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Original article

EFFECT OF S.A.Q EXERCISES ON CERTAIN PHYSICAL VARIABLES AND JUMP SHOT IN HANDBALL

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Abstract

Aim. Speed, Agility, Quickness is a system of training that enhances performance levels in all sports. Gradual and progressive use of the SAQ Training exercises, drills and methods leads to improvement in: Acceleration, Speed, Arm action, Footwork, Response time, Explosion. The main objective of this study was to investigate the efficacy of (speed, agility, and quickness; SAQ) method on jump shot and physical performance variables for youth handball players.

Methods. Twenty handball youth players were divided into two groups: Experimental (n = 10) and Control (n = 10). Each group trained three times a week for ten weeks; all training modalities were performed during each session. Parameters assessed were height, weight, training experience.

Results. The results revealed significant differences between pre- and post- measurements (speed- agility and reactive agility tests).

Conclusion. Our suggestion is that youth athletes can benefit by reinforcing muscles and improving the speed, agility, flexibility and jump shoot performance through SAQ exercises.

Keywords: SAQ exercises, Jump Shot, Handball

Introduction

It has become a scientific research of the most important factors upon which to develop the communities in order to reach the highest levels in all public areas, and field athlete in particular, through the identification of what God gave human abilities and energies of multiple, in an attempt to achieve the greatest benefit from the scientific facts and theories modern in the field of sports, fitness and sports Education is one of the areas that affect the human as an important and essential element in the construction of the individual, and set it up in an integrated manner on a scientific basis.

The evolution of mathematical and natural sciences accompanied by large changes in sports training theories and the evolution of biological, biomechanics and physiological sciences added a lot to the attention of sports training. Amr (2014) indicated that every observer of the evolution of sports levels in the world and ponder it realizes that the sports training great in the preparation and the formulation and development of affair human capabilities of its various dimensions for maximum what he can from inside the human capabilities and energies of the bombing in the direction of the desired goal.

Whereas it is the most important sports

training in general and training handball goals is a private individual access to the highest possible level athlete, so it was necessary to direct the training process to prepare the rider preparation integrated in all aspects (physical -skills- physiological-psychological). Given the different ways and training programs become necessary on the coach to choose training programs and methods that fit with the characteristics and potential of his players and that work on the physical capabilities of the development where they have in turn lead to improve the level of digital achievements.

It is a wonder that handball has not taken off in Egypt. It's a combination of three of the nation's favorite sports - soccer, netball and basketball - it's fast, it's fun and it can be played anywhere: indoors, outdoors or on the beach.

The fact handball has become popular in Egypt. High scoring, dynamic and athletic, it is an outstanding spectator sport.

In handball, a three-second rule ensure players cannot dwell on the ball and while there is no basketball-style shot clock, if a referee (there are two) rules a team is not trying to score, he/she can award possession to the opposition.

Training that has become in the recent period commonly used by athletes is SAQ exercise where

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beginners and those with high level.

In addition, refers Mario, et al. (2011) that the term SAQ is derived from the first letters of both of the transitional Speed, agility and Quickness.

Velmurugan & Palanisamy (2012) noted that SAQ exercises modern training system produces integrated effects of many physical capacities within a single training program.

Moreover, refers Remco, et al. (2009) that exercises SAQ integrated training system is designed to improve acceleration, compatibility between the eye and the hand, the explosive power, the speed of response.

On the nature of the correlation between the three training elements (transitional speed agility and speed motor).

Shows Baechle, et al. (2000) that the transition speed is the player's ability to perform sequential and similar movements in the shortest possible time, while it is agility to change the conditions in the air, and the ability of the motor speed is the maximum contraction or motor response to muscle in as little time as possible.

And explains Vikram (2008) the difference between the transitional speed and speed motor that transition speed need time to reach the maximum speed of which must be incremental, and this is evident in the running races in which the player for a time sufficient needs to get from speed zero to maximum speed, while speed motor. They do not need to this time, but the maximum muscle contraction in the shortest possible time and appear in the explosive movements of some sports.

While sees Baechle, et al. (2000) to the existence of similarity between the terms of motor speed and the speed of the motor response.

And it refers young & Sheppard (2006) that the concept of agility of the concepts that are frequently around questions by researchers and thinkers in the field of sports, and so far there is no consensus in the sports field on the nature of the concept of fitness, and this may be due to association with some physical and motor abilities.

