Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XVII, ISSUE 2 Supplement, 2017, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XVII, ISSUE 2 Supplement, 2017
September 2017, 17 (2, Supplement): 497-503
Original article

EFFECT OF EDUCATIONAL PROGRAM BASED ON AI CHI EXERCISES ON BALANCE AND PERFORMANCE LEVEL OF CRAWL SWIMMING FOR COLLEGE STUDENTS

SHAMS-ELDEN Mohamed[1]

Abstract

Aim. The Japanese Jun Konno created Ai Chi. It is a form of aquatic fitness that focuses mainly on balance, strength, relaxation, flexibility and breathing. It is like a meditation in movement that brings balance to our body and our mind. It is usually done in groups inside the pool. Slow and broad movements of arms and legs, along with breathing and soft music to facilitate relaxation, help to stimulate and flow internal energy. The purpose of this study was to investigate the effect of educational program based on Ai Chi exercises on balance and performance level of crawl swimming for college students.

Methods. Twenty college students from faculty of physical education, Mansoura University, divided into two groups. The experimental group (n = 10) performance Ai Chi exercises and control group (n = 10) performed traditional exercise. The parameters were collected before and after (10) weeks. Subjects were required to read and complete a health questionnaire and informed consent document; there was no history of injuries, diabetes or recent surgery.

Results. Statistical analyses showed that:

Statistically significant difference between the pretests, posttests for the experimental, and control groups in Standing Stork Test. Dynamic balance test, and variables of Performance level of crawl swimming for the experimental and control groups

Conclusions. 10-weeks educational program based on Ai Chi exercises, on the balance and performance level of crawl swimming for college students. Experimental results indicated that all variables were significantly increased in the experimental group only after educational program based on Ai Chi exercises.These results have to be taken into account by instructors in order to better understand and implicated of these concepts for technical effects of swimming learning.

Keywords: Halliwick-therapy, aquatic exercises, autism spectrum disorders.

Introduction.

Swimming is one of the most important sports in the world and is very popular among the public. It has long been known to swim back to the Stone Age. It mentioned in 2000 BC. in 1896it became an integral part of the Olympic Games, in Athens, Greece, and due to the strong demand for the sport was founded an International Swimming Federation "FINA" in 1908. (Ali, et al., 1998)

Crawl swimming is the fastest type of swimming and gives you the feeling that you are strong inside the water and it is often difficult to get buoyancy from the beginning, because breathing in the water can be one of the most difficult skills. (Ali, et al., 1998; Wael, 2002)

In the mid-1980s, Konno saw the need for a group exercise program in hot, shallow water. He wanted to create something that provide the same relaxing benefits experienced during the water massage (Watsu) but without the intimacy of contact due to the idiosyncrasy in Japan relaxes nearby.

Konno developed the practice of Ai Chi to meet a need for relaxation through gentle motions in the water being carried out in a kind of meditation. (Davis, 2004)

Initially it was called to its program "The breath of the water", and the objective was to cultivate the vital energy or chi. from the beginning Ai Chi is not a derivation of tai chi and follows only its development process. In addition, it develops under the influence of fluid, continuous and elegant movements that characterize many physical disciplines of East Asia. (Brody & Geigle, 2009)

In the mid-1990s, Konno consulted Ruth Sova, MS, (chair of Aquatic Therapy and

[1] Faculty of Physical Education, Mansoura University, EGYPT
E-mail address: amr297@aswu.edu.eg
Received 19.02.2017 / Accepted 11.03.2017

Rehabilitation Institute, founder of the Aquatic Exercises Association), seeking support to popularize Ai Chi. Ruth Sova, as soon as she saw the program, recognized its value.

With a strong emphasis on the cultivation of Chi, he changed the name of the program "Water Breathing". Word Ai Chi. "It comes from the Japanese word" aisuru ", which means love. Chi in turn means energy. Putting the two words together to name the program seemed natural to Konno. Initially the name is not registered because he wanted to support free growth Ai Chi. in 2004, however, the registration process was formally initiated in order to preserve the integrity of the program and ensure that only Ai Chi practitioners use the name. Together with Konno, Sova has carried out the project to spread the global level of Aichi. (Noh, et al., 2008)

It was published as Ai Chi: Balance, Harmony and Healing in 1999 and developed a certification program.

