

## **Effectiveness of S.A.Q Trainings on some of the Physical Variables and the Level of Offensive Skills Performance in Basketball**

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### **Introduction and the problem of research:**

In recent years, fitness specialists used the stability of central portion of the body exercises in the training programs for athletes, due to the great influence of these exercise on sports performance, which results a tremendous force working to provide a maximum performance for the lower limb and the upper limb .Exercises that have become in the recent period commonly used by athletes are S.A.Q trainings as practiced by novices and those with high level.

Mario Jovanovich and others (2011) refer that S.A.Q abbreviation S.A.Q is derived from the first letters of each of the transitional Speed (Speed), (agility) and kinetic quickness (Quickness) (1285: 23). Velmurugan & Palanisamy (2012) add that S.A.Q trainings are modern training system which results integrated effects of many physical capabilities

within a single training program (432: 26).

Remco Pullman and others (2009) indicate that S.A.Q trainings are integrated training system designed to improve the acceleration, compatibility between the eye and the hand, the explosive capacity and the speed of response. (494: 24) and about the nature of the connectivity relationship between the three training elements (transitional speed, agility and kinetic quickness) ,Baechle and others (2000) illustrate that the transitional speed is the player`s ability to perform similar sequential movements at the shortest time possible, while the agility is the player`s ability to change his positions in the air and the kinetic quickness is the maximum constriction or motor response for the muscle in shortest time possible. (18:14)

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Vikram Singh (2008), explains the difference between the transitional speed and kinetic speed that the transitional speed needs time to reach the maximum speed which must be incremental, and this is evident in the sprinting races, in which the player needs a sufficient time to get from speed zero to maximum speed, while kinetic speed does not need to this time, but it needs the maximum muscle contraction in the shortest possible time and appears in the explosive movements for some sports. (12:27)

While Baechle and others (2000) see that there is a similarity between the terms, kinetic speed and the speed of the kinetic response. (18:14) The researcher noted that most Arabic references use the term cleverness as a translation for the word Quickness and its use significantly as a synonymous to agility term.

Sheppard and Young (2006) refer that the concept of agility is from the concepts that are frequently around questions by researchers and thinkers in the sports field, and until now there is no consensus in the sports field on the nature and

the concept of fitness, and this may be due to its association with some physical and kinetic abilities. (25: 919)

through Internet browsing, researcher noted the modernity of S.A.Q trainings in sports field , where Velmurugan & Palanisamy (2012) indicates that S.A.Q training is considered one of the modern training forms in sports field and studies which dealt with its physical and physiological effects on youth and adult players differed in their findings due to the difference of the way it had been dealt with in the sports field. (26: 432)

Canon (2002) & Adel Jouda (2004) agree that the basketball is from the activities with distinct and changing situations by contrast way And the nature and the conditions of competition are done through its multiple technical skills which the player has to practice to overcome the speed and strength of the opponent and in order to improve the speed and accuracy of a kinetic harmony for the basketball player, different combinations of skillful performance for any skill must be developed, specially skills that are used

frequently during the game through different kinetic sequences. (19: 110) (25: 6)

the proper plan to raise the efficiency of basketball players is considered from the important things such as planning for how to learn basic skills and raise the level of both physical and skillful aspects where the access to the high sports levels does not come by chance but as a result of long-term plan which has a limited goals, therefore ,Essam Abdul Khaliq (2003) and Ahmad Amin Fawzi (2004) agree that the skill means the individual's ability to complicated kinetic cognition easily, accurately and by speed of response for changing situations to achieve the best results (1: 177) (7: 309).

And then we find that the player's perfection for offensive skills in basketball in particular means the opportunity to put the ball in the right place in which the player can point from it easily to aim the opposing team's basket by the highest number of points and this requires from the player to master the Offensive skills, in general, and point, in particular, so the point is considered from the

most basic skills which operates coaches and players alike. Without point perfection, the performance of the rest of the skills will become without advantages (4: 171) (62: 8) (20: 9) (41:16).

Mustafa Zeidan, Jamal Mousa (2004) and Muhammad Ismail (2010) agree that the point skill in basketball is the only skill that achieve the victory for the team if the players do it well, because all the other different skills and offensive plans become useless in the absence of the success of the point. (92:14) (81:11)

Ahmed Hussein (2002) and Muhammad Ismail (2009) indicate that there are basic rules for the point process which depend on the distance and nearness of the player from the ring of basket as well as facing the ring or on its side, but , in point process, we must emphasize on an important issue which is the attempt to lift the flight of the ball arc so as to further ensure the entry of the ball to the ring with a large angle approaching (90 degrees) because it is the best angle to enter the ball to the ring. (44: 2) (48:10)

Through the work of the researcher as coach of King

Saud University basketball team in Saudi Arabia, he found that there is weakness in the performance of some offensive skills in basketball that is due to the slow process of transition from defense to attack and vice versa as a result of the lack of physical attributes which associated with the change of skillful performance such as transitional speed, flexibility and agility that are developed through a training method that combines these elements as a S.A.Q trainings, which makes the researcher to carry out this study to learn about the effectiveness of S.A.Q trainings on some of the physical variables and the level of performance of the offensive skills in basketball.

