



SWEDISH JOURNAL OF SCIENTIFIC RESEARCH

ISSN

2001- 9211

Issue 3 March

Volume 3 - 2016





**SWEDISH JOURNAL™
OF SCIENTIFIC RESEARCH**

ISSN. 2001-9211

*The Swedish Journal of Scientific Research (sjsr)
ISSN 2001-9211. Volume 3 . Issue 3. March 2016*

No.	Title	Page
01	JUGGLING TEST BATTERY	01-11
02	PARENT PERCEPTIONS OF BARRIERS TO PHYSICAL ACTIVITY FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS	12-18
03	REPRESENTATIONAL SYSTEMS AND THEIR RELATIONSHIPS TO SELF-EFFICIENCY OF PRACTITIONERS AND NON-PRACTITIONERS STUDENTS OF SPORTS IN KURDISTAN	19-30
04	SOME ASPECTS OF ATTENTION AND SKILL RELATIONSHIP ACCURATELY CORRECTION TO THE BASKETBALL PLAYERS MIDDLE CLASS	31-43
05	SOME BIO KINEMATIC VARIABLES AND ITS RELATIONSHIP WITH ACHIEVEMENT 25 M FREE STYLE SWIMMING	44-49
06	THE EFFECT OF A PROPOSED ELECTRONIC GUIDE IN TEACHING SOME GROUND MOVEMENTS IN GYMNASTICS IN SECONDARY STAGE USING VARIOUS (PARTIAL-COMPLETE-MIXED) LEARNING METHODS	50-54
07	THE EFFECT OF THE DIFFERENT POSITIONS DURING TENNIS PERFORMANCE ON THE MORPHOLOGY OF THE VERTEBRAL COLUMN	55-68
08	THE IMPACT OF LEARNING SOME BASIC SWIMMING SKILLS ON FEAR LEVEL DEGREE AMONG PHYSICAL EDUCATION STUDENTS	69-73
09	THE PSYCHOLOGICAL, PERSONAL AND EMOTIONAL COMPATIBILITY AND ITS RELATION TO PRECISION IN SOME BASIC FUTSAL SKILLS AMONG DIYALA TEAMS PLAYERS	74-80

JUGGLING TEST BATTERY

EVANGELOS BEKRIS ^a, ARISTOTELIS GIOLDASIS ^b

^a PhD, Department of Physical Education and Sport Science, National and Kapodistrian University of Athens, Greece.

^b PhD student in University of Peloponnese “School of Human Movement and Quality of Life Sciences”

vag_bekris@yahoo.gr giold_telis@yahoo.gr

Abstract

Juggling is considered as a basic technical skill which is often ignored by soccer coaches. It provides players with the ability to control the ball after activities such as corners, free-kicks, goal-kicks, throw-ins, and crosses. Furthermore, juggling improves their coordination and balance abilities. Due to the fact that there is not any systematic study for juggling evaluation with gradual difficulty the current research project aims to develop a battery of juggling tests with increasing difficulty. In addition the researchers include movements which are similar to the game conditions such as zig zag, jumps and various body contacts. In the current study forty four players participated, twenty two of which were experienced soccer players and twenty two were recreational athletes. The results confirmed the reliability and validity of the tests. Furthermore, it was found that the difficulty of the tests was gradually increased when the researchers added limitations regarding time, distance, and contact surfaces.

Key-words: soccer, test, skill, technical, juggling

1. INTRODUCTION

The interaction among physiological, psychological, social, tactical and technical factors determines individual and team performance in soccer (Bangsbo, 1993; Little & Williams, 2006). Previous research (Açıkada, Hazır, Aşçı, Turnagöl, & Özkara, 1998; Stølen, Chamari, Castagna, & Wisløff, 2005; Stratton, Reilly, Williams, & Richardson 2004) described soccer as a physical contact game that requires movements with (controls, turns, passes, dribbles, shoots) or without ball (jogging, sprints, direction changes, tackles, jumps, ground and air challenges). Furthermore, the speed and precision of these movements has been found to determine the quality of performance (Fitts & Posner, 1967). Soccer is considered as an open game (Knapp, 1977) the techniques of which require interactions among cognitive, perceptual and moving abilities (Bate, 1996). Limitations such as time and space, as well as the presence and the number of opponents may influence these interactions. That means that the players have to apply the appropriate skill sequences and standardize their performance with the minimum time and energy outlay in order to be effective in game conditions (Sotiropoulos & Bekris, 2007). Therefore players have to practice hard to improve their skills which are defined as the acquired ability to produce predetermined results with maximum certainty often with the minimum expenditure of time and energy (Knapp, 1977).

Although juggling is considered as a main technical skill it is often ignored in soccer literature. Many coaches wondering *Why is juggling important?* or *We do not juggle the ball in the game so it is not important to practice.* Contrary to these views juggling ability is used very frequently in game conditions. Specifically, it provides players with the ability to control the ball after activities such as corners, free-kicks, goal-kicks, throw-ins, and crosses. In addition juggling improves the ability of players to read the spin of the ball, as well as their coordination and balance. Finally, players learn to use several contact surfaces of both feet to juggle the ball. Obviously juggling ability is important in soccer for improving individual possession and field position as well as for promoting attacking play. Therefore juggling tests have to include various movements and realistic conditions similar to the ones encountered in soccer games. For instance fatigue is one variable that most of the technical tests ignore (Mohr, Krustup, & Bangsbo, 2003). Literature review about juggling tests revealed that most of these are not such realistic as soccer demands.

Nowadays, a majority of researchers have examined the juggling ability in soccer (Hoare & Warr, 2000; Malina et al., 2005; Morgan 2012; Rebelo et al., 2013; Rösch et al., 2000; Vale et al., 2009; Vanderford, Meyers, Skelly, Stewart, & Hamilton, 2004). For instance, Rösch and colleagues (2000) used a juggling test which required the players to juggle the ball with their foot, trying to manage 25 touches. Rösch and colleagues (2000) also developed three more tests in which the researcher threw the ball

from a 5 meter distance to the players who tried to play the ball with the following order “chest-foot-head”, “head-left foot-right foot”, and “foot-chest-head”. Similarly to the 25 touches juggling test, Vale and colleagues (2009) as well as Rebelo and colleagues (2013) used the 100 touches juggling test that was developed by Kuhn (1978). The players had two trials to juggle the ball with a maximum score of 100 touches per trial. Vanderfond and colleagues (2004) limited the ball contacts with foot or knee in order to increase its difficulty. The players had to drop the ball on their foot or knee and tap it in the air as many times as possible for 30 seconds. Hoare and Warr (2000) developed a juggling test in which players were allowed to use various parts of their body (feet, knees, thighs and heels) to juggle the ball. Three coaches and one sport scientist formed an evaluation panel that assessed the players’ juggling ability for 30 minutes. Malina and colleagues (2005) added a juggling test only with the head. The players had to keep the ball in the air inside a 9X9 m square using only their head. The researchers also used a juggling test with any body part inside the same 9X9 m square. The players had to keep the ball in the air without using their arms or hands. Finally Morgan (2012) used three techniques to evaluate juggling ability. For the first and the second technique the players had to juggle the ball only with one foot and keep that in the air while the other had to remain unmoved on the ground for 60 seconds. Then they had to repeat the test with the other foot. For the third technique the players had to use alternate feet to juggle the ball for 60 seconds. For all the tests the players had to use a 1.5X1.5 square. However, from our research there has not been any study which includes several juggling tests with a gradually increase of difficulty. Furthermore the validity and reliability for most of the existing tests has not been assessed.

Therefore, the current study aimed to develop a battery of juggling tests with increasing difficulty by using only the dominant foot. In addition the researchers included movements which were similar to the game conditions. They included zig zag movements, jumps, free ball touching and moving in the soccer area as well as a standardized row to juggle the ball with various body parts. They also examined the criterion validity and reliability of these tests.

2. METHODS

Participants

In the current study forty four subjects participated, twenty two of which were experienced soccer players (age 15.5 ± 0.9 years) and twenty two were recreational athletes (age 16.4 ± 0.9 years). The soccer players were members of soccer academies and adult teams while the recreational players participated in school, university and private soccer leagues. The researchers informed the participants about the aims, the ethics, the risks, and the benefits of the study before providing them or their guardians with a written informed consent. The study also received approval from the university ethics committee.

Procedures

The researchers arranged meetings with the training staff and the players of a soccer team so as to explain the aims, the ethics, the risks, and the benefits of the research project. Similarly they invited to the study a soccer team that participated in school soccer leagues (recreational athletes). Before the juggling assessment they participated in a 15 minute standardized warming up without ball (running, sprinting and dynamic stretching) as well as a 10 minute with ball warming up. In the beginning, the researchers examined the test-retest reliability for the twenty two soccer players, number that was similar to previous research (Mirkov, Nedeljkovic, Kukolj, Ugarkovic, & Jaric, 2008; Russell, Benton, & Kingsley, 2010). They arranged two trials with a time distance of 7 days. The researchers also examined the tests’ criterion validity by comparing the outcomes of soccer and recreational players. The researchers gave three attempts to the participants for each test so as to familiarize themselves to the protocol before recording the next three attempts. The highest of the attempts was used as their performance score. The researchers followed the same procedures for all the tests during both trials. Some adjusted forms of existed juggling tests were used (Malina et al., 2005; Reilly et al., 2007; Rösch et al., 2000; Vale et al., 2009).

Skills testing

For each test the players had to use mainly the foot to juggle the ball. They started the tests by picking up the ball from the ground with their dominant foot. The researchers also added test variations so as to gradually increase their difficulty. The difficulty of the tests gradually increased due to area and time limitations, changes of the number and the order of body parts which the players used, as well as some distance variations. A 2X12m distance was used to evaluate the 24m straight juggling, the 24m zig zag juggling and the 24m hurdles’ juggling tests. The researchers recorded the travelled distance as well as the required time to complete the trial.

- 24m straight juggling: Players juggle the ball only with the dominant foot for a distance of 24m (12X2 forth and back).
- 24m zig zag juggling: Players juggle the ball only with the dominant foot while they were swerving it in and out of four cones, 3m distance from each other (12X2 forth and back).
- 24m hurdles’ juggling: Players juggle the ball only with the dominant foot while they were passing over the four 30cm hurdles 3m distance from each other (12X2 forth and back).

A limited 3X3m square was used for the following juggling tests. The players could touch the ball once with each part of the body according to the predetermined order. The researchers recorded the best performance of three trials for each test.

- 100 touches juggling: Players had to juggle the ball with their foot with a maximum score of 100 for each trial.
- 30s juggling: Players had to juggle the ball with their foot within 30 seconds. The researchers recorded the total number of touches during this period of time.

The last test included specific order of the body parts which tapped the ball. Each successful row evaluated with one point. The following orders were used: foot-thigh; foot-chest; foot-head; foot-thigh-head; foot-head-chest; and foot-thigh-head-chest.

Statistical Analysis

Descriptive statistics were performed to assess the score for each test. Then independent t-test method was used to compare whether there were any differences between the playing and recreational groups of youngsters. The researchers also performed t-test for each variable to compare if there were differences between the two trials. The reliability level between the tests was assessed by Pearson correlation and the coefficient of variation. Criterion validity was assessed by the median-split analysis for each variable. Finally, some percentages were also used to compare the performance of the players in the tests. The statistical significance level was accepted at $p < .05$.

3. RESULTS

Reliability

The table 1 presents the descriptive statistics for both the trials as well as the reliability statistics of each test. Almost all the test revealed strong reliability, relative reliability as well as tight test-retest reliability. Specifically, the scores of the variables were the following: *100 touches juggling test* (ICC: .83; r : .84; CV: 4.3), *24m straight juggling* (ICC: .53; r : .55; CV: 5.8), *24m zig zag juggling* (ICC: .84; r : .84; CV: 7.3), *24m hurdles' juggling* (ICC: .88; r : .87; CV: 8.9), *30s juggling* (ICC: .86; r : .85; CV: 2.0), *foot-thigh juggling* (ICC: .83; r : .82; CV: 6.2), *foot-chest juggling* (ICC: .91; r : .90; CV: 6.9), *foot-head juggling* (ICC: .89; r : .83; CV: 3.7), *foot-thigh-head juggling* (ICC: .85; r : .85; CV: 7.2), *foot-head-chest juggling* (ICC: .69; r : .69; CV: 3.5), *foot-thigh-head-chest-juggling* (ICC: .87; r : .88; CV: 7.2). Afterwards the researchers performed t-tests to examine whether there was any significant difference between the trials.

Table 1. Reliability of juggling tests.

Variable	Trial 1	Trial 2	t-test	r	ICC	CV (%)
100 touches juggling	77.32 (24.90)	82.17 (26.74)	ns	.84***	0.83***	4.3
24m straight juggling	19.64 (5.61)	21.32 (6.28)	ns	.55*	0.53*	5.8
24m zig zag juggling	16.05 (7.51)	17.82 (6.94)	ns	.84**	0.84**	7.3
24m hurdles' juggling	10.68 (6.92)	12.13 (5.84)	ns	.88***	.87***	8.9
30s juggling	52.36 (21.00)	53.91 (18.63)	ns	.86**	.85***	2.0
Foot-thigh juggling	16.14 (12.64)	17.61 (13.55)	ns	.83***	.82***	6.2
Foot-chest juggling	4.09 (2.35)	4.51 (2.87)	ns	.91***	.90***	6.9
Foot-head juggling	4.86 (2.95)	5.12 (3.69)	ns	.89**	.83**	3.7
Foot-thigh-head juggling	3.32 (1.91)	3.00 (1.47)	ns	.85**	.85***	7.2
Foot-head chest juggling	2.68 (1.29)	2.55 (1.69)	ns	.69*	.69**	3.5
Foot-thigh-head-chest juggling	2.41 (.73)	2.67 (1.04)	ns	.87**	.88***	7.2

* $p < .05$ ** $p < .01$ *** $p < .001$

Criterion validity

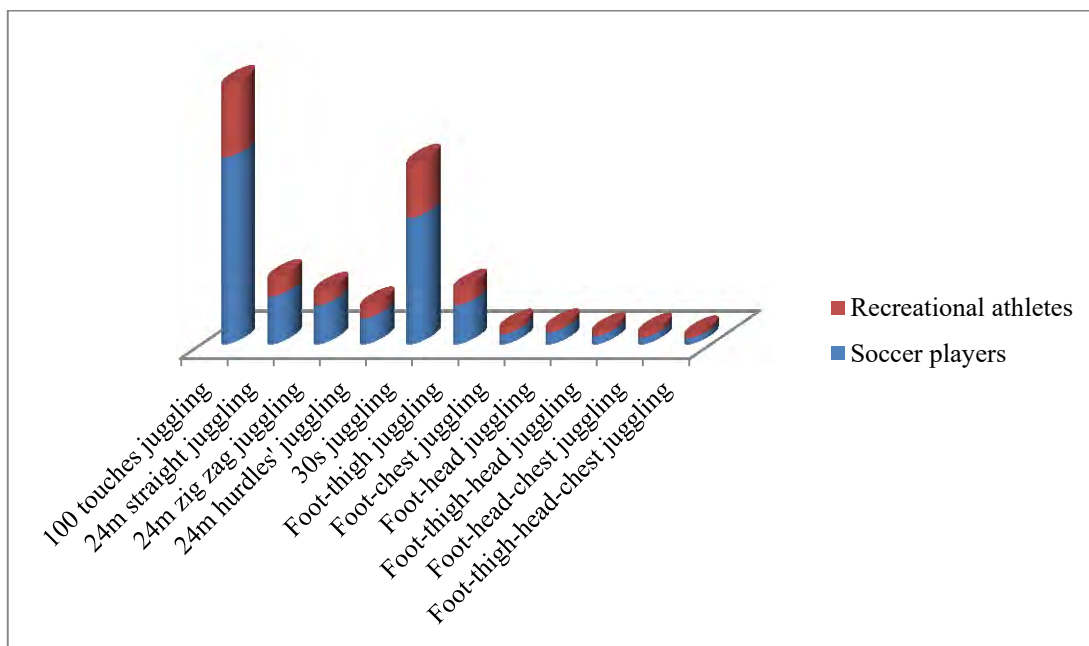
The median split analyses showed that for all the tests of juggling, the majority of soccer players were above the median whereas the majority of recreational athletes were below the median (table 2).

Table 2. Criterion validity of juggling tests.

Test	Means	Median %	
		Above	Below
100 touches juggling			
Soccer players	77.32 (24.90)	82	18
Recreational athletes	30.09 (17.87)	18	82
24m straight juggling			
Soccer players	19.64 (5.61)	82	18
Recreational athletes	7.73 (3.52)	3	19
24m zig zag juggling			
Soccer players	16.05 (7.51)	73	27
Recreational athletes	5.95 (2.52)	5	95
24m hurdles' juggling			
Soccer players	10.68 (6.92)	77	23
Recreational athletes	5.27 (2.25)	18	82
30s juggling			
Soccer players	52.36 (21.00)	77	23
Recreational athletes	22.68 (10.91)	18	82
Foot-thigh juggling			
Soccer players	16.14 (12.64)	73	27
Recreational athletes	7.18 (4.65)	23	77
Foot-chest juggling			
Soccer players	4.09 (2.35)	55	45
Recreational athletes	2.68 (1.91)	23	77
Foot-head juggling			
Soccer players	4.86 (2.95)	73	27
Recreational athletes	2.09 (.87)	5	95
Foot-thigh-head juggling			
Soccer players	3.32 (1.91)	59	41
Recreational athletes	2.14 (1.46)	27	73
Foot-head-chest juggling			
Soccer players	2.68 (1.29)	68	32
Recreational athletes	2.45 (1.95)	27	73

Foot-thigh-head-chest juggling			
Soccer players	2.41 (.73)	46	54
Recreational athletes	1.59 (.80)	18	82

The following graph shows the contribution of the tests according to the level of the participants (graph 1). Soccer players performed higher levels than recreational players for all the variables: 100 touches juggling (77.32 ± 24.90 vs 30.09 ± 17.87 , $t= 7.228$, $p= .000$); 24m straight juggling (19.64 ± 5.611 vs 7.73 ± 3.521 , $t= 8.433$, $p= .000$); 24m zig zag juggling (16.05 ± 7.512 vs 5.95 ± 2.516 , $t= 5.975$, $p= .000$); 24m hurdles' juggling (10.68 ± 6.917 vs 5.27 ± 2.251 , $t= 3.488$, $p= .001$); 30s juggling (52.36 ± 20.998 vs 22.68 ± 10.908 , $t= 5.884$, $p= .000$); Foot thigh juggling (16.14 ± 12.635 vs 7.18 ± 4.646 , $t= 3.120$, $p= .003$); Foot chest juggling (4.09 ± 2.348 vs 2.68 ± 1.912), $t= 2.182$, $p= .035$); Foot head juggling (4.86 ± 2.949 vs $2.09 \pm .868$, $t= 4.231$, $p= .000$); Foot thigh head juggling (3.32 ± 1.912 vs 2.14 ± 1.457 , $t= 2.306$, $p= .026$); Foot head chest juggling (2.68 ± 1.287 vs 2.45 ± 1.945 , $t= .457$, $p= .650$); Foot thigh head chest juggling ($2.41 \pm .734$ vs $1.59 \pm .796$, $t= 3.543$, $p= .001$).



Graph 1. Recreational and soccer players' performance in juggling tests.

4. DISCUSSION

The aim of this study was two-fold: to examine the reliability and criterion validity of juggling tests as well as to develop a battery of juggling tests. Reliability was confirmed with test-retest method while criterion validity was confirmed by comparing players and recreational athletes. Regarding the battery of juggling tests the researchers divided these in categories according to their characteristics:

Tests with one contact surface (foot)

100 touches juggling test

Concerning the 100 touches juggling test the results showed that more than 52% of the players performed the maximum score of the test while the 82% surpassed the average score (77 repeats). Thus, it is obvious that this test is not appropriate to evaluate juggling ability of amateur adolescents.

30 seconds juggling test

As far as the 30 seconds juggling test the results revealed that the 77% surpassed the average score (52 repeats). A significant finding was that 90% of the players who achieved the maximum score in 100 touches juggling test were above the average score of the current test, whereas the players who achieved low scores in 100 touches juggling test performed also low

scores in *30s juggling test*. Furthermore, it was found that the range of the performance was greater than the previous test. Thus *30s juggling test* better detects the level of the players as it is more difficult than *100 touches juggling test*.

24 meter straight juggling test

In this test the 63% of the players achieved the maximum score while the 82% were above the average score (20 meters). Remarkable though was that the 80% of the players who achieved the maximum score in the current test also performed the maximum score in the *100 touches juggling test*. Furthermore, the 77% of the players who did not complete the test had also low performance in the *30s juggling test*. Thus it is obvious that the players have to indicate high quality in 100 touches as well as in *30s juggling tests* to perform well in this test which is more difficult.

24 meter zig zag juggling test




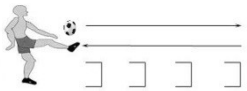
Regarding the *24 meter zig zag juggling test* 37% of the players achieved the maximum score while 73% of them were above the average score (16 meters). In addition only 50% of the players who completed the *24m straight juggling test* completed also this test. Furthermore 85% of the players who completed the current test had also completed the *24m straight juggling test*, which means that this test was of greater difficulty than the previous one.

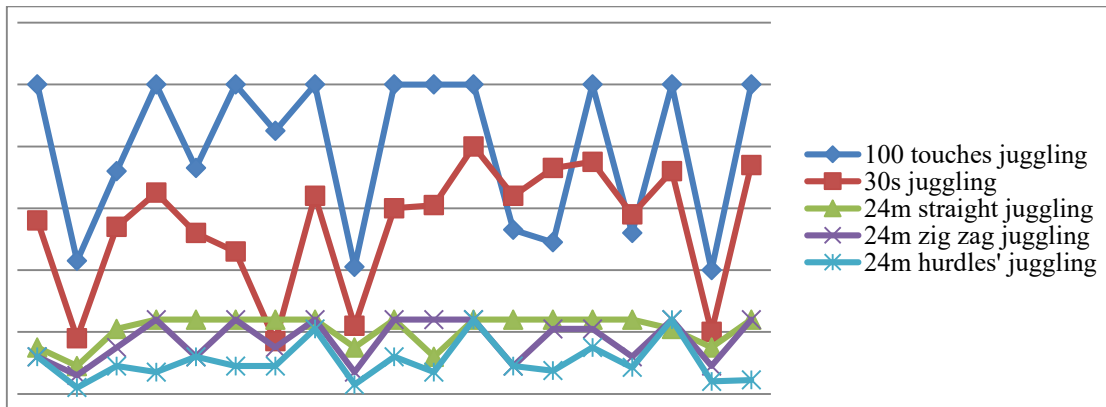
24 meter hurdles' juggling test

Finally, only 10% of the players completed the *24 meter hurdles' test*, while 77% of the players were above the average score (11 meter). It was notable that 22% of the players who completed the current test had also completed the *24m zig zag test*, finding which reveals the difficulty of this test. These players presented high quality in all the previous tests actually. Therefore it is obvious that the difficulty of all these tests was gradually increased.

The researchers considered the distance as the primary evaluation tool and the required time to complete the test as a more specific evaluation tool which detects the top level players. As a result, these findings constitute a guide for the coaches and soccer experts to evaluate the juggling ability of players according to their playing level. According to the findings of the current study we developed the following table (table 3) and graph (graph 2) for this series of tests.

Table 3. Difficulty of juggling tests (dominant foot).

Tests (dominant foot)	Figure	Difficulty	Average	High Scores
100 touches juggling		1	77.32 touches	>100 touches
30s juggling		2	52.36 touches	70-80 touches
24m straight juggling		3	19.64 meter	24m or 9-10 sec
24m zig zag juggling		4	16.05 meter	24m or 16-18s
24m hurdles' juggling		5	10.68 meter	24m or 22-25s



Graph 2. Players' performance in juggling tests (dominant foot).

Juggling tests with various body parts

Foot-thigh juggling test (two body parts)

The results showed that in *foot-thigh juggling test* 73% of the players surpassed the average score (16 repeats). Furthermore 73% and 80% of the players who were under the average score performed also low in *100 touches* as well as in *30s juggling tests* respectively. It is obvious that players have to achieve high scores in *100 touches* and *30s juggling tests* in order to perform well in *foot-thigh juggling test*.

Foot-chest juggling test (two body parts)

Concerning the *foot-chest juggling test* only 55% was above the average score (4 repeats). This test seems to be of greater difficulty than the *foot-thigh* as the average score was obviously lower (4 < 16). Specifically it was found that 87.5% of the players, who were above the average score, had also the highest scores in *100 touches* and *30s juggling tests*. In addition, 77% of them had scores above the average in the *foot-thigh juggling test*. Furthermore, 75% of the players who performed the highest scores in this test indicated high scores also in *foot-thigh test*. Thus the players who presented high quality in *foot-thigh test* face greater possibilities to achieve also high scores in *foot-chest test*.

Foot-head juggling test (two body parts)

In *foot-head test* 73% of the players performed above the average score (5 repeats). Comparing this test with *foot-chest test* it seems that *foot-head test* was easier as the average score of the players was higher (5 > 4). Indeed the results showed that 73% of the players were above the average score comparatively to the 55% who were above the average score in *foot-chest test*. Furthermore, 90% of the players who performed high scores in *foot-head test* performed also well in *foot-chest test*. This finding is probably due to the lack of players' quality to control the ball with the chest and their difficulty to tap the ball with the foot after the chest. However this skill is very common in soccer which may lead to lack of ball possession.

Foot-thigh-head & Foot-head-chest juggling test (three body parts)





The difficulty of juggling tests is increased when the players have to use several body parts to juggle the ball. Specifically, it was found that in *foot-thigh-head test* the players performed extremely lower (3.3 repeats) than in *foot-chest test* which was the most difficult test that included two body parts (4 > 3.3). Interestingly the results revealed that players who indicated high performance in *foot-chest test* performed also well in *foot-thigh-head test*. Concerning the comparison between *foot-thigh-head* and *foot-head-chest tests* (2.7 repeats) it was found that the second one was of greater difficulty (3.3 > 2.7). In total 59% of the players were above the average score of *foot-thigh-head test* while 68% were above the average score of *foot-head-chest test*. Furthermore it seems that players who indicated high performance in *foot-thigh-head test* revealed also high performance in *foot-head-chest test*. Thus the greater difficulty of *foot-head-chest test* is obvious.



Foot-thigh-head-chest (four body parts)

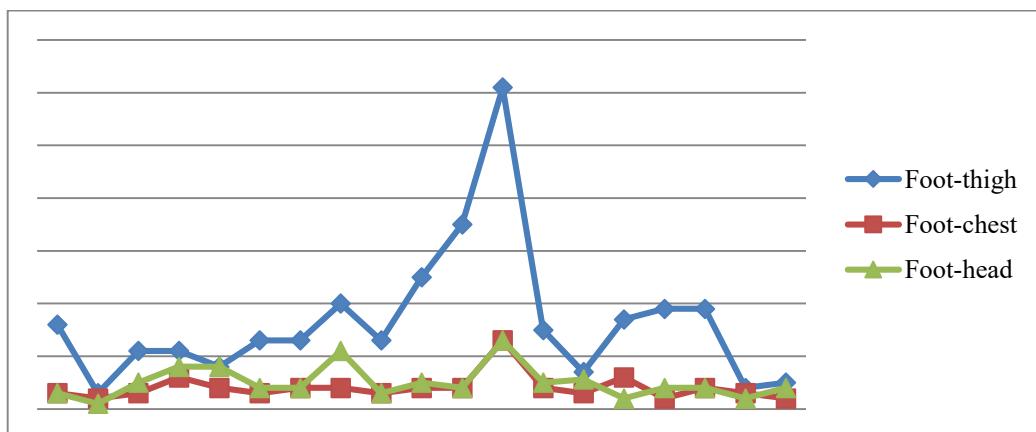
Finally, the difficulty in *foot-thigh-head-chest test* was greater because the average score was lower than the previous tests (2.4 repeats) and the percentage of players who achieved performance above the average score was lower as well (46%). Furthermore, a significant finding was that 89% of the players who did not surpass the average scores of *foot-thigh-head* and *foot-head-chest tests* performed also under the average score of *foot-thigh-head-chest test* with extremely low scores. The results confirm the greater difficulty of the players perform above the average scores in this test, finding that makes this test the most difficult. Indeed players that achieved great performance in the other tests performed also higher performance in this test

compared to their teammates. According to the findings of the current study we developed the following table (table 4) and graphs (graph 3 and 4) for this series of tests.

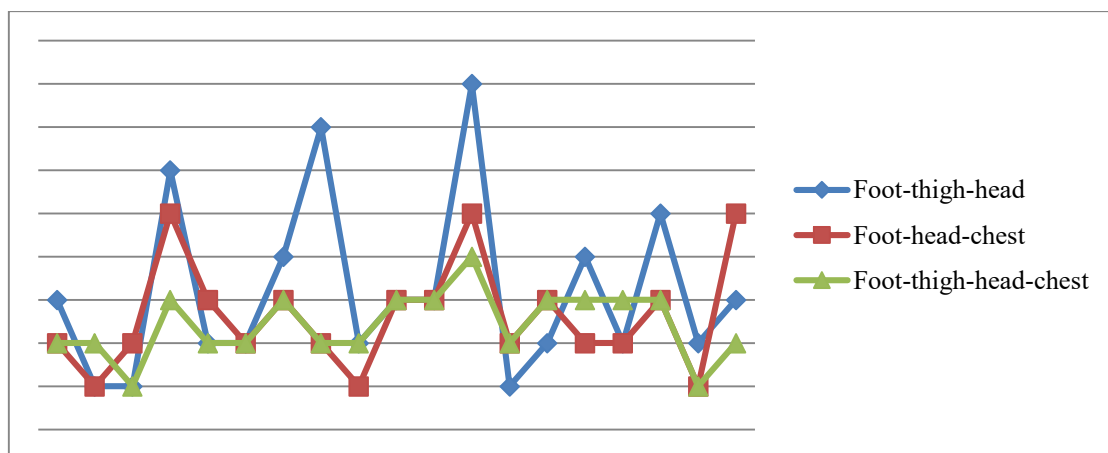
Table 4. Difficulty of juggling tests (various body parts).