According to (Sova, 1999) who is currently president of Ai Chi International, about 8,000 instructors teach Ai Chi in the United States, Canada, Europe, Asia and Latin America. At the time of publication of this article, 500 instructors were certified.

As popularity, Ai Chi spread throughout the world, Konno has developed an additional series of movements that extends the program, including working in pairs. These movements added to the Ai Chi sequence or used separately, depending on the case.

Konno also created three series of focusing on "chi cultivar" movements that can be added to the progression.

These postures are gathered and chi around the practitioner's body and then take the energy that provides care and support Li, et al., 2001)

Ai Chi is a program of aquatic exercises and relaxation combines techniques of breathing and progressive resistance under water to relax and strengthen the body.

In the exercises, large, slow and fluid movements of arms, trunk and legs develop. In this discipline people stand, with their knees slightly flexed with water at their shoulders, in this way water is used as an agent that offers resistance thus increasing the effectiveness of exercise.

Ai Chi is a progression of aquatic bodywork that involves the whole body, achieves a total strengthening and relaxation uniting the philosophy of East and West, and integrates the mental, physical, energetic and spiritual body. (Li, et al., 2003)

Ai Chi is a total body water-based booster and progression of relaxation that bridges East and Western philosophies, and integrates mental, physical and spiritual energy. It combines Tai-Chi concepts with Shiatsu and Watsu techniques, and it serializes standing on the water shoulder thoroughly using a combination of deep breathing and the slow and broad movements of the arms, legs and torso. The Ai Chi moves the progression of simple breathing, to the incorporation of the upper extremities, trunk, lower extremities, and finally total body application. An effective exercise program increases oxygen consumption and calorie through form correct and positioning in the water.

Ai Chi is a water movement and relaxation program that has been created to help practitioners enjoy water in a fluid but powerful progression.

An efficient exercise program increases oxygen and calorie consumption simply with a correct form and a good positioning in the water, it is a perfect relaxation technique for people with a lot of stress and ideal to improve the range of movement, balance and mobility.

Ai Chi performed standing with water at shoulder height using a combination of deep breathing and wide, slow movements of arms, legs and torso. (Olabe-Sánchez & Martínez-Almagro, 2014)

It is a technique that can be performed in groups in pairs or individually. While some therapeutic exercise programs can only be performed by a specific population, Ai Chi has been used with great success in: pain management, arthritis, fibromyalgia, COPD, diabetes, multiple sclerosis, amputations, balance deficits, scoliosis, syndrome carpal tunnel syndrome, hypertension, ACV, fatigue, eating disorders, weight management, breast cancer, cardiac and pulmonary rehabilitation, cardiac congestive failure, childbirth preparation, menopausal therapy, immunodeficiency disorders, migraines, anxiety, depression and management of the wrath. (Pérez-De & Lambeck 2015)

Although various body and mind programs are introduced in other sports and aquatic experiences, Ai Chi has developed a particularly strong and loyal worldwide

following with enthusiastic instructors who spread the practice wherever they go.

The purpose of this study was to investigate the effect of Ai Chi exercises on balance and performance level of crawl swimming for college students.

Methods

Experimental Approach to the Problem

Two groups (experimental and control) performed a pre and post - training designed intervention in balance and performance level of crawl swimming. The experimental group (EG) (10 college students) trained 1 hour per day 3 times a week on Ai Chi exercises besides the instructional program for ten weeks. The control group (10 young swimmers) continued their normal instructional program, while the experimental group completed Ai Chi exercises program to see whether this type of training modality would have a positive or negative or no effect on balance and performance level of crawl swimming.

Program basics.

The program is performed with deep breathing and combined with slow, large, circular and constant movements. Ai Chi brings a sense of harmony and deep inner relaxation.

Exercises include attention to a mental component, proprioceptive awareness, and centralized breathing.