**The Aim of Research:-**

To identify the effectiveness of S.A.Q trainings on some of the physical variables and the level of performance of the offensive skills in basketball.

**The hypothesis of Research:-**

- There are statistic denotable variances between pre and post measurements at the level of some physical variables and skillful performance in basketball in favor of the experimental research group.

- There are statistic denotation variances between the averages of pre and post measurements at the level of some physical variables and skillful performance level in basketball in research control group to post measurement.

- There are statistic denotation variances between the averages of post measurements of the experimental research group and the control group at the level of some physical variables and skillful attack performance in basketball in favor of the experimental group.

**Research Methodology:-**

The researcher used the experimental methodology by using experimental design for two groups; experimental one and the other is controller by using pre and post measurement.

**The Sample and Community of Research:**

The sample of research included King Saud University team ,Saudi Arabia for training season (2014-2015) and their number is (24) players, among (17-20 years). 16 players have been chosen to perform basic experiment of the research. They have been divided into two groups, experimental one

and the other is controller in addition to 8 players to conduct the survey for the research.

### **Data Collection Tools:**

#### **First, Used Devices:**

- Restmeter device for length measure

Stop Watch-

Medical balance-

Measure Tape-

-Dynamometer device to measure the strength of leg muscles

-Basketball Playgrounds

#### **Second, Tests Used in the Research:**

1-Deep diagonal prostration test to measure the strength of arms and shoulders muscles (15: 214).

2-The strength of legs muscles using Dynamometer device for measuring the leg lift strength (15: 210, 211).

3-The vertical jump test to measure the stability of the muscular power of the legs (305: 304: 15).

4-Medical ball throw for the farthest distance to measure the muscular power of the arms (15: 308).

5-Balance test on the instep to measure the fixed balance. (15: 571) (18)

#### **Skillful tests:-**

1- Speed of dribbling: time has been recorded in which the

player takes specified distance back and forth until he skips the starting line in seconds.

2-drebbing ending with point: time has been calculated from the moment issuance of the start signal until he skips the start line.

.3- speed of point (30) seconds

#### **Third, the forms used in the research:**

Three questionnaires were designed to know the experts` opinion on:

-Identifying the most influential physical components in the level of skillful performance can be developed by S.A.Q trainings which are the special muscles affecting the lower limb, the trunk and upper limb for the skillful performance in basketball.

-Identifying the physical tests depending on the selected elements.

. Identifying the skillful tests for the skills under discussion- Questionnaire for experts` opinion about the program. -

#### **The steps of program:**

#### **The proposed program:**

#### **Preparation steps of S.A.Q trainings program:**

\*Conduct survey of researches and studies associated with the research variables.

\*Benefit from the experts` diverse experiences in design training programs.

### **The aims of S.A.Q trainings:**

The development of some special physical variables for the basketball players using physical and harmonic trainings, and on different parts of the body, and according to the nature of the physical and technical performance in basketball with the importance of the development of:

.)level of physical capabilities (under discussion-

Level of skillful performance in basketball.-

### **The standards of S.A.Q trainings program:**

-suit the proposed trainings in their content with the goals and also with the nature of age

-flexibility of the program and its ability of modification and application .

-Gradation in increasing all of load, appropriate progress, form of frizzing and directing training loads in accordance with the desired training method.

. the availability of security and safety factors-

-taking into account the individual differences among the players.

-the availability of tools and equipment used in training and implementation program and its suitability.

the balance between the generality and privacy of-training.

Organization, diversification and continuity of the training. -

Attention to the rules of warm-up and relaxation.-

### **Determinants of S.A.Q trainings program:**

#### **Program duration:**

\*Duration of the program is (8) weeks

#### **The number of training units:**

\*The number of weekly units is (3) at a rate of  $3 \times 8$  weeks = 24 units in the proposed program.

#### **Used training method:**

The researcher used the method of interval load with a high intensity and recurring training, circular training , in addition to exercises with a similar performance to the skillful performance.

### **The scientific basis of the training program in a way of interval load with a high-intensity:**

-Determination of the maximum repetition 30 seconds for each exercise of selected exercises.

