

Effect Of Swiss Ball Exercises For Improving Selected Physical Parameters And Level Of Performance Of Some Floor Exercises Skills In Gymnastics.

BY

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Abstract

This study aims to identify the impact of using Swiss ball exercises on increasing some physical parameters and level of performance in gymnastics of (30) female students of the fourth grade in the Faculty of Physical Education at the University Sadat City. A pre-test post- test, control group design was used in which a (range of motion of the spine, hum strings, pelvis , muscle power arms, legs , balance, and strength of the abdominal muscles) and to learn some skills (Forward Handspring and Back Ward) before and after eight weeks with two sessions . The experimental group (n=15) followed an eight weeks Swiss ball exercises program while the controls (n=15) received no intervention.

the research tools were physical tests, level skill tests, and exercises program with Swiss ball , the researcher has been used statistics treatment (the arithmetic mean, standard deviation, simple correlation coefficient, and (T) test, the improvement rate , and the most significant results that exercises with Swiss ball had been used in the research led to differences in improvement between the two groups experimental and control groups for the experimental group in the physical variables (the flexibility, muscle strength, muscle power and balance) ranged between (21.38% : 53.81%) , and in the level of performance skills back walkover and the front handspring as the percentage of improvement between the two groups ranged as follows (23.87% : 26.51%).

Key words : Swiss Ball Exercises, ,floor exercises in gymnastics.

Introduction and research problem:

Assistant tools are considered one of important factors in teaching gymnastic skills and acquiring the physical abilities and motor fitness. The assistant tools also raise the technical performance level of skills. Numerous studies as (Yeadon & Rosamonds 2012), (Al-Khalifa & Motawe 2012), (Rosamond 2006), (Shehata and Al-Shazly, 2006), (Shehata, 2003), (Peter H 2003) & Al-Salam, 2001) concur with the importance of using the assistant tools that work on simplifying the process of education, guiding the motor performance in the right way, grading in teaching the difficult skills, reducing the effort and saving time during teaching and training. In addition to that the assistant aids are used in correcting the technique errors, especially for beginners. Also the assistant tools provide sensory experiences that enrich the educational situation, prove the information in the mind of the learner of the selected skills and require his/her attention, which works to increase his/her ability to imagine to make the process of education easy.

Swiss Ball is one of assistant tools that is used in fitness programs and which helps the body to gain fitness and dynamic skills (Jonir, 2005), (Rose 2011).

Different terms were used to describe the Swiss ball; such as the stability Ball, the exercise Ball, the Fitness Ball and the wellness Ball; as shown in (Jonir, 2005), (Rose 2011) (Aagaard 2011). It is a ball made of elastic rubber, filled with air and its diameter is between 45 cm: 85 cm, to suit all sizes and lengths for those who practice the exercises using it. The Swiss Ball become the effectiveness part of the newly fitness development programs, as it works for strengthening trunk muscles and increasing control of abdomen and back muscles. Also, it works for the consistency of the muscular work between the upper limbs and lower limbs, which

helps to balance in general. It works for developing the flexibility and improving the static and dynamic balance, and muscular control, (Detz, 2009), (Jakubek, 2007), (Condron, 2007).

(Singhbal, 2012), (Lehman & Macmillan, 2006), (Petko, 2006), (Lehman & Hoda, 2005¹) & (Flett, 2003) mention that the unstable surface of the Swiss Ball works to improve muscular tone, and leads to stimulate a greater number of muscular fibers and the deep muscles that are difficult to be developed and brought into performance of exercises that use stable surfaces, which works to improve the muscular strength and the muscular nervous compatibility. In addition (Motawe & Khalil 2014), (Hassanein, 2001) & (Bompa, 1998) refer that the physical development of the physical characteristics of each activity is linked closely to the skill level of performance and the level of physical characteristics is improved by the development of physical preparation programs which aims to bring physiological changes with specific nature towards the type of the practiced activity. (Ward, 1997) states that the proficiency of the beginners in gymnastics in the basic skills is considered one of the most important basics and special requirements to help them to master the skills and access to the upper levels, so it is a must to grade the level of performance skills of the highest difficulties and use the latest training methods and developed tools.

