

THE EFFECT OF A QUALITATIVE TRAINING PROGRAM WITH SUPPLEMENTS ON SOME PHYSIOLOGICAL, PHYSICAL VARIABLES & SKILL PERFORMANCE IN FOOTBALL

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Abstract

One of the problems facing trainers in the training season is unstable levels of their players. This motivated researchers to conduct studies that raise the level of player's performance physiologically as this aspect affects their physical and skill performances. Improving physical performance and late appearance of tiredness are from the important aspects that all trainers seek to achieve. Tiredness is a physiological problem that has a negative effect on physical performance and may deter performance improvement. Levels of football players are affected by supplements which are a compound extracted from natural nutritional components of nutritional meals. They are readily produced with various forms and sizes whether containing nutritional substances or nutritional cores that needs to increase for athletes in body or muscular cells to obtain necessary energy or to increase muscular cells area according to the specialist efficiency in order to obtain the highest achievement. The study aims to identify the effect of a qualitative training program with supplements on some physiological and physical variables and skill performance in football. The researcher used the empirical method as it is proper for the nature of this study by designing two empirical and control groups. The sample of the study was chosen purposively from Itthad Sporting Club for the youth class. The sample included 20 players divided into two empirical and control group (10 players each). The researcher reached sample equivalency and concluded that the empirical group that used the qualitative training program with supplements achieved a clear advance in physiological, physical and skill aspects understudy. In addition, the qualitative training program used by the researcher was suitable in terms of using exercises such as velocity, strength, jumping and weights for the study.

KEYWORDS: training program, supplements, physiological & physical variables, skill performance, and football.

1. INTRODUCTION & PROBLEM OF THE STUDY

One of the problems facing trainers in the training season is unstable levels of their players. This motivated researchers to conduct studies that raise the level of player's performance physiologically as this aspect affects their physical and skill performances. Improving physical performance and late appearance of tiredness are from the important aspects that all trainers seek to achieve. Tiredness is a physiological problem that has a negative effect on physical performance and may deter performance improvement. The level of football players is affected by multiple factors including physiological, morphological, educational or psychological effects, but physiological factors came on top of these factors as they are closely related to training loads and different adaptation processes of body systems and their ability to resist tiredness and continuous performance along the time of the match.

Supplements are a compound extracted from natural nutritional components of nutritional meals. They are readily produced with various forms and sizes whether containing nutritional substances or nutritional cores that needs to increase for athletes in body or muscular cells to obtain necessary energy or to increase muscular cells area according to the specialist efficiency in order to obtain the highest achievement. The study also discusses the role of physical training and its effect on biological components of energy such as glucose and lactic acid production in addition to the role of biological organizers and hormones (such as cortisol) that contribute to metabolism of nutrients and affect different metabolism processes. Trough the researcher's work in football field, he noticed that most trainers of junior club teams do not know the role of supplements on one hand. On the other hand, there is not enough knowledge about suitable doses of supplements (including phosphocreatine which is one of the most important supplements). In addition, a lot of trainers do not know the ability of these supplements to develop any physical or skill characteristics or physiological variables for young football players.

Objectives of the Study:

The study aims to identify the effect of a qualitative training program with supplements on some physiological and physical variables and skill performance in football.

Hypotheses of the Study:

There are statistically significant differences between results of pre and posttests in some physiological and physical variables and skill performance in football between members of the empirical and control groups.

2. METHODOLOGY

The researcher used the empirical method as it is proper for the nature of this study by designing two empirical and control groups.

Sample of the Study:

The sample of the study was chosen purposively from Itthad Sporting Club for the youth class. The sample included 20 players divided into two empirical and control group (10 players each) and the researcher reached sample homogeneity equivalency.

