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Original article

EFFECT OF BRAIN GYM ON MANIPULATING SKILLS AND BALANCE FOR BEGINNERS IN RHYTHMIC GYMNASTICS

REHAB Hafez[1]

Abstract

Aim. Brain Gym used in over 80 countries in Education, Business, Sport and the Performing arts with profound and lasting results.Brain Gym helps to release any 'block' that is holding you back from enjoying the best you can be. It is that simple. The purpose of this study was to investigate the effect of brain gym on manipulating skills and balance for beginners in rhythmic gymnastics.

*Methods***.** Twenty young rhythmic gymnastics, divided into two groups. The experimental group (n = 10) performance brain gym and control group (n = 10) performed traditional exercise. The physical and skillful variables collected before and after eight weeks. Subject's parents and coaches were required to read and complete a health questionnaire and informed consent document; there was no history of injuries, diabetes or recent surgery.

Results. Significant difference between experimental group and control group in Standing Stork Test, dynamic balance and Performance level of Manipulating Skills (MS) for posttest to the experimental group.

Conclusions. Finally, brain gym program for 8 weeks, resulted in an increase in Standing Stork Test, dynamic balance and Performance level of Manipulating Skills. These results have to be taken into account by coaches in order to better understand and applicate of brain gym concepts for technical effects of training.

*Key words***:** Brain Gym, Manipulating Skills, Rhythmic Gymnastics.

Introduction

Rhythmic Gymnastics is the perfect sport to provide a solid base for any athlete to play in any sport. Rhythmic Gymnasts compete in Individual and in Group of five or more manipulate one or two pieces of apparatus: rope, hoop, ball, clubs, ribbon and freehand (no apparatus). Rhythmic gymnastics is a sport that combines elements of ballet, gymnastics, dance, and apparatus manipulation. The victor is the participant who earns the most points, determined by a panel of judges, for leaps, balances, pirouettes (pivots), apparatus handling, and execution. The choreography must cover the entire floor and contain a balance of jumps, leaps, pivots, balances and flexibility movements. Each movement involves a high degree of athletic skill. Physical abilities needed by a rhythmic gymnast include strength, power, flexibility, agility, dexterity, endurance and hand-eye coordination.

There is no separation between mind and body, thinking or motor performance, which depends on the human capacity for physical work and take the hard effort.(Brittani Bush, 2011).

In the modern era the evolution of work due to technological development which made machines are most of the business, and to make this shift nature of the business changed thus to the business mentality of more physical comfort to humans. In contrast, the business mind as well as the rapid development and stunning in the media and how daily information that enters into the human mind naturally and make that person feel tired mentally and erratic mental capacity. In addition, regarded as one of the most dangerous technology factors in the modern era, because despite all the development that has occurred in human rights has not been able to find a cure of the disease, which affects the mind, which is the cause of human evolution, and it is not Alzheimer's disease. The mental and exercise are very important to human activity and the health of his body and his mind for as long as possible in life, there is a difference between mental exercises that increase the focus and information retrieval and other exercises that anyone can be carried out continuously, and between mental

[1] Faculty of Physical Education for Girls, Alexandria University, EGYPT
E-mail address: amr297@aswu.edu.eg
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sports. Mental games are designed for fun and stimulate the mind and focus, and more than exercise, it depends principle of gain and loss in the play. Examples of such games of chess, one of the most important mental sports

The educational process of great importance in the upbringing of generations properly and in different age groups, and for this the researchers and intellectuals routinely to study this area comprehensively and depth to reach the best educational methods that help educators in the implementation of educational curricula as fully as possible and to reach an influential education.

In addition, learning styles of many different and every private learning be built based on validity and reliability in the field of application philosophy of style, but these methods share a common goal: the learner attention from both mental and physical and skill aspects.

The foundations of learning is helping to overlap mental exercises and skill because it is heavier in the process of performance skills and mastery and development of education; it is not possible to focus on exercise technique only, but the introduction of mental training exercises in the learning process. (Weiss, 2000).

It is an element basis, an integral part of the educational process is important, and the duty of the duties of the learner President, during the performance the learner needs high mental demands constantly. As must the learner in the course of learning self-reliance to live up to its level and he has to think creatively and to have the ability to independent visualization during the performance.

Brain Gym is part of the Educational Kinesiology program. Educational Kinesiology means, "To draw out learning, with movement". An advanced movement based program improves neural communication throughout the mind and body to help us access and achieve out highest potential in learning and any life skills. The program is extremely effective and enjoyed by everyone who uses it. (Stephenson, 2009).