With the presence of many different methodological skills that are taught to female students in the Faculty of Physical Education at the University of Sadat City ranged in its difficulty over the four academic years, the fourth year has the largest share of the skills of the difficult

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nature which require the availability of special physical characteristics for its performance as well as the need to daring and fearlessness. Some examples of these skills are (back walkover) , and (front handspring) which requires some of physical abilities such as (spinal flexibility, stretching of hamstrings muscles, pelvic joint flexibility, and the power of the arms and leg muscles and strength of the abdominal muscles) The researcher has noticed through teaching the previous two skills the weakness in their own physical abilities as well as the difficulty of acquiring and mastering the skills artistic performance by the students required by the nature of each other's skill.

The researcher has found that the use of the Swiss Ball as an assistant tool may help to improve the physical characteristics of that skills , as it works for the speed of learning and improving performance level for these skills through her experience in teaching and permanent development of the process of education and the attempts to facilitate the acquisition of skills performance and overcome its difficulty through the use of the innovations of education and training. , in addition to the vision concerning the importance of employing use of the assistant tools of the gymnastics in development of the physical and skills aspects in teaching the gymnastics skills in less time, with less effort and increasing the effectiveness of process of education for both the teacher and the learner.

Objectives:

The research aims to develop a program using the Swiss Ball to identify the improvement of some physical abilities (the flexibility, muscle strength, muscle power and balance) and its impact on learning of back walkover, and front handspring skills .

Hypothesis:

1. There are statistically significant differences between the test and

retest of the experimental group in the physical variables (the flexibility, muscle strength, muscle power and balance) in favor of the post measurement.

2. There are statistically significant differences between the two post measurements of the experimental group and the control group in the physical variables (the flexibility, muscle strength, muscle power and balance) and skill performance level of the back walkover, and the front handspring in favor of the experimental group.
3. There are statistically significant differences between the pre measurement and post measurement of the control group in the physical variables (the spinal flexibility, stretching of hamstrings muscles and the pelvic joint flexibility, the power of the arms and leg muscles, balance and strength of the abdominal muscles) in favor of the post measurement.

Material and methods

experimental method are used for two groups; (experimental group and control group) . The research population has been selected by the deliberate way and it is the students of the fourth year, belonging to the Faculty of Physical Education at the University Sadat City for the academic year 2012/2013. The research population consisted of 63 female students. The research sample that was 45 female students selected from the research population 63 female students, was divided into 15 female students of the control group, 15 female students of the experimental group, and 10 female students of the exploratory group from inside the research population and outside the research sample.

Exploratory Study

Ten female randomly chosen from population and outside the core sample contains of ten female students to conduct the Exploratory study on Sunday, 03/03/2013 in order to identify: - how the tools and equipment used in the Physical ability measurements and program sessions are suitable, - the assistants understand the Methods of measuring the Physical ability measurements, - the proposed exercises are suitable to the nature of sample, - calculating the scientific treatments for Physical ability measurements used in the research, - trying a the session of the program to make sure of the time of the exercises performance, its arrangements and calculating the times of exercises.

Data Collection:

Tools and Devices:

Graduated ruler, chalk and a stopwatch, polar watch A₁

Physical ability measurements:

Stand-and-Reach test it used to measure the flexibility of the trunk and thigh, Bridge up test it used to measure the spinal flexibility, Side Split test it used to measure the flexibility of Pelvic joint , medicine ball chest pass test it used to measure the muscular ability sit- up and bending knees it used to measure the strength Vertical Jump test it used to measure the muscular ability of legs Standing Balance to measure static balance (Appendix. 1)

Physical ability measurement of the Level of Skill Performance in Gymnastics:

The level of skill performance of the two skills(back walkover, and the front handspring) (Appendix. 2) under research was measured by giving a grade for the skill by a committee composed of four

faculty members, and the greatest grade and the least grade were deleted and the average of remaining grades were found. Each skill has been evaluated separately of five grades divided on the skill parts. (Appendix. 3)

Proposed Training Program:

After going back to the scientific references, research and previous studies that are related to the research field and by the Internet and watching videos, and images of the Swiss Ball Exercises in the field of gymnastics as an assistant tool to learn the skill performance, the researcher has limited a group of the Swiss Ball Exercises, (Appendix. 4) to put the components of the program to commensurate with the age stage and the physical and skill level of the female students and to achieve the objective of the program in improving the physical level, as well as teaching the selected skills. (Kluwer, Williams, & Wilkins, 2014), (Werner, Hoeger, & Sharon, 2016), (Flett, 2003), (Bryden, 2009), (Kennedy C, 2014), (Condron, Swiss Ball Cor Workout, 2007), (Detz, 2009), (Rose, 2011) and (Casey & Kevin , 2012).