-Determination of the load for each exercise by multiplication  $\times 3/4$ .

Example: Exercise (5) running, taking into account the position of the feet inside the agility ladder : running is done at peak performance, and the researcher determine the time that the player takes to achieve the performance for example(10 seconds) and multiply the resulting value in (75%) to determine the severity of load

-Weightlifting exercises for the development of transitional speed which its intensity is determined of 75%, taking into account the gradation in this intensity , and to be a repetition of 8-12 times .

-Rest between each exercise for 60 seconds practicing stretching exercise on the grounds that the stretching exercise is one of training circle exercises, taking into account the use of the pulse at rest and after the effort in determining the used rest periods under discussion.

\* The researcher determine the pulse rate for each player

before the start of the program in order to determine the severity rate by pulse rate, by this way the intensity of exercise for each exercise is determined like exercises (9-24), which are harmonic exercises by the performance of ladder. The time was determined (60) seconds between each exercise to reach the rest phase to start-up the work again after reaching a positive rest index pulse rate closer to the pulse rate at rest.

-Selected training circle has been practicing three times provided by periods of rest between each of them, on the grounds that the training circle is a group.

Rest between the groups will be 2-4 minutes. -

-Maximum repetition is measured through the 30 seconds of each exercise every 3 weeks to determine the load of each stage of the program.

-Determination of the intensity of loads and the weight or the used resistors in kg according to the weight of the player and the aim of training. (According to the weight that the player can carry multiplied also in 75%)

**Selection and determination of training circle content:**

Thirty exercises have been identified to put them inside the training circles in the form of stations. Each circle contains a number of ranked exercises according to the objective to be achieved with the performance of the training circles as has been mentioned in the training programs. The researcher cares to choose the quality of exercises to be similar to the nature of the performance in basketball and muscles working in performance within the search, in addition to the balance of muscular work between the worker muscles and counter ones.

#### **Parts of training unit:**

##### **A – The primer part (preparatory):**

This section includes warm-up exercises for the purpose of setting up the muscles by increasing the blood movement within the muscles and raising the temperature of the body and the development of the central nervous system and this part takes between (12-20) minutes from the training unit time.

##### **B-The main part:**

Main part includes S.A.Q trainings to develop special physical capabilities, and this part takes between (40-45) minutes and (60-70) minutes as maximum.

##### **C-The concluding part:**

The main part is followed by a period of relaxation. It included a combination of training its purpose is recrudescing the morphological responses to its normal levels.

This part takes between 5:10 minutes.

According to that the researcher constituted training load courses through the interval load course which consists of 8 weeks training according to the foundations of constituting training load.

The researcher divided the total period to weeks, then dividing for each week (3) training session. The program is explicated in attachment (4).

##### **Presenting and discussing results:**

##### **Presenting and discussing the first hypothesis.**

**Table (1)**  
**The denotation of the variances between pre and post measurements at the level of some physical variables and skillful performance for basketball players of experimental research group**

Tests	Measurement Unit	Pre measurement		Post measurement		Differences between Averages	Improvement percentage	(T) value	The level of Denotation
		Arithmetic Average	Standard deviation	Arithmetic Average	Standard deviation				
-strength of arms muscles	Number	18.10	1.25	24.45	0.62	5.35	29.55%	4.15	sig
-Strength of legs muscles	Kg	41.35	0.86	46.70	0.36	5.35	12.93%	4.85	sig
-The ability of legs	CM	29.65	0.47	34.18	0.32	4.53	15.27%	4.39	sig
-The ability of arms	M	6.62	0.32	8.15	0.47	1.53	23.11%	4.47	sig
-The balance of right leg	S	7.15	0.15	11.12	0.36	3.97	55.52%	4.62	sig
-The balance of left leg	S	7.09	0.25	12.60	0.85	5.51	77.71%	4.32	sig
- Drebbling ending with point	S	8.38	0.25	6.22	0.11	2.16	34.72%	4.14	sig
- Quickness of point	Number	7.32	0.14	12.25	0.02	4.93	67.34%	4.62	Sig
- Quickness of dribbling	S	11.31	0.17	8.55	0.15	2.76	32.28%	4.52	Sig

Value of (T) at the level of denotation is  $(0.5) = 1.860$

From schedule (1) it becomes clear that there are statistic denotable variances between the averages of pre and post measurements at the level of some physical variables and skillful performance for basketball players of the experimental research group, whereby the value of (T) ranged between 4.14 : 4.85) and it is bigger

than its value at the level of (0.5).

