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Effect of (S.A.Q) exercises on some biochemical variables for 100m hurdles runners

Suha Ali Tahir [1], Abeer Dakhil Hatim [2]

E-mails: shaimaa.jaafar1104a@copew.uobaghdad.edu.iq [1], abeer@copew.uobaghdad.edu.iq [2]

1&2 Physical Education and Sport Sciences college for women

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Abstract

Finding training methods and methods and innovative exercises based on various sciences and its reflection on new ideas, and perhaps one of these exercises is the S.A.Q exercise style, and Sakyo exercises are among the modern exercises used in the sports field as they improve performance efficiency. As for the problem of the research, the two researchers noticed that there is a decline in completing the 100m hurdles, this requires investigation and search for the reasons for this decline and standing on the obvious weaknesses in the stages of the sprint, which results in a loss of time for the Iraqi runners, compared to the recent developments of this event, which reflects the level of achievement. (S.A.Q) in some biochemical capabilities and the achievement of 100m hurdles for female 100m hurdles runners under (20) years old and on a sample of (8) runners, and after conducting pretests with the help of the assistant work team and applying the program for Sakyo exercises and then conducting posttests to obtain the results. Collecting data and processing it statistically, the two researchers concluded that the adoption of Sakyo exercises (S.A.Q) works to develop biochemical variables and achievement in 100 meter hurdles sprinters. The two researchers recommended the application of the proposed program using Sakyo exercises (S.A.Q) for female runners in the 100-meter hurdles competition with the same intensity, repetitions, and inter-comfort for its role in improving the levels of biochemical variables (sodium, calcium, and enzyme (C.P.K)

Keywords | **Sakyo exercises, 100m hurdles**

Introduction:

The sports training process, which is based on sound scientific foundations and rules, is one of the main ways to reach the goals and achieve the best results in sports. Arab and Asian, and this was the result of reliance on sports training methods and means based on scientific standards and foundations, which led to an increase in the efficiency or outputs of the training process, as each athletics event has its own specifications and requirements, including the 100m hurdles event for women as the female runner must be distinguished by special characteristics and possess high-level physical capabilities and special training requirements to reach her to a motor and skillful performance along the stages of the race in order to achieve the required achievement in this event, and this is what researchers and trainers seek in this field to find means, methods, new training and exercises based on various sciences and their reflection on new ideas, and perhaps one of these exercises is the technique of Sakyo exercises (S.A.Q), and Sakyo exercises are among the modern exercises used in the physical field. It also improves the efficiency of performance by developing the ability to perform rapid movements, and contributes to the development of some special abilities of the 100m hurdles runners, as well as some biochemical variables, which is reflected in the performance as required. The two researchers hope that this method will have an impact that it can have. In developing biochemical variables and bringing about the required adaptation by focusing on some compounds in the blood, especially minerals (calcium, sodium

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and CPK enzyme) that play the main and direct role in the continuity of the vital functioning of the body's cells and delaying the onset of muscle fatigue in light of the use of biochemical responses, creating conditions and research on the means that lead to the development of performance efficiency and the upgrading of training on the upgrading of the training process. And its reflection on the achievement of 100m hurdles, and from here the importance of this study emerges on the preparation of Sakyo exercises (S.A.Q) for the purpose of bringing about development in the level of these capabilities of the runners and then trying to keep pace with the internationally developed level in them. Falling and standing on the obvious weaknesses in the stages of the sprint, which results in a loss of time for the Iraqi runners, compared to the developments that have taken place for this activity in recent years, which reflects the level of achievement, and this generates questions for the two researchers, especially what happens in terms of biochemical variables in the muscles and blood and is reflected in the physical and motor capabilities, which The emergence of fatigue caused an attempt to answer it by finding new exercises that fit the requirements of this event. Therefore, the two researchers decided to prepare the Sakyo (S.A.Q) exercises in the training units, which had a positive effect on achievement in terms of appropriate training requirements for this type of competition to build their capabilities in some compounds in the blood Especially minerals (calcium, sodium and CPK enzyme) and prepare the body for adaptation to show its positive impact in terms of studying this problem and Finding successful solutions in order to provide a correct scientific method through which a vital adaptation is gained from training and to provide a simple part of the training solution to achieve new results and thus to keep pace with the future development in the developed countries of the world. The research aims to prepare Sakyo exercises (S.A.Q) for runners 100m hurdles under (20) years old. To identify the effect of Sakyo exercises (S.A.Q) on some biochemical abilities and the achievement of 100m hurdles for runners 100m hurdles under (20) years old. Research hypotheses there are significant differences Statistical significance between the results of the pre and post-tests of the experimental group in some biochemical variables and the completion of the 100 m hurdles. Research fields The human field: 100 m hurdles runners. Temporal domain: the period from 7/14/2022 to 9/10/2022 spatial domain: Sulaymaniyah