When developing the Swiss Ball Exercises, the researcher has concerned with the following points: - to achieve the objective that those exercises were put for, - to suit the age stage and physical level of the female students, - to range the exercises from easy to difficult and from simple to complex, - to link to the content of the sessions with the skills, - to take into account the factor of security and safety in the selection and implementation of exercises, - exercises are flexible so that some exercises can be modified or changed, if necessary, and - the Swiss Ball Exercises are at the same performance of skills, and in the direction of the muscle work skills.

Table (1)
Time Division of the Program:

	Time	Experimental group	Control group
Warming up	5 min	Walking, running, bounce, swing, stretching	Walking, running, bounce, swing stretching
Physical preparation	25: 40 min	Proposed Exercises by the Swiss Ball for the development of the targeted physical abilities.	Physical exercises without using the Swiss Ball that works on developing the same targeted physical abilities.
Educational part	40: 25 min	It aims to teach the back walkover and the front handspring and the Swiss Ball Exercises have been used in the ranging of teaching the two skills.	Ranging in teaching the skill of back walkover and front handspring by the Exercises followed just in the lecture.
Ending	5 min	It includes lengthen and relax exercises.	It includes lengthen and relax exercises.
Total time	75 min	75 min	75 min
Number of sessions per week		2 Sessions	2 Sessions
The total number of sessions		16 Sessions	16 Sessions

Identifying the Key Variables

The researcher has surveyed for the references and available research and she has accessed to the Internet in this field and displays to the experts to determine the program variables (Appendix No. 5) She has found that the intensity was between 65% - 80% as the heart rate was used as an essential indicator to the intensity of the Swiss Ball Exercise that is used with the beginner female trainees using the watches of brand (Polar) for identifying and measuring the pulse during the Exercise (Appendix. No. 6). As each trainee wears her own pulse watch and belt during exercising this shows the indicator for her own pulse during the exercise. The targeted heart pulse for the female student has reached 65% of the maximum rate of the heart pulses, which is calculated using the following formula: $(220 - \text{the female student age})$ (Allawi and Abdel-Fattah, 1984) (Fox, 1984) and during the first and the second weeks and following Exercises have been applied 1, 3, 4, 5, 6, 7, 8, 9, 20, 27) in the first and second session and the

Exercises (1, 2, 3, 10, 18, 22, 23, 24, 25, 26) the third and fourth sessions. They were 10 exercises, and the training intensity has been increased every two weeks by 5% of the maximum heart rate for up to 70% in the third and fourth weeks. The following exercises have been applied: (9, 10, 11, 12, 19, 20, 21, 23, 27) in the fifth and sixth sessions and the exercises: 8, 9, 10, 12, 13, 14, 19, 20, 21) the seventh and eighth sessions, and they were 9 exercises. In the fifth and sixth weeks, the intensity of training was 75%, the exercises that have been applied were: (5, 6, 8, 9, 11, 12, 16, 19) in the ninth and tenth sessions, the exercises: (12, 15, 17, 19, 20, 21, 25, 27) in the eleventh and twelfth session and the Exercises were 8. Finally, in the seventh and eighth weeks the intensity increased up to 80% and the exercises that have been applied were: 9, 10, 12, 17, 12, 19, 21) in the thirteen and fourteenth sessions and the exercises: (5, 8, 9, 11, 12, 19, 21) in the fifteenth and sixteenth session, the exercises were 7.. The number of groups have ranged of 1-3

and the duplicates from 10-20 depending on the nature of the training performance, and the speed of performance as required by each training. The sessions were two per week, the time of session was 75 minutes, the Exercises ranged from 8 to 12 in the session, and the rest time ranged from 20 seconds to two minutes (120 seconds), (Appendix No. 7).