Tests (various body parts)	Figure	Difficulty	Average	High Scores
Foot-thigh		1	16.14	35-60 repeats
Foot-head		2	4.86	10-13 repeats
Foot-chest		3	4.09	6-12 repeats
Foot-thigh-head		4	3.32	6-8 repeats

<p>Foot-head-chest</p>		<p>5</p>	<p>2.68</p>	<p>4-5 repeats</p>
<p>Foot-thigh-head-chest</p>		<p>6</p>	<p>2.41</p>	<p>3-4 repeats</p>



Graph 3. Players' performance in juggling tests (various body parts).



Graph 4. Players' performance in juggling tests (various body parts).

5. CONCLUSION

In summary the difficulty of these tests was gradually increased when the researchers added the following limitations:

- Time limitation (30s juggling) so as the players had to juggle the ball with a higher frequency.
- Juggle the ball while the player was moving straight, zig zag or over hurdles.
- Juggle the ball with various body parts.
- Juggle the ball with various body parts in various rows.

Thus the researchers developed a battery of juggling tests which are more realistic and adapted to soccer requirements. Soccer coaches and experts may use this guide to prepare training programs aimed to improve the balance, the coordination and therefore the juggling ability of their players (Bekris et al., 2012). A significant finding of the current study is the variety on the players' performance in the different tests. This fact confirms the sensitivity of these test series as it makes possible to detect any performance change (Currell & Jeukendrup, 2008). It is now apparent that high juggling ability improves the playing ability in soccer games. In conclusion the current study provides reliable, valid and sensitive tools for assessing the juggling ability of the players. Soccer coaches may use these test series to monitor the progress of their players. Finally, future research should focus on developing reliable and valid test batteries for all the technical skills.

6. REFERENCES

- Açıkada, C., Hazır, T., Aşçı, A., Turnagöl, H., & Özkara, A. (1998). Physical and physiological profiles of a second league division soccer team during preparation period. Hacettepe. *Journal of Sports Science and Technology*, 1, 3-14.
- Bangsbo, J. (1993). The physiology of soccer--with special reference to intense intermittent exercise. *Acta Physiologica Scandinavica. Supplementum*, 619, 1-155.
- Bate, D. (1996). Soccer skills practice. *Science and soccer. London: E & FN Spon*, 227-241.
- Bekris, E., Kahrimanis, G., Anagnostakos, K., Gissis, I., Papadopoulos, C., & Sotiropoulos, A. (2012). Proprioception and balance training can improve amateur soccer players' technical skills. *Journal of Physical Education & Sport*, 12(1).
- Currell, K., & Jeukendrup, A. E. (2008). Validity, reliability and sensitivity of measures of sporting performance. *Sports Medicine*, 38(4), 297-316.
- Fitts, P. M., & Posner, M. I. (1967). *Human performance*. Brooks/Cole, Belmont, CA.
- Hoare, D., & Warr, C. R. (2000). Talent identification and women's soccer: An Australian experience. *Journal of Sports Sciences*, 18(9), 751-758.
- Knapp, B. (1963). *Skill in sport: The attainment of proficiency*. Routledge.
- Kuhn, W. (1978). *Zur Leistungserfassung im Sportspiel: Entwicklung einer Fussballspezifischen Testbatterie*. Hofmann.
- Little, T., & Williams, A. G. (2006). Suitability of soccer training drills for endurance training. *The Journal of Strength & Conditioning Research*, 20(2), 316-319.
- Malina, R. M., Cumming, S. P., Kontos, A. P., Eisenmann, J. C., Ribeiro, B., & Aroso, J. (2005). Maturity-associated variation in sport-specific skills of youth soccer players aged 13-15 years. *Journal of Sports Sciences*, 23(5), 515-522.
- Mirkov, D., Nedeljkovic, A., Kukulj, M., Ugarkovic, D., & Jaric, S. (2008). Evaluation of the reliability of soccer-specific field tests. *The Journal of Strength & Conditioning Research*, 22(4), 1046-1050.
- Mohr, M., Krstrup, P., & Bangsbo, J. (2003). Match performance of high-standard soccer players with special reference to development of fatigue. *Journal of Sports Sciences*, 21(7), 519-528.
- Morgan, O. J. (2012). *The use of skill, physiological and anthropometric variables to predict soccer ability in elite youth soccer players*. Unpublished MRes Thesis. Coventry: Coventry University.

- Rebelo, A., Brito, J., Maia, J., Coelho-e-Silva, M. J., Figueiredo, A. J., Bangsbo, J., Malina, R. M. & Seabra, A. (2013). Anthropometric characteristics, physical fitness and technical performance of under-19 soccer players by competitive level and field position. *International Journal of Sports Medicine*, 34, 312-317.
- Reilly, T., Atkinson, G., Edwards, B., Waterhouse, J., Farrelly, K., & Fairhurst, E. (2007). Diurnal variation in temperature, mental and physical performance, and tasks specifically related to football (soccer). *Chronobiology International*, 24(3), 507-519.
- Rösch, D., Hodgson, R., Peterson, L., Graf-Baumann, T., Junge, A., Chomiak, J., & Dvorak, J. (2000). Assessment and evaluation of football performance. *The American Journal of Sports Medicine*, 28(suppl 5), S-29.
- Russell, M., Benton, D., & Kingsley, M. (2010). Reliability and construct validity of soccer skills tests that measure passing, shooting, and dribbling. *Journal of sports sciences*, 28(13), 1399-1408.
- Sotiropoulos, A. & Bekris, E. (2007). *Proponisiologia Podosfairou*. Athens, Telethrio Publications.
- Stølen, T., Chamari, K., Castagna, C., & Wisløff, U. (2005). Physiology of soccer. *Sports Medicine*, 35(6), 501-536.
- Stratton, G., Reilly, T., Williams, A. M., & Richardson D. (2004). *The growth of the physiological systems*, Youth Soccer. New York: Routledge.
- Vale, P., Ramos, A., Salgado, B., Correia, P., Martins, P., Brito, J., Oliveira, E., Seabra, A. & Rebelo, A. (2009). Differences in technical skill performance of Portuguese junior soccer players according to competitive level and playing position. In *International Research in Science and Soccer The Proceedings of the First World Conference on Science and Soccer* (pp. 13-20).
- Vanderford, M. L., Meyers, M. C., Skelly, W. A., Stewart, C. C., & Hamilton, K. L. (2004). Physiological and sport-specific skill response of olympic youth soccer athletes. *The Journal of Strength & Conditioning Research*, 18(2), 334-342.

PARENT PERCEPTIONS OF BARRIERS TO PHYSICAL ACTIVITY FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS

Walaa Khader^a, Aysel Pehlivan^b

^{a,b} *Institute of Sport, Physical Education and Health Sciences, University of Marmara*

Email: walaa_khader@hotmail.com

Abstract

Introduction: Children with Autism Spectrum Disorders (ASD) engage in less physical activity (PA) compared to their typically developing peers. **Purpose:** Our aim was to explore the barriers to participation in physical activity for this group. **Methods:** The method applied in this study was qualitative in nature and the phenomenological approach was used. Data was collected by interviewing. "Purposeful sampling" method and "Criterion sampling" strategy were used. In this study, 15 parents from Jordan with identified criteria were selected and face to face interviews with open-ended questions were asked. "Descriptive analysis" and "content analysis" methods were used to analyze data. According to the **results**, 4 main themes emerged from data: 1. "Community" 2. "Institutional" with 3 sub themes: a. Specialization (coaches and centers), b. certified programs, c. cost; 3. "Environmental", 4. "Family involvement".

Key Words: AUTISM SPECTRUM DISORDER, PHYSICAL ACTIVITY, BARRIERS

1. INTRODUCTION

Physical activity [PA] has been widely researched and numerous benefits have been reported (Canadian Diabetes Association, n.d.,2007; Health Canada, 2004; Jakicic & Otto, 2006; Warburton, Nicol & Bredin, 2006). Regular physical activity is linked to enhanced health and reduced risk for the development of several diseases such as heart disease, stroke, and type II diabetes (Sallis, Prochaska, & Taylor, 2000; Schomer & Drake, 2001; Warburton et al., 2006).

Also it has reported that engaging in regular [PA] improve general emotional well-being (Penedo & Dahn, 2005), mood (McPhail, 2006), and social skills (Terre & Drabman, 1992). These benefits are enjoyed by people of all ages who engage in regular [PA] (Pangrazi, Beighle, Vehige & Vack, 2003). Several retrospective studies have shown that participation in competitive sports in youth increases the likelihood that the individual will remain active in his or her adult years (Perkins, Jacobs, Barber & Eccles, 2004).

Therefore, educating children at an early age about the benefits of being physically active may help to reduce or prevent the tracking of physical inactivity into adulthood. Children with intellectual disabilities, including those with developmental disorders, are at greater risk for inactivity and the health risks associated with a sedentary lifestyle than typically developing children (Pitetti, Rimmer & Fernhal, 1993). Children with autism may have some degree of intellectual disability (Reid & Collier, 2002), as well as difficulty with motor performance (Baranek, 2002; Klin & Volkmar, 1995; Peeters & Gillberg, 1999; Reid & Collier, 2002) placing them in this high risk category.

Autism Spectrum Disorders [ASD] represent a spectrum of conditions with deficits in social interaction, communication, restricted interests and repetitive behavior (WHO, 2006). Autism is one of the most common diagnoses on the Autism Spectrum (Reid and Collier, 2002) and is typically diagnosed in early childhood, usually within the first three years of life (Hewetson, 2002). Children with [ASD] may be at risk for being physically inactive because characteristics of the disability interfere with successful participation in traditional forms of physical activity. It has been suggested that an understanding of potential barriers and facilitators that affect participation by people with disabilities could provide important information necessary for developing interventions that have a greater likelihood of success (Dunn, Andersen, Jackicic, 1998; Humpel, Owen, Leslie, 2002).

Unfortunately, published literature on barriers and facilitators associated with participation in physical activity among people with disabilities is limited (King et al, 2002; Meyers et al, 2002; Rimmer, Rubin, Braddock, 2000). In addition little is known about the types of [PA] in which children with [ASD] participate, and there is no literature reporting on specific barriers to [PA] opportunities in children with [ASD].

The aim of current study was to explore the barriers of PA for children with ASD, as reported by their parents.

2. METHOD :

Study Design

The method applied in this study was qualitative in nature and the phenomenological approach was used. The data was collected by interviewing. "Purposeful sampling" method and "Criterion sampling" strategy were used.

Participants

Face to face semi structured non-depth interviews were conducted with 15 parents of a child between the ages of 6-12 years from Amman (Jordan), diagnosed with [ASD]. The focus of this study was on children with ASD whose characteristics are fairly consistent and not in a state of rapid change during early childhood.

Procedure

After study had received ethical approval from the Marmara University Committee, each parent participant in this study in both was interviewed face to face by the researcher, each interview was voice recorded and transcribed. Each participant was interviewed once; as well the interviews were conducted in locations and times that suited the participants. The length of each interview was approximately 40 minutes. The interviewers encouraged free and open responses and did not follow a rigid interview sequence.

Data Analysis

The data was coded according to the themes and descriptive analysis and content analysis were used as qualitative analysis methods in order to analyze and to interpret data. The obtained data was summarized and coded independently and patterns were established.

Result

Barriers were grouped under four general interrelated themes emerged from data: 1) Community, 2) Institutional with 3 sub themes: a. Specialization (coaches and centers), b. certified programs, c. cost; 3) Environmental, 4) family involvement.

Community

Although most of the parents felt that people's attitudes toward individuals with ASD have improved over the years, some mothers described individual prejudice and negative societal attitudes from people in the community towards ASD children as a barrier to participation in PA. These prejudices and discriminations came from strangers in the street, other sport and recreation program participants, and participant's parents.

Parents described how the parents of typical children could be openly negative about their child playing with a child with ASD.

"A few mums have said to me "oh my son or my daughter is picking up bad habits from your son"."

This social prejudice could be attributed, in part, to a lack of knowledge and understanding of individuals with ASD that was depicted in this statement:

"They [parents of normal children] do not want their children to have too much contact with these kids [her son] despite not seeing him."

Institutional

Institutions which we are talking about are schools for special needs, integrated schools, community institutions, ASD centers and sports clubs. The institutional barrier and facilitator identified by parents were grouped under three sub-themes. (fig.1)

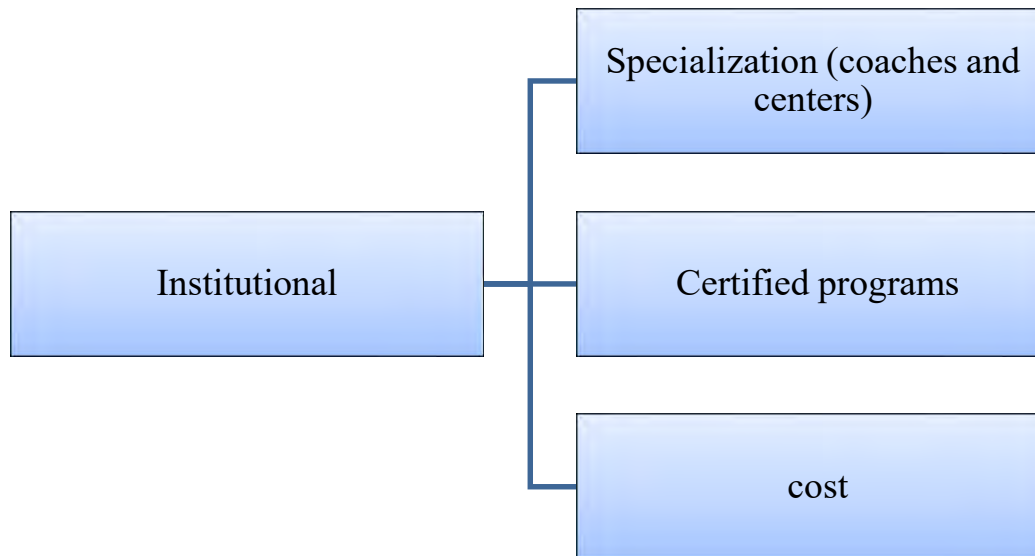


Fig.1: Institutional sub-themes

Specialization (coaches and centers)

Almost all parents were complaining about the lack of the devoted centers for the training of the children with special needs in general and for children with ASD in particular. They tried hard to find institution that would accept their children to participate in some kind of sport, some of the statements of the parents on this subject are as follows:

“I noticed agility and consistency in my child’s moves, and his love to roll forward and backward. I felt that his moves are more like the gymnastics moves. That is why I wanted him to train for gymnastics, but when I searched, I could not find any center or club who would accept my child.”

“... When he sees a basketball game on TV, he sits and watches with intense attention, and he gets excited when the players throw the ball and score. I wanted him to translate his tendencies into playing, but I did not find an adequate place for him to learn this game...”

Moreover, parents complained from the lack of sports coaches who are able to train ASD children since several institutions frequented by ASD children to get the qualification in different areas, either schools, ASD center or societal institutions does not have qualified workers to train children on different sports and physical activities.

“I wished I could find a club that would train my child to swim... I searched a lot to find a personal trainer, but I could not find any so far.”

“The reason why the sports clubs always refuse to accept my child is because they lack trainers qualified to deal with ASD children”.

Some Parents talked about the incapability of many concerned institutions to serve children with special needs generally, and ASD children specifically, and that appears obvious from what one parent has said about one of the inclusion schools his son goes to:

“For our children (ASD), the Gym represents a scary place, it has much sound and noise and has high lighting, and I think that all the environment in the Gym needs adjustment to meet the needs of our children.”

Certified programs

The certified programs in the institutions act as a barrier against the child’s ability to attain optimal levels PA where some parents report that their children do not receive physical education that accommodates their needs at integrated schools. That is depicted in this statement:

“Special education teachers could not give physical education for children with autism in my son’s school.”

My son’s teacher at school told me that the activities in the physical education class are limited to footing in the outside court, and jumping on the trampoline.

A number of parents complained about the lack of physical activity programs in ASD centers and/or about the quality and quantity of PA, where three parents reported that ASD centers which their children attend do not provide PA programs, while the rest of the parents reported that the average time allocated for PA at special needs schools does not often exceed 40 minutes. Besides that, most of them were not systematic.

Also few parents in stated that the Special Needs schools their children go to adopted a program for swimming twice per week, where they rent a pool outside the school since theirs was not ready. Despite the big positive effect on the children, as the parents

explained, this activity did not last for a long period due to the poor coordination and the lack of coaches and the non-readiness of the pool in winter.

I should state that a number of parents said that the existence of the sports education class in the institutions their children frequent plays an important role in increasing their physical activity level, and without their presence, no PA would be available for the children to do when they go home.

3.2.3 Cost

"It comes down to affordability" was a key consideration for families and sports. While cost represents a barrier to the participation in physical activity that affects children with ASD, there was an additional burden for families of a child with ASD given the extra expense of caring for a child with ASD, a reduced income as parents often worked less and the need for one-on-one attention.

"I'd put my son in half a dozen activities...., but by the time you pay for speech therapy, behavior modification programs (...) there's not a lot of money left over."

Parents also talked about the transportation cost and the higher wages for ASD sport coaches compared to whose coaching normal children.

"Center [gymnastics] is too far from my house... I cannot pay a lot for the transportation, in addition, the training costs already high."

"Personal trainer [swimming] takes a lot of money..... I reduced the days of training."

Family involvements

The family plays a big and essential role in easing or hardening their ASD children's participation in physical activity, and that is what many parents who were interviewed confirmed. Many of parents explained the lack of time, energy and patience to support their ASD children in the physical activity, and that appears clear in the following :

Firstly: ASD children need a lot of attention and care from the parents, especially if they belong to the full-time working category or have other in-house responsibilities, for example:

"He likes riding the bicycle in front of the house, and he needs me around him, but most of the time I am busy preparing food"

Secondly: The most of providing transportation to the physical activity programs might be difficult for many parents, and most of the time, the main reason the child does not join some activity is because no one could pick him to the training place, like:

"My husband and I work, and when we go back from work, I am busy preparing food then helping my children with their homework, and we do not find time to pick (...) to the club."

Thirdly: Parents should adapt with the lack of incentives and the opportunities of success in their ASD children's physical activity, which could cause frustration to some parents, and therefore avoiding subscription in the physical activity as it appears in what a parent said:

"I found it hard for my ASD child to practice any physical activity, when I compare him to his ordinary siblings, I notice a big difference."

Fourthly: Parents bear the burden of searching for coaches, programs and physical activities that suit their ASD children, and that consumes a lot of time and effort.

Environmental

Number of parents complained about the lack of parks and this affects physical activities which can be practiced by the normal child generally and the ASD child particularly.

Also the residence of the family in small flats has a role in decreasing the move and activity of the child as some parents cited.

"Playing football at school decreased his excessive activity inside the house, which hardly has a room for our movement, imagine the case for a child with excessive activity."

3. DISCUSSION

Certified programs

It is known, according to the theoretical literature, that every ASD child is a special case and does not resemble other ASD children (Cooper, Heron and Heward, 1987; Lord and McGee, 2001). This apparently acts as a barrier in the selection of different physical activities for most parents in this study because that the specific characteristics of each child were the most influential in the choice of physical activities. It was clear through the parents' responses in interviews that what fits child autism is not necessary to fit another child, for example, one mother said that football is the ideal sport for her son which develops his social skills, while another parent illustrated that football did not succeed with her child: "he was unable to acclimate to the team environment, and it was very difficult for him to follow the rules of the game as they require a lot of coordination". This shows that (one size doesn't fit all), concerning the planning approach for PA for children with ASD.

So the responsible for the PA programs need to recognize that ASD children may have a range of challenges that make their involvement difficult, and be prepared to make these programs flexible and adjustable as necessary and these are often poor motor skills, low motivation (Koegel, Koegel and McNERNEY, 2001; Reid, O'Connor and Lloyd, 2003) and the difficulty in planning and

generalization (Ozonoff, Strayer, McMahon and Filloux, 1994; Renner, Klinger and Klinger, 2000). In addition, all the fathers in the study pointed to the lack of adequate programs, separate or integrated in the institutions to provide the necessary support to meet the special needs of their ASD children (Dwyer, Needham, Simpson and Heeney, 2008; Reid, 2005).

Coaches:

The barrier that almost all parents complained about is the lack of trainers who are able to provide PA services for ASD children, where results showed that there is need these classes of trainers. Perhaps the work done by the University of Hong Kong to add a new academic department in 2005 which is specializes in training staff providing PA services to people with special needs such as sport leaders and coaches is an example that can be applied in Universities. Trainers working with children with autism should be able to understand and grasp the needs of ASD children. The ability of the coach to determine those needs, allowing him to focus on the strengths and weaknesses of each child and that therefore lead to improved skill level and understanding of the sport and, more importantly, enable the trainer to provide a supportive environment for the child to participate in the PA (Yanardag, Yilmaz and Aras, 2010). Fennick and Royle (2003) stated, "Training of activity coaches needs to become a lengthier process to establish trust with families and to acquire more extensive information about individual children" (p. 25). The training can include the training of trainers on topics such as understanding the causes and effects of autism, behavior and tendencies of children with ASD, barriers that could affect the participation of children with ASD as well as the practical training with children (Autism Speaks, 2013)

Cost :

The family choice of PA for the ASD child is affected by the cost (Brockman ,Jago ,Fox, Thompson , Cartwright , Page, 2009). Where many parents reported that physical limitations constituted a major impediment to the participation of children in the PA ,therefore it was noticeable that almost all children in the sample were involved in low-cost or even free physical activities , especially that the families of ASD children usually have other costs of interventions or other therapies which ,if compared to the cost of PA are very high.

Family involvements:

It seems that in the present study ,parents need to practice PA and set aside time to explore different PA opportunities possible for their ASD child to participate in (Brusted, 1993; Sallies, Prochaska, Taylor, 2000). Research has also shown that the preliminary upbringing received by children with special needs by parents pose a substantial effect on the child's behavior regarding the PA (Levinos and Reid.,1991) while the data concerning the influence of parents on PA are different or mixed (Sallis at al., 2000) but there is convincing evidence that parent's support has a clear and significant impact on the child's PA where the children who get family support and encouragement have high levels of physical activity (Davison, 2004; Welk, Wood and Morss, 2003; Smith, 2005; Trost, Sallis, Pate, Freedson, Taylor and Dowda, 2003) .This is consistent with the results of the current study.

Environment

Parents complained about the lack of such parks and gardens ,which limits the movement of children and represents an obstacle in participating in various PA ,especially if the family lives in a small size apartment .This makes such parks and playgrounds a pressing need and this is consistent with the findings of (Burton and Davis, 1996; Davis and Burton, 1991; Davis and Van Emmerk, 1995).

4. CONCLUSION

As the long-term consequences of PA can lead to serious secondary health problems among children with ASD, understanding the factors that influence participation in PA is important to help design successful interventions and strategies that increase their level of engagement in activity from an early age.

Activity selection for children with ASD appears to be individually-based and dependent on each child's unique characteristics, needs, preferences and goals. One common theme repeats throughout: ASD represents a spectrum of abilities, needs and preferences and therefore necessitates a spectrum of possibility with regard to PA. What fits autism child is not necessary to fit another, the ideal form of PA for a child with ASD is that which works best for that child.

Parents have to overcome barriers caused by the characteristics of their child's disability, such as motor, social, attention, and behavioral deficits, as well as a lack of resources or PA programs that will accommodate the unique needs of children with ASD. Attention also needs to be paid to barriers related to peers and parent support. Although some outdoor play environments offer important PA opportunities for children with ASD, they are not always affordable and safe.

5. REFERENCES

1. Autism Speaks. (2013). leading the way: Autism-friendly youth organizations guide. Retrieved from <http://www.autismspeaks.org/family-services/youth-organizations>

2. Baranek, G.T. (2002). Efficacy of Sensory and Motor Interventions for Children with Autism. *Journal of Autism and Developmental Disorders*, 32 (5),397-422.
3. Brockman R, Jago R, Fox KR, Thompson JL, Cartwright K, Page AS: "Get off the sofa and go and play": family and socioeconomic influences on the physical activity of 10–11 year old children. *BMC Publ Health* 2009, 21:253
4. Brustad, R. (1993). Who will go out and play? Parental and psychological influences on children's attraction to physical activity. *Pediatric Exercise Science*, 5,210–223.
5. Burton, A.W., & Davis, W.E. (1996). Ecological task analysis: Utilizing intrinsic measures in research and practice. *Human Movement Science*, 15,285-314
6. Cooper, J.O., Heron, T. E., & Heward, W. L. (1987). *Applied behavior analysis*. Upper Saddle River, NJ: Prentice-Hall, Inc
7. Davis, W.E., & Burton, A.W. (1991). Ecological task analysis: Translating movement behavior theory into practice. *Adapted Physical Activity Quarterly*, 8, 154-177.
8. Davis, W.E., & van Emmerik, R.E.A. (1995). An ecological task analysis approach for understanding motor development in mental retardation: Research questions and strategies. In A. Vermeer & W.E. Davis (Eds.), *Physical and motor development in mental retardation* (pp. 33-66). Basel, Karger: Medical Sports Science.
9. Davison, KK. Activity-related support from parents, peers, and siblings and adolescents' physical activity: are there gender differences? *J Phys Act Health*. 2004; 1:363-376.
10. Dunn AL, Andersen RE, Jackicic JM.(1998).Lifestyle physical activity interventions: history,short- and long-term effects, and recommendations;15:398–412.
11. Dwyer, J., Needham, L., Simpson, J.R., & Heeney, E.S. (2008). Parents report intrapersonal, interpersonal, and environmental barriers to supporting healthy eating and physical activity among their preschoolers. *Applied Physiology, Nutrition, and Metabolism*,33,338–346
12. Fennick, E., & Royle, J. (2003). Community inclusion for children and youth with developmental disabilities. *Focus on Autism and Other Developmental Disabilities*, 18(1), 20–27
13. Hewetson, A. (2002). *The Stolen Child: Aspects of Autism and Asperger Syndrome*. USA: Greenwood Publishing Group, Inc.
14. Humpel N, Owen N, Leslie E.(2002). Environmental factors associated with adults'participation in physical activity.;22:188–99.
15. King AC, Stokols D, Talen E, Brassington GS, Killingsworth R.(2002). Theoretical approaches to the promotion of physical activity: forging a transdisciplinary paradigm. 23(suppl 2):15–25.
16. Klin, A. & Volkmar, F.R. (1995). *Asperger Syndrome: Some Guidelines for Assessment, Diagnosis and Intervention*: Pittsburgh: Learning Disabilities Association of America.
17. Koegel, R., Koegel, L., & McNeerney, E. (2001). Pivotal areas in interventions for autism. *Journal of Clinical Child Psychology*, 30, 19– 32.
18. Levinson L, Reid G. Patterns of physical activity among youngsters with developmental disabilities. *Can Assoc Health, Phys Ed & Rec*. 1991;56:24-28
19. Lord, C., & McGee, J. P. (Eds.).(2001). *Educating children with autism*. National Academy Press. Retrieved February 12, 2016 from, <http://nap.edu/books/0309072697/html>
20. McPhail, J.D. (2006). The Therapeutic Benefits of Physical Activity. *American Athletic Medical Association Journal*, 19(1), 9-10.
21. Meyers AR, Anderson JJ, Miller DR, Shipp K, Hoenig H.(2002). Barriers, facilitators, and access for wheelchair users: substantive and methodologic lessons from a pilot study of environmental effects.55:1435–46.
22. Ozonoff, S., Strayer, D., McMahon, M., & Filloux, F. (1994). Executive function abilities in autism and Tourette syndrome: An information processing approach. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 35, 1015–1032
23. Pangrazi, R.P., Beighle, A., Vehige, T. & Vack, C. (2003). Impact of Promoting Lifestyle Activity for Youth [PLAY] on Children's Physical Activity. *Journal of School Health*, 73(8), 317-321.
24. Peeters, T. & Gillberg, C. (1995). *Autism: Medical and Educational Aspects* (2ed.). London: Whurr Publishers.
25. Penedo, F.J. & Dahn, J.R. (2005). Exercise and Well-being: a Review of Mental and Physical Health Benefits Associated with Physical Activity. *Current Opinion in Psychiatry*, 18, 189-193
26. Perkins, D.F., Jacobs, J.E., Barber, B.L. & Eccles, J.F. (2004). Childhood and Adolescent Sport Participation as Predictors of Participation in Sport and Physical Fitness Activities Durin Young Adulthood. *Youth and Society*, 35(4), 495
27. Pitetti, K.H., Rimmer, J.H. & Fernhall, B. (1993). Physical Fitness and Adults with Mental Retardation: An Overview of Current Research and Future Directions. *Sports Medicine*, 16, 23-56
28. Reid, G. & Collier, D. (2002). Motor Behavior and the Autism Spectrum disorders. *Palaestra*, Fall Edition, 20-27.
29. Reid, G. (2005). Research application: Understanding physical activity in youths with autism spectrum disorder. *Palaestra*, 21,6–7
30. Reid, G., O'Connor, J., & Lloyd, M. (2003). The autism spectrum disorders: Physical activity instruction. *Palaestra*, 19(2), 20–26, 47–48.

31. Renner, P., Klinger, L., & Klinger, M. (2000). Implicit and explicit memory in autism: Is autism an amnesic disorder? *Journal of Autism and Developmental Disorders*, 30, 3–14
32. Rimmer JH, Rubin SS, Braddock D.(2000). Barriers to exercise in African American women with physical disabilities. 81:182–8
33. Sallis, J. F., Prochaska, J. J. & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine & Science in Sports & Exercise*, 32(5), 963- 975
34. Schomer, H. H. & Drake, B. S. (2001). Physical activity and mental health. *International SportMed Journal*, 2(3), 1-9
35. Smith M: Parental influences on the physical activity behaviour of children of various ethnic backgrounds. *Res Q Exerc Sport* 2005, 76(1):50–51.
36. Terre, L. & Drabman, R.S. (1992). Relationship between Peer Status and Health Behaviors. *Adolescence*, 27(107), 595-602
37. Trost SG, Sallis JF, Pate RR, Freedson PS, Taylor WC, Dowda M. Evaluating a model of parental influence on youth physical activity. *Am J Prev Med*. 2003;25:277-282.
38. Warburton, D. E., Nicol, C. W. & Bredin, S. S. (2006). Health benefits of physical activity: The evidence. *CMAJ*, 174(6), 801-809.
39. Welk GJ, Wood K, Morss G. Parental influences on physical activity in children: An exploration of potential mechanisms. *Pediat Exerc Sci*. 2003;15:19-33
40. World Health Organization. (2006). *International Statistical Classification of Diseases and Related Health Problems*. 10th ed. (ICD-10).
41. Yanardag, M., Yilmaz, I., & Aras, Ö. (2010). Approaches to the teaching exercise and sports for the children with autism. *International Journal of Early Childhood Special Education*, 2,214–230.