Method and procedures:

The two researchers used the experimental approach by designing one experimental group with a pre and post-test due to its suitability to the nature of the research (11). The research sample, the research community was determined by the intentional method, and they are the 100m hurdles runners from the youth category. And the selection of Sulaymaniyah club runners in athletics, and the sample was intentionally chosen by the method of the pre and post-tests, and their number is (8) players.

The means of collecting information Arab and foreign sources, the global network of information on the Internet, personal interviews, the tools used in the research, an electronic (2) stopwatch type Casio, different training cones, Hurdles, jump boxes, test square box, weights, medical scale, metal metric tape measure, Korean HP laptop computer, electronic hand calculator (CASIO), legal running field for athletics, starting blocks, plastic cones of different sizes, flags (4)) white colors, centrifuge, plastic medical syringes, bottles for preserving blood serum, special kits to find preserving minerals in the blood, a set of supplies for drawing blood,

The tests used in the research after reviewing the relevant scientific sources, a set of biochemical measurements were prepared at

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Runners running 100m hurdles About the validity of these biochemical measurements for research Biochemical measurements were determined. And he showed it to a group of experts.

The measurements of biochemical variables, the purpose of the test: measuring the biochemical variables in the blood. Registration: The results of the variables are taken after being processed in the laboratory in the resting position as follows: - Calcium (Ca) Sodium (Na) Enzyme C.p.K2.

100m hurdles run test: (3) Test name: 100m hurdles run for young women Test objective: Covering the test distance (100) m in the shortest time. Test tools: (10) barriers with a height of (91) cm. The start and the first hurdle are (13) meters, the distance between the hurdles is (eight and a half meters), and the distance from the last hurdle to the finish is (10.5) meters. Description of performance: the experimenter takes the starting position from sitting, and upon hearing the start signal, she sets off at full speed to cover the race distance and to pass the ten hurdles, and the time is calculated from the beginning to the moment of crossing the finish line, the exploratory experiment is a mini-practical training for the two researchers to find out for themselves "the negatives and positives that they encounter during the test in the future" (4). Therefore, the two researchers conducted an exploratory experiment on (Thursday) on (14- 7- 2022). On a sample consisting of three players outside the main sample.

The pre-tests, the two researchers, along with the assistant work team that the two researchers approved, carried out the tests on the research sample on (Monday) on (7/18/2022) using the tests approved in the research, at (9) a.m. Right (to reduce the effect of circadian rhythms) and ask the sample not to eat breakfast, then the specialized medical staff and after taking preventive scientific measures for the accuracy of the measurements, which are as they come during the blood draw, the tester should sit at an angle (90) All analyzes were done using (one-time use) Syringes and Whit tubes were transferred to the device, where they were chemically treated by the analyst (Zana Hussein Muhammad) of the laboratory (Bakhshin Hospital) using special chemicals to extract the concentration of calcium, sodium and enzyme (CPK) in the blood (12). Achievement test. This test was conducted at four o'clock in the afternoon in the stadium of the College of Physical Education at the University of Sulaymaniyah. After the test, a blood sample was drawn again immediately after the completion. Withdrawing blood, the experimenter should sit at an angle of (90 degrees) and in the same way as before.