Baechle, et al. (2000) see that the agility and skill of an open vehicle containing multi-directional movements and at different speeds. He adds Amr (2012) its explosive stop and change direction and acceleration in a different direction. While Leary Young and the Faroe Young & Farrow (2006) It's multiple skills, including the ability to change directions quickly, followed by the start explosive stop, followed by a slowdown and then change direction and acceleration again while maintaining a dynamic balance during the performance.

In addition, sees Shepard and Young Sheppard & Young, (2006) that begin agility to respond to a certain sexy and are therefore affected by cognitive skills and decision-making factors, and is therefore a full body change rapidly and move in reaction to the exciting direction.

This has been confirmed Louise, (2011) that agility reaction is one of modern concepts in Physical Education, where she was able to change the traditional agility outlook and generally accepted by the coaches to the modern look integrates the traditional concept of both of perception and factors of decision-making.

It is through access to the global information network (Internet) noted researcher modernity SAQ training in the sports field indicates. Where Velmurugan & Palanisamy (2012) see that SAQ training is one of the modern training formats in the field of sports and studies on physical and physiological effects on youth and adult players differed in results and different way to be dealt with in the sports field.

Based on the foregoing, the researcher to conduct this study under the influence of SAQ agility drills on the reaction and the level of jumpshoot performance of the emerging handball title.

Methods

Twenty handball youth players were divided into two groups: Experimental (n = 10) and Control (n = 10). Each group trained three times a week for ten weeks; all training modalities were performed during each session. Parameters assessed were height, weight, training experience.

Physical tests:

1. Test the movement speed (30 m running from high start)
2. reactive agility test (design researcher)
3. General coordination test (pass the tennis ball on the wall)
4. Flexibility test (flexibility backbone - flexibility foot)
5. muscularpower test (broad jump - throwing medical ball)

Test skills

1. *Measuring the performance of the Jump Shoot level.*

Determinants of SAQ training program:

Duration of the program:

-Duration of the program (8) weeks.



The number of training units:

- The number of weekly units (3) units weekly at a rate of 3×8 weeks = 24 units proposed program.
- Training method used:
 - The researcher used the interval method of high intensity, and Recurring training, training ring, in addition to the content of the exercises of a nature similar performance to performance in handball.

The scientific basis of the training program in a way pregnancy is high intensity interval:

- • Repetition maximum 30 w determined for each exercise of exercise selected.
- • **Identify load each exercise.**
 - weightlifting exercises for the development of the transition speed is determined by intensity of 75% taking into account the gradient in those wrenches, and to be a repetition of 8-12mrh.
 - Rest between each exercise 60 leads, including the prolongation exercise because a circuit training exercises, taking into account the use of the pulse at rest and after effort in determining rest periods used under discussion.
 - Training department selected lead three times punctuated by periods of rest between each of them because the circuit training group.
 - 2-4q rest between groups.
 - Repetition maximum is measured through the 30th of each exercise every 3 weeks to determine the load each stage of the program.
 - Determine the severity of the loads and weight of the weights or resistors used in kg according to the weight and the objective to be emerging from the training.

- Selection and training department content:

- (25) Exercise to put it inside the training departments in the form of plants have been identified each circle on the number of exercises ranked according to the objective to be achieved. with the performance of the departments training has also been mentioned in training programs, this taking into account the researcher in the selection of quality exercise to be similar to the nature of the performance in the hand and muscles working in performance Find football, along with muscle work between the muscles working and Anti balance.

Module parts:

A - Part primer (preparatory):

- This section includes warm-up exercises for the purpose of heating up the muscles and blood movement within the muscles and raising the body

temperature and the development of the central nervous system.

- This part takes between (12-20q) from the module time.

(B) The main part:

- SAQ includes exercises for the development of physical capabilities, and this part take between (40-45q) and (60-70q) Max.