REPRESENTATIONAL SYSTEMS AND THEIR RELATIONSHIPS TO SELF-EFFICIENCY OF PRACTITIONERS AND NON-PRACTITIONERS STUDENTS OF SPORTS IN KURDISTAN

Fattin Ali Al-Kaki

College of Physical Education/ Khanaqin University of Garmian

Email: sadps566@yahoo.com

Abstract

The representational systems can be defined as the ways that are favored by learners in receiving and processing information and interact with them as a technique or style to resolve the problem or situations that they face. While the self-efficiency is defined as knowing one's own expectations and ability to overcome the various tasks successfully, and self-contentment and ability to control and overcome the difficult problems that he is facing. In speaking about the researcher's experience as being an instructor in one of Kurdistan universities she found that there are differences in the self-efficiency between practitioners and non-practitioners of sports in the educational institution. Therefore, she decided to conduct a study on representational systems and their relationships with self-efficiency. Thus, the research aims to recognize the favorite representational systems and the self-efficiency of the research sample depending on the variables (gender, academic specialization). The research sample consisted of (336) students from both practitioners and non-practitioners of the students of sports from (scientific, humanitarian and Physical education) departments. The scale of representational system has been built and the scale of representational systems has been built and the psychometric features has been verified and took out its validity and reliability. Then the researcher applied the two scales on the basic sample of the research and copied the data and processed the results statically. The study results: The practitioner students of sports of Physical Education prefer the representational system (kinetic sense) on the rest of the systems, while the non-practitioners of the students of sports prefer the representational system (visual) on the rest of the other systems, besides, the practitioners of sports outperform the non-practitioners in the self-efficiency morally.

The research aims:

1. Recognize the favorite representational systems and the self-efficiency of the research sample depending on the variables (gender, academic specialization).
2. Recognize the significance of the statistical differences in representational systems and self-efficiency of the research sample depending on the variables (gender, academic specialization).
3. Recognize the relationship between representational systems connectivity depending on variables (gender, academic specialization) and its relationship with self-efficiency of the research sample.

The researcher used a descriptive survey method and the sample consisted of (336) students from both practitioners and non-practitioners of the students of sports from (scientific, humanitarian and Physical education) departments. To achieve the objectives of the study a scale of representational systems has been built and the researcher verified the psychometric features of the scale and took out its validity and reliability. Then the researcher applied the two scales on the basic sample of the research and copied the data and processed the results statically. The study results revealed a number of conclusions, including:

*Sport practitioners who are students of physical education prefer representational system (kinetic- sense) on the rest of the systems then visual, audio systems.

*Non-practitioners who are students of scientific and humanitarian departments preferred the visual representative system than the rest of other systems followed by the kinetic-sense system then audio sense.

*The practitioners of the sport Out-perform a non-practitioner in self-efficiency internally.

*There is a morale relationship with between the representational systems (visual and kinetic-sense) from one side and self-efficiency from the other side.

Key words: Representational systems, self-efficiency, relation, practitioners, non-practitioners of sports.

1. INTRODUCTION

The concept of learning styles is an important field, it has a distinct and a direct connection related to the life of the individual and its compatibility with himself and his interaction with his environment and with others, these variables will help learners to manage learning positions more efficiently and effectively, since the different characteristics, attributes and abilities of students increases the need for diversity of educational means, because there are those who learn best through audio means, and some of them prefer visual means, and some of them learns best by practicing and working. This diversity is needed and desirable to face the individual differences, for the reason that it is difficult for a single way to combine all the stimuli in teaching. Besides, there should be a key demand to take care of the students to help them to reach and get benefit from their maximum potentials, this in turn requires attention to the means of educational technology to face the individual differences among the students and make appropriate method of teaching accessible for each of them according to their educational preferences, being one of the important conditions for the success of the learning process where it helps in achieving the educational goals and the selection of the appropriate teaching means for them as well as creating a state of harmony and interaction between the teacher and the student (Alumran2008).

As for the concept of self-efficacy is reflected through the individual underlying confidence in his abilities through the new situations or the situations which have new and unusual demands that is an important factor in the formation of the behavior of individuals and activate his performance is one of the vectors of human behavior, the individual's belief in his self-effectiveness make him more aggressive and energetic in working and various activities, and do more achievements and have self-esteem and have a high ability to face and control the pressures and be more accurate in making decisions that affecting him and the others to move up in the path of: excellence, then perfection, then charity (Al-nifie, 2010).

From here begins the importance of this study, which is the major issue that concerns the researchers today which is the appropriateness of teaching techniques and methods that are used for the learning styles of the students, and adapt these methods as to make the education easier and more-preserved and have interest to the students, and leads to an appropriate mechanism that will enable us to choose the appropriate academic specialization to the student who goes to study at university for the first time in the light of his personality and learning style, or classify the students or admitting them to achieve psychological and healthy development for them. The importance of this study lies in the core of the subject itself, which is a response to contemporary global trends, where it is the first in-the limits of researcher's knowledge dealing with variables of the current research.

The problem:

The use of representational systems as a means of teaching often raises controversy about any of these systems that would be more effective among the students, especially at the university level where there is diversity in scientific, humanitarian and applied specializations, each of these types have their own ways and various methods, besides the variable gender (male and female) may play an important role in favoring a representational type to another or any of these systems is more favorable for students and the representative systems commonly are (audio, visual, and kinetic sense). Perhaps the difference in the need for representational systems or favoring one on the other is back to the self-efficacy of the students. All these questions represent the main problem of the research, which can be summarized as follows:

*Revealing of any representational systems suitable for students, according to their gender, scientific, humanitarian and applied specializations.

*Revealing of the relationship of each of these systems with self-efficacy of the students, according to their gender, scientific, humanitarian and applied specializations.

The research field:

1.5.1 The human field: (336) students of university from the practitioners and the non-practitioners of the sport in the departments of (scientific, humanitarian and Physical Education) in some universities in Kurdistan region of Iraq.

1.5.2 The temporal field: duration from 19/02/2014 up to 04/26/2015.

1.5.3 The spatial field: classrooms in the universities of Garmian, Sulaimaniya and Salahuddin.

Research methodology and field procedures:

Research methodology: a descriptive method was used so as to be appropriate with the nature of the research.

The research community and its sample: the original community of the research consists of students of three universities and the second, third and fourth stages in the scientific departments, namely, (Physics, Chemistry, Mathematics) and humanitarian (History, Geography, Arabic) and Physical Education from undergraduate level for the academic year (2014 -2015) from the morning studies, the total number were (336) students. As the research sample represented by (112) students of each university distributed into two parts according to the attitude from practicing sports for each of them and by (168) according to gender (males and females) have been distributed in Physical Education to the three universities equally (Garmian, Sulaimaniya and Salahuddin), the rate of (56) students for each university spread over the third and fourth stages and by (28) students for each

stage and distributed by gender to (14) male students and (14) female students. Besides (84) students in the scientific specialization and the same allocated to the humanitarian specialization and distributed to (42) students distributed by gender and stage. And table (1) shows the sample distribution by gender and stages and departments:

Table (1) shows the research sample

The attitude from practicing sports	The specialization	Third stage		Fourth stage		The percentage
		Male	Female	Male	Female	
Non-practitioners of sports (Physics, Chemistry, Mathematics)	Scientific	21	21	21	21	25%
Non-practitioners of sports(History, Geographic, Arabic)	Humanitarian	21	21	21	21	25%
Practitioners of sports (Physical education)	Applied	42	42	42	42	50%
The total number(336)		168		168		100%

Steps of building the representational systems scale:

The construction of any scale passes through several key stages:

- Planning for the scale by identifying axes (dimensions) that covers its items.
- The formulation of the items of each axis.
- The application of items on a representational sample of the research community.
- An analysis of the items of the scale.

Determining and formulating the items of the scale and answer them:

The researcher applied an opened questionnaire to a number of third and fourth stages from some of the scientific and humanitarian departments and Physical Education about the favored representational systems to them and which they feel through facing the practical and theoretical lessons since joining university. The students answered the questionnaire with several answers which the researcher get benefited in forming an idea about the most important representational systems used by students at this stage. Based on scientific analysis of the content of the scientific resources, the researcher determined the questions of the scale, and then applied a closed questionnaire to a number of specialties in sports, educational and psychological sciences, for the purpose of knowing their views on the validity of the items of the study. The researcher depended in formulating the items on the developed method of (Likert) which is similar in choosing from multiple choice, as it offers items for the respondent and asks him to identify his answer by choosing an alternative from several alternatives which have different weights according to the following bases:

- The items must not be long in their terms that lead to boredom in answer.
- The phrase must be in the first person.-

The statement would be subject to one interpretation. -

- Do not use phrases likely to be answered by everyone or by no one, so as not to lose the chance of comparison by the researcher.
- The item must be clear and understood in meaning and purpose.
- The item must not revealing itself.

The drafting of the items of the scale: the researcher prepared a preliminary version of the scale on the basis of previous scales and to suit every items by (28) items and she put three alternatives for answering of each item (visual, audio , kinetic sense).

Validity and suitability of the items : for the purpose of identification of the validity of the items; the scale has been showed in its initial form to the specialties who are experienced and competent in sports in educational and psychological sciences, to find

out their views on each item and its alternatives, and knowing the appropriateness of the items to measure them for the students and through putting the mark () in front of each item and under the suitable alternative (suitable, not suitable, suitable after modification) as well as identify the appropriate adjustment. After collecting the forms, the virtual validity of the scale the scale has been extracted through the value of (Chi square) of the agreement of the experts around the items of the scale, as it has been relying on the value of the (Chi square) after comparing it with tabular value for the purpose of keeping them in the scale, and under this statistical procedure no items of the scale were excluded because they gain the largest proportion of agreement, and the scale becomes as it stands by (28) items. (Table 2) shows that:

Table (2) the views of experts for the validity of items of scale of the representational systems and the value of Chi-square.

Number of the item	Number of the experts	The Approvers	The non-approvers	Percentage of agreement	Value of the calculated Chi	Significance
1,4,8,11,13,21,25,26,28))	22	22	Zero	100%	22	Significant
(3,5,9,12,15,19,23,27)	22	21	1	95.45%	18.18	Significant
(, 6,7,14,16,18,202)	22	18	4	81.82%	8.90	Significant
(17,22,2410)	22	17	5	77.27%	6.45	Significant

* The value of tabular Chi-square at the degree of freedom at (1) and the percentage of error (0.05) = (3.84).

The exploratory experiment

An exploratory experiment was conducted on a sample of (12) students from the third and fourth stages by (6) of each stage and (4) for each department in Garmian university to answer the items of the scale which consisting of (28) items. The purpose of conducting the exploratory experiment is to know how clear the items are, and diagnose of the obstacles that may encounter the researcher, as well as identify the time that the person under experiment takes to answer the questions of the scale.

Validity construction: statistical analysis is performed in two ways

The style of the two extreme groups:

The grades of the students has been arranged in descending order to the two of extremes groups, the percentage of (27 %) was selected from the higher grades and minimum grades of (52) students per group to represent the two extreme groups, as the size of each group of the two groups (upper and lower) depends on the appropriate number for the process of statistical analysis, also depends on the total number of answers. Confidence is growing in the item when the statistical analysis done on the (100) examined or more, and becomes less when the number is less than (100). The researcher conducted the (T) test on the two extreme groups in order to know the difference between them. Table (3) illustrates this:

Table (3) The discrimination power of the two style extreme groups for the scale of representational systems

Number of the item	The Supreme group		The minimum group		The value of counted (T)	The level of significance	The discrimination ability of the item
	Statistical mean	Standard deviation	Arithmetical mean	Standard deviation			
1	2,477	1.209	1.332	0.837	3.905	0,001	Distinctive
2	3,994	1.372	2.318	1.419	4.427	0,000	Distinctive
3	2,978	1.230	2.050	0.232	4.893	0,000	Distinctive
4	2,583	1.480	1.303	0.676	4.007	0,000	Distinctive
5	2,972	1.108	2.033	1.287	4.789	0,000	Distinctive
6	3,138	1.268	2.000	1.352	6.922	0,000	Distinctive
7	2,083	1.227	1.055	0.232	4.936	0,000	Distinctive
8	2,305	0.950	1.722	0.913	2.454	0,010	Distinctive
9	3,861	1.046	2.388	1.128	5.741	0,000	Distinctive

10	1,855	0.333	1.500	0.941	2.671	0,009	Distinctive
11	2,305	1.390	1.444	1.476	3.144	0,002	Distinctive
12	3,365	1.443	2.527	1.403	3.063	0,003	Distinctive
13	2,869	1.150	1.472	0.654	6.298	0,000	Distinctive
14	2,567	1.198	1.705	0.576	7.016	0,000	Distinctive
15	3,944	1.119	2.305	1.166	6.081	0,000	Distinctive
16	3,527	1.133	2.083	1.204	5.241	0,000	Distinctive
17	3,121	1.218	2.311	1.837	5.635	0,000	Distinctive
18	3,750	1.441	2.320	1.878	2.666	0,010	Distinctive
19	3,138	1.222	2.333	1.242	6.216	0,000	Distinctive
20	3,472	1.383	2.250	0.603	4.859	0,000	Distinctive
21	3,805	0.576	3.205	1.260	2.164	0,034	Distinctive
22	2,805	1.190	1.588	0.903	3.680	0,000	Distinctive
23	2,916	1.130	1.711	0.398	4.032	0,000	Distinctive
24	3,694	1.190	2.500	1.158	4.313	0,000	Distinctive
25	3,694	1.116	2.888	1.469	2.619	0,011	Distinctive
26	3,111	1.237	1.555	0.734	6.487	0,000	Distinctive
27	3,638	1.046	2.222	0.929	6.075	0,000	Distinctive
28	3,777	1.244	1.833	1.158	6.860	0,000	Distinctive

Internal consistency coefficient: the simple correlation coefficient (Pearson) was used to extract the consistency coefficient to measure the degree of correlation of each item with the total items' degree of the scale, and the degree of each item with the degree of dimension that it belongs to by using the system of (SPSS) on the computer. As shown in the table (4):

Table (4) shows the values of correlation coefficients for the phrases of the scale with the final grades of the scale

The item	The correlation coefficient	The item	The correlation coefficient	The item	The correlation coefficient	The item	The correlation coefficient
1	0,369	8	0,331	15	0,376	22	0,451
2	0,356	9	0,358	16	0,381	23	0,534
3	0,389	10	0,364	17	0,368	24	0,471
4	0,299	11	0,475	18	0,342	25	0,335
5	0,426	12	0,504	19	0,340	26	0,404
6	0,419	13	0,444	20	0,460	27	0,384
7	0,403	14	0,408	21	0,408	28	0,321

*The tabular value for correlation coefficient in the degree freedom of (190) and level of significance (0.05) = (0.167).

Stability of the scale:

Re-testing method: the researcher applied the scale on a sample of (12) students who were chosen randomly from a sample scale of Sulaimaniya University community, then re-applied to the same sample after two weeks from the first application, and by using the correlation coefficient (Pearson) between the degrees of the first application and the degrees of the second application, the result of stability factor of the scale was (0.86).

Alpha Cronbach stability coefficient: to calculate the stability of the scale by using Alpha Cronbach's way the contrast counted for each item of the representational systems and the total variation of the scale, the value of reliability coefficient in this way was (0.88) which is a relatively high stability and a good indicator of the consistency and homogeneity of the items.

2. DESCRIPTION AND CORRECTION OF THE SCALE OF REPRESENTATIONAL SYSTEMS:

After carrying out the procedures by the researcher in the previous steps, the scale of representational systems became finalized and consist of (28) items which distributed to each of them (3) alternatives, and the degree (2) has been given for each selection and zero to two the other alternatives. Besides, the total grades ranged for each alternative between (0-56) degrees and this indicates that the greater the degree of the respondent on the alternative it suggests a high tendencies of the student to the method, the more the degree of the respondent reduces refers to the low tendency to this method, thus the scale became in its final form and ready for application on the sample of the study.

3.8 Self-efficiency scale: the researcher adopted the concept of scale of self-efficiency that was designed by (Alwan, 2014) to measure the self-efficiency. The validity factor of the scale has been found through internal consistency coefficient between each individual and the total grades of the scale where correlation factors ranged between (0, 35-.66). Whereas the reliability coefficient has been found by re-testing which reached (0.79) as well as the stability coefficient of the scale reached (0.83) by using (alpha coefficient). Despite that the scale enjoys transactions of validity and good stability and that it has been applied to various Arab and Iraqi communities and other studies on self-efficiency, but the researcher wanted to investigate the standard characteristics of validity and reliability of the scale as follows:

The standard features to measure self-efficiency: validity of scale (virtual validity): to check the validity of the scale and the validity of its items in measuring anything, the scale was displayed on a group of specialized experts and the appendix (1) for the purpose of judging its validity (see appendix 2). To analyze the views of experts on the items of the scale test was used (χ^2) for one sample, and each item considered to be valid when the calculated value of Chi-square function at the level (0.05), and table 5 shows that:

Table (5) Chi-square test results of the views of specialist experts paragraphs about the validity of items of self-efficiency scale.

Number of item	Number of experts	Approvers	Disapprovers	Percentage of approval	The counted Chi-square	Significance
(1,3,4,8,10,11,13,19,21,25,26)	22	22	Zero	100%	22	Significant
(2,5,7,9,12,15,17,23)	22	21	1	95,45%	18,18	Significant
(6,14,16,18,20,22,24)	22	20	2	90,91%	14,72	Significant

* The value of tabular Chi-square at the degree of freedom at (1) and the percentage of error (0.05) = (3.84).

-**The stability of the scale:** the stability of the scale was extracted by the two way retest as follows:

3. METHOD OF RE-TEST:

stability has been found through the application of the scale twice with the interval of (15) days and on a sample of (12) students, who were randomly selected from the departments (scientific and humanitarian and Physical Education) from Gramian, Sulaimaniya and Salahuddin universities. The reliability coefficient has been found by calculating correlation coefficient (Pearson) between the grades of students in the first application and their grades in the second application. The value of reliability coefficient reached (0.83) and this value considered to be acceptable to describe the tool as having good stability.

Alpha Cronbach's method: this equation applied on the degrees of the members of the consistency sample who were (12) students, and the value of the stability coefficient was (0.88) which is a further indication that the stability coefficient of the scale is good.

4. PREPARING THE SCALE INSTRUCTIONS:

The researcher prepared the scale instructions which shows the way of answering its items and urge the respondent to be accurate in his answers, also the respondents were asked not to leave any item unanswered with no need to mention their names.

The exploratory experiment: the scale applied on a sample of (12) students who were chosen randomly from the students of the third and fourth stages by (6) of each stage and (4) for each department in Garmian University to answer the items of the scale which consisting of (26) items, and the purpose of conducting the exploratory experiment was the same as in the exploratory

experiment to measure the representational systems, and the way of answering was clear and understandable, besides that the time it took to answer reached to (10-12) minutes.

Describing the scale of concept of self-efficiency in its final form and method of correcting it:

The alternatives to answer the items of the scale are: (applies to me completely, applies to me much, applies to me a in a moderate degree, applies to me a little bit, does not apply to me) where the grades (1-5) given to the positive items and reversible for the negative items. The total degree of the scale reached (130) degrees and medium-premise (78) degrees, the minimum degree (26), thus the concept of self-efficiency scale is ready for application to the basic research sample.

Final application of the scale: after completing the building of the representational systems scale and ensuring that self-efficiency is appropriate for the research sample to measure the purpose that was built for, where the scale which has been applied for the period from 03/26/2014 until 31/03/2014 on a sample of (108) students from Garmian, Sulaymaniyah and Salahualdin universities by (36) students from each university divided into 18 (male students) and 18 (female students) and distributed on the third and fourth stages by (9) students from each stage distributed to (practitioners and non-practitioners of sports) by percentage of (50%) for each of them from the research sample.

The statistical means: The researcher used the computer (SPSS) system to analyze the following data: ((Statistical mean, standard deviation, simple Pearson correlation coefficient Spearman Brown equation, t-test, Chi-square, the percentage, the stability coefficient of Alpha Cronbach, average premise)).

Display, analyze and discuss the results:

1. First goal: identify the favorite representational systems and self-efficiency in the research sample depending on the research variables (gender, and the attitude from practicing sports).

Table (6) the frequencies, percentages of the representational systems for practitioners and non-practitioners of sports, according to academic specialization.

The specialization	Practitioners of sports(Physical education)		Non-practitioners of sports (scientific specialization)		Non-practitioners of sports (humanitarian specialization)		The total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
The representational systems								
Audio	5	4,63%	5	4,63%	6	5,55%	16	14.82%
Visual	18	16,67%	15	13,89%	13	12,04%	46	42.59%
Kinetic sense	31	28,70%	7	6,48%	8	7,41%	46	42.59%
The total	54	50%	27	25%	27	25%	108	100%

Table (7) the frequencies, percentages of representational systems by gender (males and females).

Gender	(Males)		(Females)		The total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
The representational systems						
Audio	7	6,48%	9	8,34%	16	14,82%
Visual	22	20,37%	24	22,22%	46	42,59%
Kinetic sense	25	23,14%	21	19,45%	46	42,59%
The total	54	50%	54	50%	108	100%

Table (8) frequencies, percentages of self-efficiency between practitioners and non-practitioners of sports, according to academic specialization.

The specialization	Practitioners of sports(Physical education)	Non-practitioners of sports(scientific)	Non-practitioners of sports(Humanitarian)	The total of non-practitioners of sports
--------------------	--	--	--	--

The variable	specialization)		specialization)		specialization)		specialization)	
	Statistical mean	Percentage	Statistical mean	Percentage	Statistical mean	Percentage	Statistical mean	Percentage
Self-efficiency	88,47	68,05%	41,39	31,83%	35,34	27,18%	76,73	59,02%
The Total	54	50%	27	25%	27	25%	108	100%

Table (9) frequencies, percentages of self-efficiency by gender.

The specialization	Males		Females		The total	Percentage
	Statistical mean	Percentage	Statistical mean	Percentage		
Self-efficiency	80,52	61,94%	61,94%	65,14%	108	100%
The total	54	50%	50%	50%	108	100%

Table (10) frequencies, percentages and the results of Chi² systems of representational systems of practitioners and non-practitioners from sports.

The representational systems	The total number	Attitude from practicing sports		Value of Chi ²		Significance
		Practitioners	Non-practitioners	Calculated	Tabular	
Audio	16	5	11	2,25	3,84	Insignificant
Visual	46	18	28	2,17	3,84	Insignificant
Kinetic sense	46	31	15	5,56	3,84	Significant
Total	108	54	54			

-At the level of significance (0.05) and the degree of freedom (2-1 = 1)

Table (11) frequencies, percentages and the results of Chi² square of representational systems according to gender.

The representational systems	The total number	Gender		Value of Chi ²		Significance
		Males	Females	Calculated	Tabular	
Audio	16	7	9	0,125	3,84	Insignificant
Visual	46	22	24	0,043	3,84	Insignificant
Kinetic sense	46	25	21	0,174	3,84	Significant
Total	108	54	54			

-At the level of significance (0.05) and the degree of freedom (2-1 = 1).

Table (12) shows the statistical means, standard deviations, the calculated value of (T), the level of significance and the significance of the differences according to on the attitude from practicing sports in self-efficacy.,

The attitude from practicing sports				The value of (T)	Level of significance	Significance of differences
Practitioners		Non-practitioners				
Statistical mean -	Standard deviation	Statistical mean -	Standard deviation			
88,47	9,17	76,73	8,53	4,26	1,98	Significant

Table (13) shows the statistical means, standard deviations, the calculated value of (T), the level of significance and the significance of the differences according to gender and self-efficiency.

Gender				The value of (T)	Level of significance	Significance of differences
Male		Female				
Statistical mean -	Standard deviation	Statistical mean -	Standard deviation			
80,52	7,69	84,91	8,30	1,89	1,98	Insignificant

Table (14) shows the correlation coefficient between the (practitioners and non-practitioners) and gender (male and female) and the representational systems (audio, visual, kinetic sense) and self-efficiency.

Practitioners	Non-practitioners	Male	Female	Audio	Visual	Kinetic sense	Self-efficiency
1	0,12	0,07	0,06	0,11	0,60*	0,49*	0,56*
2		0,11	0,15	0,21	0,44*	0,24	0,42*
3			0,09	0,04	0,38*	0,21	0,57*
4				0,14	0,39*	0,17	0,65*
5					0,21	0,03	0,16
6						0,37*	0,54-*
7							0,52*

*The value of tabular (R) at 0.095 level of confidence and the degree of freedom (7) equal to 0.35

5. DISCUSSING THE RESULTS:

Through viewing and analyzing and the results, the researcher has founded that the method of (kinetic sense) is the favorite one for the practitioner students of sports and this attributed to the fact that this style has relation to the nature of their specialization which requires practical practicing of sport skills which has a direct relation to the senses, muscles and interconnection between them, it is called neuromuscular compatibility. While the visual style was the favorite choice of the sample of non-practitioner students of sports, because this attributed to that the watching of the explained subject and realize it visually which in turn lead the

subject to be absorbed better and more appropriate and remain in the memory longer period. The relative preference of the scientific specialization on the humanitarian is because that the students of scientific specialization have the capacity and the preparations to use the scientific and cognitive information better than students in the humanitarian specialization, and this may be due to the nature of the study in addition to the experience and practicing of using scientific and cognitive information to keep up with their scientific specialization and its requirements during the study and that is what caused them to choose the appropriate way to face the learning requirements (Litzinger, 2005).

The researcher attributed the lack of morale differences between males and females to the cognitive motives and considering it as an internal case which existed in both (males and females), and it depends on the cognitive construction of each learner. Since learning opportunities are equal for both, for that reasons random differences between them were founded, which prevails that the prevalent representational systems in universities are equal for both college students between (males and females) and both preferred the two styles (the of kinetic sense, and visual) on audio style. But with respect to the outstanding of practitioner students of sports of physical education on their peers of non-practitioners of sports is due to the fact that the practical process that associates their theoretical lessons are all factors that motivate the student to deal with skill in a direct way in front of the colleagues and possibly other viewers which is an opportunity to prove and challenge themselves and this is not available for non-practitioner students of the sports (Vita, Enza 2002:118). With regard to the relations between research variables, the researcher attributes the relationship between practicing sports and all of the representational systems of (visual and kinetic sense) is the need of the students to these two variables more than the others despite the importance of the third variable which is the (audio), and this positive indicator confirms that the students at the university level are able to diagnose and choose the suitable style for themselves and that develops their potentials, knowledge and information and keeping it for a longest time possible (Bander, 2011:173). While the non-practitioners of sports the relationship was paired with the representational system (visual) being their preferred one because it is one of the most stable methods in their memories compared to the audio manner, while the style (kinetic sense) came after the (visual) which is the opposite choice of practitioners of sports, this shows that the need of students for this type of styles it comes in second place and on the basis of actual need for it or on the basis of being used by the teaching staff for this style (Abu Ghazal, 2008:165).

The relationship between gender (male and female) and the representational systems (visual, kinetic sense) is attributed (by the researcher) to the lack of difference between the both (male and female) because they are subjected to the same tactics, as well as they are studying the same curriculum and are going through the same environmental, social, scientific and cultural circumstances as they are energized from the same source of knowledge, science, and information from relevant literature sources. (Bander, 2011).

The relationship between practitioners and non-practitioners of sports for both (male and female) with the self-efficiency goes back to the fact that the university students at this age stage have gone through the experiences that are enough to know their personal and internal interests and they are careful to get their academic achievement keen and have motives to develop themselves because this has a relation to the vocational and technical future each in his field of specialization. This stage at university will probably be the last chance for them to develop their abilities and their and their knowledge and this would be the basis where the future built upon and everyone is keen to excel, according to his abilities (Abu Al-Nadi 2010:110).

The researcher sees that the relationship between the representational systems (visual, kinetic sense) with each other on the one hand and with the self-efficiency on the other hand, are the most favorite methods at a close level or completely identical. Thus, they go on a one line in terms of direction and strength which in turn applies to the relationship between them and the self-efficiency (Hilal,2011:152).

The Conclusions and recommendations:

6. CONCLUSIONS:

-The practitioner students of sports of Physical Education prefer the representational system (kinetic sense) on the rest of the systems followed by the (visual) then the (audio) systems. -Non-practitioners of the students of sports from scientific and humanitarian departments prefer the representational system (visual) on the rest of the other systems and then followed by the (kinetic sense) then the (audio) systems. -The male students prefer the representational system (kinetic sense) on the rest of the other representational systems followed by (visual and audio) systems. -The female students prefer the visual representational system on the rest of the others followed by (kinetic sense then the audio) systems. -The practitioners of sports outperform on the non-practitioners morally in the self-efficiency. -The female outperformed the males in self-efficiency relatively.

-There are no morale differences between the practitioners and non-practitioners of sports in the representational systems (audio, visual).

-There are morale differences between the practitioners and the non-practitioners of sports in the representational systems (Kinetic sense) in favor of the practitioners of sports. -There are no morale differences between males and females in the representational systems (audio, visual and kinesthetic sense).

-There is a morale relationship between the practitioners of sports and the two representational systems (visual and kinesthetic sense) on the one hand and self-efficiency on the other. -There is a morale relationship between the non-practitioners of sports and the representational system (visual) on one side and self-efficiency on the other side.

-There are morale differences between (males and females) with representational system (visual) on the one hand and self-efficiency on the other.

-There is a morale relationship between the representational systems (visual and kinetic sense) on the one hand and self-efficiency on the other.

-There is a moral relationship between the representational system (kinetic sense) on the one hand and self-efficiency on the other.

7. THE RECOMMENDATIONS:

1. Make balance between the three representational systems (audio, visual, kinetic sense) as means of necessary, different and various styles of learning necessary for all specializations and as needed without neglecting any of them.

2. Directing teachers to use teaching means which are most favored by students taking into account their specializations so the focus should be on the means of (kinetic sense) for the students of practitioners of sports then the visual, then the audio. While the emphasis should be on the visual style for the non-practitioners of sports in the scientific and humanitarian departments, then (kinetic sense) then the audio.

3. Transit from the traditional methods of the representational systems to modern methods which raise students' motivation to learn

4. Develop guidance, cognitive and psychological programs to improve the level of self-efficiency for the non-practitioners of the sport.

5. Provide scientific atmosphere that contributes to the integrated development of the academic character and encourage them to increase the knowledge to take advantage of recent advances in learning and the means of social communication and internet technologies. 6. Do further and similar researches between the stages of study, colleges and universities in these two important variables.