Scientific treatments of the Physical ability measurements used in the research:

First: The Sincerity:

The researcher has calculated the sincerity of differentiation using the Upper Quartile and the Lower Quartile then found the differences between the two variables, as shown in table 6:

Table (2)
Significance of differences between Lower Quartile and the Upper Quartile in the variables under research. N = 10

Variables		Lower Quartile		Upper Quartile		Differences between the two means.	Value of t	Significant
		Mean	std. deviation	mean	std. deviation			
Physical variables	Stand-and-Reach	4.33	1.15	8.56	1.59	4.23	10.02	Significance
	Bridge up	120.25	2.64	107.14	3.74	13.11	13.6	Significance
	Side Split	30.29	3.88	21.17	2.56	9.12	7.53	Significance
	medicine ball chest pass	346	0.51	495	0.36	149	8.76	Significance
	sit- up	14.00	2.77	18.00	1.96	4.00	5.56	Significance
	Vertical jump	18.01	3.17	28.12	2.23	10.11	7.56	Significance
	Standing Balance	1.423	0.673	2.942	0.421	1.915	7.24	Significance

* The tabular value of T = 2.262 at the significance level of (0:05)

Table (2) shows the significant differences between Lower Quartile and the Upper Quartile in the variables under research., as the calculated value of T ranged from (5.56 : 13.60) which is larger than the tabular value of T at the significance level of (0:05), which indicates to the Physical ability measurements sincerity in measuring what it has been put for.

Second: Stability:

In calculating the stability the method the researcher used test- retest and then retest it again on the exploratory sample. The first retest has been done on Sunday, 03/03/2013, and she has tested re-test under the same conditions on Sunday, 03/10/2013 after one week. The correlation coefficient Pearson has been calculated between the results of the first and the second retests and the following table shows that

Table (3) correlation coefficient between the first re-test and the second re-test in the variables under research. N = 10

Variables	First re-test		Second re-test		Correlation coefficient	Significance	
	mean	std.deviation	Mean	std.deviation			
Physical variables	Stand-and-Reach	6.00	1.49	5.93	1.67	0.95	Significance
	Bridge up	113.90	4.33	114.30	3.95	0.78	Significance
	Side Split	23.60	3.37	24.00	3.09	0.884	Significance
	medicine ball chest pass	413.30	19.45	414.70	16.86	0.94	Significance
	sit- up	15.90	1.45	15.70	1.95	0.81	Significance
	Vertical jump	23.10	3.07	23.00	2.62	0.87	Significance
	Standing Balance	1.89	0.37	1.87	0.43	0.93	Significance

* The value of Correlation coefficient = 0.514 at the significance level of (0:05)

Table No. (3) shows the correlation relationship between the first and the second re-tests in the variables and the value of Correlation coefficient has ranged between (0.776 : 0.952) which indicates the stability of the Physical ability measurements.

Measurement:

The researcher has conducted the pre measurements of the variables included: (age, height, weight, physical attributes) on Wednesday 03/06/2013 and on Thursday, 03/07/2013. The skills level of the back walkover and the front handspring were not measured because the female students do not know the two skills (Appendix No. 6) , and they did not study them before.

Re-test of the Research:

The program has been applied on the research sample outside of the school day twice weekly (on Monday and Wednesday) for 8 weeks during the period from 11/03/2013 to 02/05/2013, from eight o'clock to quarter past nine in the morning. The researcher has conducted the post measurements of the variables by the same way that the pre measurements have been conducted on 05/05/2013 and on 06/05/2013, and the skill levels of the two skills have been measured on 07/05/2013.

Data Analysis "Statistical Package for the Social Sciences" SPSS was used to calculate the mean, standard deviation,

and from quarter past two to half past three after the school day. The session time was (75) minutes. The experimental group and the control group has been exchanged as the re-test of the experimental group has been during the initial weekly session in the morning before the school day and the second weekly session after the school day, and vice versa with the control group. This has been done on the two groups (the experimental and the control groups) in the same order, timing and content in every educational training session parts, with the exception of the part of the physical preparing and the main part as they have been used the Swiss Ball, whether the exercises were for the physical part and the development of the physical characteristics, or they were specific teaching exercises using also the Swiss Ball and only for the experimental group, and without the use of the Swiss Ball for the control group.

