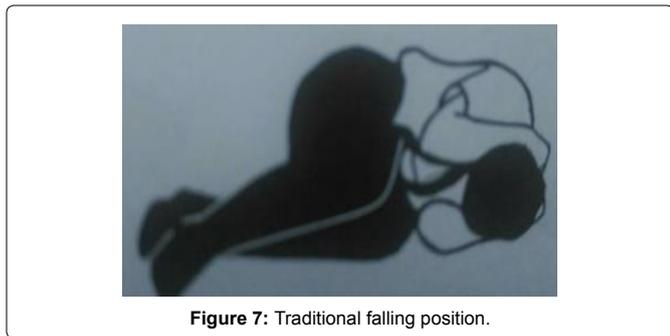
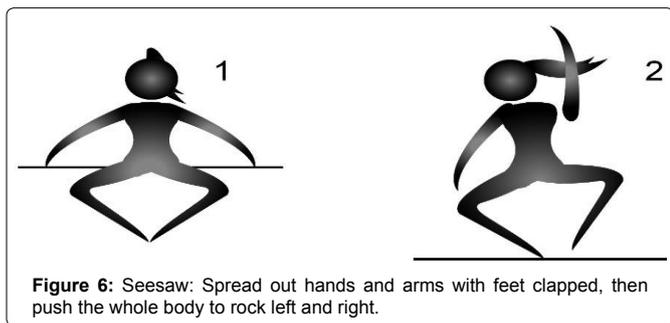
The traditional falling position includes (1) lying on one side, (2) pulling up the legs while bending at the waist and knees, (3) keeping the two fists behind the head, (4) tucking the chin, and keeping the eyes on the stomach, and (5) keeping the knees and ankles slightly aside each other (Figure 7).

Two basic ways to practice falls are (1) rolling forward and backward (Figures 8 and 9), and (2) adding waist-turning backward, going straight over the spine, and landing on one side (Figures 10 and 11).

Next, take a squatting position, stick out one leg in front and then roll backward and land on your side (Figures 12-14).

For a couple to practice falls, the steps are (1) facing each other and holding hands with a squatting position, (2) lowering yourselves together, simultaneously letting go and following the falling procedure, and (3) gradually increasing your speed with practice (Figures 15-18).

If you cannot roll to one side before hitting the ground, when you are falling face down (1) let the outstretched palms and forearms form a flat surface to strike the ground together, (2) keep your head



up or turn it to one side, and (3) practice this by kneeling and then by standing and just falling forward (Figures 19 and 20).

The final movement is to lie on your back, roll onto your shoulders while raising up your legs straight and high in the air, and then fall to each side (Figures 21-23).

**Conclusion**

The main purpose of this study is to promote the prevention of falls for people of any age. According to the different intensity,



Figure 13: Stick out one leg in front.



Figure 18: Gradually increasing your speed.



Figure 14: Roll backward and land on your side.



Figure 19: Let the outstretched palms and forearms form a flat surface to strike the ground together.

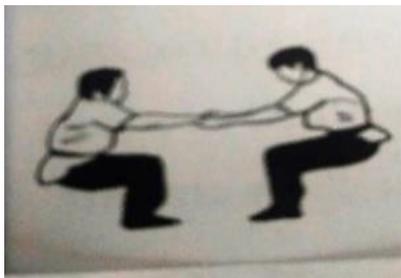


Figure 15: each other and holding hands with a squatting position.



Figure 20: Keep your head up or turn it to one side.



Figure 16: Lowering yourselves together.



Figure 21: Movement is to lie on your back.



Figure 17: Falling procedure.



Figure 22: Roll onto your shoulders while raising up your legs straight and high in the air.



**Figure 23:** Fall to each side.

exercise could be classified into four major categories: sedentary, low-intensity exercise, moderate-intensity exercise, and high-intensity exercise. Through changing poses and training in various parts of the body, Tai Chi could improve people’s overall well-being and self-defense, and reduce the risk of fall injuries. This study is intends to create a set of movement to practice to reduce fall injury utilizing Tai Chi principles with mat and dance exercises for all ages. Nowadays, people around the world are practicing Tai Chi for health benefits and for stress relief, without getting the benefits of following Tai Chi principles with adequate design of movements training to prevent fall injury. Practicing the mindful type of exercise of Tai Chi to provide an advantage in the human body movement system by implement some chosen mat and dance.

Prevention of falls can be used as a training course for athletes, dancers, and coaches to become the seed teachers by increasing cross-disciplinary guidance beyond their profession, or as the standard for Tai Chi medical certificates. This exercise can be extended to various places and benefit more people; such as schools, communities, fitness centers, health clubs, senior centers, rehabilitation centers and government departments. Although, there are many factors for falling, and majority of falls are in the group of elderly. Enhance, for the future research, some techniques design method should targeted on prevent falls of the elderly.

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