7. Do further researches that aim to find out the relationship between these two variables, and other psychological variables that has relationship with learning means and develop the self-efficiency like developing the self-esteem, the mental health, job satisfaction and teaching methods.

8. BIBLIOGRAPHY:

- Abo Al-Nadi, Hala (2010). *The Most Favored Learning Styles among Al-Isra Private University Students*. "Reality ... Ambition", Journal of Scientific Education and Psychology", , p 16., issue 1.

- Abo Ghazal, Ashreef (2008). *The Impact of the Employment of a Suggested Program Based on Taking into Account the Visual, Auditory and Kinetic Learning Styles to Collect Seventh Grade Students of English Language and their Attitudes Towards it*. Unpublished Master Thesis, College of Education, Al-Azhar University.

- Al- Nefiei, Ma'touq Abdullah (2010). *Social skills and their relationship to Self-effectiveness of the Outperformed and Ordinary high school students in Jeddah*. Unpublished Master Thesis, Umm Al Qura University, Makkah.

- Al-Masoudi, A. Saleem (2015). *Prevalent Learning Styles among Tabuk University Studens*. The Pedagogical Specialized Magazine, Volume 4 Issue 1.

- Al-Zayat, Fathi(1999) . *Infrastructure of Self-efficiency and its Determinants*. The Sixth International Conference for Psychological Counseling, Psychological Counseling Center, Ain Shams University, Cairo.

- Hanover, B (2002). *Investigation of the Role of the Gender in Developing Self-efficacy, the Development Social Psychology of Gender*. N.J. Lawrence-Erlbaum Associates.

-Hilal, Z., Al NabhaniD (2011) *ifferences in Learning Styles of the Students of Sultan Qaboos University in Light of Some of the Variables*. Journal of Educational Sciences, Issue 1, Part 2.

-Al-Shabol, Anwar Qassem (2004). *Strategy Management and its Impact on the Perceived Self-efficacy, and the Center of Control among a Sample of People with High and Low Achievement in the Upper Basic Stage*. Unpublished PhD Thesis, The Amman Arabic University for Graduate Studies, Oman.

- Alumran, J. I. (2008). *Learning Styles in Relation to Gender, Field of Study, and Academic Achievement Bahraini University Students*. "Individual Differences Research", 6 (4),303 – 316 .
- Alwan, Sally, Talib: *The Self-efficacy of the Students of University of Baghdad*. Journal of Educational and Psychological Research, p. 33 (2013).
- Bandar , A. Al-Sharif (2011). *The relationship of Favored Learning Styles of Learning achievement with of students who Have learning difficulties " A Predictive Study"*. Journal of "Arab Studies in Education and Psychology", Vol. 15, No. 3.
- Bandura, A, (1997). *Self-Efficacy: The Exercise Of Control* ,W.H.Freeman, New York.
- Bandura, A. (2000). *Exercise of Human Agency Through Collective Efficiency*. Current Directions in HumanScience, 9:75-78.
- Fleming, N and Mills, C. (1997). *Not Another Inventory, Rather a Catalyst for Reflection, from to Improve the Academy*. Vol. (11), P.(137).
- Fleming, N. D. &Bonwell, C. C. (2002). *How to Learn Best: A Students Guide to Improved Learning*. Colorado: Green Mountain Falls.
- Geche, TesfayeJale (2009). *Learning Styles and Strategies Ethiopian Secondary School Student in Learning Mathematics*. University of South Africa.
- Hurley, J. B. (2003). *Personality Type Today*.Harper and Row.ColphonBooks . New York.
- Lincoln, F. &Rademacher, B. (2006). *Learning Styles of ESL Students in Community Colleges*. Community College Journal of Research and Practice, 30 , 485 – 500.
- Mcauley , E (1985) : *Modeling and Self-efficacy A Test of Bandera's Model* . Journal of Sport , Psychology.
- Vita, Enza (2002). *The Enneagram Personality Types*.New Age.

SOME ASPECTS OF ATTENTION AND SKILL RELATIONSHIP ACCURATELY CORRECTION TO THE BASKETBALL PLAYERS MIDDLE CLASS

Kada Belkebiche^a – Ahchn Ahmed^b – Jabouri Benamar^c – Keroum Med^d

ISTAPS.mostaganem.ALGERIE. (institut d'éducation physique et de sport.mostaganem.ALGERIE.)

kbelkebiche@yahoo.fr - ahcen@gmail.com - djabbouri@hotmail.fr - kerr67@yahoo.fr

Abstract

The skill of the correction of the most important skills of the player stands by the resolution of the games so it was a source of interesting trainers, researchers, and influence in this skill are quite a few things that reinforce and these things attention, which is an important element in the basic skills of basketball and other sports where it should be available at basketball players attention and observation minute on an ongoing basis to movements player In basketball show the importance of attention is clearly due to the nature of the game that are fast and frequent changing attitudes of the multiplicity of plans defensive and offensive basic skill.

A major premise: There is a direct correlation between the relational aspects of attention and correction accuracy when basketball players.

The importance of search: In our research we want to refer to the subject of some aspects of attention and its relationship to accurately shooting in basketball, as he is considered an important aspect of sports psychology.

After the theoretical and practical analysis of the results of your table manifestations of attention (unit, concentration, distribution, conversion) and their relationship to accurately from the free-throw shooting.

- The existence of a positive correlation between the degree of severity of attention and accuracy of free-throw shooting.

- The presence of a negative correlation between the degree of concentration of attention and accuracy from the free-throw shooting.

- The presence of positive correlation between the degree of correction and to divert attention from the free-throw accuracy relationship.

Keywords: skill, basketball, players, sport.

1. INTRODUCTION

The attention in the sports field includes several aspects, although access to the high levels of sports depends largely on the growth and elevate those features, as each activity needs to these appearances, but to varying degrees, and requires the athlete to learn motor skills and mastered not only be done for Using the integrated setup of the physical and psychological aspects and tactical skills. (Muhammad Lutfi, 1975)

And requires the basketball players to keep a high level of attention in its many manifestations of the affected correction form or another of these manifestations which is characterized with the players, team sports in general and basketball in particular, what contained in the positions of playing accuracy, the player therefore require careful attention to the players who continue with the same speed and power The activity for the scoring at the right time and place. (HEDON, E, 1988, précis de physiologie. ED, O, DOIN, Californie, Etats unis)

- The problem:

The skill of the correction of the most important skills of the player stands by the resolution of the games so it was a source of interesting trainers, researchers, and influence in this skill are quite a few things that reinforce and these things attention, which is an important element in the basic skills of basketball and other sports where it should be available at basketball players attention and observation minute on an ongoing basis to movements player In basketball show the importance of attention is clearly due to the nature of the game that are fast and frequent changing attitudes of the multiplicity of plans defensive and offensive basic skill, so we went out the following forms; (BILLAT, V. 2003. physiologie et methodologie de l'entrainement : de la theorie a la pratique. BLACHARD, A. 2009. Gestion du stress.)

° What is the relationship between attention and precision shooting from the free throw with basketball players for the age group (18-16 years)?

- Sub-questions:

- Is there a correlation between the unit attention relationship and accuracy from the free-throw shooting?

- Is there a correlation between the concentration of attention and precision shooting from the free throw?
- Is there a correlation between divert attention and precision shooting from the free-throw relationship?
- Is there a correlation between the distribution of attention and precision shooting from the free-throw relationship?

3. The objectives of the research:

A main goal:

Identify and find out the correlation between some aspects of attention and correction accuracy when basketball players.

(B) sub-goals:

1. Identify the existing relationship between the unit of attention and precision shooting from the free throw.
2. Identification of the existing relationship between the concentration of attention and precision shooting from the free-throw
3. determine the existing relationship between the accuracy and divert attention from the free-throw shooting.
- 4 Determine the existing relationship between the distribution of attention and the accuracy of the free-throw shooting.

4. hypotheses: Suppose researchers on the premises immediate:

A major premise:

There is a direct correlation between the relational aspects of attention and correction accuracy when basketball players.

(B) sub-hypotheses:

1. There is a positive correlation between the unit of attention and precision shooting from the free throw.
2. There is a negative correlation between the concentration of attention and precision shooting from the free throw.
3. There is a positive correlation between the accuracy and divert attention from the free-throw shooting.
- 4 There is a positive correlation between the distribution of attention and precision shooting from the free throw.

5. The importance of search:

In our research we want to refer to the subject of some aspects of attention and its relationship to accurately shooting in basketball, as he is considered an important aspect of sports psychology from, shall be deemed to

Determination Terms:

Attention- Concentration- Free Throw- Player Middle Class- Diferent Type of Attention-Basket Ball

attention a vital dimensions affecting performance in the sports field where the attention of the individual at a given moment is not usually found only in a particular topic, but the attention does not stop and I was traveling on an ongoing basis and speed peek through fractions of a second, and understands the attention as a "ready Perceptual year directs the individual feeling about a certain whole attitude or part" .uallah the attention Mental process plays an important role in human life for his contribution to recognize and adapt to the environment and its connection with the permanence(**PERRAUT-PIERRE,E,2000**.la gestionmentale du stress pour la performance sportive).ED,Amphora,France.

Based on the foregoing found that the importance of attention and accuracy shooting in basketball and their effectiveness for the arrival of basketball players to the upper levels, which reflect the technical level, which up to the players during the training phase to obtain good results to improve the level.

6. Search Terms:

- Attention: is the psychological process of focusing the attention of the player on the special sensory stimulation is the mentality of being a process strengthen us what we want to be focusing on the cues and stimuli expel or behavior does not concern us from them. (Abdul Wahid, 2006)
- altsoab: The process is to push the ball toward the goal is to throw using the arm or arms traffic.
- krh Cart: play basketball between two teams of each of the five players each team consists purpose is to shoot the ball in the team counter basket and to prevent the other team possession of the ball or hit the target.

7. similar studies:

1.YoucefHarchaoa study:

The role of physical education and sports in the ability to focus attention and its relationship to the development of orientation and motivation.

- Conducted this study: 1995

° Is physical education and sports affect school attendance among those between the ages (12-13 years) ability to concentrate?

- Are both the inclination and motivation for physical activity at school attendance to affect the development of focus?

- The objectives are as follows:

- Understand the impact of physical education and sports for ability to concentrate.

- Understand the impact of both the inclination and motivation during sports activity on the development focus.

- Was imposed as follows:

Practice practice physical education and sports Polyphonic working on the ability to focus attention to the development of school attendance.

- Research Methodology: Follow the researcher experimental method.

- Sample: Included were randomized (145), a pupil of basic school Mohammedia Mascara Province.

- Search Tool: Test complete the forms, test different forms, test and its relationship to focus attention tired.

- Conclusions: the practice of physical education and sports by gender males and females led to the development level of concentration of attention.

- Arthur and Matt study:

- The theme: mental preparation to straighten the free throw and self-efficacy for both sides effect.
 - Conducted this study: 2008.
 - Was her problem as follows:
 - ° Is the proposed program of mental preparation improves the skill and efficiency of self-correction?
 - The objectives are as follows:
 - To identify the extent of the impact of mental preparation on the skill of self-correction and efficiency program.
- It was imposed as follows: The proposed program of mental preparation improves the skill of self-correction and efficiency.
- Research Methodology: The researchers followed the experimental method.
 - Research sample: The research sample consisted in (43) basketball player in a manner
 - Search Tool: was the suggestion skills training program (the focus of attention, mental visualization and relaxation).
 - Conclusions: Mental skills training program has improved 86 percent of the players of the experimental group in addition to improvements in self-efficacy.
 - To identify the area in which the player is a good concentration.
 - Was imposed as follows: the existence of a positive correlation between the degree of concentration of attention and accuracy relationship correction of consistency among basketball players Class Cubs.
 - There is a positive correlation between the concentration of strong positive attention and precision shooting from the side.
 - Research Methodology: follow student descriptive approach..
 - Search Tool: Focus "Dorothy Harris' network test, test correction of persistence (Ever) battery, recording grades form a computer.
 - **Conclusions:** There is a direct correlation between the concentration of attention and correction accuracy.
- 1- Research Methodology:** 1
- We used in this study we discussed the problem of the private descriptive approach and that in order to achieve its objectives and which to get with sincerity and objectivity of the results.
- Society and the research sample.**
- The first sample: represented in the sample intended for exploratory experiment consisted of 06 players from Oran write the mid-class team
- The second sample: and was the original community of the research sample consisted of 10 players for the team woke up mid-class Mostaganem.
- Areas of research**the human sphere: applied research on a sample of some of the basketball players made up of 10 players for the sports season 2012-2013m contractors with the horizons of Mostaganem, which is active in the second national team section.
- 1-3-2- spatial area:** I have been conducting tests on the players inside the stadium Faraj leading multi-sports hall of former team-mentioned, the same hall where they train and play there until the official interviews.
- 1-3-3- time domain:** I have been chosen research topic on 12-11-2012m and after agreement with the supervising professor on the subject we embarked on the theoretical side, the beginning of 14-11-2012m.
- As for the theoretical side, we have to give the tests after taking views, suggestions and amendments, and then distributed on 19-03-2013m this during times of training classes in order to be retrieved directly after the end of testing.
- Then we moved to the statistical study and then to the process of analysis and discussion to end up to a general summary of the results and gizzard, so I ended our search on a whole 23-05-2013m.
- 1.4setting procedural variables Search:**
- In order to obtain reliable scientific results requires each researcher to control the variables examined, and so isolate other internal variables that may hinder the search biography, and were as follows:
- 1.4.1.b independent variable:** the stimuli or changes in the impact of these variables called experimental variables. (Mohamed AwadBswyne and Faisal Yassin beach 0.1992) and of some aspects of attention.
- 1-4-2- dependent variable:** the effects of the independent variable and of the correction from the free throw line.
- 1-5- tools and means of Search:**
- We have used in our research this set of tools which are as follows:
- Sources and references that are relevant to the search.
 - The Internet.
 - Field tests:
 - 1-test to measure some aspects of attention for "supplying Onvemunt."
 - 2. Test the correction on the basket from the free throw line (Ever battery test to measure skill in basketball)
- Search tools:**
1. Borden test Onvemunt to the attention of: The researcher used the patch test your attention, which is known as test (Bradens-Onvemuv) rate by Taha Abdel-Gawad, 1972, as it measures four aspects of attention are: (sharpness, focus, conversion, distribution). (Ahmed Mohamed Khater and Ali Fahma pick, 1996, page 521)
 - Scale components: The approved measure, which is a paper containing 13 lines of distributed body kits Arabic numerals, each set of (3-5) numbers consist Each line on (10) groups and the total numbers (40) record This means that the test contains (1240) record, has developed this test numbers to arrange the sequence of codified also took into account the position that the application of the scale method: Look at the page in front of you attentively to notice what you see numbers and complex and is looking to be irregular distribution, and unequal to avoid the likelihood of conservation - all you are required to craft written off or compositions

you are required to be removed and the piece put italic pencil on Hmaaharv and you have to implement it quickly and accurately when you hear the signal (warmed up), you take the pen hand used by the writing, and when the signal (Start) you to turn the page quickly and begin to Find the required numbers written off and when the signal (whoa), you put a big sign pencil. According to what is shown in Figure (01).



Figure (01) shows the paper-and-pencil tests of the manifestations of attention

2. CORRECTION METHOD OF CALCULATING THE RESULTS:

Is extracted parameters of the test form with the help of its own key correction and extracted the results as follows:

- The number of characters that the player its consideration during the test.=a
- The number of compositions supposed to write off the player in the test paper.=b
- The number of public errors (wrong number of compositions which Written off plus the number of correct compositions that have not Written off).=B
- The number of correct compositions written off.=r
- Work accuracy or implementation of testing labs.=e

$$e = \frac{b-B}{b} \times 100$$

test unit attention:

Search for the desired numbers you written off by placing a slash them penciled taking into account the accuracy and speed note that the test for just one minute and we'll cancel each combination set contains the number (49) and starts Balostr one after the other from left to right.

Unit attention: $u = e \times a$

test focus attention:

After the limit is calculated Balachtbarren: (test in the case of calm and testing in the case of Alnthren photosynthesis) was

Calculating the degree of focus through:

u1: is the net productivity of labor when measuring unit of attention in the quiet situation without sexy.

u2: is the net productivity of labor when measuring unit of attention in handicapping and distractions case.

Subtracting u1 - u2 we get (K), which is the degree of concentration, as in the following equation:

$$u1 - u2 = k$$

Whenever the extracted value fell indicated high concentration of attention when the players.

distribution attention test:

The test carried out for two minutes required to write off the player combinations verses :(49) (58) and then calculates the distribution of attention.

$$C = \frac{(U3 - U4)}{(U3 + U4)} \times 100$$

Where: U3 performance productivity for installation (49) U4 performance productivity for installation (58)

divert attention test:

Test leads for two minutes with digital cancellation (49), (24), but the following manner:

The test installation starts (49) for a period of thirty seconds and then move on with reference to the cancellation of the number (24) and for a period of thirty seconds.

And when you hear the word about the move again to write off the number (49) and then again for the third time who shall cancel the number (24) will expire Adakkiktan begins in the laboratory to divert attention by calculating:

$$N = (M + H + O) / 3$$

Where M equal to the difference between the productivity of labor first and second for thirty seconds:

$$u1-u2 = M$$

H equal to the difference between the second and third work productivity

$$u1-u2 = H$$

O equivalent to the difference between the third and fourth work productivity

$$u1-u2 = O$$

And labor productivity are calculated in a period of thirty seconds for each free installation in (49) (24) in a section of the sections.

2. test correction from the free throw line:

- Description of performance method:
- The player and the ball behind him stands the middle according to the free-throw line as shown in Figure (02).
- Each player corrected the 04 groups consisting of 05 consecutive corrections.
- The player right in the correction on the basket in any way suit them.
- Gives each player a chance to rest between each set and other corrections. (Mohammad Hassan Allawi, Mohamed NasreddinRadwan, 1987) - Figure (02) shows the test correction from the free throw line.
- Degrees account (Calendar):
- Gives the player one degree for every ball enters the basket.
- The maximum that can be obtained for degrees is 20 degrees.
- Field trip: We have visited the first to search for the team and the coach trader with them in their court to determine the program of training times for the purpose of determining the second date for the testing and this so as not to influence on their training, and in the Framework Convention our work done and of the distribution of test forms on the players.
- Register grades form.
- Statistical tool.
- Pedagogical methods:
- cronometre
- A legal goal Basketball
- 05 balls legal basket
- Save the clothes in which the paper-and-pencil tests conducted Hall
- Tables - 10 pens - light indicator device

6.1 - Expeditionary experience

They stand on the most important problems and obstacles that hinder the smooth running and Hassan to search, so we conducted an exploratory experiment, which means that they "" scientific process and purpose of the stand on the negatives and positives that correspond to the researcher to be training him. "(QasimMandalawi et al., 1989) and this was on 12-03-2013m on 06 players from Oran Mail team, which is active in the second national section.

- For the proper key experience and ensure the validity of the tests that we've made it and should we have to do the exploratory experience, which is one of the preliminary roads for access to accurate and precise results at the same time.

1-7 scientific basis for testing:

- **Test stability:** intended "to give the same results if the test was applied to the same sample at different periods in the same similar circumstances." (QasimMandalawi and fall down, 1989)

So we have to find reliability coefficient for the tests and the correction from the free throw line by re-test

Table (01) shows the reliability coefficient for experimental tests of the sample

Statistical study for tests	Sample size	Degree of freedom	Statistical significance	Reliability coefficient	The correlation coefficient
Test correction from the free-throw	6	N-1 5	0.05	0.96	0.85
Test unit attention				0.92	
Test to focus attention				0.91	
Test divert attention				0.89	
Distribution of attention test				0.84	

- **Test the sincerity:** I mean, the test of truth, "the validity of the position to be measured" (Hassanein, 1995)
 So we used to extract the content sincerity sincerity test where we just introduced the candidate tests on supervising professor and a group of experts and specialists to arbitration some aspects of attention, experts have agreed to test the sincerity in achieving the purpose for which it has developed for, and this proved sincerity of our tests.

the sample Table (02) shows the honesty factor for experimental tests

Statistical study for tests	Sample size	Degree of freedom	Statistical significance	Honesty coefficient	The correlation coefficient	Significance test
Test correction from the free-throw	6	N-1 5	0.85	0.97	0.85	Moral
Test unit attention				0.95		
Test to focus attention				0.95		
Test divert attention				0.94		
Distribution of attention test				0.91		

- An objective test: Substantive results mean independence for the autonomy of the concept we have using the indicator light and a stopwatch (Mikati) to measure the test time and give especially in correction accuracy grades, and so are the measurements and tests with high objective.

1-8- statistical study: statistical treatment: <arithmetic average:

Standard deviation: p

The correlation coefficient "Karl Pearson"

The following are the laws used in this research:

The aim is to determine the correlation between the two tests by reference to the controversy statistical significance of the correlation coefficient Pearson (t) The result was calculated greater than the value seriously and why the link is strong, and vice versa, and it must be noted that the simple correlation coefficient (r) does not exceed the value of +1 -1 or +1 Whenever approached the relationship was strong but if tended to -1 inverse relationship and the closer to zero correlation decreases in the case equated me +1 or -1, the link is strong between the two tests, either positively or negatively.

The correlation between the two tests is the significance of the test reliability coefficient and can be calculated by the following equation:

2.1- search results are displayed and discussed:

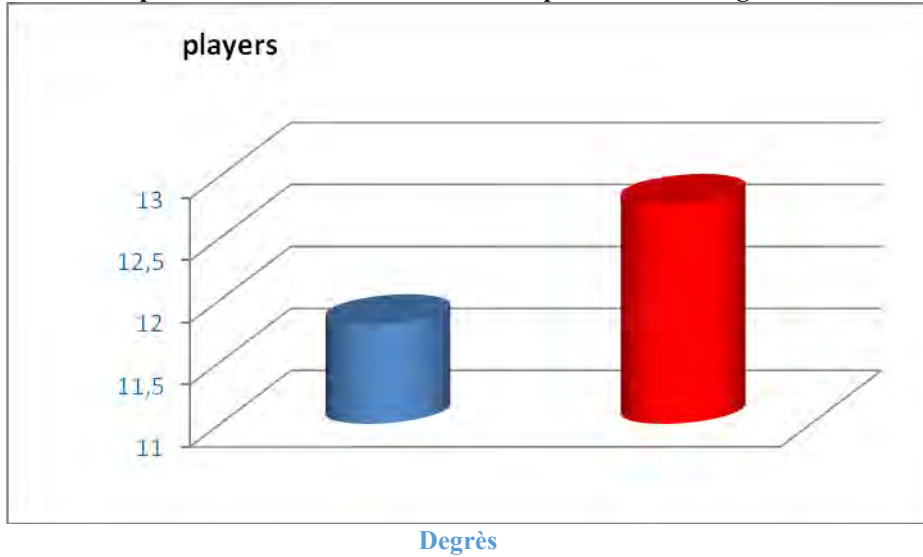
Presentation and discussion of test results of the degree of severity of attention and precision shooting from the free-throw Study Unit attention relationship and accuracy from the free-throw shooting

Table (03) shows the relationship between the unit of attention and precision shooting from the free throw.

Tests Sample	Severity of attention		The correlation coefficient	Shooting from the free-throw accuracy	
	S	P		S	P
10	12.77	1.40	0.81	11.8	1.54

Through the table note the following arithmetic average unit attention as b (12.77), which is greater than the arithmetic mean of precision shooting from the free throw, which was (11.8) With respect to the standard deviation of the severity of attention has been estimated to be (1.40) where we note a few spacing in the values of any failure the presence of dispersion as in the degree of correction from the free throw, which was estimated accuracy (1.54) In order to study the relationship between the unit of attention and precision shooting from the free throw was the use of the correlation coefficient Karl Pearson and estimated (0.81) Any There is a positive and strong correlation between the unit of attention The accuracy of the free-throw shooting. He also stressed in this aspect Osama Kamal salary (salary, 1990) that requires coaches to make sure they attend their players in good condition to ensure the highest level of attention.

- A graph showing the relationship between the unit of attention and precision shooting from the free throw.



Presentation and discussion of test results of the degree of concentration of attention and precision shooting from the free-throw Study to focus attention relationship and the accuracy of the free-throw shooting

Table (04) shows the relationship between the concentration of attention and precision shooting from the free throw.

Tests Sample	Focus attention		The correlation coefficient	Shooting from the free-throw accuracy	
	S	P		S	P
10	-1.87	2.58	-0.80	11.8	1.54

Through the table note the following arithmetic mean concentration was negative attention as much as b (-1.87) reverse the arithmetic average of the accuracy of the correction that was positive as much as b (11.8)

As for the standard deviation of the focus of attention was (1.54) of any no convergence of values and this means there is no dispersion of them compared with the test standard deviation correction which estimated accuracy (2.58), where there is a divergence of values, a few by any no dispersion but a few and for the study correlation between the degree of concentration of attention and precision shooting from the free throw was the use of the correlation coefficient Karl Pearson, who estimated (-0.80) and see that these negative value which has an inverse and a strong relationship between the two tests that is, the smaller the degree of concentration of attention player in test write-off (this means the degree of force to focus attention) increased the degree of correction has accuracy.

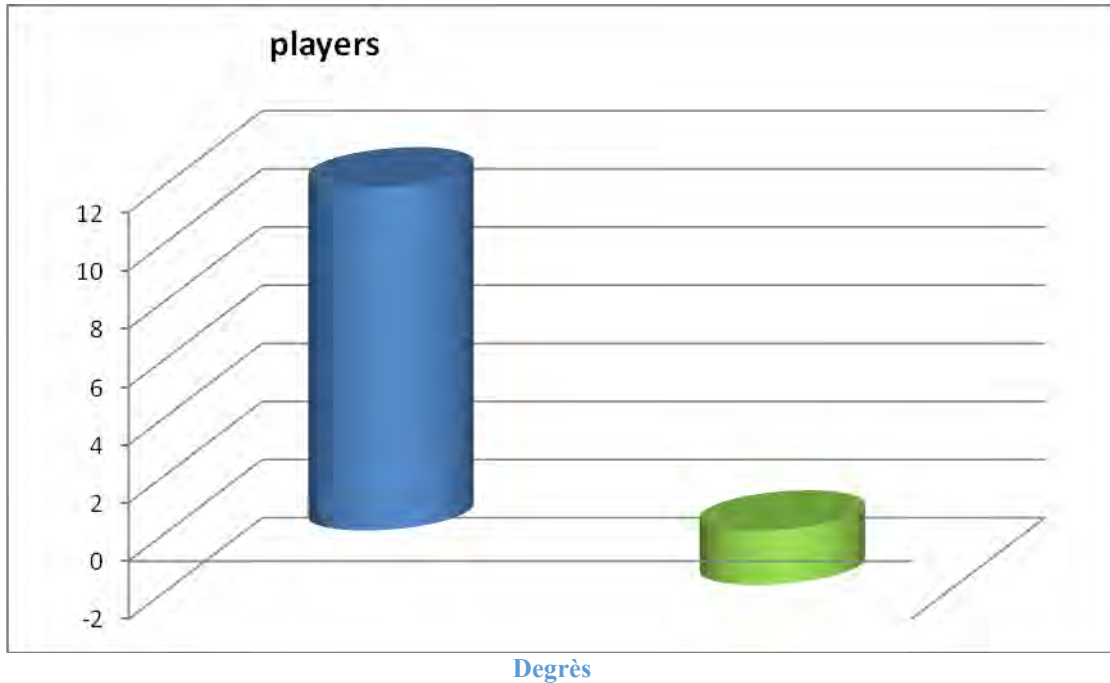
Where enhances researchers visible to the negative correlation between the degree of moral focus attention and accuracy correction to the degree of concentration of attention is an indication of the psychological state of the player before the performance of the correction.

It also confirms that Osama full salary (salary 0.1990), where the focus is to draw attention or a general basic skills of the athletes is the foundation for the success of the process of learning, training or competition in various forms

Attribute the researchers reason for this relationship to be "learner or the player with a good focus is who owns the physical compatibility in control of the stimuli and emotions that affect the entity when the focus will be in control of the motor to be

(shooting from the free-throw) (sykes, 1983) and is also consistent with the Study Hashim Ahmed Suleiman study (1987) and the study of bin Ahmad Sufian (2009) in the presence of correlation between the degree of concentration of attention and precision shooting from the free throw.

- A graph showing the relationship between the concentration of attention and precision shooting from the free throw.

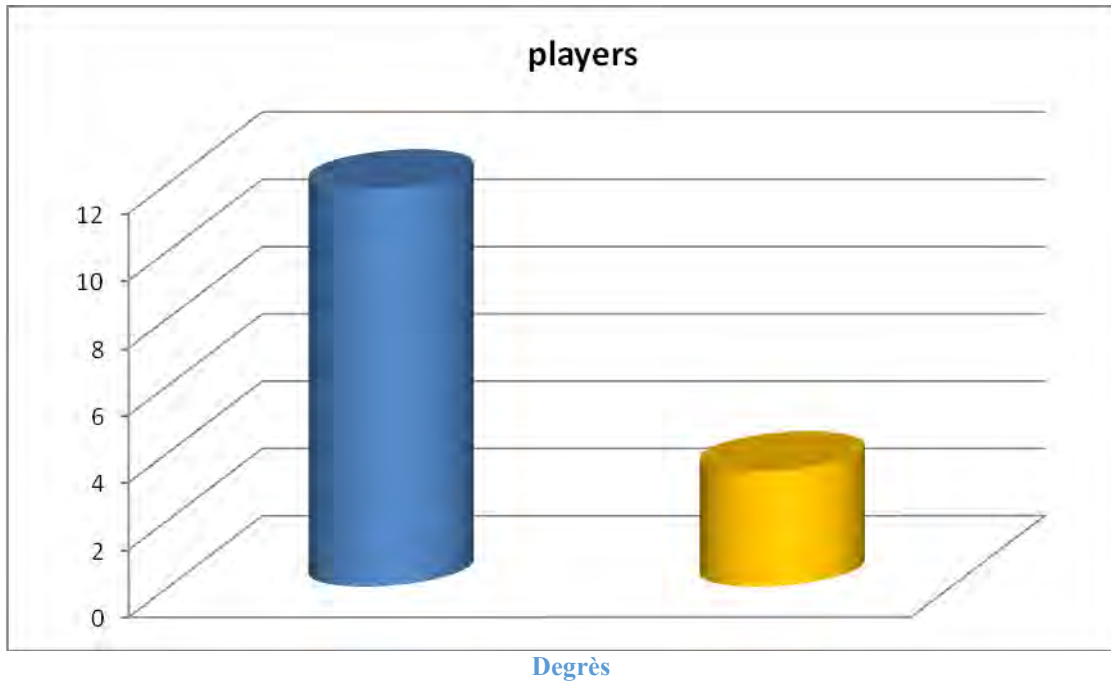


Presentation and discussion of test results of the degree of concentration of attention and precision shooting from the free-throw Study divert attention and accurate correction of the free-throw relationship

Table (05) shows the relationship between divert attention and precision shooting from the free throw.