Post Measurements:

skewness and kurtosis, Pearson correlation coefficient, t.Test, the improvement ratios (percentage) and the results demonstration and discussio

Table (4)
Significance of differences between the pre and post measurements of the experimental group in the physical variables N1 = N2 =1

Variables		Pre measurement		Post measurement		Differences between the two means.	Value of t	Improvement Ratio
		Mean	std.deviation	mean	std.deviation			
Physical variables	Stand-and-Reach	5.007	1.445	9.600	2.369	4.593	10.568	47.83%
	Bridge up	113.067	5.763	84.467	10.643	28.600	8.182	38.79%
	Side Split	25.533	1.598	16.600	2.537	8.933	18.998	53.81%
	medicine ball chest pass	519.400	50.080	660.667	49.924	141.267	16.970	21.38%
	sit- up	14.000	1.464	25.267	2.219	11.267	26.166	44.59%
	Vertical jump	20.600	2.230	32.533	2.722	11.933	16.569	36.68%
	Standing Balance	2.6023	0.497	5.535	0.448	2.933	22.207	52.99%

* The tabular value of $t = 2.04$ at the significance level of (0:05)

Table (4) shows that There are significant differences between the pre and post measurements of the experimental group in the physical variables, as the calculated value of t. ranged between (8.182 :

26.166) and it is larger than the tabular value of t at the significance level of (0.05), in favor of the post measurement, and the improvement ratio has ranged between (21.38 % : 53.81%).

Table (5)
Significance of differences between the two post measurements of the control group and the experimental group in the physical variables N1 = N2 =15

Variables		Control group		Experimental group		Differences between the two means.	Value of t	Improvement Ratio
		Mean	std.deviation	mean	std.deviation			
Physical variables	Stand-and-Reach	6.577	1.233	9.600	2.370	3.023	*4.384	31.49%
	Bridge up	99.333	2.820	84.467	10.643	14.867	*5.230	17.60%
	Side Split	22.400	1.765	16.000	2.537	5.800	*7.269	34.94%
	medicine ball chest pass	540.000	54.740	660.667	49.924	120.667	*6.308	18.28%
	sit- up	18.267	1.831	25.267	2.2189	7.000	*9.424	17.69%
	Vertical jump	25.133	3.335	23.533	2.722	7.4000	*6.657	22.75%
	Standing Balance	3.450	0.612	5.535	0.448	2.267	*10.654	40.96%
level of skills performance	back walkover	6.467	0.855	8.800	0.751	2.333	*7.940	26.51%
	front handspring	6.467	0.790	8.733	0.776	2.085	*7.928	23.87%

* The tabular value of $T = 2.04$ at the significance level of (0:05)

Table (5) shows that the There are significant differences between the two post measurements of the control group and the experimental group in the physical variables and the level of skills

performance under the research, as the calculated value of (t) ranged between (4.384 : 10.654) and it is larger than the tabular value of T at the significance level of (0.05), in favor of the experimental

group, and the improvement ratio has ranged between (17 : 40.96).

Table (6)
Significance of differences between the pre and post measurements and the improvement ratio of the control group in the physical variables N1 = N2 =15

Variables		Pre measurement		Post measurement		Differences between the two means.	Value of t	Improvement Ratio
		Mean	std.deviation	mean	std.deviation			
Physical variables	Stand-and-Reach	5.813	1.396	6.577	1.23301	0.763	6.704	11.96%
	Bridge up	109.867	4.086	99.333	2.82000	10.533	15.134	10.60%
	Side Split	25.333	1.397	22.400	1.76473	2.933	5.634	13.09%
	medicine ball chest pass	508.200	53.134	540.00	54.73964	31.800	5.918	59.85%
	sit- up	14.067	1.387	18.267	1.83095	4.200	8.749	22.99%
	Vertical jump	21.533	1.959	25.133	3.33524	3.600	5.029	14.32%
	Standing Balance	2.609	0.508	3.450	0.612	0.841	8.927	24.37%

* Value of t = 2.04 at the significance level of (0:05)

Table (6) shows that there are statistically significant differences between the pre and post measurements of the control group in the physical variables, as the calculated value of (T) ranged between (5.634 : 15.134) and it is larger than the tabular value of T at the significance level of (0.05), in favor of the post measurement, and the improvement ratio has ranged between (10.60 : 59.85).

Discussion of Table No. (4) shows that there are statistically significant differences between the two pre and post measurements of the experimental group in the physical variables and is represented by the Physical ability measurements of (Stand and reach test – Bridge up - Sid Split - medicine ball chest pass - sit- up - Vertical jump - Standing Balance) in favor of the post measurement, and the improvement ratio in the physical characteristics has ranged between (21.38% : 53.81%).

