# Effect of using cross- training on some physical abilities and single and composite skill performance level for football juniors

Mohamed Farouk Yousif Saleh

Faculty of Physical Education, Department of Sport Training, Mansoura University, Egypt
Email: dr_farouk7575@yahoo.com

**Abstract:** This research aims to design a training program using cross- training for football juniors under 18 years and identify the effect of cross-training on some special physical abilities (speed, agility, power, flexibility) for the football junior under 18 years old, the effect of cross-training on compound skill performances (receiving then passing- receiving, running then passing- receiving, dribbling then passing) and individual (passing accuracy, shooting accuracy) for football juniors under 18 years old, and percentage of improvement for different measurements of both control and experimental groups.**Methods** the researcher used the experimental method on a sample of 48 football junior under 18 years old, Most important tools of data collection were references survey, physical tests, and single and composite skills tests. Statistical work was done using arithmetic mean, standard deviation, T test, Pearson correlation and skewness coefficient. **Results** training program using cross-training led to development of some special physical abilities (speed, agility, muscle ability, flexibility) within football juniors research sample, development of some composite skills (receiving then passing- receiving, run with the ball, then passing- receiving, dribbling with ball, and then passing) within football juniors research sample, development of some single skills (Short and medium passing accuracy – shooting with foot accuracy) within football juniors research sample and clear improvement rates between experimental and control groups in all variables under consideration in favor of experimental group.
[Huda A. Qari, Ibrahim Jomoah,Stefano Mambretti. **Flood management in highly developed areas: problems and proposed solutions.** *J Am Sci* 2014;10(3):74-83]. (ISSN: 1545-1003). http://www.jofamericanscience.org. 10

**Keywords:** cross-training**,** physical abilities**,** single and composite skills performance**.**

## 1- Introduction

Cross-training means diversity in use of modern techniques, tools, equipment, activities, and different exercises from main activity to accomplish primary goal which is to improve performance and acquisition of technical expertise and special physical ability development. Cross training is a tool underly strength training, which helps players to reach pinnacle of their specialty sport competition. A strategy used by coaches to organize the training program and fitness activities, which are of greatest use of diverse activities and physical challenges in order to make their players continue to acquisition and achieve the requirements and objectives of overall fitness in a satisfactory and secure manner **Loy *et al* (1992, p512) and Yacenda (1994, p1), Stamford, Bryant (1996, p238), Breslin (1998, p18), Fitzgerald (2004, p3),**

Cross training activities include both training with weights using few and large repetitions and ploy metric exercises like jump on box, which work to build body strength, development of muscle strength, legs muscles ability, and also includes activities of aerobic endurance including water running exercises and use of moving belt and fixed training cycle, as well as activities include anaerobic endurance including running exercises **Moran et al (1997,p1)**

Modern football requires the player to have high physically fitness, so development of player's physical abilities has become one of the main pillars in training plan either daily, weekly, seasonally, and annually. Players abilities significantly increased in the world in the recent years on looking at players now and years ago, we find that their physical abilities have grown in a remarkable way **Hanafi (1994, p53)**.

Cross training represents a modern trend in training and is regarded as organizational form, which includes the use of different activities, sports as well as training means and methods and what suit it from facilities available, which can be utilized during the training in accordance with players capabilities, cross-training contributes in development of physical abilities represented in aerobic, anaerobic work, muscular endurance, force, power, agility and flexibility, it is also working on development of physiological aspects related to sports performance in addition to the development of psychological aspect of an athlete **Mohammed (2002, p100)**.