The researcher attributes this improvement to the applying of the suggested training program by using the mooted S.A.Q trainings which led to improving the skillful performance level by developing the ability to connect between the utilized technical skills in the attack skills for the experimental group.

Rising the improvement ratio of physical abilities is due to the positive influence of training group which included individual and doubles training which led to arousing the interest of the players and pushing them to exert some more effort, thus rising the efficiency of wetware and increasing the interconnection between sensual nerves which influenced by the stimuli which existed in the program and its interrelation with kinetic nerves which led to improving and developing physical abilities mooted. And this agree with what Zoran referred to (2005)(82) in that rising physical level being accomplished through the player's feeling/sensation of all the parts of his body and his different positions.

This is what has been cleared up from schedule (5) which refers that there are statistic denotable variances between pre and post measurements for the experimental group in physical tests.

The researcher attributes this to the good planning of S.A.Q trainings program and rationing training loads in a scientific way which is suitable to the age and training phase of the training sample and to the use of accommodative training as a main part in developing physical abilities.

The researcher sees that the suggested program by using S.A.Q trainings included accommodative training and this in developing traditional speed element which its concern is to generate unintentional muscle constriction working on arousing other sensual organs, thus increasing the number of kinetic units in the muscles which work on the joints which are necessary for increasing muscle strength, and also for matching S.A.Q trainings with the motions being performed in the competition.

This agreed with what has been mentioned by Zoran Malonovic(2012 )(28) , et al in that S.A.Q training is considered one of the training shapes which contributes in improving some special physical abilities.

This study agrees with Ahmed Mahdy (2002) (3) , , Tarek Shokry (2003) (5) , , MohamedAbdul Daem (2000) (12) in the importance of connecting between physical abilities with skillful performance in basketball.

The first hypothesis has been achieved which stipulates that there are statistic denotable variances between pre and post measurements at the level of some physical variables and skillful performance in basketball in favor of the experimental research group.

**Table (2)**  
**The denotation of the variances between pre and post measurements at the level of some physical variables and skillful performance for players in basketball for the experimental research group**

Tests	Scale = Measurement	Pre measurement (sn)		Post measurement		Differences between averages	Improvement percentage	(T) value	The level of denotation
		average	Standard deviation	average	Standard deviation				
-strength of arms muscles	Number	18.15	1.32	20.60	0.51	2.45	13.49%	2.98	sig
-Strength of legs muscles	Kg	41.32	0.69	43.90	0.25	2.58	6.24%	2.87	sig
-The ability of legs	CM	29.20	0.47	31.17	0.32	1.97	6.74%	2.74	sig
-The ability of arms	M	6.68	0.32	7.15	0.47	0.47	7.03%	2.65	sig
-The balance of right leg	S	7.12	0.47	9.20	0.32	2.08	29.21%	2.87	sig
-The balance of left leg	S	7.10	0.62	9.18	0.15	2.08	29.29%	2.91	sig
-Dribbling ending with point	S	8.36	0.62	7.88	0.11	0.48	6.09%	2.47	sig
-Quickness of point	Number	7.31	0.21	9.50	0.24	2.19	29.95%	2.65	sig
-Quickness of dribbling	S	11.28	0.52	10.60	0.18	0.68	6.41%	2.36	sig

The value of (T) at a denotation level  $(0, 5) = 1, 860$

From table number (2), it becomes clear that there are statistic denotation between the averages/medians of pre and post measurements at the level of some physical variables and skillful performance level in basketball in research control group, whereby (T) value ranged from (2, 47 to 2, 98) and it is bigger than its value at denotation level (0, 5).

The believes that this improvement belongs to due to the regular attendance of the training by the players in the college, which led to spontaneous improvement in the physical abilities and the

skillful performance level for the attack skills of basketball.

According to the researcher, these results are attributed to the positive effect of the program (traditional) of the control/discipliner group at the performance level in basketball, which depends on the explaining and model way.

It includes explaining performance and clarifying the educational points of the skill with correcting mistakes which contributes to improve the levels of the players, besides the explaining includes the technical and legal information which is related to skills.

Also the researcher attributed this progress to the efficiency of the individuals of the control group, where the regularity and continuing in practice in addition to continual competition between players to give the best physical and skillful performance had a great effect on raising physical abilities level which reflected on developing skills aspects.

From what have been mentioned above, it is clear that the results achieve the study hypothesis which stipulates that there are statistic denotation variances between

the averages of pre and post measurements at the level of some physical variables and skillful performance level in basketball in research control group.

Thereby the second hypothesis has been achieved which stipulates that there are statistic denotation variances between the averages of pre and post measurements at the level of some physical variables and skillful performance level in basketball in research control group to post measurement.