The researcher attributes that this progress in the physical characteristics is due to that the Training Educational Program using the Swiss Ball Exercises that was used with the experimental group had been effective due to it contained exercises that

develop its flexibility of spine, behind the thigh and the flexibility of pelvic joint.

The program also included exercises to develop muscle strength of the arms and shoulders and the muscle strength of legs, and also included exercises that work on the development of balance, and the strength and bearing of the abdominal muscles.

Moreover, these Exercises have gained acceptance from the female students which made them do them more positively, which has had a positive impact on their keen to continue in the performance and they did not feel tired quickly.

In addition to that the Swiss ball exercises work on increasing the resistance of the working muscles, such as the muscles of the abdomen, back, and others and they are also working on controlling the working muscles and straightening them in addition to improving the internal fortitude and inner strength of the female student. The Swiss Ball also works on the development of muscle strength of the trunk.

The researcher states that The Swiss Ball is an important tool for developing and improving the flexibility, balance,

strength, and many other physical characteristics. Recently it became one of the components of ability development programs. This is consistent with the results of the previous researches of (Rafael, Clare, Pecson, & Imamura, 2016), (Kennedy & Lewis, 2014), (Pikhtina, 2015), (Hyson, 2016), (Duncan, 2009), (Sndstrup, Jakobsen, A A., et al. 2012), (Lehman & Macmillan, 2006), (Lee & Cho, 2013), (Ismail, 2010), (Abdel Raheem, 2010), (Hedaiet, 2007), (Bakr. R, 2013).

Indeed they reported that the Swiss Ball Exercise improves the strength of abdominal and trunk muscles, as well as it develops stretching, flexibility and balance. In addition to that training the Swiss Ball on non-static surface increases the stimulating of greater number of muscle fibers to do stronger muscular contraction.

The Swiss Ball also works on the training and developing the deep muscles that are difficult to be trained in the exercises done on stable surface, as well as it works on making more power to control the performance than training on a stable surface. The Swiss ball exercises are working on developing the nervous muscular control, hard and dynamic balance and muscular strength especially the full area of trunk (Jakubek, 2007).

This is also consistent with what were mentioned by (Czaprowski, Afeltowicz, Gebicka, & Paulina, 2014), (Condrón, 2007), (Montanaro, 2007), (Milligan, 2005), (Seung, 2014) (Petko, 2006), (Craig, 2005) that Training using the Swiss Ball is working on increasing the internal consistency (muscular control) and working on economizing in effort.

On the other hand, the study of (Lehman & Hoda, 2005) confirmed that the training using the Swiss Ball works on strengthening the fully muscles of trunk and the abdomen in particular, increasing the strengthening of the back muscles, and

this is what achieves the validity of the first hypothesis which stipulates " There are statistically significant differences between the pre measurement and post measurement of the experimental group in the physical variables (the flexibility, muscle strength, muscle power and balance) in favor of the post measurement." in favor of the post measurement."

Third, discussing the results of the second hypothesis:

Table (5) shows that There are statistically significant differences between the two post measurements of the control group and the experimental group in the physical variables and is represented by the Physical ability measurements of (Stand and reachtest – Bridge up - Sid Split - medicine ball chest pass - sit- up - Vertical jump - Standing Balance) in favor of the experimental group, and the improvement ratio in the physical characteristics has ranged between (21.38% : 53.81%). As well as the presence of statistically significant differences in the two post measurements of the control group and the experimental group at the level of skills performance of the skill of the back walkover and the front handspring in the favor of the experimental group and the improvement ratio between the two groups was as follows: (23.87% and 26.51%) respectively.