The main experiment (Sakyo exercises (S.A.Q)

The two researchers conducted these exercises during two units per week within the curriculum prepared for training the speed component (Sunday and Thursday). During the main part of the training, the exercises adopted an integrated complementary training system aimed at stimulating competition by dividing the speed into three main components: linear speed and speed of change of direction. And the interactive motor speed, the number of training units in the main experiment was (16) training units, within the main section, the exercise time ranges between (30-50) minutes from the time of the main section for team training, the use of fast performance for a short time in the development of interactive movement:

• Use agility exercises and then go
• Using jumping and spinning exercises, then launching
• Use front, back and side bouncing exercises, then launch
• Using jumping exercises from the side and over a barrier and then launching
• Use the ground ladder exercises and then launch
• Use take-off exercises, raise the knees, run by jumping, and then take off

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• Using partridge and kicking exercises, then launching
• Using different distances to develop linear speed
• Diversifying and changing the performance of exercises from one training unit to another
• The training shall be similar to the effectiveness requirements
• Use rest periods
• All exercises performed at an intensity of (90% -95%)
• The groups were determined to be (3-5) groups for each exercise
• The number of repetitions ranged from (3-5) for each exercise
- The sample underwent a training program for a period of (8) medium weeks, each circuit consisting of four weeks, the formation of the monthly pregnancy (1), i.e. 3 weeks of ascent and one week of descent. Sakyo exercises (S.A.Q) were applied to the experimental group during the period of special preparation. The two researchers, along with the assistant work team, conducted the post-tests on the research sample on Saturday (9/10/2022), taking into account the same conditions related to the pre-tests. Arithmetic, median, skewness coefficient, standard deviation, t-test for the significance of differences between the means for related samples.

Results:

Table (1)
Shows the normal distribution of the sample in some research variables

Variables	Measurement unit	N	Asthmatic mean	Median	Standard deviation	Coefficient of torsion
Calcium	Mg/dl	8	8,312	8.35	0.241	0.049
sodium	u/L	8	110.37	110	2.503	2.375
at restC. p. K	Mmol/L	8	130,25	130.5	2.375	-0.650
after C. p. K completion	Mmol/L	8	163.25	163.5	2.712	-0.007
completion	Second	8	18.065	18.135	0.544	-0.827

It is noted from Table (1) that the values of the torsion coefficient were confined to (+3) all of them, and this indicates the homogeneity of the research sample in the variables referred to in the table, which are within the curve.

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Table (2)
shows the arithmetic means, standard deviations, variances, and the calculated t-value for the experimental group in the pre and post-tests.

Variables	Measurement unit	Pre test		Post test		C D	A D	Calculated T value	Error level	Significant
		A	STD	A	STD					
Calcium	Mg/dl	8.312	0.241	9.387	0.564	1.075	0.528	5.753	0.001	Sign
sodium	u/L	110.3	2.503	131.5	4.407	21.125	6.081	9.825	0.000	Sign
at C. p. K rest	Mmol/L	130.2	2.375	133.5	2.138	3.250	2.549	3.606	0.009	Sign
C. p. K after completion	Mmol/L	163.2	2.712	155	3.207	8.25	3.011	7.747	0.000	Sign

At a degree of freedom (7) and an error level (0.05).

Displaying and analyzing the results of the differences between the pre and post-tests by completing the 100-meter hurdles run for the experimental group.

Table (3)
shows the arithmetic means, standard deviations, variances, and the calculated t-value for the experimental group in pre and post-tests.

Variables	Measurement unit	Pre test		Post test		C D	A D	Calculated T value	Error level	Significant
		A	STD	A	STD					
Achievement 100m hurdles	Second	18.065	0.554	17.575	0.719	0.490	0.422	3.277	0.014	Sign

At a degree of freedom (7) and an error level (0.05).

Discussion:

The results of the biochemical variables (calcium level, calcium level, and C.K.P enzyme level) and the completion of 100 barriers show that there are significant differences between the tests between the pre and post-tests of the experimental group, and in favor of the post test, as the biochemical variables have a relationship with physical abilities and are related to the type of exercises (13), and that Achievement of (100) m hurdles related to physical capabilities (such as speed and strength) and movement (such as agility, flexibility and compatibility), as it is an important indicator of the state of sports training and the changes that occur in the body as a result of training efforts. The functional variables are one of the factors on which modern training