Considerations

- Water level shoulder
- Water temperature
- Do not use substances that alter consciousness
- Anatomical alignment
- Naturally flowing breath
- Feet and knees pointed out
- Do not twist the knees - directional toward the feet
- Natural water velocity - do not create too much turbulence
- All movement begins in the abdominal area
- Ends move as if drawn by strands
- Column always aligned
- Eyes focused forward on the water surface
- Eliminate extra thoughts

Principles of Ai Chi**:**

- YUAN - to make the movements of circular form, seeking the internal and external harmony.
- SUNG - relax, internally and externally, to promote blood circulation.
- CHING - Do not intend the body or make it hard.
- YUN - move at a certain speed, controlled by the mind.
- CHENG - maintain good balance and posture.
- SHU - move the body easily, comfortably and relaxed.
- TSING - direct thought to mind, concentrate.

Samples

Twenty college students from faculty of physical education, Mansoura University, divided into two groups. The experimental group (n = 10) performance Ai Chi exercises and control group (n = 10) performed traditional exercise. The parameters were collected before and after (10) weeks. Subjects were required to read and complete a health questionnaire and informed consent document; there was no history of injuries, diabetes or recent surgery.

Testing Procedures

Subjects were assessed before and after 10-weeks of Ai Chi exercises program all measurements were taken one week before and after training at the same time of day. Tests followed a general warm-up that consisted of running, calisthenics, and stretching.

Standing Stork Test (SST):

To assess the ability to balance on the ball of the foot.

- The athlete Remove the shoes and socks (they might cause you to slip or gain extra advantage). Place your hands on your hips.
- Place one foot flat against the inside of the other leg's knee.
- There should be one foot that is resting flat on the floor (the one you are standing on) – lift your heel off the ground and put all of your weight on the ball of that foot.

The athlete should practice for about a minute before testing and the test begins counting from the moment you lift your heel from the ground.

Dynamic balance

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XVII, ISSUE 2 Supplement, 2017, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Balance test investigated by 5 m-timed-up-and-go-test (5m-TUG). Subjects performed 5-TUG with time taken to rise from a chair, walk a set distance 5 m, turn around, walk back and sit down. Each subject was giventwo practice trials performed to familiarize. All subjects completed three trials with 1 min recovery between trials. The least time for each trial was recorded

Performance level of crawl swimming

Judges Committee from three professors to evaluate the students through these points.

- Body position
- Arm movement
- Leg movement
- Breathing
- Effectiveness and efficiency of Technique performance

Statistical Data Analysis

Differences in Standing Stork Test,Dynamic balance, and Performance level of crawl swimming between the two measurements (pretests-posttests) were compared using a paired T-test. Differences between the two groups (experimental-control) were compared using independent T-test. The level of significance was set at $p < 0.05$, and all data are reported as mean ± SD.

Results.

Table 1. Anthropometric Characteristics of the Groups (Mean ± SD)

Group	N	Age [years]	Weight [kg]	Height [cm]
Experimental	10	20 ± 1.7	74 ± 4.6	174 ± 4.5
Control	10	21 ± 1.4	72 ± 5.3	173 ± 5.6

Table 1 shows the age and anthropometric characteristics of the subjects. There were no significant differences were observedin the anthropometric characteristics for the subjects in the different groups.

Table 2. Mean ± SD and "T" Test between pretests and posttests in Standing Stork Test.Dynamic balance test, and Performance level of crawl swimming for the experimental and control groups

Variables	Experimental group		Rate %	Control group		Rate %	T sign
	Before	After		Before	After		
Balance tests							
Standing Stork Test	38.63± 2.58	45.56* ±2.89	17.94	37.78±2. 46	40.84*±2 .91	8.10	S
Dynamic balance	12.87± 1.21	15.45* ±2.37	20.05	12.67±1. 34	12.93* ±2.56	2.05	S
Performance level of crawl swimming							
Body position	2.46 ±0.16	7.93*± 0.78	222.36	2.55 ±0.13	5.82*±0. 78	128.24	S
Arm movement	2.35±0. 11	6.21*± 0.27	164.26	2.67±0.1 6	4.47*±0. 35	67.42	S
Leg movement	3.46±0. 13	5.43*± 0.38	56.94	3.33±0.1 8	4.76*±0. 24	42.94	S
Breathing	1.57±0. 27	5.89*± 0.76	275.16	1.62±0.3 5	2.93*±0. 54	80.86	S
Efficiencyof Technique performance	5.78±1. 18	8.55*± 1.73	47.92	5.84±1.2 3	6.92*±1. 46	18.49	S