Tests Sample	Divert attention		The correlation coefficient	Shooting from the free-throw accuracy	
	S	P		S	P
N	—			—	
10	3.42	2.43	0.30	11.8	1.54

Through the table note the following: SMA divert attention was estimated at (3.42), which is much lower than the arithmetic average of the accuracy shooting from the free throw, which was (11.8) With respect to the standard deviation to divert attention, which was estimated at (2.43) note the presence of spacing values no no dispersion compared with the standard deviation in the correction of the free-throw which stood accuracy (1.54) where the convergence of the values of any lack of dispersion In order to study the relationship between divert attention and precision shooting from the free throw was the use of the correlation coefficient Karl Pearson and estimated (0:31) It is little or no positive shift attention between accuracy and correction of the free-throw link. And enhances the researchers this weakness lack of training special units of the exercises that lead to disqualification and develop this theme as the module normal daily must contain a form of scoring and the coaches that they have a clear idea of the manifestations of attention, especially to divert attention.



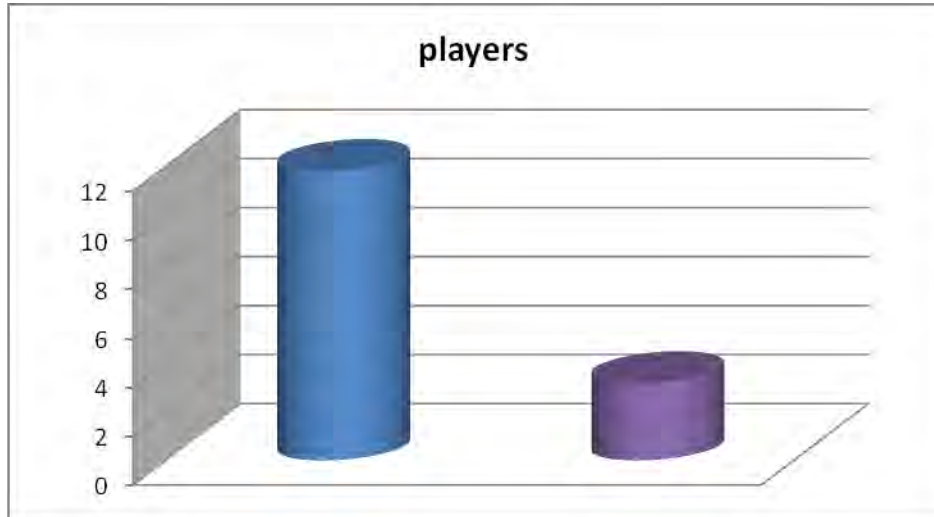
Presentation and discussion of test results of the degree of concentration of attention and precision shooting from the free-throw
The study of the distribution of attention relationship and accuracy of free-throw shooting

Table (06) shows the relationship between the distribution of attention and precision shooting from the free throw.

Tests Sample	Distribution of attention		The correlation coefficient	Shooting from the free-throw accuracy	
	S	P		S	P
N	—			—	
10	3.14	6.48	0.40	11.8	1.54

Through the table note the following: the arithmetic average of the degree distribution of attention was (3.14), which is much lower than the arithmetic average of the accuracy correction, which was estimated at (11.8) With respect to the standard deviation of the degree distribution of attention has been estimated by (6.48) note the presence of a large spacing between the values ie there is a large dispersion between them compared with the standard deviation of the accuracy shooting from the free throw, which was (1.54) there is no dispersion of values in order to study the existing relationship between the distribution of attention and precision shooting from the free throw was the use of the correlation coefficient Karl Pearson and estimated (0.40), a positive correlation Simple between the distribution of attention and precision shooting from the free throw.

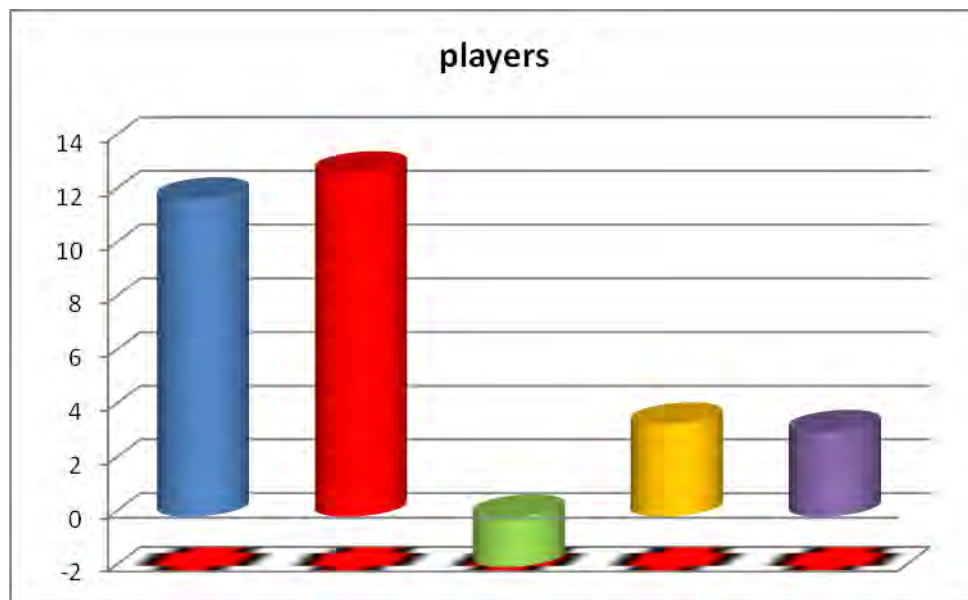
A graph showing the relationship between the distribution of attention and precision shooting from the free throw .



Degrès

Table (07) shows the relationship between the manifestations of attention precisely from the free-throw shooting.

Tests	The intensity of attention	Focus attention	Divert attention	Distribution of attention	Shooting from the free-throw accuracy
S	12.77	-1.87	3.42	3.14	11.8
P	1.40	2.58	2.43	6.48	1.54
The correlation coefficient	0.81	-0.80	0.31	0.40	



Degrès

Through the table and curve note that: averages varying with each other in write-offs and tests correction from the free throw line accuracy tests, arithmetic Valmtost in the degree of severity of attention was (12.77) was the largest of them in the test correction accuracy, which amounted to (11.80), and the arithmetic average of the degree the focus of attention was negative as estimated (-1.87) This shows the strength of the degree of concentration of attention to the players, but for the conversion and distribution of attention, who deal with (3.42) (3.14) were lower than the arithmetic average of the correction accuracy.

As for the standard deviations were the lack of a simple and large dispersion appeared between them and in the following manner:

Deflection unit attention and accuracy correction estimated (1.40) (1.54) of any lack of dispersion between the values, With respect to the focus and divert attention and which was estimated at (2.58) (2.43) appeared between the dispersion between the values for I have for a simple, but great dispersion was when the distribution test where as b (6.48).

As for the link that emerged between the two tests differed Kmal between them so strong and positive correlation appeared strong negative correlation, and in the following manner:

Vmaaml link to unity and precision shooting from the free-throw appeared linked to positive strong as estimated (0.80) As for the correlation degree of concentration of attention, which was estimated at (-0.80) any strong negative correlation, and this demonstrates the high degree of concentration of attention to the players, then link back little or no attention when converting, which was estimated at (0.31), while for the simple correlation estimated the b (0.40) at a temperature distribution of attention among the players..

□ interview results assumptions:

The first hypothesis: There is a positive correlation between the unit of attention and precision shooting from the free throw. Based on the results obtained by the experimental sample and the result of field tests carried researchers embody I'm on the ground that there is a direct correlation is positive strong between the unit of attention and precision shooting from the free throw, and this was confirmed to us through the table (03) and curved graph, which assured us that the health of the hypothesis that impose that there is a positive correlation between the unit of attention and precision shooting from the free throw as confirmed in this aspect Osama Kamal salary (salary, 1990) that requires coaches to ensure the presence of their players who are in good condition to ensure the highest level of attention .

All of these indicators make sure the health of any relationship that the greater the degree of attention in the unit test write-offs when the players has increased the success rate correction.

The second assumption: There is a negative correlation between the concentration of attention and accuracy of free-throw shooting

Based on the results obtained by the experimental sample and the result of field tests carried out by the Taliban researchers embody I'm on the ground that there is a strong inverse relationship between the concentration of attention and precision shooting from the free throw, and this was confirmed to us through the table (04) and curved graph, which confirmed us health hypothesis that impose that there is a negative correlation between the concentration of attention and precision shooting from the free throw any that the smaller the degree of concentration of attention player in test write-off (this means the power of the degree of concentration of attention) increased the degree of correction has accuracy as consistent with bin Ahmad Sufian 2009 study The study Hashim Ahmed Suleiman 1987 that there is a correlation between the concentration of attention and precision shooting from the free throw.

All of these indicators make sure the health of the inverse relationship between the concentration of Alatbah and accuracy from the free-throw shooting

The third hypothesis: draws positive correlation between divert attention and precision shooting from the free-throw relationship.

Based on the results obtained by the experimental sample and the result of field tests carried out by the Taliban researchers embody I'm on the ground that no correlation is positive slim between divert attention and precision shooting from the free-throw relationship and this has been confirmed to us through the table (05) and curved graph, which assured us that impose health hypothesis that there is a positive correlation between divert attention and precision shooting from the free-throw

And enhances the researchers this weakness lack of training special units of the exercises that lead to the development of this theme as usual daily training module should contain a form of scoring and the coaches that they have a clear idea of the manifestations of attention, especially to divert attention

All of these indicators to make sure the health of the relationship between relational divert attention and accurate correction of the free-throw

Fourth hypothesis: draws positive correlation between the distribution of attention and precision shooting from the free-throw relationship.

Based on the results obtained by the experimental sample and the result of field tests carried out by the Taliban researchers embody I'm on the ground that no correlation is positive medium between the distribution of attention and precision shooting from the free-throw relationship and this has been confirmed to us through the table (06) and curved graph, which assured us that impose health hypothesis that there is a positive correlation between the distribution of attention and precision shooting from the free-throw

This indicates that the correlation relationship between the distribution of attention and precision shooting from the free-throw

3. RECOMANDATION :

Based on what is stated in the study, the researchers recommended the following:

- some of the players who are characterized by a high level of unity of attention and focus attention and intensify training on the skill of the correction to the level of development.
- training exercises and special scoring on penalty kicks for the development of mental state (attention).
- accustom players to different positions high degrees of attention continuously.

- conduct special tests manifestations of attention for different periods to learn about the evolution that takes place for the players to its importance in the development of the correction accuracy.
- conduct a study similar to the other bench appearances and how they relate strictly correction from different regions.
- use of private coaches to develop aspects of attention with their athletes exercises.
- increased emphasis on exercise for the development of the distribution of attention and divert attention.
- need to focus on mental abilities and special attention and manifestations, including the focus of attention and the attention unit

4. GENERAL SUMMARY:

One important factor of mental factors in order to win and achieve sporting achievement is and it has the sports psychologists study topics related to psychological and mental problems of the sports activity, and for this, the researchers conducted a lot of experiments and research to uncover solutions for those problems.

Including the topics of attention to the basketball players, and on this basis of our study, titled "some semblance of attention relationship and accurate shooting from the free-throw line rather basketball players Class mid-category (16-18 years), where we have acquired the presence of different correlation relationships significance between some aspects of attention and precision shooting from the free throw, being an essential skill depend on any team to win the largest possible number of points and to win the team match must be on each player to focus until the last seconds of the game, because the critical and tough competition, especially the last stroke play on small molecules that occur the difference and determine the fate of each team in the game.

5. CONCLUSIONS SEARCH:

After the theoretical and practical analysis of the results of your table manifestations of attention (unit, concentration, distribution, conversion) and their relationship to accurately from the free-throw shooting.

- The existence of a positive correlation between the degree of severity of attention and accuracy of free-throw shooting.
- The presence of a negative correlation between the degree of concentration of attention and accuracy from the free-throw shooting.
- The presence of positive correlation between the degree of correction and to divert attention from the free-throw accuracy relationship.
- The lack of correlation between the degree of distribution of attention and precision shooting from the free throw

Determination Terms:

Attention- Concentration- Free Throw- Player Middle Class- Diferent Type of Attention-Basket Ball
-Precision of attention – Concentration — Distribution of attention.

6. CONCLUSION EN FRANCAIS:

Un facteur important de facteurs mentaux afin de gagner et d'atteindre l'exploit sportif est et il a les sujets d'étude des psychologues sportifs liés à des problèmes psychologiques et mentaux de l'activité sportive, et pour cela, les chercheurs ont mené beaucoup d'expériences et la recherche afin de découvrir des solutions pour ces problèmes.

Y compris les sujets d'attention pour les joueurs de basket-ball, et sur cette base de notre étude, intitulée "un semblant de relation de l'attention et le tir de précision à partir de la ligne de lancer franc plutôt les joueurs de basket-ball de classe mi-catégorie (16-18 ans), où nous ont acquis la présence de différentes relations de corrélation signification entre certains aspects de l'attention et le tir de précision du lancer franc, étant une compétence essentielle dépendre d'aucune équipe à remporter le plus grand nombre possible de points et de gagner le match de l'équipe doit être sur chaque joueur de concentrer jusqu'à ce que les dernières secondes du jeu, parce que la concurrence critique et difficile, surtout le dernier coup jouer sur de petites molécules qui se produisent la différence et déterminent le sort de chaque équipe dans le match.

7. BIBLIOGRAPHIE :

- 1-BILLAT,V.2003.physiologie et methodologie de l entrainement :de la theorie a la pratique.2^e,edit.ED De Boeck BRUXELLE,Belgique.
- 2-BLACHARD,A.2009.Gestion du stress.EdRCS Mont de Marsan.France.
- 3-DUMONT,M,2001.Stress et adaptation chez l enfant.EdPresses univesite du quebec Canada.
- 4-FERRE,J,PHILLIPE,B,1998.Dictionnaire des APS,ED,Amphora,France.
- 5-GOETGHEBUER,G,BEAUF AIS,O.2003.le Basket Ball ED,le clavier bleu.France.
- 6-GREBO,E ,2009.Le stress.ED,le clavier bleu.France.
- 7-HIEBERT,B,1985,le stress chez les enseignants.ED Association canadienne d education ,Toranto,Canada.
- 8-HEDON,E,1988,précis de physiologie.ED,O,DOIN,Californie ,Etats unis.
- 9-PERRAUT-PIERRE,E,2000.la gestion mentale du stress pour la performance sportive.ED,Amphora,France.
- 10-RAIMBAULT,N,20004,lapreparationmentalr en sport collective.EdChiron,France.
- 11-RIPPOL,H,2008,le mental des champions.EdPayot,France.
- 12-SCANFF,C,L,2003 ,Manuel de psychologie du sport,l interventionauprés du sportif.Ed Revues ,E.P.S,France.
- 13-THOMAS,R .1994.Préparation psychologique du sportif.Ed,Vigot,France.

14-NATATION POUR TOUS.2011.LE Stress est il favorable à la performance sportive.

-sites :

<http://www.natationpourtous.comss/entrainement/gestion-stress.php>

2-RICHOU,S,2011.le soin de transpiration des mains.

<http://www.doctissimo.fr>

3-SANTECHEZNOUS.2008.Gare au sress.

<http://santecheznous.com>

4-SARRIEU ,M.d.2011.le stress et votre santé.

<http://www.fleurancenature.fr>

5-TARMOUSSI,M ,2011.la preparation mentale en basket ball.

<http://preparationmentale.blogspot.com>

6-WIKIPEDIA.2004.physiologie.

<http://fr.wikipedia.org/wiki/physiologie>

7-WIKIVERSITY.2007.Basket Ball

<http://fr.wikiversity.org/wiki/Basket-ball>

SOME BIO KINEMATIC VARIABLES AND ITS RELATIONSHIP WITH ACHIEVEMENT 25 M FREE STYLE SWIMMING

Ferdous Majeed Ameen

College of Physical Education and Sports Science, University of Diyala.

Dr.ferdousameen@yahoo.com

Abstract

This work aimed to elicitation the speed of swimming computing the time of performance divided on the distance.

Therefore, the speed meaning their achievement and thereafter understanding the relationship between kinematic variables and achievement that lead to final focused recommendations using descriptive method, samples of sixty students were selected intentionally from fourth year, school of physical education, Duhok with good performance in swimming.

Scientific observation, questionnaire, test, analysis, and measurement were used for data collection, certification of the scientific observation was carried out by two camera one above and other under the water inside glass box closed and tritely placed in front of the performance (10 m in the middle of race).

The best photos transferred to laptop for application Maxtraq program for kinetic analysis.

Results revealed non – significant correlation between some biokinetic variables with achievement i.e weakness of sampling technique. Free-style swimming requires body's extension through extending of hips which showed significant correlation with achievement. Comparable correlation of elbow with achievement means necessity of hand extension to pull more water. However, increasing of leg extension when the right arm enter the water lead to less resistance on the body. Once the right arm enter water, the left hand must gradually extending under water until approach to full extension beside the hip. Thus, inverse considerable correlation resulted between left forearm with horizontal line of body

Key Words:-Bio Kinematics, Achievement, free style, swimming.

1. INTRODUCTION

The swimming sport are pretty exercised rights in all stages of our life, does not belong to age, a certain swimming water sports popularity is of great significance in the construction of various aspects of a person's life (human and social). Thus the sport of swimming occupies a prominent place among all other sports, because they move all the muscles of the body and its development and strengthens heart and lung.

The importance of swimming shows in our time clearly because of the urgent need for the exercise of human sporting activities in order to compensate for the shortfall that occurred in the physical infrastructure through technological development in the provision of services after the emergence of a lot of diseases in modern era" (Ayyash , 1989, 13).

Freestyle first place among the types of swimming in terms of speed and the number of its activities in the Olympic program" (Ayyash , 1989 ,89), which embodies clearly through scientific studies of this swimming.

The level of swim for students of the University of Dohuk is not clear since the lack of swim tournaments and therefore did not know the level of students performance.

Objective of this study was identifying some of bio Kinematics variables for free style swimming (25)m and Understand their relationship to the free pool (25 m) accomplishment.

Materials and Methods:-

Descriptive method used for intentional sampling that included sixty male students in fourth year in the college of Physical Education, University of Dohuk , selection of the final samples (six student) that constitute 10% of the original community , description and the statistical parameters values for tested samples showed in (Table 1) .

Table (1) Shows the values of the statistical parameters sample specifications,

Statistical Names chronological	weight / Newton	Mass (kg)	leg length	Length Arm (Cm)	the total length (cm)	Life training by years	age by Years
Zia Noman	750	75	44	79	184	8	23
Peer Omid	800	80	44	79	185	10	25
Exhale Mamend	720	72	43	73	181	9	27
Carzan Mohammed	860	86	46	78	185	16	27
Finoar Kheireddine	780	78	43	72	180	7	26
Jkrkouhin Ghazi	630	63	41	71	170	10	23
mean	757.67	75.67	43.5	75.33	180.83	10	25.17
Standard deviation	71.34	7.13	1.5	3.39	5.12	2.88	1.67
Coefficient sprains	-0.56	-0.56	0	-0.08	-1.77	1.71	-0.36

An experiment conducted on Wednesday (26-1-2013) (12:00) pm, the experiment 's main in the swimming pool School of Physical Education at the University of Dohuk each samples has been giving one attempt and photographed by video film distance (5m)at within a total of(25m) two camera were fixed vertically on the player 's level and gymnast's body parts considered as drawing measurement.

The bio **Kinematic** variables determined by experts selected variables depended on the outcome of 60-100%swimmers movement were chopped using special program to sectioning video film for analyzing with Maxtraq program, following **Kinematic**: (head angle, shoulder joint angle left and right, the elbow joint angle left and right, wrist joint angle left and right, Angle hip right and left, knee joint angle left and right, ankle angle left and right, angle of the hummers, crank angle, thigh angle, angle leg, torso angle, the removal of the body gravity center, displacement between the shoulders, Time Motion i.e the time between two images at the moment when enter the right arm and, the moment when enter the left arm, total time for completion of the moment to give the go - ahead to the moment of the player arrival to the end, entire(total) speed of performance derived by dividing the total distance by the total time of the performance, Speed of body's gravity center is the speed of the body's gravity center between two (pictures) and computed dividing the distance of body's gravity center between two (images) on the time between two (pictures), the speed of arm / arm speed between two (pictures) computed dividing the distance between the point of entry the right arm in the water and the point of entry left arm in water time between two (pictures), removing of body's gravity center / is the connecting line between two points of body's gravity center between two (pictures), dislodge arm / are the connecting line between the point of entering the right palm and the left palm entering point water, total distance of the race, kineatic path of the body's gravity center.

Statistical methods included: -Standard deviation, Simple correlation

(excel)and (SPSS) programs were applied for data processing .

2. RESULTS

Table (2) Shows circles and standard deviations and the value of (t) calculated and tabular value margin of error for a sample search for Angle joints of the body

stages Variables	entering the water left arm				entering right arm of the water			
	error rate	correlatio n	deviatio n	mean	error rate	correlat ion	deviatio n	mean
Angle right shoulder	0.43	-0.40	9.07	15.98	0.26	-0.55	11.83	176.68

angle left shoulder	0.10	0.72	15.59	199.33	0.98	-0.01	16.73	20.40
annex angle right	0.52	-0.33	28.23	108.50	0.13	0.69	4.77	172.30
annex angle left	0.05 **	0.80	10.66	171.51	0.85	-0.09	47.90	138.88
right wrist angle	0.40	0.42	15.07	181.48	0.70	-0.20	16.71	171.73
left wrist angle	0.65	0.24	12.16	172.38	0.56	0.30	24.90	173.01
right hip angle	0.87	-0.08	33.48	151.36	0.06**	0.80	17.50	147.41
left hip angle	0.70	-0.20	15.14	158.88	0.09	-.073	16.45	138.90
angle right knee	0.07	0.20	33.39	152.73	0.55	0.31	22.17	118.10
left knee angle	0.77	-0.15	30.80	155.63	0.64	0.24	25.75	145.20
Ankle right angle	0.73	0.17	12.10	144.13	0.89	-0.07	27.90	147.70
left ankle angle	0.50	-0.34	17.79	146.43	0.64	0.25	26.66	160.16

Results in Table (2) showed non-significant correlation between achievement in free - swimming and angles of body joints in tow moment of entering the right and left hand for most variables in except of : -

1-The angle of right hip at a moment of entering right arm ,since mean was (147.41) S.D = (17.50) r = (0.80) significant, and error rate = (0.005) F.D=(5) and tabular (r) = (0.75) .

2-Angle of left elbow at moment of entering left arm into the water , results mean = (171.51) S.D = (10.66) and r = (0.80) at (0.05) tabula (r) = 0.75 a relationship significant correlation.

Table (3) Circles show the results of calculations and standard deviations and simple correlation and the error rate for parts of the body angles to the research sample

Stages Variables	entering the water left arm				Entering the water wright arm			
	error rate	correlation	deviation	mean	error rate	correlation	deviation	mean
leg right corner	0.80	-0.13	13.27	10.83	0.06	-0.19	39.72	50.51
angle left leg	0.20	0.60	10.19	16.55	0.12	-0.30	11.09	17.63
angle right thigh	0.53	-0.32	20.49	21.56	0.66	-0.52	20.32	37.05

angle of the left thigh	0.91	-0.06	9.23	12.36	0.04 **	-0.16	10.65	17.80
Angle of the humerus right	0.30	-0.50	4.85	14.76	0.78	-0.27	3.84	5.88
angle of the left humerus	0.42	0.41	4.19	11.66	0.42	0.21	27.70	25.31
angle right forearm	0.37	0.45	17.47	63.45	0.46	-0.22	2.44	5.80
Left forearm angle	0.70	0.20-	7.44	8.96	0.00 **	-0.11	39.52	50.35
head angle	0.43	-0.40	14.34	17.51	0.20	0.60	9.63	12.27
Torso angle	0.33	0.48	2.57	5.08	0.64	0.33	3.89	4.83

Data represented in Table 3 showed that r.values between right arm entering to water was the arithmetic mean =(17.80) S.D = (10.65) r = (-0.16) error rate=(0.039) when the D.F = 5 and the value of tabular (r) = 0.75, where the literatures confirmed that the body must be horizontal as much as possible through high speed of repeated movements of the lower limbs and reduction of strikes capacity of legs (Ayyash, 1989 ,91).

Al Catt (1999) demonstrated that legs must be straight , to close up with no hardening, and the thigh consider standing pivot of legs movement. The latter also reported that the crawl over bend of knee are the most common mistakes in swimming that lead to increasing of thigh angle and the speed affect negatively.

Table (4) Shows variables bio Kinematics between the moment you enter the right arm of the water and the moment you enter the water left arm

	Stages variables	Statistical Description			
		Error rate	correlation	deviation	mean
1	Displacement of center of mass	0.66	-0.23	0.09	0.60
2	offset between the palm of the left and keeping the right	0.99	0.001s	0.14	0.51
3	is the first time	0.30	0.50	0.38	1.77
4	the time of the second image	0.38	0.44	0.47	2.40
5	time between the two images	0.89	0.06	0.14	0.63
6	speed (central of mass)	0.54	-0.31	0.28	1.00
7	speed arm	0.80	-0.12	0.29	0.83
8	total distance	o	0	0.00	25
9	total time	0.00 **	-0.99	1.74	20.98

10	overall speed	0.00 **	1	0.10	1.19
----	---------------	---------	---	------	------

* Each value in the field is equal to or less significance (0.05) is significant

Data of Table (4) showed that non-significant correlation between most of the variables except of total time of achievement, since the Mean = (20.98) S.D= (1.74) $r = (- 0.99)$ error rate = (0.00), Therefore, high adversely correlation were achieved i.e reduction of performance time lead to increasing of achievement(speed)where speed = Distance/time

3. DISCUSSIONS :

Where the technique freestyle requires that the body is horizontal on the abdomen so that the shoulders higher than the level of the seat which is located beneath the surface of the water immediately and the body is in free-swimming in the course of the hand and Afloat as much as possible (Hassan and others, 2006, 106.), must also reduce passive resistance along the introductions to the body by reducing the degree of the angle between the longitudinal axis of the body and the level of the water surface, note that the degree of this angle connecting distance to be accomplished (Ayyash, 1989, 91) and confirms that Muhammad Ali that the fall of the two legs , which leads to increased resistance is one of the common mistakes swim free (cat , 2000 ,113) , and this was clearly the existence of a significant positive correlation between the angle of the hip and achievement.

Where the technique freestyle requires to start one arm dragging with the staying of elbow enter straightly followed by flex of second arm Flexure and raise elbow Thus,when the arm enter water at a point in front of the body with parallel line to the longitudinal axis of body,The arm path horizontally and vertically toward the longitudinal axis of the body (Ayyash, 1989 ,98), report confirmed that of the most common mistakes in the process of entering the arm to the water are attempting to enter the arm and the elbow , two high (cat, 2000, 114). Thereafter,when one of the arms of stressed, the other arm inter to water with the shoulder extension (pick- and others , 1998,60).

Left crank angle at the moment when right arm enter the water resulted Mean (50.35) , S.D = (39.52) $r = (- 0.11)$ error rate = (0.009) at 5 F.D and Tabulator (r)=(0.75) revealed that the arm movement in the water (s)shape (Hassan and others , 2006, 111.). Ayyash, confirmed beginning of the dragging movement elbow joint form 120 degree whereas the angle of the forearm and the upper surface is up to 30 degree (Ayyash , 1989, 95.). worthily, the most common mistakes in the arm movement at a moment of tensely and push is no (cat , 1999 ,115.)

4. CONCLUSIONS :

- The absence of a significant correlation conclusions of some bio Kinematics variables caused by weakness in the sampling technique, since the sample included students of the fourth year not club players.

- Free-swimming need to extension of body through the hip , which correlated a significantly with achievement.

1- A significant correlation of elbow with achievement, this indicate necessity of arm's extending at a moment of entering the water for help to pull more water(achieve more distance).

2- Increasing of legs extending at a moment of entering right arm the water, lead to reduction of resistance on the body and thereafter, increase of achievement.

3- At the moment of entering the right arm in the water left arm must extend gradually beneath the water until reaches semi full extension beside the hip and this what a significant adverse correlation between left forearm and the horizontal line .

4- Less time increase.

5. REFERENCES:

1. Abdul Hamid, Joumana Mohammed (2009). the sport of swimming , 1st edition , Future Publishing House , Amman
2. Ali, Adel Abdul Basir (2004). Analysis bio kinematics of the movements of the human body
3. Ayyash , Faisal Rashid (1989) . The sport of swimming, the House of Wisdom, Baghdad.
4. Baik , Ali and others(1998). Recent trends in learn to swim (crawl - back), Knowledge facility in Alexandria.
5. Cat, Muhammad Ali (1999). The scientific principles of the pool, the Arab Center for Publishing, Cairo.
6. Hassan, Mekdad Mr. Jaafar and others (2006). the modern Olympic swimming , Zaki Office for printing, Baghdad
7. Omar, Hussein Rahman Merdanoabd , Iyad (2011) . bio kinematics in athletic movements , Najaf Press
8. Samurai, Fouad Tawfik (1982). Bio kinematics, Baghdad.