Football player should be enjoying high physical fitness represented in both aerobic and anaerobic fitness to raise efficiency of speed,

vertical jump, ability and endurance and associate this with the basic skills in order to be superior throughout match time. **Bin Eliyahu (1996, p115-120).**

Football game has three basic components (fitness – skill performance - tactical performance) player's low physical fitness adversely affect his skill performance level, especially as match going to its end, if player's performance not dramatically approaching the ideal; the tactical performance - regardless of the extent of its ease - is a waste of time and effort. **Cor van Dermeer & Roy Ress (1997, p57-58).**

It is important in football to combine football skills and fitness components, both of them must be developed together, over time it will be noted that during application of training program the physical fitness contribute to effectiveness of performance of passing, receiving, and running with or without the ball, as we cannot judge on quality of football player performance, without looking at his performance under pressure (physical – psychological - competitor), this reflects his real abilities, and training on that increases his performance in total manner **Martin (1996, p25-27)**.

Playing nature during football matches with their changed situations imposed players to use compound forms of skills (composite or merged skills) They represent a form of construction consists of several skills interconnected (integrated), performed in sequence and affects each other. Player mastering single skills (passing - receiving-dribbling) is not so important like his ability to perform composite skills (receiving, running, then dribbling and passing- receiving then shooting) and in simple manner commensurate with situation natures during the game. **Mohamed and Amrallah (2000, p77)** cross training has high degree of importance in raising level of physical fitness elements through cross training activities of swimming, cycling, running, walking in water, as well as rise of stairs, rowing, gymnastics, yoga and wrestling as it is not intended by cross training to practice activity to replace the training schedule, but it serves as an improved performance of the athlete, through muscle-building, developing of coordination, balance, speed and explosive power. **Zaki (2004, p13), Eric (2002, p39)**

The researcher noted through his work as football coach, and his involvement in training of some junior teams, as well as teaching of football in the collage, and in light of reference and studies survey of previous Arabic studies which dealt with ways and means for developing physical abilities for football juniors, researcher found that previous studies did not address the extent of effect of cross-training on special physical abilities and the outcome effect on performance accuracy and speed of single and compound skills for football juniors under 18 years

This prompted the researcher to deal with this subject to identify the effect of using cross training on physical abilities and compound skill performances skill of football juniors under 18 years old and this has been done by designing proposed training program using cross training to develop some physical abilities and study their effect on performing single and compound performances skills where developing this is an important prerequisites for juniors at this stage which may have positive effect on the improvement of skills and physical elements as each side affects the other significantly and where single and compound motor performances is also an important factor and a key role in implementing various and varied plans and duties during the mach as it need new ways and methods in their development and training.

**1.2-The Research objectives: This research aims** to design a training program using cross- training for football juniors under 18 years and identify: -- The effect of cross-training on some special physical abilities (speed, agility, power, flexibility) for the football junior under 18 years old.

-The effect of cross-training on compound skill performances (receiving then passing, receiving, running then passing, receiving, dribbling then passing) and individual (passing accuracy, shooting accuracy) for football juniors under 18 years old

-Improvement percentage for different measurements for both control and experimental groups

**1.3-The Research Hypotheses** -There are statistically significant differences between pre and post measurements in special physical abilities (speed, agility, power, flexibility) between experimental and control group in favor of post measurement.

-There are statistically significant differences between pre and post measurements in compound skill performances (receiving then passing, receiving, running then passing, receiving, dribbling then passing) and individual (passing accuracy, shooting accuracy) between experimental and control group in favor of post measurement.

- There are statistically significant differences between experimental and control group in favor of experimental group in improvement percentage for all research measurements.

**2-Material and methods:**

The researcher used the experimental method as it is appropriate to the research nature; using experimental design: pre-and post measurements for two groups, one experimental and the other control.

**2.1-The Research sample:-** Sample selected intentionally and consisted of (48) players (25) Mansoura club juniors and (23) Talkha club juniors, in Egypt 8 juniors excluded due to interruption, irregular training, and injuries and thus sample size became 40 junior During the preparation of annual training plan for the season 2012/2013 at the level of main part of the training units throughout the duration of the proposed training program which refers to normal distribution and homogeneity of sample individuals in these variables.