Significant differences, p< 0. 05 *

It is clear from Table (2) that statistically significant difference between the pretests, posttests for the experimental,and control groups in Standing Stork Test. Dynamic balance test, and variables of Performance level of crawl swimming for the experimental and control groups.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XVII, ISSUE 2 Supplement, 2017, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

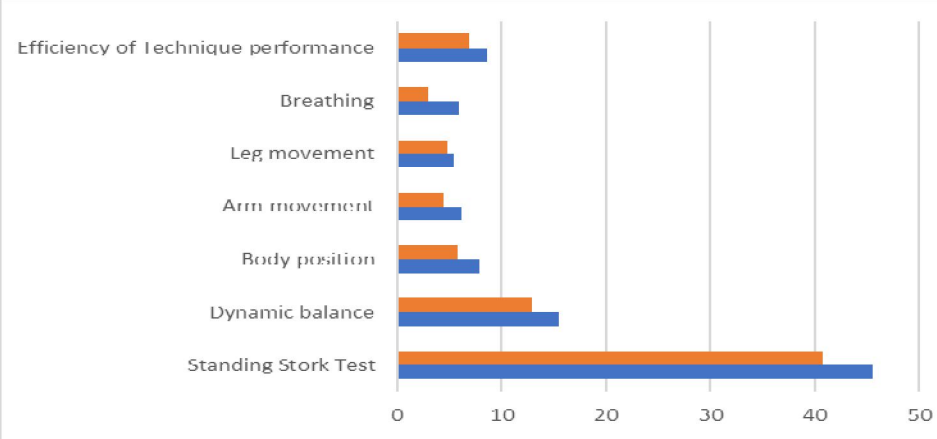

Fig 1 show the differences between posttests in Standing Stork Test. Dynamic balance test, and Performance level of crawl swimming for the experimental and control groups

Discussion.

This study assessed the effects of a 10-weeks educational program based on Ai Chi exercises, on the balance and performance level of crawl swimming for college students. Experimental results indicated that all variables were significantly increased in the experimental group only after educational program based on Ai Chi exercises.

The researcher said that, the training program which designed and implicated on the experimental group were affected and improvement this variables.

These results constant with (Wael, 2002; Bíró, 2007; Richard & Nathalie, 2008; Pérez-De & Lambeck, 2015) that Ai Chi offers all the benefits associated with body-mind practice, it offers increased circulation and oxygen consumption. People in limited physical conditions enjoy the benefits that the practice provides.

Ai Chi takes the teacher to another level in which he continues to learn and grow.

Those interested in the discovery of Ai Chi can learn from other teachers and from the book, the series of video program or can be certified. (Schneider & Leung, 1991)

It combines the concepts of the Tai-Chi, Shiatsu and Watsu® techniques, and is carried out standing and with a depth of water at shoulder height. A combination of deep and slow breathing, wide movements of the arms, legs and torso is used. The progression of Ai Chi moves from a simple breath, to the incorporation of the upper limbs, trunk, lower extremities, and finally the entire body.

Ai Chi was created to assist water professionals (including water-based exercise instructors, personal trainers, therapists and aquatic physiotherapists) and students to enjoy water with a powerful progression. It is an efficient exercise program that increases caloric and oxygen consumption through correct shape and positioning in the water, a perfect relaxation technique for heavily stressed clients, and is ideal for creating a better range of motion and the mobility. (Brody & Geigle, 2009)

Ai Chi is the sigh we give when we are in peace, "says Jun Konno, Ai chi is an individual or group meditative exercise program in warm and shallow water. It provides relaxing benefits experienced during water massage being influenced by flowing, continuous and graceful movements similar to many physical disciplines of East Asia. (Song, et al., 2003)

According to (M. kreg, 1999) the Benefits of Ai Chi practice are:

- The movements of the Ai Chi favor balance, coordination, flexibility, increasing the agility and mobility of the body.
- Helps reduce muscle weakness, generalized pain and stiff joints.
- It balances the body and psychic structure, calms the nervous system.
- It increases blood flow to joints, tendons, muscles and ligaments.
- Reduces problems associated with rheumatism, rheumatoid arthritis, fibromyalgia, etc.
- Power the breath as a motor of energy.