Paul E. Dennison, Ph.D., is a professional educator, a pioneer in the field of kinesiology, and an authority on the breakthrough attainment of cognitive and academic skills. In the 1960s, Dr. Dennison began the seminal research into reading achievement and its relation to brain development that would form the basis for the Brain Gym work - the remarkable movement-based learning program that has helped people of all ages turn their learning challenges into successes. Working alongside developmental optometrists, Dennison offered his students a full program in sensory development, including a few simple movements that seemed to help with equilibrium and perceptual skills. These movements would someday spark the idea for Brain Gym (Weiss, 2000).

In 1975, at the University of Southern California, Paul received the Phi Delta Kappa award for Outstanding Research. He was granted a Doctorate in Education for his research in beginning reading achievement and its relationship to cognitive development and silent speech (thinking) skills. He began to develop what would later become Educational Kinesiology (Edu-k) —basing his discoveries on his unique understanding of the interdependence of physical development, language acquisition, and academic achievement.(Andrea, Ginger, 2014).

In the early 1980s, Paul joined forces with Gail, an artist and movement educator, who would later become his wife and collaborator. They co-founded and co-created Educational Kinesiology, the Brain Gym activities, and the Learning-through-Movement series of books and manuals, including Vision Gym: Playful Activities for Natural Seeing. Gail E. Dennison is the originator of the Vision circles, Double Doodle Play, and Movement Dynamics courses. She has served for twenty-three years as Executive Editor of the Brain Gym Journal . (Brain Gym International, 2014: Dennison, Dennison, 1994: 2007).

Now, Brain Gym used in over 80 countries in Education, Business, Sport and the Performing arts with profound and lasting results.(Brain Gym International, 2003).

Brain Gym helps to release any 'block' that is holding you back from enjoying the best you can be. It is that simple.(Stephenson, 2009).

Brain Gym is an educational kinesiology system developed by Dr. Paul Dennison and Gail E Dennison asserts you to accelerate the learning process through physical exercise accelerated after the Dennison's, physical exercise balances the brain, creating new nerve pathways that facilitates learning physically coordination more quickly, finally, leads to spiritual coordination

Kinesiology is the doctrine of human motion; Educational kinesiology then how body movements are learning the basic thought Gym system involves 26 movements in a particular order These movements are designed to activate the brain to function best. The nervous system and sensomotor system helps to communicate according to schedule Highest Efficiency As soon as the brain integrates the movements; learning becomes a whole brain activity and is faster and easier. (Spaulding, et al., 2010).

Brain Gym can be helpful to anyone who wants to improve their learning process, but it can be especially useful for people with brain damage or hyperactivity originally designed for people with learning disabilities. Brain Gym is now much more widespread to become a first grader Reading, or an older child is trying to concentrate enough to play the violin, brain Gym could help them achieve their goals, It is taught by teachers, therapists, businessmen, artists, athletes and parents around the world be used (Cammisa, 1994).

The researcher observed that emergence methods several strategies for teaching and learning did not take place in the use of the Physical Education curriculum. Including Brain Gym that did not make it in practice in the teaching process.

However, were limited to use only in the research, as noted by the researcher that there is a weakness in the performance of the kinetic chain of the skills of gymnastics rhythmic; because the skills of this series of difficult skills lead for the first time and need to the attention of high-concentration.

Hence, the research problem in a few highlight modern strategies when teaching skills in rhythmic gymnastics as well as weak performance skills, and the use of this overlap in the methods of learning may fruitful outcome active and influential through the changes that may occur in the performance level of the students. The purpose of the present investigation was to identify the brain gym on fundamental skills and balance for beginners in rhythmic gymnastics.

Methods

Experimental Approach to the Problem

Two groups (experimental and control) performed a pre and post - training designed intervention in which Dynamic balance (DB), Standing Stork Test (SST) and Performance levels of Manipulating Skills (MS) were recorded. The experimental group (EG) (10 young rhythmic gymnastics) trained 1 hour per day 3 times a week on brain gym besides the traditional training for eight weeks. The control group (10 young rhythmic gymnastics) continued their normal training, while the experimental group completed brain gym program to see whether this type of training modality would have a positive or negative or no effect on (DB, (SST) and (MS).