Table (1) Homogeneity of the groups of the study in length, weight and age and physiological variables:

Serial	Statistics Variables	Measuring Unit	Empirical Group		Control Group		Chi ² Counted	P Value Significance
			Arithmetic Mean	Class mean	Arithmetic Mean	Class mean		
1	Age	Year	13.00	10.5	13.1	10.5	0.00	1.00
2	Length	Cm	149.00	11.95	150.00	9.05	1.219	0.270
3	Weight	Kg	59.95	9	60.23	12	1.305	0.253
4	Pulse Rate	s/m	78.7	11.55	79.60	9.45	0.660	0.417
5	Contraction Pressure	ml/mercury	124.00	9.95	122.00	11.05	0.182	0.669
6	Extension Pressure	ml/mercury	83.50	10.35	83.00	10.65	0.014	0.907

Table (2) shows statistically significant differences of Kruskal-wallis test in pre-test in variables of age, length and weight and physiological variables understudy between empirical and control groups as the P value is more than 0.05 at all variables of the study which means that there are no statistically significant differences between both groups and reflects homogeneity of their members.

Table (2): Equivalency of the empirical and control groups in physical and skill variables:

(N = 10)

Serial	Statistical Data Variables	Measuring Unit	Empirical Group		Control Group		Chi ² Counted	P Value Significance
			Arithmetic Mean	Class mean	Arithmetic Mean	Class mean		
1	30 m dash	Second	7.88	8.2	7.880	12.8	3.048	0.81
2	long jump from stationary	Meter	1.478	10.1	1.55	10.9	0.092	0.76
3	Barrow Test	Second	12.64	12.1	12.80	8.9	1.492	0.222
2	Ball air control	Number	3.85	10.95	4.50	10.05	0.12	0.729
3	Running with ball	Second	17.56	10.2	18.00	10.8	0.058	0.809
4	Long pass in football	Meter	17.99	9.6	19.00	11.4	0.474	0.491

Table (2) shows statistically significant differences of Kruskal-wallis test in pre-test in variables of age, length and weight and physiological variables understudy between empirical and control groups as the P value is more than 0.05 at all variables of the study which means that there are no statistically significant differences between both groups before conducting trial.

Field Procedures of the Study:

In order to determine tests that measure physical, psychological and skill abilities in football, the researcher used legalized tests with scientific conditions and suitability to the sample of the study as follows:

Physical Tests: (Al Zohery: 2009, 54, 76 & 62)

- 1- Dash training.
- 2- Long jump from stationary.
- 3- Barrow Test.

Physiological Tests: (Amir: 1999, 68, 70 & 87)

- 1- Pulse Rate Tests.
- 2- Extension Pressure Rate.
- 3- Contraction Pressure Test.

Skill Tests: (Hedayat: 2004, 75, 45 & 44)

- 1- Air Ball Control.
- 2- Running with the Ball.
- 3- Long Pass in Football.

Pre-Tests of the Sample:

Pre-tests were conducted on 17 – 18/03/2015 consecutively at 9:00 am for physiological and skill tests and 6:00 am for physical tests related to the empirical group. As for the control group's tests, they were conducted at the same playground the next day. Physiological and skill tests were performed at 9:00 am and physical tests at 6:00 am. The researcher put certain conditions for tests

in terms of time, place, selection method and work team in order to achieve the same conditions or any similar conditions when performing post-tests for the sample of the study.

Qualitative Training Program & Supplements:

The qualitative training program includes two control and empirical groups subjected to pre-tests to check their status before including the empirical variable. The researcher depended on applying daily training methods for both groups and with the same applied sizes with the difference of adding velocity exercises related to approve absolute velocity exercises, strength training with weights and different jumping exercises to develop the understudied variables. The researcher implemented three additional qualitative training units as empirical variables into methods used by both groups and on the empirical group only to show the effect of these exercises on developing physiological, physical and skill abilities. These units were applied in the morning on Saturday, Monday and Wednesday starting from Saturday 24/03/2015 and applied absolute velocity exercises on Saturday morning, jumping strength exercises on Monday morning and weights exercises on Wednesday morning each week for a period of eight weeks. The researcher unified training intensity of these exercises each two weeks and move in intensity to a higher level for the following weeks. For example, the start was with 95% intensity for velocity exercises and with of 8:1 rest (effort ratio to rest). As for jumping exercises, they started with the same intensity and rest, but weights exercises started by 75% intensity and 4:1 rest. As for the following two weeks, rest period was shortened among repetitions to ensure the training effect and this applied to the rest of training aspects on this basis. The researcher used highly intensive training on which positive rest depends between repetitions and groups with working intensity 85 – 95% which is under the maximum intensity. After that, the researcher conducted post-tests for both groups to determine their cases after applying the empirical variable on the empirical group to make difference between results of pre and post tests resulting from the effect of the empirical positive variable on the empirical group as well as details of the nutritional program of phosphocreatin on a group of experts and specialists with the help of attached instructions with supplement packs which was being given to the sample during 8 weeks in addition to the training course of the trainer for players of the empirical group only.