C-concluding part:

- This is followed by the main part of the period of calm and relaxation, it included a set of exercises designed to physiological responses return to normal levels, and this part take between (5-10q).
- Accordingly, the researcher form the training load cycles within period cycle, consisting of (8) weeks training in accordance with the foundations of the formation of the training load, where the division of the total period to weeks and then was division per week (3) training units daily used wave way. (1: 1), (2: 1),

Steps to implement Search:

- After selecting the key variables, tools and devices used, the researcher conducting physical measurements and the level of performance of Jump Shoot in light of the following procedures.
- A tribal measurements of the physical tests and lasted two days and then on 11, 01/12/2013 m.
- Tribal conduct measurements of the level of performance of Jump Shoot will be held on 13.01.2013 m
- Start implementation of SAQ training program on 01.15.2013 where the implementation of the program took (8) weeks and consists of (24) by a training unit (3) training units per week
- A posteriori measurements directly after the completion of the application of the basic experience will be held on 06.03.2013 and the same tribal m measurements sequence.

Statistical analysis

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

Results

Table 1. Age, Anthropometric Characteristics and physical variables of the Groups (Mean ± SD)

Variables	Mean	Standard Deviation	coefficient of skewness
Age (years)	13.12	1.23	1.05
Height (cm)	164.5	6.34	0.37
Weight (kg)	47.32	5.7	0.45
Training experience (years)	4.31	2.63	0.18

Table 1 shows the age, anthropometric characteristics and physical variables of the subjects. There were no significant differences observed in the anthropometric characteristics and for the subjects in the groups.

Table 2. Mean ± SD and "T" sign. Between two Groups (experimental and control) in physical variables and Performance level of jump shoot

Variables		Experimental group		Control group		T sign.
		Before	After	Before	After	
Coordination (freq.)		11.90 ±0.73	13.10 ±0.87	11.850.66 ±	11.99 ±0.63	Sign.
Agility (cm)		12.04 ±0.18	11.82±0.20	12.08 ±0.25	12.00 ±0.19	Sign.
Flexibility (cm)	Shoulders	27.00 ±0.81	27.90 ±0.78	26.95 ±0.92	27.11±0.88	Not Sign.
	backbone	6.90 ±0.87	7.60±0.51	6.92 ±0.91	7.05±0.76	Sign.
Movement speed (second)		6.22 ±0.1	6.14±0.09	6.23±0.2	6.19±0.17	Sign.
Arm power (cm)		59.42±3.84	62.22±4.89	59.25±4.26	60.74 ±4.38	Not Sign.
Leg power (cm)		37.51 ±4.26*	45.22 ±3.79	38.05 ±4.37	40.31 ±3.28	Sign.
Jump shoot Performance Level (Degree)		0.61 ±0.08	0.50 ±0.05	0.62 ±0.08	0.59 ±0.06	Sign.

It is clear from Table (2) the t-test showed statistically significant differences between the post measurements for the experimental and control groups in all variables of physical and jump shoot Performance Level for the experimental group except shoulders flexibility and arm power.

Discussion

“Speed” is about max velocity or how fast you can run. Generally, max speed development requires about 6-8 seconds at max or near max effort with a full rest recovery so your heart rate is about normal before beginning the next exercise.

SAQ is structured by a system a progressive sequence of training ‘phases’. Called the ‘Continuum’ it gives coaches a natural confidence in delivery. Players are guaranteed to see improvements in their explosive, multi-directional speed, agility and quickness, acceleration/ deceleration, quality and speed of response control as they progress. A brief description follows:

The results confirmed by Adams, et al. (1992) that the activity of reflection rubber allows excellent transport special force to the same speed and similar movements that require high capacity of the trunk and legs and show results when the performance of the broad jump.

Velmurugan & Palanisamy (2012) of SAQ exercises confirm this that work to stimulate muscle spindles, resulting in high-voltage motor units in the liberal and raise other receptor is working to increase the number of active motor units, which are the cause of increasing the power generated.

This is in line with what was said Zoran, et al. (2012) that SAQ training is one of the training forms that contribute to the improvement of some physical



capabilities and that of the most important kinds of speed.

The results of this study are consistent with the study of both Vikram, (2008), Remco et al. (2009), Mario, et al. (2011) in that SAQ exercises contribute to an improvement in acceleration and the ability of the two men muscle, agility and speed motor time.

This is confirmed by Louise (2011) that success in the performance of any skill development needs to contribute to the physical components of performance are perfect.

This is in line with the findings of Marwan (2003) that the training on skill alone is not enough to improve this skill and get fruitful results, as it is next to the skill development to be the development of motor capabilities of the skill itself.