Samples

Twenty young rhythmic gymnastics, divided into two groups. The experimental group (n = 10) performance brain gymand control group (n = 10) performed traditional exercise. The physical and skillful variables collected before and after eight weeks. Subject's parents and coaches were required to read and complete a health questionnaire and informed consent document; there was no history of injuries, diabetes or recent surgery.

Training Protocol

The 8-week Brain Gym movements consisted of anoriginal 26 Brain Gym movements, sometimes abbreviated as the 26. These activities recall the movements naturally done during the first years of life when learning to coordinate the eyes, ears, hands, and whole body. The twenty-six activities, along with a program for "learning through movement" developed by educator and reading specialist Paul Dennison and his wife and colleague, Gail Dennison who say that the interdependence of movement, cognition, and applied learning is the basis of their work. Clients, teachers, and students have been reporting for over 20 years on the effectiveness of these simple activities such as:

- Concentration and Focus
- Memory
- Academics: reading, writing, math, test taking
- Physical coordination
- Relationships
- Self-responsibility
- Organization skills
- Attitude

Testing Procedures

Subjects were assessed before and after 8-weeks of brain gym 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.

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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– 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

Dynamic balance is very important at sports that need too many joint awareness, and overall proprioception. 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 given two practice trials performed to familiarize. All subjects completed three trials with 1 min recovery between trials. The least time for each trial was recorded.

Manipulating Skills (MS)

- Rhythmic gymnastics involves many movement qualities such as balance, poise, grace, flow of body, coordination, rhythm, and kinesthetic sense.
- Fitness qualities such as agility, flexibility, and posture are also major proponents.
- Rhythmic equipment needed Balls, Hula-hoops, and Ribbon Sticks

The total degree from 35 point. Each issue take five points

1. Spiral Motion using Ribbon
2. Circle Motion using Ball
3. Toss and Catch using Ball
4. Spinning Motion using Hoop
5. Swiggle overhead using Ribbon
6. Rolling Motion using Hoop
7. Bouncing Motion using Ball

Statistical analysis

All statistical analyses were calculated by the SPSS statistical package. The results are reported as means and standard deviations (SD). Differences between two groups were reported as mean difference ±95% confidence intervals (meandiff ± 95% CI).Student's t-test for independent samples was used to determine the differences in fitness parameters between the two groups. The $p<0.05$ was considered as statistically significant.

Results

Table 1. Age and anthropometric Characteristics of the groups (Mean ± SD)

Group	N	Age [years]	Weight [kg]	Height [cm]	BMI [kg/m^2]
Experimental	10	6 ± 1.9	24 ± 2.6	120 ± 3.1	16.5 ± 1.8
Control	10	6 ± 1.2	23 ± 3.3	124 ± 2.2	15.4 ± 1.1

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

Table 2. Mean ± SD and "T" Test between two Groups (experimental and control) in Standing Stork Test Dynamic balance and Performance level of Manipulating Skills

Variables	Experimental group		Control group		T test	Sign.
	Before	After	Before	After		
Standing Stork Test	32.11 ±2.09*	38.31 ±3.11	32.74 ±3.19	33.85 ±2.89	4.60	S
Dynamic balance	10.14 ±1.12*	12.55 ±1.53	9.89 ±0.67	10.03 ±1.08	5.93	S
Performance level of Manipulating Skills (MS)	21.01 ±0.41*	29.13 ±0.73	20.97 ±0.59	26.06 ±0.62	4.86	S

Table 2 shows that:

Significant difference between experimental group and control group in Standing Stork Test, dynamic balance and Performance level of Manipulating Skills (MS) for posttest to the experimental group.

Discussion

The main findings from this study were the significant Increases in Standing Stork Test Dynamic balance and Performance level of Manipulating Skills, which proved the brain gym efficacy.

As a result tended to use researcher and methods built between brain gym exercises and scheduling sequential and random exercise techniques to get to know the kinetic chain performance in rhythmic gymnastics.