Post-Tests of the Sample:

Post-tests were conducted on 12/04/2015 at 9:00 am for physiological and skill tests and 6:00 am for physical tests related to the empirical group. As for the control group’s tests, they were conducted on 13/05/2015 at the same playground the next day with achieving the same possible testing conditions of pre-tests.

Results of the Study:

Table (3) Significance of differences between pre and post tests for physical, skill and physiological variables for the control group:

Serial	Statistics Variables	Measuring Unit	Control Group				Z Value	P Value Significance
			Pre-test		Post-test			
			Arithmetic Mean	Class Mean	Arithmetic Mean	Class Mean		
1	30 m dash	Second	7.880	17.6	7.81	16.6	2,032-	*0,042
2	Long jump from stationary	Meter	1.55	10.00	1.487	12.40	2,023-	*0,043
3	Barrow Test	Second	12.80	19.5	12.64	18.70	2,060-	*0,039
4	Air ball control	Number	4.50	6.15	4.51	9.50	2,032-	*0,042
5	Running with the ball	Second	18.00	22.00	18.94	20.65	2,023-	*0,043
6	Long pass with football	Meter	19.00	23.05	18.72	24.75	2,032-	*0,042
7	Pulse rate	s/m	79.60	13.3	69.70	10.7	2,070-	**0.038
8	Contraction blood pressure	ml/mercury	122.00	17.60	120.50	17.40	2,207-	**0.027
9	Extension blood pressure	ml/mercury	83.00	13.60	81.00	13.10	2,032-	**0.042

Table (4): Significance of differences between pre and post tests for physical, skill and physiological variables for the empirical group:

Serial	Statistics Variables	Measuring Unit	Empirical Group				Z Value	P Value Significance
			Pre-test		Post-test			
			Arithmetic Mean	Class Mean	Arithmetic Mean	Class Mean		
1	30 m dash	Second	7.88	16.75	6.970	14.55	3.059-	**0.002
2	Long jump from stationary	Meter	1.478	1.00	1.63	2.00	2.871-	**0.004
3	Barrow Test	Second	12.64	20.00	10.97	19.00	2.739-	**0.006
4	Air ball control	Number	3.85	6.25	6.27	12.45	2.739-	**0.006
5	Running with the ball	Second	17.56	22.30	15.45	21.00	2.236-	**0.025
6	Long pass with football	Meter	17.99	23.15	19.81	25.25	2.955-	**0.003
7	Pulse rate	s/m	78.7	12.7	75.9	11.60	2.220-	**0.026
8	Contraction blood pressure	ml/mercury	124.00	17.75	121.50	17.25	2.226-	**0.026

9	Extension blood pressure	ml/mercury	83.50	13.95	90.00	13.55	2.214-	**0.027
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Table (5): Significance of differences between control and empirical groups in physical, skill and physiological variables

Serial	Statistical Data Variables	Measuring Unit	Empirical Group		Control Group		Chi ² Counted	Significance
			Arithmetic Mean	Class mean	Arithmetic Mean	Class mean		
1	30 m dash	Second	6.970	5.50	7.81	15.50	14.340	0.000
2	Long jump from stationary	Meter	1.63	15.35	1.487	5.65	13.472	0.000
3	Barrow Test	Second	10.97	15.50	12.64	5.50	14.318	0.000
4	Air ball control	Number	6.27	15.50	4.51	5.50	14.593	0.000
5	Running with the ball	Second	15.45	5.50	18.94	15.50	14.593	0.000
6	Long pass with football	Meter	19.81	15.10	18.72	5.90	12.295	0.000
7	Pulse rate	s/m	75.9	15.50	69.70	5.5	14.504	0.000
8	Contraction blood pressure	ml/mercury	121.50	13.10	120.50	7.90	4.049	0.044
9	Extension blood pressure	ml/mercury	90.00	13.20	81.00	7.80	4.275	0.039