And improved muscle strength link improved performance skill level confirms Enrique, et al. (2007) that the strong muscle necessarily fast muscles and the muscle power is of key physical elements which must work to develop even working to improve the speed motor.

Also due researcher improvement in the performance of the skill level of the jump shoot that SAQ exercises development of distinctive force as fast as the two men that have contributed significantly and directly in improved speed as the increase in distinctive force as quickly as a result of using SAQ training and working to stimulate the motor units, which leads to the involvement of a large number of them resulting in constriction of the forces and fast runs on the explosive increase performance and speed. Where confirms Amr Hamza (2012) that the muscular contraction of the factors on which depends the speed and Dick pointed out, citing that, as quickly as distinctive strength is the basis for the speed of the running time.

This is in line with the saw Marwan (2003) in the need for matching muscle contractions prevailing exercises own selected as much as possible with the incident itself through the skill of the performance of both the quality of these contractions or the degree of severity.

Conclusions

In light of the findings of the researcher of the research recommends the following results:

- Application SAQ exercises in handball.
- Diversity in training SAQ between the upper end and the lower taking into account the gradient in intensity and taking into account individual differences and motivation for each individual.

- Further similar studies to determine the role of SAQ exercises to improve the morphological and physiological variables for players in different sports.

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References

- Adams K, O'Shea JP, O'Shea KL, 1992, The effects of six weeks of squat plyometric and squat plyometric training on power production, *Journal of Applied Sport Sciences*.61, pp:36–41.
- Akhil M, Vikram S, Shyam LMN, Rai, 2011. Effect of six weeks S.A.Q. drills training programme on selected anthropometrical variables, *Indian Journal of Movement Education and Exercises Sciences*, Vol. I No. 1, PP.121-129
- Amr H, 2012, Effect of complex training on certain physical variables for young fencers, PhD dissertation, Zagazig University
- Baechle T, Earle R, Wathen D, 2000, *Essentials of Strength Training and Conditioning*, second edition. China: Human Kinetics.
- Enrique L, Francisco S, Enrique N, 2007, Analysis of the fencing lunge flight phase in EPEE, 12th Annual Congress of the ECSS, 11–14 July, Jyväskylä, Finland
- Jon L, Oliver and Robert W., Meyers, 2009, Reliability and Generality of Measures of Acceleration, Planned Agility, and Reactive Agility, *International Journal of Sports Physiology and Performance*, 4, 345-354.
- Louise E, 2011: Sport-specific video-based reactive agility training in rugby union players, Thesis presented in partial fulfillment of the requirements for the degree Master of Sport Science at Stellenbosch University
- Mario J, Goran S, Darija O, Fredi F, 2011: Effects of speed, agility, quickness-training method on power performance in elite soccer players, *Journal of Strength and Conditioning Research*, 255/1285–1292
- Marwan A, 2003, *Handball*, Arabian publish, Egypt
- Neitzke H, Miller M, Cheatham C, O'Donoghue J, 2010: Preplanned and reactive agility training influence on agility test performance in male adolescents, *Journal of Strength & Conditioning Research*: January - Volume 24 - Issue - p 1
- Remco P, Jonathan B. and Andrew E, 2009: Effects of SAQ Training and Small-Sided Games on



- Neuromuscular Functioning in Untrained Subjects, International Journal of Sports Physiology and Performance, 4, 494-505
- Sheppard JM, Young WB, 2006: Agility literature review: Classifications, training and testing, Journal of Sports Sciences, September; 24(9): 919 – 932
- Tim G, Dean B, 2009, Reactive agility of rugby league players, Journal of Science and Medicine in Sport, 12, 212—214.
- Velmurugan G, Palanisamy A, 2012, Effects of Saq Training and Plyometric Training on Speed Among College Men Kabaddi Players, Indian journal of applied research, Volume:3, Issue: 11, 432
- Vikram S, 2008, Effect of S.A.Q. drills on skills of volleyball players, A THESIS, Submitted to the Lakshmibai National Institute of Physical Education, Gwalior.
- Young WB, Farrow D., 2006, A review of agility: Practical applications for strength and conditioning. Strength and Conditioning Journal 28(5): 24-29.
- Zoran MG, Nebojša T, Nic J, Krešimir Š. 2011. Effects of a 12 Week SAQ Training Programme on Agility with and without the Ball among Young Soccer Players, Journal of Sports Science and Medicine , 12, 97-103.