Brain Gym is made up of simple and enjoyable movements and activities that we use with our students in Educational Kinesiology (Edu-Kinesthetic) to enhance their experience of whole brain learning. (Dial, et al., 1988). These activities make all types of learning easier but are especially effective with academic skills. The word education comes from the Latin word "educare" which means, "to draw out". Kinesiology is derived from the Greek root "kinesis" which means "motion". It is the study of movement of the human body. (De los Santos, et al., 2002). Educational Kinesiology is a system for empowering students of any age by drawing out potentials locked in the body. Educators have addressed the dilemma of failure in our schools by devising programs to better motivate, entice, reinforce, drill and "stamp in" learning. These programs succeed to a degree. However, why do some children do so well while others do not ? In Edu-Kinesthetics, we see that some children "try too hard" and "switch off" the brain integration mechanism necessary for complete learning. Information is received by the back brain as an "impress" but is inaccessible to the front brain as an "express". This inability to "express" what is learned locks the student in a failure syndrome. The solution, discovered by Edu-Kinesthetics research, is whole brain learning through movement patterning and Brain Gym activities that enable students to access those parts of the brain previously unavailable to them. The changes in learning and behavior are often immediate and profound as children discover how to receive information and express themselves simultaneously (Hyatt, 2007).

The brain is a wonderful organ - the center of everything we do What if you make your brain function more efficiently What if you could learn things faster and exactly the brain Gym claims it can help you do with one Series of simple physical exercises (Weiss, 2000).

Brain Gym has been linked to better academic, social, and physical performance. It is said to include stress relief, increased self-esteem, and greater awareness of personal space (Cammisa, 1994).

Either the recommended way of learning brain Gym is with a certified teacher, through a class or private sessions there are both basic and special interest classes and brain Gym instructors are available all over the world you can also learn from Paul Dennison and Gail E Dennison book Brain Gym (Thomas, Hatton, 1993).

While the Dennison's claim that Brain Gym is effective in improving memory, many opponents claim that it is a pseudoscience that is not scientifically proven to really help learn these opponents believe that all the improvements with brain- Gym can be attributed to the placebo effect, which benefits greater attention for learning, and the overall benefits that exerts. (William, 2014).

From relaxation to calming and self-care . . . from visual and auditory skills to self-expression. From authentic play to collaboration and celebration, this is the nature of Edu-K classes worldwide, and has been for more than 30 years. (Mahar, et al., 2006, Khalsa, et al., 1988)

Educational Kinesiology (Edu-K for short) is a comprehensive and enjoyable learning-skills program for people of all ages who want to experience intrinsic mastery of their subject. "Educational" comes from the Latin word educate, which means to draw out, lead forth, or educe. "Kinesiology," from the Greek root kinesis (the production of motion), means the study of the principles of mechanics and anatomy in relation to human movement. Educational Kinesiology is a system, then, for empowering learners to notice how they move so they can draw out their innate potential. (Wolfsont, 2002).

Brain Gym Instructors, specialists in a full range of Edu-K coursework, recognize movement and cognition (the body and brain) as one whole system, see the muscles and senses as working in synergy, and understand learning to be built on play—cultivating the senses and motor skills, rather than overriding them. From development of the proprioceptors, the "brain cells in the muscles," to elaboration of the visual map that makes up one's kinesphere of coordinated skills, the Edu-K work fosters movement as a way to support and develop the innate intelligence that fires the synapses for learning. (Sifft, & Khalsa, 1991).

The Edu-K curriculum of honoring the learner's body wisdom by moving to internalize meaning provides opportunities for the development of the following main areas of human experience (Russek, 2004).The physical skills of learning – this term (for a concept unique to Edu-K) refers to the bodily-kinesthetic intelligence—the sensorimotor mechanics, such as eye teaming or head turning—behind each academic and cognitive skill.

Self-regulation – the self-care, initiative, and self-direction that are best discovered through movement and social interaction(Mahar, et al. 2006).

Structured play – interactions with others or with objects in which a theme provides a creative context for the unfoldment of learning through purposeful movement.

Symbolic thinking – mental processing in which, by mastery of the coding of words and images, concrete physical experience is represented (Horsley, 2004).

A esthetic appreciation – the perception of beauty and other sensory/emotional values experienced through pattern-seeing, in such areas as nature, fine arts, and coordinated movement.

The Edu-K balance process, "Five Steps to Easy Learning," brings cognition together with intentional movement. A basic balance addresses three learning dimensions, and calls on the following five learning principles (Spaulding, et al., 2010).

- Draw Out: Intelligence Is Inborn
- Focus: Attention Follows Intention
- Notice: We Learn What We Actively Experience
- Move to Learn: Growth Is a Search for Balance, and Imbalance a Search for Growth
- Interconnect: Each One of Us Is Affected by Every Other

Conclusions

Finally, brain gym program for 8 weeks, resulted in an increase in Standing Stork Test, dynamic balance and Performance level of Manipulating Skills. These results have to be taken into account by coaches in order to better understand and applicate of brain gym concepts for technical effects of training.

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