**2.2- Research Sample Modesty and Equivalence**

Sample modesty and equivalence in main variables (age – height -weight - training age) and under consideration variables were emphasized

**2.3-the scientific factors**

(Validity – Reliability) for the tests applied in this study using validity differentiation test and re-test applying for calculating reliability

**2.2.1-Reliability coefficients for the tests under discussion** results reveal that all measurements in question has characterized by high reliability at significance level (0.05), and this confirms its suitability to research sample

**2.3.1-Validity Coefficient** To calculate the validity coefficient, the researcher used discrimination validity between two groups, one distinct from the other in variables in question, where he selected random sample of juniors under 18 years old in Talkha club has been classified into two groups, one distinct from the end comparing between the two groups using t-test and table 4 shows the validity coefficient for the tests under discussion.

**2.3.2-Transactions honesty tests under** results reveal the presence of statistically significant differences at the 0.05 level between the two groups of measurements which shows the validity of these tests and their ability to distinguish between members of the sample people with different levels

**2.4-Measurements used in the research:**

***1 – Special physical abilities tests***

- Running at full speed of 50 m test
- agility test
- The broad jump test from stability measure muscle ability test
- flexibility test

***2 - Tests to measure some single and composite football skills***

- Short and medium shooting accuracy test
- receiving from motion then pass test
- Shooting with for accuracy test
- receiving from motion and rotation, run with the ball, then pass test
- receiving from motion from front then cheat and pass test. **(Abdul Sattar (2005)**

**3.Training program design foundations**

- Program follow sports training and principles in terms of the intensity, size and load intensity.

-Taking into account gradient in load within the training program sessions

-Taking into account individual differences while applying program exercise.

-Guided by pilot studies and pre-measurement under discussion with regard to start required dose and training period time.

-Training exercises considered proposed training program using cross- training activities contents.

- Exercises ordered from easy to difficult for suitability to physical measurement as per pre-measurement of junior research sample
- Program time was (8) weeks during with (32) training sessions.
- First training session starting dose has been identified per pre-measurements results
- both groups undergone same motor duties (physical – skill) except for proposed program which applied to experimental group in physical part in the main part of training session.
- The application of proposed training program was three weeks after the beginning of general preparation period.

**4.Statistical Treatment:**

The researcher processes the data statistically using the methods of statistical analysis as following:

- Mean
- standard deviation.
- Median.
- Skewness coefficient
- Simple correlation coefficient.
- T Test "
- improvement ratios %.

- Researcher adopted 0.05 significance l.