The researcher states that the differences between the control group and experimental group in post measurement may return to the used program including the exercises of using the Swiss Ball has led to an improvement in the physical level of the experimental group more than the control group, which was subject to the program adopted in the college. The importance of the Swiss Ball Exercises and the benefits of them on the physical side of the female students have been explained and proved in the first hypothesis. Thus as a result of improving the physical level, this has led to an improvement in the skills

level of the female students. The researcher states that the efficiency of the physical condition is a clear indicator of the level of skill as the improvement in the physical condition of the female students is a direct cause of the improvement in the skills level. This is consistent with what have been mentioned by (Motawe & Khalil, 2014), (Hasanain, 2001) and (Lehman & Macmillan, 2006) that there is a direct correlation relationship between the physical level and the skill level of the individual and the physical condition has a significant and direct impact on the level of skills performance. The rationale for using the Swiss Ball is to guide the female student to the correct dynamic path, especially for the beginners whose nervous muscular compatibility have not arrive to optimize yet. Also by The Swiss Ball as an assistant tool, errors and situations can be corrected and secure positive help can be given to the female student also it works on letting the female Gymnastics player recognize the emptiness around her and facilitate the rhythm performance and proper time zone, in addition to reducing the fear factor from falling or injury during the performance, which improves the skill level (Yeadon & Rosamonds, 2012) and (Rosamond, 2006). In addition the results are consistent with (Bakr R, 2013), (Al-Sawaf, 2012), (Mohammed, 2011), (Abdul Rahim, 2010), (Abdel Kawi, 2009), (Williardson, 2007) and (Moussa, 2006) that the use of the Swiss Ball Exercises has led to a significant improvement in the physical condition and level skills in gymnastics and other sports. This is what is achieved by the validity of the second hypothesis, which states that " There are statistically significant differences between the two post measurements of the experimental group and the control group in the physical variables (the flexibility, muscle strength, muscle power and balance) and skill performance level of the back walkover, and the front handspring in favor of the experimental group.

Discussing the results of the third hypothesis:

Table (6) shows that There are statistically significant differences between the pre and post measurements of the control group in the physical variables and is represented by the Physical ability measurements of (Stand bending and reach test – Bridge up - Sid Split - medical ball throwing - sit-up - Vertical jump - Stork stand) in the favor of the post measurement, and the improvement ratio in the physical characteristics has ranged between (10.60 : 59.85).

The researcher states that the improvement happened in the control group may be due to the regularity of the students in retesting the (traditional) followed program as this improvement is due to that the (traditional) used method has achieved progress in the physical characteristics required by the performance. And this progress appears in the results of the control group as a logical and acceptable result. It is assumed that the (traditional) used method is a direct lesson subject to scientific bases and proper learn ways are used in it to achieve the desired objectives. This is in line with what was referred to by (Shenoda & MAnsour, 1999), (Berham, 1995) and (Sery, 1993) that the method used in the field of teaching is the distinctive form in implementing the lesson taken by the teacher as a mean of education. In addition to the practice of the female students of the skill in practice, training and repairing errors on an ongoing basis would improve the physical abilities and level of performance. The teaching aids will coordinate the movement of the female student, clarify the direction and control the right rhythm and timing. All the above achieve the validity of the third hypothesis, which states that There are statistically significant differences between the pre measurement and post measurement of the control group in the physical variables (the spinal flexibility, stretching of hamstrings muscles and the

pelvic joint flexibility, the power of the arms and leg muscles, balance and strength of the abdominal muscles) in favor of the post measurement.

Conclusions:

In the light of the objectives of the research, hypotheses, sample limits, the methodology used, the statistical treatments and the outcomes, the researcher has reached the following conclusions:

- 1) Swiss Ball Program has a positive effect on the physical variables.
- 2) Swiss Ball Program has achieved better improvement ratios than the traditional exercises in the physical variables and represented in (the flexibility, muscle strength, muscle power and balance) and the difference in the improvement ratios between the control group and experimental group ranged between (21.38% : 53.81%)
- 3) Swiss Ball Program has achieved better improvement ratios than the traditional exercises in improving the level of skills performance of the two skills of back walkover and the front handspring as the percentage of improvement

between the two groups ranged as follows (23.87% : 26.51%).

Recommendations:

In the light of the conclusions that could be reached and the sample limits of the research, the researcher recommends the following recommendations:

- 1) Need to develop the Swiss Ball Exercises as a part of the contents of the teaching session in the lesson of gymnastics in the part of physical preparation because of its positive impact on the improvement of the physical abilities (flexibility, muscle strength and muscle power).
- 2) Need to use the Swiss Ball as an assistant tool in teaching the gymnastics skills of the ground movements.
- 3) Making similar studies to determine the impact of Swiss Ball Exercises on the other remaining physical abilities.
- 4) Making similar studies to determine the impact of Swiss Ball Exercises on the improvement of skill performance on other systems in gymnastics.

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