Annexes

1-Track motor of center of mass

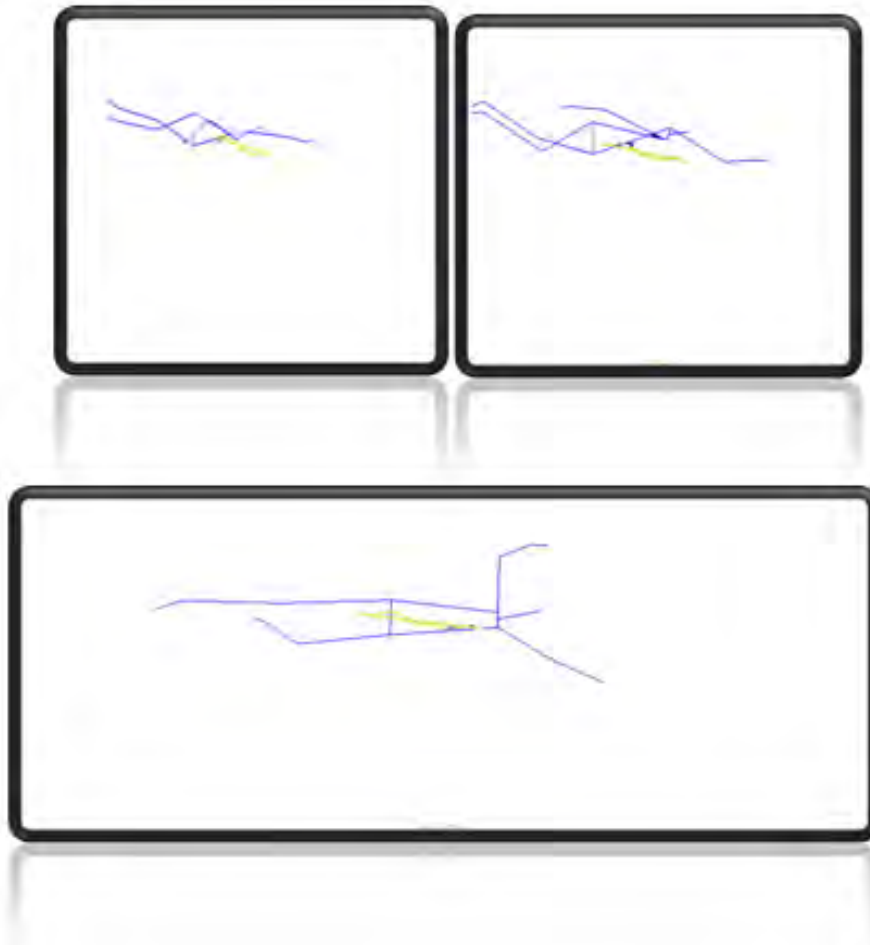


Figure -1-shows the path center of mass

2-Track motor to hand

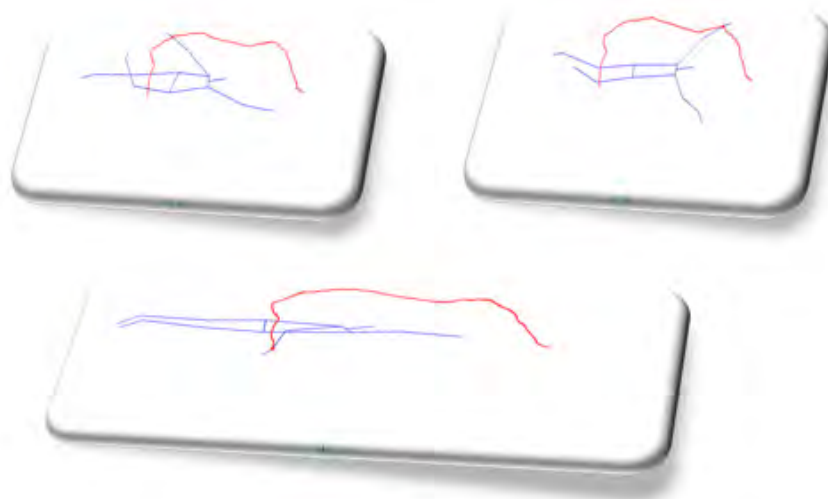


Figure -2- shows the path to hand

THE EFFECT OF A PROPOSED ELECTRONIC GUIDE IN TEACHING SOME GROUND MOVEMENTS IN GYMNASTICS IN SECONDARY STAGE USING VARIOUS (PARTIAL-COMPLETE-MIXED) LEARNING METHODS

Douah Bachir^a Ahcene Ahmed^b

^{a,b} *Institute of Physical & Sport Education, Mestghanem University – Algeria*

E-mail: bachireps@gmail.com , ahceneahmed@hotmail.fr

Abstract

This study aims to determine the effect of applying a proposed electronic guide using computer in learning some ground movements in gymnastics in the secondary stage by employing electronic presentation means to present explanatory educational programs including images and video tapes according to various learning methods (partial, complete and mixed methods) and then determine the best method to apply the proposed electronic guide. The study was conducted on 122 students (68 males + 54 females) of the secondary stage. Results showed that the proposed electronic guide has as a positive effect on learning some ground movements in gymnastics for the secondary stage and using the proposed electronic guide according to the partial method is better than its use according to complete or mixed methods. The researcher recommends applying the proposed electronic guide in learning ground movements in gymnastics in secondary stage according to partial method and providing electronic models aiming to integrate electronic education by teaching physical and sport education due to its importance in helping teachers explain movements during lessons and students to perceive movements.

Keywords: electronic education, ground movements, gymnastics, skills education methods.

INTRODUCTION

Electronic education is one of the modern trends in the teaching and learning system in physical and sport education depending on using modern communication mechanism including computers, networks, multimedia including sounds, images, diagrams, research, electronic libraries and internet websites whether remote or in the term (Abdallah Al Moussa, 2002, 24). It is a mean supporting the educational process and transforming it from prompting to creativity, interaction and skill development. It combines all electronic forms of teaching, learning, publication and entertainment by adopting computers, storage media and networks. The employment of electronic presentation means of giving lectures and presenting educational sessions aims directly to raise the level of the sport educational process, operate its activities, facilitate its tasks and achieve its goals. Physical and sport education in any society should contribute to develop knowledge and efficiencies that enable the youth to develop their social abilities such as working in a team, solidarity, tolerance and sportive spirit in a multi-cultural framework (Yehia Mohamed Ahmed Elgamel, 1989, 91) in addition to create balance among mental and physical activities throughout the educational career (Audiger Francois, 2000, 31). Among the most important of these activities is gymnastics that is considered one of the individual necessary sports for humans at all age stages, especially junior stages which require modern teaching techniques from technical and aesthetic aspects of skills.

Adel Abdelbasir (2004) says that gymnastics has great educational benefits and values that help learners develop their psychological and mental characteristics so they acquire daring, overcoming their fears, taking decisive decisions, self-confidence, perseverance, ability to innovate and achieving satisfaction (Adel Abdelbasir, 2004, 100-101). Therefore, we should consider this activity and teach it in the secondary stage due to correct methods and using modern technological methods that are consistent with the current situation and help us understand technical aspects of skills, sequencing stages of learning and analysis due to explanatory models treated and simplified for learners through finding detailed e-learning programs that facilitate educational process for teachers and learners.

Problem of the Study:

Gymnastics is one of the main sports that prepare students at all aspects being one of the main sport that help individuals develop their physical and psychological characteristics (Abdelmonem Soliman Barham, 1995, 45) and qualify them practice all other

sports by acquiring freedom of movement starting from movement originality till movement innovation, good will development, body control and giving it aesthetic characteristics in performance (Saeb Attia Ahmed & Ibrahim Khalil Mourad, 1985, 112). Mohemd Shehata, 1992 asserts that ground gymnastics include many varied skills that require various physical and psychological characteristics. Therefore, it becomes especially important (Mohamed Ibrahim Shehata, 1992, 72). This makes it necessary for us to consider teaching this sport activity inside our educational institutions depending on using electronic and explanatory educational models including video images and tapes through which performance can be perceived and applied correctly. Mohamed Mahmoud Abdelsalam says that teachers should be able to present a satisfactory model for the skill that is needed to be learnt and manage to explain it completely using certain means of explanation and models (Mohamed Mahmoud Abdelsalam, 2002, 34).

Through reviewing different technical aspects, educational stages and the most significant means of teaching ground movements, it became clear to us that there is a difficulty in explaining and understanding the technical stages of these movements. Next, we attempted to search for a modern method that helps both teachers and learners in learning ground movements in gymnastics due to modern educational and technological means through proposing an electronic guide to teach ground movements in gymnastics at the secondary stage, know the extent of its effect and the latest method for teaching movements due to the proposed electronic guide. Accordingly, the following question was posed:

- What is the best way to learn ground movements in gymnastics using the proposed electronic guide? Partial or mixed methods?

Objective of the Study:

- Determining the latest ways of learning ground movements using the proposed electronic guide, partial, complete or mixed methods.

Hypothesis of the Study:

- Using an electronic guide due to partial method is better than using it due to complete or mixed methods in teaching some ground movements in gymnastics at the secondary stage.

Related Studies:

- A study by Almoatasem Bellah Wahib Mahdi (2012): "The Effect of Hypermedia on learning some Basic Skills on Ground Movement Ring in Artistic Gymnastics" aimed to prepare hypermedia to learn some basic skills on ground movement ring in artistic gymnastics. This study was conducted on a sample of the Institute for Teachers Preparation in DIALA governorate (24 students divided between two control and empirical samples). The researcher followed the empirical method. Findings of the study proved that the use of hypermedia, adoption of correct scientific method of learning technologies by presenting movement details has a positive effect on learning some skills at the ring of ground movements in artistic gymnastics.
- A study by Nasima Mahmoud Waly (2006): "The Effect of using Varying Methods of Video Tapes on Learning Serve Receiving and Reception Skills in Volleyball", as the researcher used the empirical method in a sample of 132 female students of the second year, Faculty of Physical Education for Girls – Alexandria. She applied the test of serve directed from above and serve reception test. The sample of the study was divided into three groups:
 - First empirical group: 44 female students using slow motion video.
 - Second empirical group: 44 female students using normal motion video.
 - Third empirical group: 44 female students using fast motion video with cuts and focusing by slow motions. Findings of the study showed that the third group was superior over the other groups at performance level.

1. METHODOLOGY & FIELD PROCEDURES OF THE STUDY:

The researcher used the empirical method. The sample of the study was collected from the first year secondary students at Abu Bakr Belqayed Secondary School at Ber Al Jeer – Wahran for the study year 2014 / 2015 (122 students: 68 males + 54 females) distributed on three divisions selected randomly. The first section was taught using partial method, the second section using mixed method and the third section using complete method.

Basic Study:

Pre-tests were conducted in the period from 04/01/2015 to 08/01/2015 with the aim of discovering the initial level of students' performance.

Study sessions: in the period from 11/01/2015 to 19/02/2015 (05 sessions in which 05 skills were taught): forward round bouncing, standing on shoulders, jumping up with half-round, standing overhead and lateral wheel. Previous skills were taught using the electronic guide and presentation of educational situations using computers and visual display device as each skill was projected based on the learning method for each department through defining it, its technical aspects and educational stages by

depending on sequential educational situations explained by video pictures and clips with normal and slow motions. In evaluating the performance of movements, we depended on evaluating executive and aesthetic aspects due to a strict framework of evaluating ground movements.

Post-tests: these tests were conducted in the period from 22/02/2015 to 26/02/2015 through which the final level of students was evaluated.

Statistical Treatments:

Percentage, arithmetic mean, Standard Deviation S.D, T-Test student and F-Test Fisher

Discussing Findings:

First: Discussion of Pre-tests for the sample of the study:

Table (01): results of contract analysis in pre-tests according to gender:

Gender	Contrast Source	Squares Total	Freedom Degrees	Squares Average	F Value	Significance
MALES	Within groups	2.07	2	1.03	0.22	Insignificant
	Intra-groups	300.36	65	4.62		
	Total contrast	302.7	67	/		
FEMALES	Within groups	0.48	2	0.24	0.08	Insignificant
	Intra-groups	143.82	51	2.82		
	Total contrast	144.3	53	/		

Table (01) showed that 0.22 and 0.08 values are statistically insignificant which means that there are no significant differences among the empirical and control groups in pre-tests and this group is homogeneous at the same levels for males and females.

Second: Discussion of Findings of Pre- and Post-tests on samples of the study

Table (02): results of pre- and post-test analyses for samples of the study with different teaching methods and genders:

Gender	Method	Tests	N	Mean	S.D	T Student	Significance
Males	Partial	Pre-test	22	7.40	1.91	15.78	Significant
		Post-test		15.95	1.21		
	Mixed	Pre-test	23	7.08	2.17	24.11	Significant
		Post-test		14.91	1.64		
	Complete	Pre-test	23	7.00	2.19	25.11	Significant
		Post-test		14.39	1.97		
Females	Partial	Pre-test	18	4.55	1.75	16.58	Significant
		Post-test		14.05	1.86		
	Mixed	Pre-test	18	4.77	1.30	19.13	Significant

		Post-test		13	1.23		
Complete		Pre-test	18	4.61	1.78	15.98	
		Post-test		12.38	1.20		

Table (02) shows that for males, the values: 15.78, 24.11 and 25.11 are significant at level 0.01 which means that there are significant differences for the sake of post-tests which refers that using the proposed electronic guide had a positive effect on learning the proposed ground movements for males by different learning methods whether in partial, mixed or complete methods. In addition, table (02) also shows that for females, the values: 16.58, 19.13 and 15.98 are significant at level 0.01 which means that there are significant differences for the sake of post-tests which refers that using the proposed electronic guide had a positive effect on learning the proposed ground movements for females by different learning methods whether in partial, mixed or complete methods.

Third: Discussion of Results of Post-tests for the Sample of the Study:

Table (03): results of contrast analysis in post-tests among samples due to gender:

Gender	Contrast Source	Squares Total	Freedom Degrees	Squares Average	F Value	Significance
MALES	Within groups	28.37	2	14.18	5.00	Significant
	Intra-groups	184.33	65	2.83		
	Total contrast	373.14	67	/		
FEMALES	Within groups	25.59	2	12.79	6.87	Significant
	Intra-groups	115.64	51	2.26		
	Total contrast	141.23	53	/		

Table (03) shows that the T counted value was 5.00 for males, 6.87 for females and significant at level 0.01 which refers that there are significant differences among means. Accordingly, the level of learning ground movements in gymnastics differs by the difference of learning methods for males and females. Therefore, using the proposed electronic guide in learning ground movements in gymnastics interacts more with partial method than in complete and mixed methods for both males and females.

2. DISCUSSING FINDINGS:

Findings of the study are discussed due to the hypothesis of the study: “using the electronic guide according to the partial method is better than its use according to complete or mixed methods in learning some ground movements in gymnastics at secondary stage”. Results of table (02) showed that there are statistically significant differences between pre and post-tests in the samples of the study for the sake of post-test which shows that the use of the proposed electronic guide has a positive effect on learning ground movements with all of the applied learning methods (partial, complete and mixed methods). Results of table (3) showed that there are statistically significant differences in post-tests in the samples of the study for the sake of partial method which shows that the use of the proposed electronic guide due to the partial method gives better results than using mixed or complete methods for males and females. This agrees with the study by Almoatasem Bellah Wahib Mahdi (2012) that asserted that using the scientific and correct method in learning technology in learning by presenting details of movement has a positive effect on learning some skills of ground movements in artistic gymnastics. This also agrees with the study of Nasima Mahmoud Waly (2006) in that the use of normal motion videos with cuts and focus in slow motion is better than using the other methods.

The researchers think that the appearance of these findings is attributed to the use of computers that are considered a basic educational means that played a great role in presentation, explanation of educational situations and overcoming some difficulties

in the learning process, especially through the presentation of skills in slow motions, pausing videos on parts of skill performance to focus on their explanation, repeating presentations for multiple times according to the needs and explaining detailed points of performance at certain moments. Moustafa Abdelsamea Mohamed (1999) says that electronic learning via computers contributed in multiple ways to develop many aspects of the education process and facilitate many of its tasks. Mosston (1980) tackles teaching methods that showed that educational situations should be provided with means that facilitate information acquisition and learning speed at the same time in addition to distinction among teachers is shown in how they are able to use variable educational means. Therefore, the hypothesis of the study was achieved.

3. CONCLUSIONS:

Based on results of the study, in the light of objectives and hypotheses of the study, the researchers found the following conclusions:

- The proposed electronic guide has a positive effect in learning ground movements in gymnastics at the secondary stage.
- Using the electronic guide due to the partial method gives better results than using it due to complete or mixed methods in teaching some ground movements in gymnastics at the secondary stage.

4. RECOMMENDATIONS:

- The importance of using the proposed electronic guide in learning some ground movements in gymnastics at the secondary stage.
- Drawing attention of physical and sport education teachers to the use of e-learning.
- Working on designing electronic programs or the rest of sport course activities and for various studying stages.

5. REFERENCES:

- 1- Almoatasem Bellah Wahib Mahdi (2012): "The Effect of Hypermedia on learning some Basic Skills on Ground Movement Ring in Artistic Gymnastics", Faculty of Basic Education, Diala University – Iraq.
- 2- Saeb Attia Ahmed & Ibrahim Khalil Mourad (1985): "Gymnastics for Second Grades", Baghdad University.
- 3- Adel Abdelbasir (2004): "Artistic Gymnastics for Males & Females", the Rgyptian Library Press – Alexandria.
- 4- Abdallah Al Mousa (2002): "Electronic Learning", King Saud University.
- 5- Abdelmonem Soliman Barham (1995): "Contemporary Gymnastics Encyclopedia", Dar Al Fikr Press, Moata University – Amman.
- 6- Mohamed Ibrahim Shehata (1992): "The Guide of Modern Gymnastics", Dar Al Maaref – Alexandria.
- 7- Mohamed Mahmoud Abdelsalam (2002): "Gymnastics for Beginners".
- 8- Moustafa Abdelsamea Mohamed (1999): "Technology of Education: Arab Studies", 1st Editio, the Book Center Press – Cairo.
- 9- Yehia Mohamed Ahmed El Gamal (1989): "The Effect of a proposed Training Program on Enhancing & Developing Balance for Standing on Hands Skill Training in Gymnastics", Helwan University – Cairo.
- 10- AUDIGER, François. Basic concept and core competecies for education democratic citizenship. Strasbourg. France. 2000
- 11- Mosston.M. teaching physical education. 2nd,ed. Columbus. Charles Merrill publishing company.1980.

THE EFFECT OF THE DIFFERENT POSITIONS DURING TENNIS PERFORMANCE ON THE MORPHOLOGY OF THE VERTEBRAL COLUMN

Atef Rashad Hussein^a - Moushira Ibrahim El-Agamy^b

^aParticipating professor, Department of physical education, Faculty of education, Sultan Kabous University, Sultanate of Oman,

^bDepartment of Exercises and Gymnastics, Faculty of Physical Education, El-Sadat University, Egypt

atefrashad@yahoo.com

Abstract

Research objective: Studying the vertebral column morphology in the thoracic , lumbar & sacral sections as well as identifying the incidence of scoliosis in tennis players.

Research Sample: 15 players from Sultan Qaboos University tennis Team were chosen by the selective method.

Research Methodology & Material :The Spinal Mouse device was used to evaluate the vertebra using descriptive methodology.

Research Procedure: Six tests in three positions (Standing ,Flexion and Extension) were done to simulate the physical performance of the sport.Statistical evaluation suitable for the study were used :mean, standard deviation, Spermann and Person correlation factors .

Research Results: A higher mean difference in the lumbar areas in the flexion position 48.73 degrees in comparison to the thoracic and sacral area. Meanwhile a higher mean difference for the thoracic and sacral area in the extension position 26.06 & 40.73 degrees consecutively confirmed by Spermann and Person correlation factors. There was no scoliosis in the sample.

Research Recommendation: Focusing on strengthening exercises of the abdominal and lower back muscles ensuring the efficacy and stability of the vertebral column.

Keywords: different positions - tennis performance - vertebral column morphology

1. INTRODUCTION

The main axis of the body is the vertebral column. The vertebral column plays an important role in body movement .It is made of bones and cartilage and it gives the body its posture and strength. plays an important role in body movement .It is made of bones and cartilage and it gives the body its posture and strength. The structure of the bones suits their mechanical function whether static or dynamic. Bones are linked together by joints that act like levers and with the help of muscles; they complete the desired movement and maintain the body balance (2).

The vertebrae grow by the same magnitude in height and width at the age of three. The vertebrae and spinal canal grow quickly till the age of 5 and the body growth continue till the end of high school. Most of the cervical, thoracic and lumbar vertebrae growth are completed by the age of 20,the sacrum vertebrae grow until 25 years and the coccyx vertebrae growth is completed by the age of 30 (20).

When we look to the vertebral column in a sagittal position (front-back),we will find that the vertebral column is composed of 4 physiological curvatures 2of them heading forward (cervical and lumbar) and called lordosis Kurt et.al (2003) and Sean Hanrahan (2005) . The other 2 heading backward (thoracic and sacrococcyx) and called kyphosis. These curvatures are strengthened due to the strength of the muscles, joints and cartilages.

The cervical and thoracic curvatures are completed at the age of 7 and the lumbar curvatures are completed at the age of 12.The complete growth of the vertebral column happens at the age of 18 -20 and its main function is to maintain the body balance around an equal axis between the different curvatures (17).

The skills training for the different sports depend on a group of theoretical basics and scientific rules related to the human body's activities which must be practically adopted to explain the body balance and movement .This is done through the study of the skeletal-muscular system morphology which will enable trainers to provide proper training (2).

Athletics have special features in the vertebral column curvatures depending on the type of sport practiced. Tennis is considered an acyclic non repetitive sport depending on one side movement .The trunk movements during performance varies between quick

flexions and extensions from the sagittal spinal position. The high training loads with repetitive movements in the trunk lead to morphological changes of the vertebral column for example affecting the lumbar vertebrae, tension of the abdominal and lumbar muscles in addition to an increased risk of injury due to increased inner pressure on the vertebrae (12).

Many studies have been done on the effect of the athlete's different positions during performance on the morphology of the vertebral column. Rowing, volleyball and water skiing involve quick repetitive flexion and extension of the trunk (6, 4, 21). In addition, cyclists during performance are forced into the flexion position which affects their trunk. Athletes in sports with frontal curvature positions e.g. cyclists, skiers, and canoeists have been found to have kyphosis during standing position while canoeists have decreased thoracic and lumbar curvatures in sitting position (5,10).

These studies are only done by modern computerized devices to be able to give specific information. The Spinal Mouse device measures the angles between the vertebrae in the whole vertebral column except the cervical section. It discovers any deviation in the vertebral column and compares them to the normal measurements according to age and sex. It is an important device in the sports field and all studies are performed on it.

This research studies the vertebral column morphology for tennis players. The researcher finds that tennis exerts morphological changes on the vertebral column. The aim of this study is to know the effect of tennis on the vertebral column and the incidence of scoliosis occurring to tennis players.

Aim of the research

1- Identify the vertebral column morphology of tennis players at the following points :

A- Thoracic section

B- Lumbar section

C- Sacral section

2- Identify incidence of scoliosis occurring to tennis players.

Questions of the research:

A- Is there any statistical significance in the vertebral column morphological measurements of the thoracic section for tennis players?

B- Is there any statistical significance in the vertebral column morphological measurements of the lumbar section for tennis players?

C- Is there any statistical significance in the vertebral column morphological measurements of the sacral section for tennis players?

D- Is there any statistical significance in the vertebral column morphological measurements of scoliosis for tennis players?

Research Terminology :

Flexion of the vertebral column: It is the maximum curvature of the vertebral column to the front (13).

Extension of vertebral column: It is the maximum curvature of the vertebral column to the back (13).

(Lumbar/Spinal) : Total lumbar section.

(Thoracic/Spinal) : Total thoracic section.

(Sacrum/hip) : Total sacral section.

(Incl) : Vertebral column inclination.

(length) : General vertebral column.

Related Studies

José M. Muyor et.al (2013) evaluated sagittal thoracic and lumbar spinal curvatures and pelvic tilt in elite and master cyclists when standing on the floor, and sitting on a bicycle at three different handlebar-hand positions. A total of 60 elite male cyclists (mean age: 22.95 ± 3.38 years) and 60 master male cyclists (mean age: 34.27 ± 3.05 years) were evaluated. The Spinal Mouse system was used to measure sagittal thoracic and lumbar curvature in standing on the floor and sitting positions on the bicycle at three different handlebar-hand positions (high, medium, and low). The mean values for thoracic and lumbar curvatures and pelvic tilt in the standing position on the floor were $48.17 \pm 8.05^\circ$, $-27.32 \pm 7.23^\circ$, and $13.65 \pm 5.54^\circ$, respectively, for elite cyclists and $47.02 \pm 9.24^\circ$, $-25.30 \pm 6.29^\circ$, and $11.25 \pm 5.17^\circ$ for master cyclists. A high frequency of thoracic hyperkyphosis in the standing position was observed (58.3% in elite cyclists and 53.3% in master cyclists), whereas predominately neutral values were found in the lumbar spine (88.3% and 76.7% in elite and master cyclists, respectively). When sitting on the bicycle, the thoracic curve was

at a lower angle in the three handlebar-hand positions with respect to the standing position on the floor in both groups ($p < 0.01$). The lumbar curve adopted a kyphotic posture. In conclusion, cyclists present a high percentage of thoracic hyperkyphotic postures in standing positions on the floor. However, thoracic hyperkyphosis is not directly related to positions adopted on the bicycle (11).

José M. Muñoz et al (2011) stated that sports with a predominance of forward bending and extension postures have been associated with alterations in the sagittal spinal curvatures and greater risk of spinal injury. Because, the tennis players adopt these postures, the aims of this study were: 1) to describe spinal curvatures and pelvic tilt in male and female highly trained adolescent tennis players during relaxed standing posture and with thoracic spine corrected (in prone lying on the floor); and 2) to determine the frequency of thoracic hyperkyphosis and lumbar hypo/hyper lordosis in these postures. Forty adolescent tennis players (24 male and 16 female) aged 13-18 years, participated voluntarily in this study. The Spinal Mouse system was used to measure sagittal spinal curvatures and pelvic tilt. The mean values in the relaxed standing posture were $43.83^\circ \pm 7.87^\circ$ (thoracic kyphosis), $-27.58^\circ \pm 7.01^\circ$ (lumbar lordosis), and $13.38^\circ \pm 5.57^\circ$ (pelvic tilt) for male tennis players, respectively; and $36.13^\circ \pm 6.69^\circ$ (thoracic kyphosis), $-32.69^\circ \pm 5.06^\circ$ (lumbar lordosis), $20.94^\circ \pm 5.36^\circ$ (pelvic tilt) for female tennis players ($p < 0.05$ between genders in all spinal parameters). The male and female tennis players showed a frequency of 62.5% and 93.8% ($p = 0.032$) for neutral thoracic kyphosis, and 83.3% and 93.8% ($p = 0.062$) in neutral lumbar lordosis, respectively. In conclusion, due to the high percentage of neutral spinal curvatures in both male and female tennis players, to practice tennis in these levels does not alter sagittal spinal morphology in the relaxed standing posture in adolescent highly trained tennis players(9).

Pedro A. Lopez- Minarro et al (2011) determined that the sagittal spinal curvatures and pelvic position in standing and kneeling in the canoe in young canoeists. Forty-four young highly-trained canoeists (mean age: 15.11 0.61 years) were recruited. Thoracic and lumbar curvatures and pelvic inclination were evaluated with a Spinal Mouse system in standing position and in the base position (kneeling on one knee in the canoe) and catch phase of the stroke. The mean thoracic kyphosis, lumbar lordosis and pelvic inclination in standing were $44.66 \pm 8.80^\circ$, $-30.34 \pm 8.31^\circ$, and $14.20 \pm 7.32^\circ$, respectively. In the canoe, the thoracic, lumbar and pelvic angles were $39.66 \pm 9.52^\circ$, $-24.32 \pm 6.79^\circ$, and $15.18 \pm 4.34^\circ$, respectively, for the base position ($p < 0.001$ with respect to standing, except for pelvic inclination), and $28.93 \pm 10.45^\circ$, $-13.45 \pm 10.60^\circ$, and $37.61 \pm 6.27^\circ$, respectively, for the catch phase of the stroke ($p < 0.001$ with respect to standing and base position). A higher percentage of hyperkyphotic postures in standing than in the canoe was found, while thoracic hypokyphosis increased in the catch phase of the stroke. In regards to the lumbar curve, the percentage of hypolordosis postures in the base position was higher than when standing. Lumbar kyphotic postures were detected in the catch phase of the stroke. In conclusion, the standing thoracic hyperkyphosis in young canoeists may be related to factors other than the posture and movement in the canoe. The canoeists adopted a lumbar flexed posture at the catch phase of the stroke, although this position may not affect the sagittal configuration of lumbar spine in standing. Postural training should be included in the training program of canoeists to improve the thoracic posture in the standing position (12).

Elizabeta Popova Ramova et al (2011) stated that the spine deformities are presented with 27.3% in the population regarding all deformities of the muscle system. The clinical examination has its limitations as a result of the subjective participation of the examiner and the lack of qualitative measurement. The research tested the applicability of the software program Spine Mouse in screening of the spine deformities. The software program is important for spine examination in the sagittal plane. In order to evaluate the software in the screening program for bad posture, a score has been made with maximum points and possible gained points regarding the parameters: number of children who participated in the examination out of the entire population, number of the examined, preserved data from the examination and cooperation during the examination. A total of 986 children were examined for 15 days with 6 children examined per hour or 74%. Of the total number of children, 97.2% cooperated during the examination and the data were lost for 14.7%. The results showed that this software is applicable with significance for examination of spine deformities in the school population. The cost of the software and the speed of the examination are limiting factors for its use in a large population(5).

Nevine Fikry (2008) studied the vertebral column morphological difference and the balance of movement between male and female tennis players. The researcher studied 10 players (5male and 5female) with an average height of 155cm ,average weight 49.80 kg and average age 13.7 years old. The researcher used the Spinal Mouse device . The researcher concluded that the lumbar vertebrae were the most affected in the players. The female players showed higher balance of movement which is due to the growth and physiological changes that happen at this age . The total balance factor was the same for both male & female players. She recommended the use of calibrated modern devices to evaluate the performance and morphology of the players every 3-6 months (9).

Research Procedure :

1-Research Methodology : The researcher used descriptive method as it suits the nature of the research .

2- Research Sample : The sample has been chosen by the selective method and it is composed of 15 players from Sultan Qaboos University tennis Team. The following table refers to the characteristics of the sample .

Table 1- Descriptive characteristics of the sample

Parameters	Mean	Standard deviation	Skewness
Age (years)	19.18	2.71	1.24
Height (cm)	180.7	6.54	0.12
Weight (kg)	71.87	9.33	0.42
Training (years)	10.62	2.18	1.23

3-Research procedure :

The required procedures were prepared to perform the test at the laboratory of the Physical Education department, College of education, Sultan Qaboos University on 12/11/2015 to evaluate the vertebral column of the research sample.