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depends to raise the level of performance, and without that the level of the athlete cannot advance. Calcium, calcium level (14), and C.K.P enzyme level) after the two groups went through the training experiences and made the required adaptations. It increases the ability of the individual's performance as a result of performing physical exercises for several days, weeks or months, by adapting the body's systems to the optimal performance of those exercises (10). As the physical effect works to bring about physiological changes as a result of the external load through the increase in the physical efforts that occur when the training load is higher than normal and the gradual increase and thus requires corresponding physiological adaptations, as the process of sports training occurs physiological adaptation in all organs and organs of the body due to This indicates an improvement in the functional work that occurred in the respiratory circulatory system (9), and an improvement in the rate of production of energy systems as a result of the quality of the exercises. The training method is from that practice or that effort" (6) Also, the training method in which both the coach and the researcher worked to improve the achievement (8), as (Kamal Jamil Al-Rabadi) shows that "the training methods are to develop and improve the player's physical fitness to achieve sporting achievements We do not believe that a coach can dispense with the use of these methods (127:1), which have become the basis for building and developing, and the important thing about these methods is that they are used for all abilities (2). The different forms of sport, and the coach has only to be an artist in choosing the appropriate method for the activity in which a method can be used more than the other methods (5) and (Matheus) affirms: "The regular practice of training in a serious manner leads to a change in job rates This effect appears in their responses to training loads" (7). Thus, these Sakyo exercises (S.A.Q) work and create adaptations in the rate of biochemical variables (calcium level, sodium level, and C.K.P. enzyme level) and achievement, and the results were logical.

Conclusions:

1. Adopting Sakyo exercises (S.A.Q) improves the level of calcium and sodium in the blood of 100-meter hurdles runners.
2. Adopting Sakyo exercises (S.A.Q) improves the level of C.K.P. enzyme at rest and after effort for 100-meter hurdles runners.
3. The adoption of Sakyo exercises (S.A.Q) works to develop the achievement of the 100-meter hurdles competition runners

Recommendations and suggestions:

1. The need to adopt Sakyo exercises (S.A.Q) for 100-meter hurdles runners.
2. Disseminate the results of Sakyo (S.A.Q) exercises to athletics coaches.

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تأثير تمرينات (S.A.Q) في بعض المتغيرات البيوكيميائية لعداءات 100م حواجز

سها علي طاهر، عبير داخل حاتم
كلية التربية البدنية وعلوم الرياضة للبنات / جامعة بغداد

مستخلص البحث

ان ايجاد وسائل و طرائق تدريبية وتمارين مستحدثة بالاعتماد على مختلف العلوم وانعكاس ذلك على الافكار الجديدة ولعل واحدة من هذه التمارين اسلوب التمرينات الساكيو (S.A.Q) وتمرينات الساكيو من التمرينات الحديثة المستخدمة في المجال الرياضي كونها تحسن من كفاءة الأداء اما مشكلة البحث لاحظت الباحثتان هناك هبوط في انجاز100م حواجز, وهذا يتطلب التقصي والبحث عن أسباب هذا الهبوط والوقوف على نقاط الضعف الواضحة في مراحل العدو والتي ينتج بسببها فقدان الزمن لدى عداءات العراق مقارنة مع التطورات الحاصلة لهذه الفعالية في الآونة الاخيرة مما يعكس على مستوى الانجاز ويهدف البحث الى التعرف على تأثير تمرينات الساكيو (S.A.Q) في بعض القدرات البيوكيميائية وانجاز 100 م حواجز لدى عداءات 100 م حواجز تحت (20) سنة وعلى عينة من (8) عداءات، وبعد إجراء الاختبارات القبلية بمساعدة فريق العمل المساعد وتطبيق البرنامج لتمرينات الساكيو ومن ثم اجراء الاختبارات البعدية للحصول على النتائج وبعد جمع البيانات ومعالجتها احصائياً استنتجت الباحثتان إنّ اعتماد تمرينات الساكيو(S.A.Q) تعمل على تطوير المتغيرات البيوكيميائية والانجاز لدى عداءات مسابقة 100متر حواجز. واوصت الباحثتان بتطبيق البرنامج المقترح باستخدام تمرينات الساكيو S.A.Q لدى عداءات مسابقة 100متر حواجز للشابات بنفس الشدة والتكرارات والراحة البينية لدورها في تحسين مستويات المتغيرات البيوكيميائية الصوديوم والكالسيوم وانزيم .C.P.K

الكلمات المفتاحية | تمرينات الساكيو ، حواجز 100م