3. RESULTS AND DISCUSSION

Tables (4) and (5) show that there are statistically significant differences at significance level 0.05 in all physiological variables for the control and empirical groups for the sake of post-test. The researcher attributes the reason for this due to the use of the qualitative training program that used multiple kinds of physical exercises such as velocity, strength, jumping and weights as well as suitable training intensity and supplements used with the qualitative training method. This training developed members of the empirical group over the empirical group's with different doses of nutritional aids such as creatin which helps in late emergence of tiredness and enhances physical performance to generate the needed energy for muscular work. The study results also asserted that there are statistically significant differences between both groups for the sake of the empirical group. For example, the increase in sugar level in blood such as the increase in cortisol led to improve all physical and skill variables. If this hormone decreases (cortisol), it will lead to imbalance in nutritional representation of carbohydrate substances. In addition, excess in its increase leads to changes in nutritional representation of food components and the transformation of amino acids into carbohydrate substances with the increase in glycogen and fats. Thus, we can conclude that the empirical group achieved better than the control one in physical, physiological and skill tests due to legalized percentages of phosphocreatin which is rich with energy. Since the time of exercise performance is within the non-aerobic system, it will certainly develop physical ability due to the increase of this compound reserve.

We can also conclude that the empirical group is better than the control one according to the effective (CPK) enzyme in physiological variables. The researcher attributes this due to the phosphocreatin supplement. Since its concentration increases automatically after any maximum effort, this is due to the nature of this enzyme which stimulates and accelerates the reformation of (ATP) once again which was asserted as the CPK remains at its normal limits at break times and increases during exerting any highly intensive effort in muscles and blood as it breaks chemical bonds of the phosphocreatin, carbohydrates and muscular glycogen (Radwan: 1998, 45). The researcher thinks that the nature of football gives players a certain amount of energy on aerobic – phosphate work and due to changing playing cases. The strong and quick moves performed by football players such as jumping, shooting and 15 m fast running depend on the non-aerobic phosphagenic ability represented in the phosphagenic system of maximum muscular contractions with energy (Al Kott: 2002, 17). Moreover, the source of energy in this system is the solution of phosphocreatin stored in muscles through the CPK enzyme as breaking the phosphocreatin to get energy is made by this enzyme which means that the phosphocreatin gives energy after stimulation by this enzyme (Allawi: 1984, 353).

4. CONCLUSIONS

- 1- The empirical group that used the qualitative training program with supplements achieved a clear advance in physiological, physical and skill aspects under study.
- 2- The qualitative training program used by the researcher was suitable in terms of using exercises such as velocity, strength, jumping and weights suitable for the study.
- 3- The highly intensive training is more suitable with the used supplements.
- 4- Development of physical and physiological abilities had an important effect on skill performance level for football players.

5. RECOMMENDATIONS

- 1- The qualitative training program with supplements can be approved to develop physiological, physical and skill abilities and can be given to junior football teams.
- 2- Asserting that football trainers should consider training courses and nature of players' nutrition and their physiological conditions.
- 3- There should be an interest in supplements for players of various sport activities especially in football and benefit from results of this study by football trainers with conducting similar studies that enhance physiological, physical and skill efficiencies of players.

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7. APPENDAGES

Week	Day	Details	Intensity	Repetition	Break within repetition	Groups	Break within groups	notes
First	Saturday	<u>Velocity exercises</u> Running (50 m sitting with 5 time repetition x 2 groups, and 95% intensity which cuts a distance in 6 s and break ratio 1 : 7 in one minute within repetitions and 2 – 3 within the two groups						
	Monday	<u>Jumping Strength exercises</u> Hopping (80 m consecutively on right and left legs with 5 time repetition x 2 groups, and 90% intensity and break ratio 1 : 6 in one minute within repetitions and 2 – 3 within the two groups						
	Wednesday	<u>Strength exercises with Weights</u> Training (lifting a weight 40 kg) bending knees and standing 10 times x 5 repetitions x 2 groups with 60% intensity and break ratio 1 : 4 in 45 minutes break within repetitions and 2 – 3 minutes within the two groups						On the moltgum device