Tools and Devices :

Spinal Mouse

The device is a wireless unit used to measure the angles between the vertebrae of the whole vertebral column except the cervical section . It also discovers any deviations and compare it to the normal vertebra which is calibrated in the computerized unit according to age and sex , that is why it is considered one of the modern important devices in the sports field .The device has different tests but the researcher chose 6 tests suitable for the nature of the research :

- 1-Testing vertebral column in upright standing position.
- 2- Testing vertebral column frontal curvature – flexion position.
- 3- Testing vertebral column backward curvature – extension position.

The previous tests investigate the research 's first objective with its 3 criterias
(attachment 1) .

The following tests investigate the second objective of the research
(attachment 2) .

- 1- Testing vertebral column in upright standing position 2.
- 2- Testing vertebral column in upright standing position and bending towards the right (Upright – Right).
- 3- Testing vertebral column in upright standing position and bending towards the left (Upright - Left) .

The following data were obtained for each position in the 6 tests :

- 1-The measure of the angles between 2 adjacent vertebrae .
- 2-The angles for the vertebral column curvatures.
- 3-The length of each section of the vertebral column from the first thoracic till the sacrum.
- 4-Total lumbar section (Lumbar/Spinal).
- 5-Total thoracic section (Thoracic/Spinal).
- 6-Total sacral section (Sacrum/hip).
- 7-Vertebral column inclination (Incl).

8-General vertebral column (length).

The Device is composed of 2 main units:

- 1-The unit that moves along the vertebral column.
- 2-The unit attached to the computer.

The unit attached to the computer transmits the signal to the computer program for data analysis and it's calibrated to the 3 testing positions. The players data is entered on the computer program and then the testing position is selected from the screen .Press the left button to start and slowly move down the vertebral column starting from the first vertebra in the thoracic spinal till the sacrum vertebra and then press the left button to finish the test . The shape of the vertebral column is then shown on the screen . The same steps are done for tests 2 and 3.At the end the results of the vertebral column is shown.

Rules for testing the vertebral column:

1. Excluding any player who had previously complained or suffered from pain in the vertebral column.
2. Identifying the standing position by making a mark on the floor.
3. Maintaining the distance between the player and the device by 1 meter.
4. Making marks on the vertebral column while conducting the test for precision in case the device gets off track ,then an error will show on the computer screen , so the test will be repeated.
5. Keeping the hands still next to the body during the testing.

Statistical Measurements:

- 1-Mean .
- 2-Standard deviation.
- 3- Skewness
- 4-Sperman correlation factor.
- 5-Pearson correlation factor.

2. RESULTS:

Table 2-Measurments of the vertebral column of the sample in standing position

Parameters	Mean	Standard deviation	Skewness
Thor 1/2	2.6667	2.46885	2.020
2/3	3.3333	2.60951	.580
3/4	4.5333	3.70071	.554
4/5	4.4000	2.19740	.062
5/6	4.3333	2.66369	.737
6/7	3.8667	2.16685	.294
7/8	5.2000	2.21037	.533
8/9	5.6000	2.38447	-.945-
9/10	5.7333	2.31352	.334
10/11	4.6667	2.71679	-.013-
11/12	1.7333	1.57963	.507
Lumb 1/2	1.9333	1.86956	.943
1/2	3.3333	2.49762	2.069
2/3	3.8000	2.21037	.245
3/4	5.0000	1.96396	-.261-

4/5	7.1333	1.76743	-.411-
Sacr 1/5	6.0000	2.00000	.247
SAC/ HIP	4.6667	2.31969	-.047-
THSP	30.2667	17.28528	1.613
L\SP	41.3333	7.42262	.565
INCL	5.299332	61.59947	.065
LENGTH	5.299332	61.59947	.065

Table 2 shows the measurements of the vertebral column angles for the sample in standing position. The skewness ranged between ± 3 which indicates homogeneity of the sample.

Table 3- Measurements of the vertebral column of the sample in flexion position.

Parameters	Mean	Standard deviation	Skewness
Thor 1/2	4.8667	3.44065	.361
2/3	3.4667	2.03072	.144
3/4	4.1333	3.48193	1.195
4/5	4.0667	3.15021	.894
5/6	3.6667	3.35233	1.096
6/7	3.9333	2.40436	1.157
7/8	3.2000	1.56753	.262
8/9	5.8000	3.00476	.295
9/10	5.8667	2.09989	1.057
10/11	6.5333	1.55226	1.845
11/12	5.6667	2.66369	.074
Lumb 1/12	4.8667	2.09989	.683
1/2	5.9333	3.15021	-.072-
2/3	9.4667	4.38938	.813
3/4	11.4667	6.82293	1.490
4/5	11.1333	6.04893	1.779
Sacr 1/5	5.7333	4.11386	1.534
SAC/ HIP	1.0867	11.58612	-.304-
THSP	38.1333	10.54830	.518
L\SP	48.7333	10.95749	-.360-
INCL	6.1233	46.63026	.528
LENGTH	5.2993	61.59947	.065

Table 3 shows the measurements of the vertebral column angles for the sample in the flexion position. The skewness ranged between ± 3 which indicates homogeneity of the sample.

Table 4- Measurements of the vertebral column of the sample in extension position.

Parameters	Mean	Standard deviation	Skewness
Thor 1/2	3.9333	2.40436	-.337-
2/3	3.6667	2.49762	-.101-
3/4	4.5333	3.06749	-.037-
4/5	5.7333	4.04381	.889
5/6	4.0000	2.39046	.290
6/7	5.0667	2.93906	.197
7/8	5.6000	2.55790	-.134-
8/9	6.8667	2.89992	-.152-
9/10	6.0000	2.47848	.000
10/11	4.0000	2.80306	.337
11/12	3.5333	2.29492	.871
Lumb 1/2	3.4667	2.13363	-.354-
1/2	4.8667	2.19957	.241
2/3	6.6000	1.91982	-.246-
3/4	8.2000	2.21037	.304
4/5	10.2667	3.47371	-.683-
Sacr 1/5	9.3333	4.56175	1.954
SAC/hip	26.06	10.47082	-.144-
THSP	40.7333	9.67668	-.196-
L\SP	44.8000	15.85740	.173
INCL	5.1113	52.29568	.000
LENGTH	5.2993	61.59947	.065

Table 4 shows the measurements of the vertebral column angles for the sample in the extension position .The skewness ranged between ± 3 which indicates homogeneity of the sample.

Table 5-Mean difference between the 3 positions(standing-flexion-extension)

Parameters	Standing	Flexion	Extension
SAC/hip	4.661	1.086	26.06
THSP	30.26	38.13	40.73
L\SP	41.33	48.73	44.80
INCL	5.299	6.123	5.111
LENGTH	5.299	5.299	5.299

Table 5 shows the mean difference between the 3 positions. It shows the curvature of the lumbar section in the flexion position and the curvature of the thoracic and sacrum section in the extension position.

Table 6-The relation between the thoracic,lumbar and sacrum in the 3 positions using Pearson correlation factor.

Correlation between the 3 positions(Pearson)	
Correlating Point	Correlation
(Lumbar/Spinal) Stand &Flex	.871
(Lumbar/Spinal) Stand &Exten	.728
(Lumbar/Spinal) Exten &Flex	.629
(Thoracic/Spinal) Stand &Flex	.843
(Thoracic/Spinal) Stand &Exten	.863
(Thoracic/Spinal) Exten &Flex	.373
(Sacrum/hip) Stand &Flex	.657
(Sacrum/hip) Stand &Exten	.098
(Sacrum/hip) Exten &Flex	.536

Table 6 shows Pearson correlation factor indicating there is a statistical significance between the sacrum extension and sacrum standing position equal to 0.98 which is a strong relation as it approaches 1.

To confirm the relation the researcher used Spearman correlation factor:

Table 7- The relation between the thoracic, lumbar and sacrum in the 3 positions using Spearman correlation factor.

Correlation between the 3 positions(Spearman)	
Correlating Point	Correlation
(Lumbar/Spinal) Stand &Flex	.888
(Lumbar/Spinal) Stand &Exten	.860
(Lumbar/Spinal) Exten &Flex	.629
(Thoracic/Spinal) Stand &Flex	.881
(Thoracic/Spinal) Stand &Exten	.869
(Thoracic/Spinal) Exten &Flex	.515
(Sacrum/hip) Stand &Flex	.434
(Sacrum/hip) Stand &Exten	.145
(Sacrum/hip) Exten &Flex	.680

Table 7 results matches with the results of Pearson correlation factor.

Table 8- Measurements of the vertebral column of the sample in standing position 2.

Parameters	Mean	Standard deviation	Skewness
Thor 1/2	2.2000	2.48424	1.543
2/3	2.0000	1.92725	.760
3/4	1.9333	1.70992	2.097
4/5	1.2667	1.62422	1.927
5/6	1.2667	1.48645	1.580
6/7	1.3333	1.58865	2.325

7/8	1.8000	1.78085	1.047
8/9	1.4667	1.06010	.100
9/10	1.8000	1.08233	.062
10/11	1.8667	1.72654	1.965
11/12	2.0000	1.73205	1.142
Lumb 1/12	1.7333	1.94447	.904
1/2	2.0000	1.88982	.513
2/3	1.5333	1.72654	.848
3/4	2.0000	1.85164	1.714
4/5	2.5333	1.64172	1.329
Sacr 1/5	2.5333	1.95911	.107
SACHIP	3.5333	2.79966	1.075
THSP	5.0000	3.74166	.821
LSP	2.7333	1.38701	-.005-
INCL	5.277332	48.33731	.291
LENGTH	5.299332	61.59947	.065

Table 8 shows the measurements of the vertebral column angles for the sample in standing position 2. The skewness ranged between ± 3 which indicates homogeneity of the sample.

Table 9- Measurements of the vertebral column of the sample in the tilted position towards the right.

Parameters	Mean	Standard deviation	Skewness
Thor 1/2	2.8000	2.56905	1.801
2/3	2.0000	1.55839	.261
3/4	1.9333	1.66762	.974
4/5	2.6000	1.40408	-.236-
5/6	2.0667	1.16292	-.146-
6/7	2.8667	2.35635	2.149
7/8	2.5333	1.50555	-.074-
8/9	3.2000	2.14476	1.055
9/10	3.4000	1.84391	.893
10/11	4.0000	1.73205	-.476-
11/12	3.6000	1.84391	-.025-
Lumb 1/12	3.1333	1.84649	.247
1/2	3.2667	2.57645	.325
2/3	5.0000	3.09377	1.269
3/4	5.5333	3.35659	.561
4/5	3.4000	2.72029	.470
Sacr 1/5	3.5333	1.27395	1.532

SACHIP	25.8667	8.81449	.106
THSP	19.4667	8.80638	.391
L\SP	35.1333	7.79071	.691
INCL	5.212772	58.49965	.371
LENGTH	5.299332	61.59947	.065

Table 9 shows the measurements of the vertebral column angles for the sample in the tilted position toward the right. The skewness ranged between ± 3 which indicates homogeneity of the sample.

Table 10- Measurements of the vertebral column of the sample in the tilted position towards the left.

Parameters	Mean	Standard deviation	Skewness
Thor 1/2	3.0667	1.79151	-.115-
2/3	2.1333	1.55226	.671
3/4	3.0000	2.10442	.424
4/5	2.5333	1.68466	.761
5/6	2.5333	1.55226	.391
6/7	2.6000	1.63881	.526
7/8	2.8000	1.97122	1.224
8/9	3.1333	2.61498	1.437
9/10	4.0667	1.79151	.057
10/11	3.2667	2.63131	.779
11/12	4.2000	1.78085	-.259-
Lumb 1/2	3.6000	2.19740	.731
1/2	3.6667	2.38048	-.166-
2/3	5.1333	3.20416	-.019-
3/4	4.7333	2.12020	.922
4/5	6.6000	4.11964	.358
Sacr 1/5	6.8667	3.60291	.283
SACHIP	24.5333	10.24602	-.432-
THSP	28.8667	9.55336	1.218
L\SP	34.3333	6.16055	.667
INCL	5.217332	51.63673	.389
LENGTH	5.299332	61.59947	.065

Table 10 shows the measurements of the vertebral column angles for the sample in the tilted position toward the left. The skewness ranged between ± 3 which indicates homogeneity of the sample.

Table 11-Mean difference results for the 3 positions(standing 2-tilting to the left-tilting to the right)

Parameter	Standing position 2	Tilting to the left	Tilting to the right
INCL	5.27	5.21	5.21
LENGTH	5.29	5.29	5.29

Table 11 shows the mean difference between the 3 positions indicating there is no difference between the curvatures of the vertebral column and the same length of the measured part of the vertebral column in both directions.

3. DISCUSSION:

The data analysis and presentation of the vertebral column testing's shown in table 5 (the mean difference of the 3 positions in the extension position) shows that there is a higher mean difference for the thoracic and sacrum section indicating that they were the parts affected during fencing performance. This data is also confirmed using Pearson and Spearman correlation factors (tables 6,7).

Alirckson and Warner (2006) indicate a statistical increase in the thoracic kyphosis of skiers after 5 years. Ogrowska (2007) found a change in the sacrum section of rowers training from 8-20 year. Per A. (2002) indicates that high level players have stronger abdominal muscles than the lower back muscles which is the opposite for non training people. This agrees with table (1) that indicates the training period of the sample which reaches 12 years (2,13,15).

The number of years performing with continuous high training loads is an important factor in determining the curvatures of the vertebral column. The yearly increase in loads is proportional to the increase in the thoracic curvature in different sports. This matches with what Smith (2008) mentioned that high training loads may lead to loss of the disc height which reduces the length of the anterior column of the spine. This will result in thoracic kyphosis leading to low back pain (sacrum section) as well as bringing the scapula in an anterior tilt and protracted position so restricting the shoulder range of motion (18).

The data analysis and presentation of the vertebral column testing's shown in table 5 (the mean difference of the 3 positions in the flexion position) shows there is a mean difference for the lumbar section curvature indicating that it is one of the affected areas during performance. This was also confirmed by Pearson & Spearman factors (table 6,7).

Stuart McGill (2016) indicate that the flexion exercise in the thoracic section, the range of motion is less than in the lumbar section 30-40 degrees due to the presence of the thoracic cavity. The range of motion is greater in the lower section of the back because the lower ribs are longer and freely moving. While the lumbar vertebrae range of motion are relatively free 55 degrees which is less than the sacrum vertebrae range of motion. The link between the lumbar and sacrum sections are responsible for the greater part of motion (20,1).

Robert Behnke (2012) and Young J.L (1996), explained that the flexion in the standing position depends to a great extent on the earth's gravity. The extensor muscles of the vertebral column facilitates this movement as well as the increase of the pull on the posterior part of the annulus fibrosis, the longitudinal posterior ligament, and the ligament flava (17,22).

Burri C.&Ruter.A (2000), Stuart McGill (2016) confirmed that practical measurements showed that the load on the intervertebral discs upon lifting is less than the calculated load by 30% at the intervertebral disc between the fifth lumbar and the first sacral and less by 50% in the lower thoracic section. This is because the abdominal muscles absorbs this difference due to the strong contraction during lifting (3,20).

This is also confirmed by Jose Muyor et.al (2013) indicating that the pelvic area is the base of the vertebral column and the frontal curvature of the pelvis increases the curvature of the lumbar section. While the backward curvature of the pelvis decrease the lumbar curvature (8).

Table (11) presenting the mean differences of the 3 positions (standing 2- tilting towards the right and left) states that the inclination and the length of the measured vertebrae are the equal for both sides(5.21) indicating that there is no scoliosis in the sample. The researcher states that this is because the players focus on performing prophylactic exercises to avoid any tilting to the left and right side.

The researcher highlights the importance of applying training programs for all aspects of the vertebral column, not only for the right and left sides that receive most of the pressure during the training period. In addition strengthening the abdominal and lower back muscles will help in protecting the vertebral column from the encountered loads during training. Finally all these programs would help in the protection of the vertebral column from any deviations or injuries that may result from practicing fencing.

4. CONCLUSION:

The following have been concluded according to the research objectives and the sample :

- 1- The lumbar section is affected by the performance of tennis in the flexion position.
- 2- The thoracic and sacrum sections are affected by the performance of tennis in the extension position.
- 3- There is no change or deviation in the angles between the vertebrae whether towards the right or the left caused by the performance of tennis in the standing position.

5. RECOMMENDATIONS:

- 1- Using vertebral column measurements and testing in different positions as an indication for early detection of any abnormal inclinations.
- 2- Focusing on the strengthening exercises of the abdominal and lower back muscles to ensure the efficacy and the stability of the vertebral column.
- 3- Considering prophylactic programs to ensure avoiding any postural deformations that may occur due to playing the sport whether in sagittal or coronal plane of the vertebral column .
- 4- The importance of making the players and their parents aware of the postural changes that might happen from the sport and what will happen if they don't support the trainers in educating their children to follow proper postures .
- 5- Continuously identifying changes that happen to the vertebral column to be able of developing the training programs .
- 6- Testing other body joints for example knees and shoulders.
- 7- Conducting similar research studies on other sports especially young players.
- 8- Using advanced devices to evaluate the players every 6 months to assess their morphological state

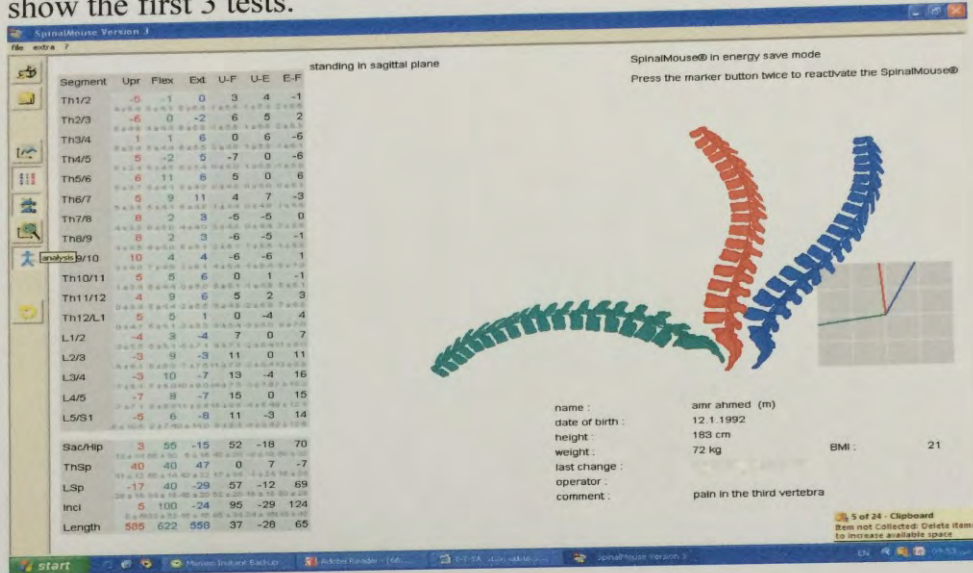
6. REFERENCES:

1. American Academy of Orthopedic Surgeons, and Reprinted with their kind permission by the British Orthopedic Association (1966); Joint Motion Method of Measuring and Recording.
2. Alicicsson, M. and Werner, S. (2006) Young elite cross-country skiers and low back pain. A Five-year study. *Physical Therapy in Sport* 7,181-184.
3. Burri, C. & Rüter, A. (2000) ; Verletzungen der Wirbelsäule Springer, Verl. Heidelberg.
4. Caldwell, J.S., McNair, P.J. and Williams, M. (2003) The effects of repetitive motion on lumbar flexion and erector spinae muscle activity in rowers. *Clinical Biomechanics* 18, 704-711.
5. Elizabeta Popova Ramova, Anastasica Poposka, Milica Lazovic (2010) School Screening for Bad Posture with Spine Mouse Device *Macedonian Journal of Medical Sciences*. 2010 Dec 15; 3(4):358-363
6. Grabara, M. and Hadzik, A. (2009) Postural variables in girls practicing volleyball. *Biomedical Human Kinetics* 1, 67-71.
7. Jose M.Muyor,et.Al (2011);Spinal posture of thoracic and lumbar spine and pelvic tilt in highly trained cyclists, *Journal of Sport Science and medicine*10,355-361.
8. Jose M.Muyor,et.Al (2013); Sagittal Spinal Morphology in Highly Trained Adolescent Tennis Players, *Journal of Sport Science and medicine*12,588-593.
9. Keller T.S., Colloca C.J., Harrison D.E., Harrison D.D., Janik T.J. (2005)Influence of spine morphology on intervertebral disc loads and stresses in asymptomatic adults: implications for the ideal spine. *Spine J.*, 5: 297-300.
10. López-Miñarro, P.A., Muyor, J.M. and Alacid, F. (2010) Sagittal spinal curvatures and pelvic tilt in elite young kayakers. *Medicine dello Sport* 63, 509-519.
11. Nevin, F., Faoud .(2008) Vertebral column morphology and the balance of movement for young tennis players (comparative study), *journal of faculty of physical education Port Saied six edition*
12. Pedro A. Lopez-Minarro et.Al (2011); Sagittal Spinal and Pelvic postures of Highly-Trained Young Canoeists, *Journal of Human Kinetics* 29,41-48

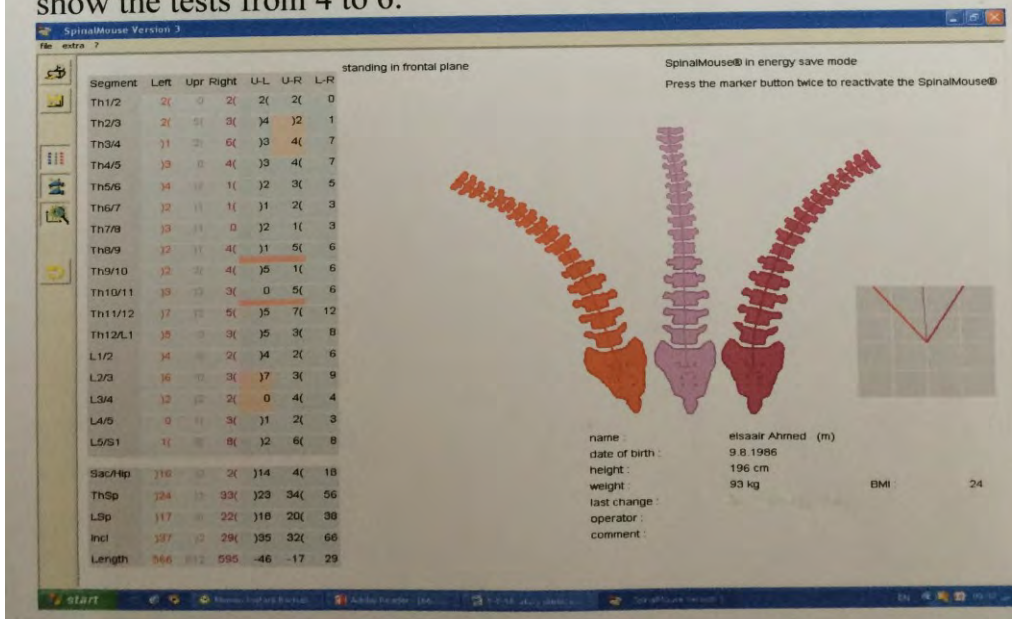
13. Per A.F.H Renström (2002); Handbook of Sports Medicine and Science Tennis, Sweden.
14. Polga D.J., Beaubien B.P., Kallemeier P.M., Schellhas K.P., Lee W.D., Buttermann G.R., Wood K.B (2004) Measurement of in vivo intradiscal pressure in healthy thoracic intervertebral discs. *Spine*,. 29:1320-1324.
15. Ogrkowska M.B. (2007) Pathological change of intervertebral disc of the lumbosacral spine of competitive rowers. *Biology of Sport* 24, 375-388.
16. Robert G. & Watkins M.D. (1997); The Spine in Sports,
17. Robert Behnke (2012) Kinetic Anatomy ,3rd Edition, HUMAN KINETICS.
18. Sean Hanrahan, et. Al (2005); The short term effects of joint Mobilization on acute Mechanical low Back pain in collegiate athletes, *Journal of athletic training* (Dallas) 40 (2), Apr/june.
19. Smith, A., O'Sullivan, P. and Straker, L. (2008) Classification of sagittal thoraco-lumbo-pelvic alignment of the adolescent spine instanding and its relationship to low back pain. *Spine* 33, 2101-2107.
20. Stuart McGill (2016) Low Back Disorders, 3rd Edition, Cloth Pass/Kycd, HUMAN KINETICS.
21. Tittel, K. (2003); Beschreibende und funktionelle Anatomie das Menschen, Auf. 14, verl. Urban & fischer, München.
22. Young, J. L. (1996); Back Pain in Tennis: is only the disk at risk? Hand-out at the Third International Conference on Sports Medicine and Science in Tennis, Melbourne, Australia, January.
23. Wilke H.J., Neef P., Hinz B., Seidel H., Claes L.E (2001). Intradiscal pressure together with anthropometric data - a data set for the validation of models. *Clin Biomech*, 2001. 1: S111-S126.
24. Wodecki, P., Guigui, P., Hanotel, M.C., Cardinne, L. and Deburge, A. (2002) Sagittal alignment of the spine: comparison between soccer players and subjects without sports activities. *Revue de Chirurgie Orthopédique et Réparatrice de l'Appareil Moteur* 88, 328-36.

Attachments

Attachment 1: Picture of the results from the Spinal Mouse device to show the first 3 tests.



Attachment 2: Picture of the results from the Spinal Mouse device to show the tests from 4 to 6.



THE IMPACT OF LEARNING SOME BASIC SWIMMING SKILLS ON FEAR LEVEL DEGREE AMONG PHYSICAL EDUCATION STUDENTS

Bahjat Ahmad Abu Tame

Associate Professor, Department of Physical Education, Palestine Technical University- Kadoorie, Palestine

Email: ba_tame@yahoo.com

Abstract

The study aimed to determine the impact of learning some basic swimming skills on the fear level degree among physical education students in Kadoorie University. To achieve this, the researcher followed the quasi-experimental method using a fear's questionnaire associated with learning to swim in order to measure the fear level degree in the aqueous medium. The simple randomly selected and included (67) male students registered for the swimming course (1), who have no previous experience in swimming. Results of the study showed that there is positive impact for learning the proposed basic swimming skills on the fear level degree in the aqueous medium, the fear level degree has reduced after learning basic swimming skills in terms of the arithmetic average of the fear level degree in pre measurement is (3.75) , but in post measurement is (1.63) , the average difference between the two measurements pre and post was positive (2.11) which shows that learning basic swimming skills have positive effect in reducing of average fear degree among students. The researcher recommended using and learning the proposed basic swimming skills to help reduce the level of fear associated with aqueous medium, benefit from the student's self-confidence that resulting from learning swimming skills in improving the learning process and increase the effectiveness of swimming lessons in order to increase the swimming practices field.

Key words: Basic Skills, Swimming, Level of Fear.

1. INTRODUCTION

The process of learn swimming humanitarian message and mandatory duty on everyone to learn and teach to others. He will able to maintain his life and save others from drowning. Also playing in the aqueous medium is grainy way for kinetic development, so that every human being has the ability to swim and learn skills at an early age. However, anyone practiced sport of swimming maybe suffered to negative attitudes cases, which affect him directly, that resulting in some cases, such as recipe psychological fear which is usually accompanied by psychological and physiological changes beyond the control of the individual. This case defines by (Anan,1995,157) it is one of the important emotions, and it is most important phenomena that affect the performance of the learners, and that this effect may be positive push them to do more or negatively hamper performance. This is motivation anxiety which refers to facilitate the performance and inhibitor anxiety which refers to the obstructed performance. (Annan, 1995, 272)

Problem of study:

Swimming is one of the sporting events that are unique to a private from the rest of sports condition, which do in aqueous medium, and is the basic skills of the pool first base to learn to swim and without mastery of the individual can not engage in any activity in the aqueous medium. Through researcher's experience in teaching of swimming, He observed that the manifestations of fear when the students during swimming lessons such as emotions that are accompanied by some physiological changes and physical appearances, where the phenomenon of fear caused problems for students, which affects the level of academic achievement, represents in success or fail in the swimming course or on the level of performance skills. From here came the idea of a researcher of this study, where the problem centered study to know the impact of learning basic swimming skills to get rid of fear in the aqueous medium with physical education students.

Objective of study:

To determine the effect of learning basic swimming skills to get rid of fear in the aqueous medium with physical education students.

Question of study:

What is the impact of learning some basic swimming skills on the fear level degree of physical education students?

2. METHOD AND PROCEDURES :

Method of Study:

The researcher used quasi-experimental method with pre and post measurements, it is appropriate with this study.

Population of study:

The Sample of study included of physical education students in Department of Physical Education, Palestine Technical University- Kadoorie, Palestine for the academic year 2014/2015, consisted of (236) male and female students.

Sample of study:

Sample of study randomly selected and included of (67) students registered in swimming course (1) in summer semester, who have no previous experience in swimming, where they were to exclude students who have previous experience, study has been applied in the period 21/07- 28/08/2015, before starting of learning as a pre scale and after the completion of the final practical exam as a post scale.

Tool of study:

The researcher used to measure the level of the degree of fear in the aqueous medium questionnaire fear associated with learning to swim, he used (Hayek & Jabber, 2004), which included (20) phrases, it has been conducting scientific transactions have (honesty, and consistency), reaching degree the overall stability (85%), a degree of stability to meet the objectives of the current study. It also distributed the steps of responding (5-1) according to include the card Pentagram as follows: I am afraid very much (5) degrees, I fear greatly (4) degrees, I am afraid moderately (3) degrees, fear degree a few (2) degrees, and I fear very few (1) degree.

Basic swimming skills:

Basic swimming skills units included as (Abu Tame, 2007, 200) mentioned of six weeks that consisted three learning units per week, (60) minutes for each learning unit, spread over all of the introductory section (warm-up exercises), the main part (learning activity, and activity applied), and the final part (free activity, and leave), as follow:

- Confidence and cope with the aqueous medium include: identification of the aquatic environment, go down under the water's surface with self-mute and open eyes, move back and forth, the two men jumping into the water and the head of different heights.
- Buoyancy skills include: buoyancy balling (lamp), horizontal buoyancy on the abdomen, horizontal buoyancy on the back, standing position of buoyancy on the belly, put stand of buoyancy on the back.
- Slip into the water rush by: Push the bathroom floor or wall, attached payment slip on the abdomen, attached payment slip on the back.
- Skill timing of breathing "vertical attachment to the body" is one of the introductory skills that accelerate learning to swim useful ways, teaching them to be educated after reassuring to his mastery of the skill of the slide and the conditions of the various buoyancy. (Rateb 0.1999, 97)
- Progress by moving the Parties and include: horizontal buoyancy on the abdomen / back and move with the two men.
- Skill to stand in deep water "is one of the basic and important to contribute to the security and safety of the learner skills."
- Jump in the water (normal start) Includes: Dive of sitting on the edge of the tub mode, diving from the focal position on the knee, vertical jump into the deep water, jumping in the form of balling.
- Dog's swimming .
- Primary back swimming.

