THE APPLICATION OF A MIXED LIVE AND ONLINE EXERCISE PROGRAM OF TAI CHI FOR ADULTS AND ITS EFFECT ON DYNAMIC BALANCE

Chatzipanagioti Vithleem,
Phd candidate
Msc., P.E.Teacher, Tai Chi Instructor & coach, International judge Tai Chi Chuan
School of Physical Education and Sport Science,
Democritus University of Thrace, Komotini, Greece
Introduction

Tai Chi is an ancient Chinese internal martial art.

‘Tai Chi is often referred to as ‘medication in motion’ and, as a mind-body exercise, it strengthens, stretches and balances the practitioner while improving health’, personal development and self-defense (Wayne, P.M., & Fuerst, M., 2013).

Tai Chi continues to be widely practiced

Exercise for health and fitness

Multidimensional benefits in physical, psychological well-being, and cognitive functions.

The purpose of this study was to examine the application of a mixed intervention exercise program of Tai Chi with live and online distance learning methodology and its effect on the dynamic balance of the participants.
Methods Live & Online

- **Sample:**
  19 practitioners (7 men and 12 women), with an average age of 53.9 ± 6.3 years

- **The duration** of the intervention was 18 weeks (January to May 2020)
  9 weeks of live exercise and the remaining 9 weeks of online distance learning

- **The exercise frequency** was 3 times per week lasting 90 minutes in the live lessons
  The duration was adjusted to 60 minutes in the online sessions.

Due to restrictions caused by the outburst of the pandemic, the intervention program had to be adapted to an online environment.
Tai Chi protocol

- All training sessions were supervised by a qualified Tai Chi Chuan teacher.
- The forms of Yang style Tai Chi Chuan
- **Warm-up, main part and recovery**
- The principle from the easiest to the most complex
- Verbal instruction
- The method of visual observation
- Principle of ‘watching and copying the motion like a mirror’
- Personalized correction of the postures and movements
Mind-body exercise
The application of imagery and meditation
Live vs livestreaming Online

LIVE vs ONLINE TAICHI

ADAPTATION OF MODULES AND PROTOCOLS
The nature of Tai Chi is considered as a complex, multicomponent mind-body intervention.

It scales from easier to learn basics to very high demanding movement patterns, forms and partnerwork.

The presence and supervision of a qualified teacher is with no doubt essential in order to master and understand all applications for all levels on all stages of the education.

WHY ONLINE?

During the pandemic of Covid-19 the need for livestreaming exercise became a must-have, gaining more popularity.

Tai Chi online programs had already answered to the needs of people with busy life style conditions as a good solution to work out at home.
The structure of online Tai Chi lessons

- ‘Shaping’ the environment
- ‘Marking’ the room
- Technical issues and materials
- Costs of production
- Preps
- Methodology – follow-ups – feedback
- Group dynamics
- Motivation and communication
- Self-control
- Intros and closures
Pros

- Safety and convenience
- Adaptability of movement
- Time-saving
- Practice at home – no commuting
- Can be joined from almost anywhere
- Psychological booster
- Mind-body benefits
- Availability even during times of crisis
- Attendance of global online venues
Cons

- Lack of social interaction
- Technical issues
- Connectivity issues
- Lack of interaction between teacher and student (corrections and assessment)
- Time management and adaptation
- Not suitable for every topic of Tai Chi
- Insufficient competencies of using IT tools
- Minimizes in-depth practice and detailed observation of movements
- Room size
The presence and supervision of a qualified teacher is with no doubt essential in order to master and understand all applications for all levels on all stages of the education.

Online Tai Chi can subsequently support the exercise but should not be considered as the only effective way to learn.
Tai Chi and Balance

Tai Chi is often referred to as a very affective and safe exercise for balance rehabilitation and fall prevention.

Balance requires the interaction and coordination of many factors and systems (Wayne, P.M., & Fuerst, M., 2013).

Assessment of Balance and Core control - Y Test

Use:
- to predict the risks of injury in athletes for the measurement
- of pre- and post-rehabilitation performance
- Improvement after performance enhancement programs
- dynamic balance for fitness programs
- and return-to-sport-readiness.
Methods - Balance

Y test for dynamic balance
(Lower quarter test)

Data of the research were collected at baseline and after a period of 18 weeks.

Each test is repeated three times, and the maximum reach in each direction is recorded.

The results are calculated taking limb length into consideration, to determine a "composite reach distance". Asymmetry can also be assessed by comparing the results from each leg.

A paired sample t-test was used for the data analysis.
Right limb length in centimeters: _____________
(Measure from right ASIS to right medial malleolus in supine after performing bilateral bridge)

RIGHT

LEFT

Greatest Successful Reach

<table>
<thead>
<tr>
<th></th>
<th>Right</th>
<th>Left</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior (A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posteromedial (PM)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posterolateral (PL)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Composite Score

<table>
<thead>
<tr>
<th></th>
<th>Right</th>
<th>Left</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\text{Composite Score} = \frac{(\text{Anterior} + \text{Posteromedial} + \text{Posterolateral})}{3 \times \text{Right Limb Length}} \times 100
\]
Results

The results of the present study showed that, after the application of t-test for dependent samples with significance index ($p < 0.05$), a statistically significant difference ($t = -3.663; p < 0.05$) was observed in the balance of the left foot and ($t = -3.257; p < 0.05$) of the right foot at baseline and at follow up.

The Composite score of the left and right symmetry of each of the reach directions was less than 4cm (< 4cm) difference both at baseline and at follow up.
Results

Participating in a Tai Chi exercise program seems to be an effective method of improving balance and reduce risk of falls.

Limitations of the study maybe due to the pandemic of Covid19 which might have affected the results.

The activation of different muscle groups, the sequence of movements, the duration of the forms and the combination of the mind body component may have a positive effect on the control of the posture of the body and the better sense of its position in space.
GOOD NEWS!

Research suggests that Tai Chi practitioners may have improved sensory organization and joint proprioception (Siu Ming Fong, 2006). This can relate to the improvement of dynamic static balance.

A better sense of the positions of joints in space and the ability to maintain posture quicker may help to prevent falls.

As a mind-body exercise, it combines relaxation techniques, improves breathing and releases stress. Thus it may diminish the fear of falling, providing enhancement of self-esteem and improvement of neuromuscular synergy and reaction of the joints (S.K. Gatts et al, 2007) in order to maintain balance.

Laboratory studies indicate that Tai Chi improves torso and limb flexibility, knee strength and lower extremity strength supporting as a result the control of posture.
THANK YOU FOR YOUR ATTENTION