**Table (3)**

**The variances denotation between the two post scales/measurements at the level of some physical variables and skillful performance level for basketball players on experimental research group and control group**

Tests	Measurement Unit	Experimental group		Control group		(T) Value	The level of denotation
		Arithmetic Average	Standard deviation	Arithmetic average	Standard deviation		
		-strength of arms muscles	Number	24.45	0.62		
-Strength of legs muscles	Kg	46.70	0.36	43.90	0.25	3.24	sig
-The ability of legs	CM	34.18	0.32	31.17	0.32	3.64	sig
-The ability of arms	M	8.15	0.47	7.15	0.47	3.84	sig
-The balance of right leg	S	11.12	0.36	9.20	0.32	2.98	sig
-The balance of left leg	S	12.60	0.85	9.18	0.15	3.87	sig
-Dribbling ending with point	S	6.22	0.11	7.88	0.11	3.32	sig
-Quickness of point	Number	12.25	0.02	9.50	0.24	3.45	sig
-Quickness of dribbling	S	8.55	0.15	10.60	0.18	3.66	Sig

The value of (T) at a denotation level  $(0, 5) = 1, 746$

From table number ( 3) statistic denotation variances it becomes clear that there are between the averages of post

measurements of the experimental research group and the control group at the level of some physical variables and skillful attack performance in basketball, whereby the value of the (T) ranged between (2, 98 : 3, 54) in favor of the experimental group.

The researcher imputes this improvement to the applying of the suggested training program by using the mooted S.A.Q trainings which led to improving the skillful excellence performance level by developing the ability to connect between the utilized technical skills and the transition from the preparation phase to the sharpshooting of the players of the experimental group.

The researcher attributes this to the good planning to the program and rationing the training loads in a scientific way which is suitable to the age and training phase of the research sample resulting in physical improvement reflected on performance level in basketball.

And that is confirmed/underscored by Essam Abd el khalik (2003) (8) and Mostafa Zidan (2003) (13) that

succeeding in performing any skill requires developing physical components leads to perform it perfectly.

This is Accordant to what has been achieved by

Mostafa Zidan (2007) (15) that rehearsing on skill solely isn't enough to improve this skill and obtaining fruitful results. In addition to developing the skill, the 'intimateness' abilities must be developed related to the skill itself.

The researcher sees that practicing basketball requires high physical and skillful abilities, muscle concordance, kinetic creativeness, feeling the relationship between time and place (setting), vacuum and feeling the dynamic performance. Which is prescribed by variety and comprehensibility and it leads the practitioner to have high muscular neural controllability which isn't available expect through physical and skillful abilities according to modern manners.

The researcher also imputes this to S.A.Q trainings which led to improving the strength and ability/capacity of the muscles of the legs and arms, also balance components

whereby succeeding in attack skills in basketball requires legs muscle ability until the player becomes able to jump straight ahead and above to the maximum distance. And also the arms ability till hitting becomes distinctive by distinguishable speed strength. And this result matching what has been pointed to by (Fan) that basketball player has to possess physical components (muscle strength and ability) because of their concordance with skillful performance (20, 22, 23).

Also the researcher attributes this improvement of skillful performance level to S.A.Q trainings which led to strengthening stem muscle because of its great influence on performing this skill and this agreed with Hall who said that sharpshooting effectiveness depends on the balance during the process of rising (jumping) for sharpshooting.

The researcher attributes the results of this study to that performing attack skills requires practicing a lot of muscle aggregates, besides arms and shoulder in order to perform it by the required strength.

This is accomplished through conveying the generated strength from the muscle of the foot to stem to be finished by departing the ball away from the hands which requires kinetic conveying to convey strength between the parts of the body and employ it in a way which guarantees that the sharpshooting will be stronger and faster as possible as it can.

The results of the study are compatible with the study of Jhon (2009)(22) in the believe that S.A.Q trainings contribute in improving strength and muscle ability.

Thereby the third hypothesis has been achieved which stipulates that there are statistic denotation variances between the averages of post measurements of the experimental research group and the control group at the level of some physical variables and skillful attack performance in basketball in favor of the experimental group.

### **Conclusions:**

-S.A.Q trainings led to improvement in physical

variables level for basketball players.

-S.A.Q trainings led to improvement in skillful performance level for basketball players.

### **Recommendations:**

Through what has been achieved of the research results by the following have been recommended:

-Applying S.A.Q trainings in basketball on attack and defensive skills.

- Diversifying S.A.Q trainings between upper and lower limb and consecrate Gradating in variances and motivations for each individual.

-Conducting more similar studies to stand on the role of S.A.Q trainings in improving physical and morphological variables for the players in different sports.

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