Variables of study:

- Independent variable: basic swimming skills.
- Dependent variable: level of fear degree in the aqueous medium.

3. RESULTS AND DISCUSSION:

To answer the study question, which states: What is the impact of learning some basic swimming skills on the degree of fear level of specialization of Physical Education students were finding the arithmetic mean and standard deviation and the value of (T-test) of the samples correlated to significant differences between the pre and post application to measure the fear associated with learning to swim to members of the sample The results (Table 1) shows that, while the Table (2) the total score of the level of the degree of fear in both the pre and post measurement:

Table (1) Mean and S.D for significance of differences between pre and post measurement results per each paragraph of the scale.

Sr.	paragraph	Pre (N=67)		Post (N=67)		T-test	P-Value
		Mean	S.D	Mean	S.D		
1	Invitation to learn to swim by friend or trainer.	2.50	1.13	1.83	0.82	8.97	0.000
2	Go in the river cruise or sea	3.76	1.11	2.20	0.96	11.85	0.000
3	Stop as a result of fatigue while swimming in deep water.	4.41	0.67	1.14	0.46	16.73	0.000
4	Sitting on the edge of the swimming pool in the deep part and put the legs in the water.	2.76	1.08	2.14	1.07	11.30	0.000
5	Trip in a small boat with person or people who do not know how to swim.	4.26	0.96	1.25	0.55	11.17	0.000
6	Eyes open under water while swimming.	3.58	1.18	1.74	0.78	14.45	0.000
7	Pick up things from the edge of the bathroom from the deep region.	4.26	0.93	1.31	0.72	16.88	0.000
8	Pick up things from the edge of the bathroom of the shallow area.	2.98	1.34	1.82	0.95	9.72	0.000
9	Invitation from a friend or friends have never been swimming with them for the descent of the water.	4.26	0.86	1.28	0.59	16.56	0.000
10	Standing in shallow water with splashes of water sharing with friends.	2.85	1.30	1.91	0.84	8.73	0.000
11	Walking up a ladder moving jump.	4.17	1.08	2.13	0.88	13.07	0.000
12	Swimming in the pool where there is no one else.	4.40	1.00	1.46	0.68	12.52	0.000
13	Jump to the water from moving up a ladder to jump high and one meter.	4.25	1.14	1.43	0.65	18.10	0.000
14	Swimming with people you do not know.	3.74	0.97	1.20	0.64	16.36	0.000
15	Looking at the deep water.	2.77	1.21	1.20	0.47	9.26	0.000
16	Jump by feet in a water depth of the shoulder.	3.40	1.32	1.55	0.74	12.39	0.000
17	Lost balance while walking in the water.	4.11	0.97	1.17	0.52	16.39	0.000
18	Dipping the head and body underwater.	3.29	1.39	1.64	0.86	10.97	0.000
19	Go down to the water is higher than head high.	4.43	0.74	3.02	0.69	18.28	0.000
20	Swim in the sea area where no clear vision of the bottom.	4.77	0.64	1.83	0.82	14.22	0.000

Table (2) T-test results of the correlated samples for significance of differences between pre and post measurement of fear scale associated with learning of swimming of sample

	Pre (N = 67)		Post (N = 67)		Mean difference		Degree freedom	T-test	P-value
	Mean	S.D	Mean	S.D	Mean	S.D			
Fear scale	3.75	0.55	1.63	0.34	2.11	0.68	66	25.09	0.000

* Statistically significant at the level ($P \leq 0.05$). T. spreadsheet (1.66) degree of freedom (66).

The table (2) Shows that the mean associated with fear questionnaire for learning of swimming has reached the pre measurement (3.75), with a standard deviation (0.55), while reached post measurement (1.63), with a standard deviation (0.34), and that the significance level equal to (0.000) It is less than (0.05), which indicates that there are differences statistically significant differences between the pre and post measurements in favor of post measurement. This result means that there is the impact of learning of basic swimming skills at the level of the degree of fear in the aqueous medium with the students of Physical Education, since the degree of fear It has reduced after learning of the proposed basic swimming skills. As the table shows that the mean difference between pre and post measurements were positive (2.11), and the value of (T-test) calculated is greater than the value of (T-test) spreadsheet (1.66) which is a function at a level ($P \leq 0.05$). Which demonstrates that the learning basic swimming skills had an impact in alleviating the average of fear degree among students. Figure (1) clearly shows this result:

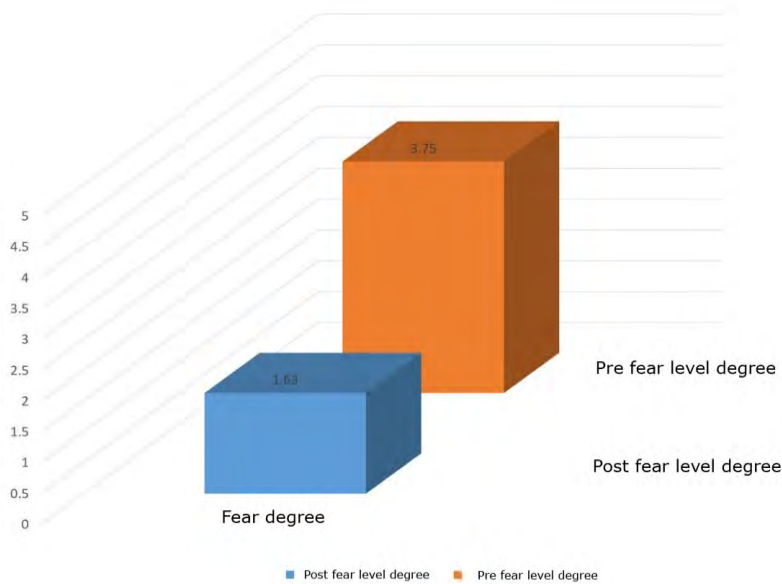


Figure (1) Pre and post of fear level degree

The researcher attributes this result to what is being observed while teaching basic swimming skills in terms of the students know information regarding the characteristics of the body in the aqueous medium as the learners know about characteristics of body in the water helps to reduce the degree of fear toward the aqueous medium. The focus on trust and familiarity with the water and the gradient exercises in the exercises from easy to difficult and from simple to complex and training in the shallow area and deep led to a feeling educated reassurance, which helped to significantly reduce the degree of fear of the aqueous medium and increase self-confidence. This is consistent with what indicated by each of the (Arabi and Jarar, 2006) and (Rizk, 2003) the swimming have a positive effect on the psychological point of view and which ones create emotional balance and the development of self-confidence, and is consistent with the recommended by the (Abu Tame, 2005) that need to develop self-confidence in students when learning of swimming and is consistent with the findings of the study (Abdulhadi and Ali, 1990) that there is a positive relationship between self-confidence and learning of swimming skills. The researcher believes that taking into account the psychological needs of learners and aptitudes and inclinations helped feeling reassured educated and safety. The control of the teacher's lessons and decision-making led to a feeling of reassurance educated, helping to their sense of security. In this (Alkatib and Aljanabi, 2002) that learning is at the beginning of swimming lessons from a teacher needs full control of the lesson and make decisions which helps the learner a feeling of security and safety. Also researcher believes that diversity and the proper use of buoyancy aids in teaching basic swimming skills had a positive impact, as has led to a sense of security and thus reduce the level

of the degree of fear of the water and increase self-confidence, and this is what he had reached (Abu Tame, 2007, 206) that the use of buoyancy aids in the teaching of basic skills pool has a positive impact on the learners where led to a sense of security and reduce the degree of fear of water and increased self which accelerated learning skills and confidence, and this confirms (Alket, 2004, 49) that the use of tools buoyancy aid helps to overcome the first shock of fear. The resort to the free activities and games led to the adaptation of learners and their enjoyment, and in this pointed (Alket, 2004,50) that the practice games increase the learners adapt and improve their concentration and their reactions to enjoy the swimming lessons. This result conformed with the result of study (Abu Tame, 2008, A), that the learn of swimming skills and competitive types leads to a low level of anxiety and the size of the students. And agreed with the findings of study (Abu Tame, 2008, B) that the learn of swimming and the kinds of competitive skills leads to the sense of beautiful feelings, and agreed with the result of the study (Abu Tame, 2007) that the learn basic swimming skills led to feeling learned students reassurance and reduce the degree of fear of the water and increase self-confidence, also agreed with the result of the study (Alhayek and Jabber, 2004) that the proposed tutorial in swimming led to reducing the level of fear degree which associated with learning of swimming.

4. CONCLUSIONS AND RECOMMENDATIONS:

Reference to results and discussion mentioned above, the researcher concluded that the level of fear degree has reduced after learning of basic swimming skills, which shows that learning of basic swimming skills has the effect of reducing the level of fear degree in the aqueous medium. The researcher recommends to learn the proposed basic swimming skills in order to reduce the level of fear degree associated with learning of swimming, the students' self-confidence must be aimed to improving the learning process and increase the effectiveness of swimming lessons to widen field of swimming practices, and conduct research and studies similar to help the discovery of methods and modalities of learning contribute to get rid of the fears associated with the aqueous medium.

5. REFERENCES:

- Abdulhadi, Fatima., & Ali, Laila. (1990) Effect of Self-confidence to learning of swimming, *First scientific conference, Role of Physical Education in solving Contemporary Problems, V. (3)*, Faculty of Physical Education, University of Zagazig. Egypt.
- Abu Tame, Bahjat., Ahmed. (2008, A). Anxiety resulting from learning the skills and types of swimming among Department of Physical Education Students, Palestine Technical University- Kadoorie, Palestine, *First International Scientific Conference of Physical Education, Sports and Health, V. (1), N. (7)*. Kuwait University. Kuwait.
- Abu Tame, Bahjat., Ahmed. (2008, B). An analytical Study of the Motives of learn to swim among Department of Physical Education Students, Palestine Technical University- Kadoorie, Palestine - According to Model of (SMS). *First International Sports Science Conference. (An active community to develop health and performance). V. (2)*, p 131-155. College of Physical Education, Hashemite University, Zarqa, Jordan.
- Abu Tame, Bahjat., Ahmed. (2007). The effect of using buoyancy aids to learn some basic skills in swimming for Students of Physical Education. *Najah University Research Journal (Humanities), V. 21(1)*, p188-226. Nablus, Palestine.
- Abu Tame, Bahjat., Ahmed. (2005) Trends of Department of Education Students in Palestine Technical University- Kadoorie towards attitudes the practice of swimming. *Journal of Bethlehem University, V. (24)*, p133-164. Palestine.
- Alhayek, Sadiq., & Abdulsalam, Jabber. (2004) The impact of proposed learning program in swimming on some variables among middle-aged men, *Najah University Research Journal (Humanities), V.18 (2)*, p 561- 598. Nablus. Palestine.
- Alkatib, Afaf., & Aljanabi, Asia. (2002). Effect of Guided Discovery Approach to learn freestyle skills, *Journal of Physical Education Sciences, V. 1 (1)*. Faculty of Physical Education, University of Babylon, Iraq.
- Alket, Mohammad., Ali. (2004). *Scientific principles for swimming*. Arab Center for Publishing, Zagazig. Egypt.
- Annan, Mahmoud., Abdulfattah. (1995). *Psychology of Physical Education and Sports*. 1 Ed., Dar Alfikr Alarabi, Cairo.
- Arabi, Samira., & Jarar, Tamer. (2006). The impact of proposed learning program in Swimming on Self-concept and Level of performance of Participants in learning of swimming courses organized by Faculty of Physical Education in University of Jordan. *Fifth Scientific Conference (Sports Science in Changing World), Faculty of Physical Education, University of Jordan*.
- Rateb, Osama., Kamel. (1999). *Swimming education*. 1st Ed. , Dar Alfikr Alarabi, Cairo.
- Rateb, Osama., kamel. (1995). *Sports Psychology*, 1st Ed. , Dar Alfikr Alarabi, Cairo.
- Rizk, Samir. (2003). *Scientific Encyclopedia for sport of swimming*, Amiriyah Press. Ajman, UAE.

THE PSYCHOLOGICAL, PERSONAL AND EMOTIONAL COMPATIBILITY AND ITS RELATION TO PRECISION IN SOME BASIC FUTSAL SKILLS AMONG DIYALA TEAMS PLAYERS

^aBasim Awad Ali , ^bTurki Hilal Kadhim , ^cBasim Jabbar

^{a, b, c} college of physical education and sport science Diyala university

mohamed_w7077@yahoo.com turki.hiala@yahoo.com

Abstract

The significance of the paper is in studying the variable (psychological-personal-emotional compatibility) as it is regraded of the factors which influence the nature of performance, acclimation and goals achievement in harmony with the reality of the society he lives in as well as the importance of the individual's self-apprehension and the ability to know the capabilities and potentials of the individual himself to be able to interact with the different bodily, skillful, and cognitive sides in compatibility with the behavior of the individual along with his activity and level of performance. The researchers adopted the descriptive approach of associative relations. The scale is adopted to (70) players representing (53.84%) of the total study society. While the final scale is applied to (50) players representing (38.46%) of the original society. In this way, the adaptation sample and final scale sample of (120) players in a ratio of (92.30%) of the original society. The level of sportive psychological-personal-emotional compatibility was good in the sample of the study. Any improvement in the level of sportive psychological-personal-emotional compatibility will lead to a development in the skillful performance and vice versa. This encourages other researchers to work on similar studies dealing with other skills, other sports and different samples in various study levels even in terms of the gender of learners.

Keywords: psychological-emotional, basic futsal skills

1. INTRODUCTION

Psychological compatibility is one of the significant psychological concepts among athletes which did not received its due importance in learning in concordance to the context of sound concepts in Iraq in spite of its vital and focal role in reducing negative psychological effects caused by the environments in physical work due to the pressure of training, competitions and the negative results achieved by players. Hence is the significance of this paper in studying the variable of (the psychological-personal-emotional compatibility) regarding it of the effective factors on the nature of performance, acclimation and goals achievement in harmony with the reality of the society he lives in as well as the importance of the individual's self-apprehension and the ability to know the capabilities and potentials of the individual himself to be able to interact with the different bodily, skillful, and cognitive sides in compatibility with the behavior of the individual along with his activity and level of performance.

In addition to physical training, coaches and sport psychology specialists devote a significant part of their interests to mental training aiming to achieve stability in player's level and as complementary factor that is not to be ignored as various requirements appeared to gain the psychological compatibility wished for in matches and competitions via tools and procedures adopted by the coach or psychological specialist with the player or, sometimes, even by the player himself with his own self. Here occurs the importance of this paper in dealing with the (psychological-personal-emotional compatibility) as a factor influencing the nature of performance, acclimation and goals achievement in harmony with the reality of the society he lives in as well as the importance of the individual's self-apprehension and the ability to know the capabilities and potentials of the individual himself to be able to interact with the different bodily, skillful, and cognitive sides in compatibility with the behavior of the individual along with his activity and level of performance.

Moreover, due to the environments accompanying long and exhaustive training met by football players, the y might cause negative effects and psychological pressure which have negative impacts on achieving the required level. According to the experience of the researchers and the actual need for psychological and emotional cases and the level of relation between them and some basic football skills, they wanted to diagnose the nature of this relation to be beneficial for workers in the field of training, and, to identify the correlation between the psychological-personal-emotional compatibility and the skills of (passing, dribbling, scoring) in football.

Field Procedures:

2. METHODOLOGY:

The researchers made use of the descriptive approach of associative relations.

Sample of the Study:

The study society comprised Diyala Teams Players which are (13) teams with (10) players each. Hence, the total number of players is (130). The scale is adopted to (70) players representing (53.84%) of the total study society. While the final scale is applied to (50) players representing (38.46%) of the original society. In this way, the adaptation sample and final scale sample of (120) players in a ratio of (92.30%) of the original society which is the same similar ratio of the total study sample in terms of skill tests and the scale, neglecting the questionnaire forms of others.

Tools and Devices used in the Study:

Futsal standard stadium, 20 standard balls, ribbons to point precision areas, questionnaire forms of the psychological scale, camera to photograph the tests, registration forms.

Field Procedures:

The Procedures of Adopting the Psychological-Personal-Emotional compatibility Scale:

The Procedures of Adopting the Psychological-Personal-Emotional compatibility Scale:

Suitable for the sample under study via the agreement of experts concerning the questions with setting reformative steps of the scale from scientific view.

$$Ca^2=(L-Q)2/Q.....(1)$$

Table (1) Experts' agreement and signification level of the psychological-personal compatibility scale

No.	Question	Consenters	Non-Consenters	Ca ²	signification
1	I feel satisfied about myself despite lesson difficulties and competition with colleagues	10	1	7.36	significant
2	I am not aggrieved in class	10	1	7.36	significant
3	I depend on myself in meeting my sport requirements	9	2	4.45	significant
4	I feel irritated when coach criticizes me in front of other players	9	2	4.45	significant
5	I can control my nerves during playing	9	2	4.45	significant
6	I am an excellent player and productive in lesson	10	1	7.36	significant
7	I speak proudly of my achievements when talking with other players	9	2	4.45	significant
8	It is easy to get my feelings hurt by competitors in other groups	10	1	7.36	significant
9	When the teacher stimulates me I feel more inclined to win	10	1	7.36	significant
10	My performance in competition is better than in training	9	2	4.45	significant
11	My performance greatly heightens when I play in the name of my group	10	1	7.36	significant

12	My hope is great in all that I wish during competition	9	2	4.45	significant
13	I feel lonely even when with my mates in the field	9	2	4.45	significant
14	I feel self-confident during training and playing	10	1	7.36	
15	I like assisting my mates in class	9	2	4.45	significant

The χ^2 in table under the level of (0.05) and freedom degree of 91) equals (3.84)

The Psychometric Properties of Scale Items:

The psychometric properties reveal the ability of the scale to measure what it was set for and the rational analysis might not be sufficient alone to figure out the validity of the items because it depends on the face-scanning of items. Therefore, there ought to be a statistical analysis of the scale items to find out the availability of the scale in addition to the fact that statistical analysis forms an integral factor in constructing all psychological tests so as to keep the good items.

Furthermore, the researchers delineated the two styles of extreme groups and intrinsic agreement to analyze the scale items as follows:

The Style of Two Extreme Groups:

The researchers implemented the style of two extreme groups in measuring the discriminatory force of the items after data processing via the SPSS to find out the individual differences between the members regarding the measured property and to distinguish between those who achieve high scores and those who get low scores among the study sample of (70) players. The overall mark for each form is first specified and then put in descending arrangement from the top to the lowest score, next the researchers selected 50% of the high score forms and 50% of those who got the lowest scores, and, therefore, the total number of players in each group was (35).

After that, the T-test is used in order to count the discriminatory coefficient of each of the 15 items. The statistically significant T-value is considered an indicator to distinguish the items and it ranged from (38.147-74.212). When comparing it with the tabular t-value on the level of (0.05) and freedom degree of (68) which reached to (1.96), the items were distinctive under this level as shown in table (2).

Table (2) show mean ,standard deviation and measured high and low group

No.	High Group N=86		Low Group N=86		T-value	
	Mean	Standard deviation	Mean	Standard Deviation	Measured	Error Ratio
1	4.045	0.706	1.071	0.259	41.850	0.001
2	5.000	0.000	2.188	0.704	42.071	0.000
3	4.198	0.698	1.000	0.000	48.470	0.002
4	4.964	0.187	1.973	0.650	46.587	0.001
5	4.775	0.420	1.866	0.637	40.244	0.000
6	5.000	0.000	2.232	0.684	42.619	0.003
7	4.342	0.477	1.000	0.000	74.212	0.001
8	4.865	0.343	2.152	0.647	39.076	0.001
9	4.477	0.502	1.232	0.424	52.180	0.001
10	4.342	0.477	1.357	0.481	46.533	0.001
11	4.423	0.549	1.089	0.286	56.965	0.000
12	4.045	0.353	2.089	0.679	38.147	0.000

13	5.000	0.500	1.304	0.462	50.375	0.000
14	4.198	0.000	2.143	0.721	41.745	0.000
15	4.964	0.784	1.000	0.000	39.749	0.000

3. INTRINSIC AGREEMENT COEFFICIENT:

Intrinsic agreement coefficient is used to identify the agreement between items in their measuring of the behavioral phenomenon (Sami Mohammed Milhim, 2000: 65). The intrinsic agreement coefficient is the correlation coefficient between the score of each item and the total score of the scale as an internal norm. Through using Pearson simple correlation coefficient to figure out the associative relation between the scores of the sample members, it is found that correlation degrees ranged from (0.645-0.400). Upon comparing them with associative tabular values on the level of (0.05) as a criterion to eliminate the statistically non-significant items, yet the comparison proved that all the items are statistically significant as shown in table (3).

Table (3) shows the intrinsic agreement of the scale items:

No.	Correlation Coefficient	Signification
1	0.463	Significant
2	0.400	Significant
3	0.450	Significant
4	0.498	Significant
5	0.483	Significant
6	0.533	Significant
7	0.391	Significant
8	0.437	Significant
9	0.605	Significant
10	0.546	Significant
11	0.531	Significant
12	0.402	Significant
13	0.413	Significant
14	0.506	Significant
15	0.645	Significant

1. Cronbach's Alpha

Alpha affords us with good estimation of stability in most cases and the intrinsic agreement coefficient is counted as alpha coefficient considered as the extent of measuring the same thing by the items in scale and if all items do actually measure the same property then they should be related with each other. Such type of stability is called intrinsic harmony (Al-Shmmari, Mohammed Soud, 2000:117). The value of Cronbach's alpha was (0.92) which signifies high stability coefficient that can be trusted to estimate the stability of the test.

Table (4) The Personal-Emotional Compatibility Scale in its Final Form

No.	Items	Strongly Agree	Agree	Agree Sometimes	Disagree	Strongly Disagree
-----	-------	----------------	-------	-----------------	----------	-------------------

1	I feel satisfied about myself despite lesson difficulties and competition with colleagues					
2	I am not aggrieved in class					
3	I depend on myself in meeting my sport requirements					
4	I feel irritated when coach criticizes me in front of other players					
5	I can control my nerves during playing					
6	I am an excellent player and productive in lesson					
7	I speak proudly of my achievements when talking with other players					
8	It is easy to get my feelings hurt by competitors in other groups					
9	When the teacher stimulates me I feel more inclined to win					
10	My performance in competition is better than in training					
11	My performance greatly heightens when I play in the name of my group					
12	My hope is great in all that I wish during competition					
13	I feel lonely even when with my mates in the field					
14	I feel self-confident during training and playing					
15	I like assisting my mates in class					

Scale Correction Method:

The scale is corrected by giving a mark for each response from the athlete and for each of the 15 items, then these marks will be summed to find the total score for each form. These forms were corrected after marks are given to the response concerning the positive and negative items about the concept of alienation among athletes for one of the alternatives as follows and as is shown in table (5).

Table (5) shows the estimation scale along with marks of positive and negative items:

No.	Alternatives	Positive Items	Negative Items
1	Strongly Agree	5	1
2	Agree	4	2
3	Agree Sometimes	3	3
4	Disagree	2	4
5	Strongly Disagree	1	5

Moreover, so as to figure out the total mark of the scale, scores gained by the tested are summed after answering the (15) items. The highest score that could be achieved is (75) marks and the lowest is (15). While the neutral marks is (45) which can be

achieved via collecting the marks in the estimation scale (1, 2, 3, 4, 5) then dividing them on (5) alternatives and next to multiply them by the number of items that are (15). Thus we gain the neutral mark.

Skill Tests

1. The zigzag run test with ball (rolling) among (5) poles back and forth.
2. The passing test towards small target (10 meters) away.
3. The Scoring test towards a target which is divided into numbered squares from both sides (average).

The Main Experiment

After executing the pilot study and viewing the elapsed time, the researchers made the experiment on (40) players in the span of two successive days (27-28/11/2015).

Exposing, analyzing and discussing the results:

Revealing the Results of the athletic Psychological-Personal-Emotional Compatibility and some Basic Football Skills and analyzing them:

Table (6) the Mean, the Median, the Standard Deviation, the athletic Psychological-Personal-Emotional Compatibility and some Basic Football Skills:

No.	Variables	Measure Unit	Mean	Median	Standard Deviation	Torsion Coefficient
1	Personal-Emotional Compatibility	Mark	86.214	86	8.798	0.07
2	Zigzag Run	Second	8.615	9	2.615	0.44-
3	Passing	Mark	5.244	5	1.728	0.42
4	Scoring	Mark	22.325	23	4.675	0.43-

According to table (6) it is crystal clear that:

In the above table a statistical description of the study variables is done. As all variables in the above shown table are naturally represented in terms of Gauss Triangle, which is one of the harmony indicators of the study sample, the torsion coefficient values ranged between (1±) which is a good and normal indicator.

Discussing the Results of the athletic Psychological-Personal-Emotional Compatibility and some Basic Futsal Skills:

Table (7) The Correlation Coefficient, the Error Ratio in the athletic Psychological-Personal-Emotional Compatibility and some Basic Futsal Skills

Statistical Processes	Variables	Dribbling	Passing	Scoring
Correlation Coefficient	Personal- Emotional Compatibility	.28*	.34*	.30*
Error Ratio		.049	.046	.041
	Sample	40	40	40

According to table (7), it is clear that:

There is a significant associative relation between the personal-emotional compatibility and the skills delineated in this paper via the before mentioned error ratio which was below the signification level of (0.05) which indicates the signification relation. As for the correlation direction, all results show that the relation between the variables is a direct one in the positive direction between the psychological-emotional-personal compatibility and the basic skills under study. They imply that the increase in the precision

degree of skill performance will in turn lead to an increase in the level of psychological-emotional-personal compatibility or vice versa. To put in plain English, the increase in the precision of skill performance means that there is an improvement in the level of personal-emotional compatibility. Because this skill deals with the opponent competitor not with the mate, therefore, this requires a higher level of response than the skill which is dealing with the mate which has also led to the appearance of this significant relation.

Furthermore, the personal-emotional compatibility is embodied in specifying the response type and nature in concordance with the requirements of the situation and permits the adoption of the response in a suitable way leading to a state of compatibility with the training environment or session and the positive participation in its activity, and in the same time leads to a state of satisfaction (Omar bin Nasser, 2008: 18).

As regarding the skill of passing, the need to the requirements of the psychological-personal-emotional compatibility come from the player's knowledge of his opponent's position and attempting to locate the ball in the correct places in addition to psychological impact for if he does not have a psychological-emotional compatibility which is coming from the distance and the requirement of needed power to pass the ball in the correct direction with the natural power without being influenced by the opponent. The psychological-personal-emotional compatibility is considered of the factors effecting the nature of performance, adaptability and achievement of aims in harmony with the power to know the abilities and potentials of the individual along with his interaction with the various physical, skillful, cognitive and planning sides in concordance with the behavior of the individual, activity and level of performance (Ali Abdul Hasan & Hussein Abdul Zahra, 2011:177).

4. CONCLUSION

The level of sample members in all three basic skills is medium while the level of psychological-personal-emotional compatibility is good among the sample members. Any improvement in the level of psychological-personal-emotional compatibility will result in a development in the skill level and vice versa. Furthermore, this encourages other researchers to work on similar studies dealing with other skills, other sports and different samples in various study levels even in terms of the gender of learners as well as paying due attention to the psychological side in training sessions so as to find out the suitable tools to develop these properties and to work on developing the level of educational programs via various methods and approaches to achieve a better evaluation.

5. REFERENCES

- ❖ Oudah, Ahmed Salman. *Evaluation and Measurement in the Training Process*, 2nd ed. (Amman: Al-Amal Press, 1993).
- ❖ Abdul Hamza, Baath Abdul Muttaleb. "Designing and Codifying Two Batteries Test (Physical-Skill) to Select Futsal Junior Players in Baghdad Aging (14-16) Years." An Un Published M.A Thesis, College of Physical Education and Sport Sciences/ University of Baghdad, 2010.
- ❖ Jabir, Jabir Abdul Hameed and Yousef Elsheikh Yousef. *The Psychology of Individual Differences* (Cairo: Egyptian Renaissance Library, 1973).
- ❖ Milhim, Sami Mohammed. *Evaluation and Measurement in Education and Psychology*, 1st Ed. (Amman: Dar Elmaysara, 2000).
- ❖ Hussein, Ali Abdul Hassan and Hussein Abdul Zahra. "The Psychological and Social Compatibility and its Relation to Self Esteem among College of Physical Education-University of Karbala." Published Paper in (*Al-Qadisiya Journal of Physical Education Sciences*, vol. 11, Issue 3, Dec.1.2011).
- ❖ Bin Nasir, Omar. "The Level of emotional and Social Compatibility among Addicts and Non-Addicts." An Un Published M.A Thesis (Naif Arabic University for Security Sciences, College of Higher Studies, Social Sciences, Psychological Care and Health, 2008).
- ❖ Fahmi, Mustapha. *A Study in the Psychology of Adaptation* (Cairo: Al-Khanji Library, 1987).
- ❖ Ferguson. *Statistical Analysis in Education and Psychology*, trans. by Hanaa Al-Aqeeli (Al-Mustansiriya University: Baghdad, 1991).
- ❖ Disouqi, Kamal. *Psychology and the Study of Compatibility*, Vol.2 (Beirut: Al-Nahdha Al-Arabiya Press, 1974).
- ❖ Alshammari, Mohammed Saoud. "The Personal Properties of High and Low Endurance Persons and their Relation to Birth Treatment Approaches among University Students." An Un Published Ph.D. Dissertation (Al-Mustansiriya University: College of Education, 2000).
- ❖ Al-Kinani, Mamdouh Abdul Munim and Essa Abdallah Jabir. *Psychological Educational Evaluation and Measurement*, 1st ed. (Kuwait: Al-Falah Library, 1995).
- ❖ Al-Tikriti, Wathiq Omar Moussa. "Making Psychological Compatibility Scale for University Students: Making and Application." An Un Published M.A Thesis (University of Baghdad/ College of Arts, 1989).
- ❖ Al-Samarrai, Asmaa Hikmat Fadhil. "Making and Codifying Scientific Knowledge Scale and its Relation to Skillful Performance in Volleyball." Un Published Ph.D. Dissertation (University of Baghdad/ College of Physical Education, 2002).
- ❖ Munn, N. *Psychology Fundamentals of Human Adjustment*, Vol.3 (New York: George and Company, 1950).