- It improves the functioning of all organs of the body.
- Ai chi helps reduce Stress, and some symptoms such as anxiety, fatigue and depression.

Ai Chi is the breath we take when we are alone, "says Jun Konno, founder of Ai Chi. Ai chi is a program of individual or group meditation exercises in warm, shallow water. It provides relaxing benefits experienced during massage in the water, which is being influenced by fluid, continuous and elegant movements as well as many physical disciplines of East Asia.

Ai Chi benefits derived from the effects of buoyancy, gentle and controlled movement, and coordinated breathing. (Gallagher, 2005). Diaphragmatic breathing can cultivate relaxation, and lumbopelvic stabilization (Chen, 2006).

The coordination of breathing and movement in Ai Chi allows muscles to produce graceful, flowing movements of the trunk and extremities. This activity can lead to development of core control for all swimming movements (Sova, 1999)

Conclusions

10-weeks educational program based on Ai Chi exercises, on the balance and performance level of crawl swimming for college students. Experimental results indicated that all variables were significantly increased in the experimental group only after educational program based on Ai Chi exercises. These results have to be taken into account by instructors in order to better understand and implicated of these concepts for technical effects of swimming learning.

Acknowledgments

Thank you to all of subjects who participated in this study.

References

Ali FA, Adel N, Essam H, 1998, Recent Trends in Swimming, Knowledge Establishment, Alexandria.

Bíró M, 2007, Teaching and learning strategies during primary school students swimming education, emphasis on interactions, Ph.D. Thesis, Semmelweis University.

Brody LT and Geigle PR, 2009, Aquatic Exercise for Rehabilitation and Training. Human Kinetics, Champaign.

Chen DC, 2006, When Yin Meets Yang. Words of Wisdom on Taijiquan Practice. Published in Taiwan.

Davis B, 2004, The Taijiquan Classics. An Annotated Translation Including a Commentary by Chen Wei-ming. Berkeley, California: North America Books.

Kreg M, 1999, Effects of T'ai Chi Ch'uan Practice , T'ai Chi magazine , August vol (13) no (4)

Lan C, Lai JS, Chen SY, Wong MK, 1998, 12-month Tai Chi training in the elderly: its effect on health fitness. Medicine and science in sports and exercise (Baltimore, Md.), Mar 1998: 30 (3). p. 345-351.

Li F, Fisher KJ, Harmer P, Shirai M, 2003, A simpler eight-form Easy Tai Chi for elderly adults , Journal of aging and physical activity (Champaign, Ill.), Apr. 11 (2). p. 206-218

Li JX, Hong Y, Chan KM, 2001, Tai chi: physiological characteristics and beneficial effects on health, British journal of sports medicine (Oxford, England), June 35 (3). p. 148-156.

Noh DK, Lim JY, Shin HI, Paik NJ, 2008, The effect of aquatic therapy on postural balance and muscle strength in stroke survivors-a randomized controlled pilot trial. ClinRehabil; 22(10-11):966-976.

Olabe-Sánchez PJ, Martínez-Almagro A, 2014, Repercusióndel Ai Chi en el equilibrio de las personas mayores. Eur J Investig Health PsycholEduc; 4(3):247-256.

Pérez-De la Cruz S, Lambeck J, 2015, Effects of a programme of aquatic Ai Chi exercise in patients with fibromyalgia. A pilot study. Rev Neurol; 60:59-65.

Richard L and Nathalie W, 2008, A Constructivist-Informed Approach to Teaching Swimming Quest, 60, 387-404.

Schneider D, Leung R, 1991, Metabolic and cardiorespiratory responses to the performance of wing chun and t'ai-chi chuan exercise. Int J of Sports Med.12 (3):319-23

Song R, Lee EO, Lam P, Bae SC, 2003, Effects of tai chi exercise on pain, balance, muscle strength, and perceived difficulties in physical functioning in older women with osteoarthritis: a randomized clinical trial, J Rheumatol. Sep;30 (9):2039-44.

Sova R, 1999, Ai Chi - Balance Harmony and Healing, DSL, Ltd

Wael A, Muti K, 2002, Effectiveness of using some methods of teaching on swimming skills, PhD thesis, Faculty of Physical Education for Boys, Helwan University.