**Table (1) The proposed training program using cross- training**

| Cross training activities | 55% | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100% | Medium | High | Maximum | Date | Units | Weeks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Running in nature | * | | | | | | | | | | | | | 23/6 | 1 | 1st |
| Sand training | | * | | | | | | | | | | | | 25/6 | 2 | |
| Flexibility training | | | * | | | | | | | | | | | 27/6 | 3 | |
| | | * | | | | | | | | | | | | 29/6 | 4 | |
| General preparation exercises | | | * | | | | | | | | | | | 30/6 | 5 | 2nd |
| Weight training | | | | * | | | | | | | | | | 2/7 | 6 | |
| Coordination training | | | * | | | | | | | | | | | 4/7 | 7 | |
| | | | | * | | | | | | | | | | 6/7 | 8 | |
| Argometer cycle training | | | | | * | | | | | | | | | 7/7 | 9 | 3rd |
| Moving belt | | | | * | | | | | | | | | | 9/7 | 10 | |
| Flexibility training | | | | | * | | | | | | | | | 11/7 | 11 | |
| | | | | | | * | | | | | | | | 13/7 | 12 | |
| General preparation exercises | | | | | * | | | | | | | | | 14/7 | 13 | 4th |
| Weight training | | | | | | * | | | | | | | | 16/7 | 14 | |
| Plyometric training | | | | | | | * | | | | | | | 18/7 | 15 | |
| | | | | | | * | | | | | | | | 20/7 | 16 | |
| General preparation exercises | | | | | | | * | | | | | | | 21/7 | 17 | 5th |
| Rope jump | | | | | | | | * | | | | | | 23/7 | 18 | |
| Medical ball training | | | | | | | * | | | | | | | 25/7 | 19 | |
| | | | | | | | | * | | | | | | 27/7 | 20 | |
| General preparation exercises | | | | | | | * | | | | | | | 28/7 | 21 | 6th |
| Plyometric training | | | | | | * | | | | | | | | 30/7 | 22 | |
| Weight training | | | | | | | * | | | | | | | 1/8 | 23 | |
| | | | | | | * | | | | | | | | 3/8 | 24 | |
| Special preparation training | | | | | | | * | | | | | | | 4/8 | 25 | 7th |
| Stairs exercises | | | | | | * | | | | | | | | 6/8 | 26 | |
| Box exercises | | | | | | | * | | | | | | | 8/8 | 27 | |
| | | | | | | | | * | | | | | | 10/8 | 28 | |
| Special preparation training | | | | | | | * | | | | | | | 11/8 | 29 | 8th |
| ◦Weight training | | | | | | | | * | | | | | | 13/8 | 30 | |
| | | | | | | | | | * | | | | | 15/8 | 31 | |
| | | | | | | | | * | | | | | | 17/8 | 32 | |
| | 52 | 48 | 45 | 42 | 39 | 36 | 33 | 30 | 27 | | | | | | | Time minute |

**Table (2)Differences significance between pre and post measurements for experimental group in physical tests under consideration. n = 10**

| Variables | Tests | Measuring unit | Pre measurement | | Post measurement | | Mean Differences | T Value |
|---|---|---|---|---|---|---|---|---|
| | | | Mean | ± SD | Mean | ± SD | | |
| Physical abilities | Running at full speed of 50 m | Sec | 10.56 | 0.737 | 8.97 | 0.617 | 1.586 | 6.071* |
| | Agility | Sec | 10.44 | 0.704 | 9.77 | 0.547 | 0.670 | 8.066* |
| | Wide jump from stability | Cm | 189.5 | 5.14 | 194.9 | 5.04 | -5.400 | -11.94* |
| | Flexibility | Cm | 13.4 | 1.17 | 16.7 | 1.05 | 3.200 | -12.67* |

**Table (3)Differences significance between pre and post measurements for control group in physical tests under consideration. n = 10**

| Variables | Tests | Measuring unit | Pre measurement | | Post measurement | | Mean differences | T Value |
|---|---|---|---|---|---|---|---|---|
| | | | Mean | ± SD | Mean | ± SD | | |
| Physical abilities | Running at full speed of 50 m | Sec | 10.39 | 0.689 | 9.88 | 0.662 | 0.512 | 2.08* |
| | Agility | Sec | 10.47 | 0.713 | 10.28 | 0.702 | 0.190 | 6.86* |
| | Wide jump from stability | Cm | 186.9 | 3.212 | 188.4 | 2.913 | -1.50 | -5.58* |
| | Flexibility | Cm | 12.9 | 0.875 | 14.4 | 0.699 | -1.50 | -0.900* |

**Table (3)**, show that there were statistically significant differences between pre- and post measurements for control group in (speed, agility, muscle ability, flexibility).Researcher attribute this to the fact that traditional program followed which was applied to the control group, and follow the steps to implement sessions in a standardized scientific manner has led to improve physical abilities, very low than improvement level resulted from application of proposed program your style training cross-Improvement percentage here is the criterion to judge between the two programs

**Table (4)Differences significance between post-measurements in physical variables for experimental and control groups.** n 1 + n 2 = 20 value

| Variables | Tests | Measuring unit | Experimental Group | | Control Group | | Mean Differences | T Value |
|---|---|---|---|---|---|---|---|---|
| | | | Mean | ± SD | Mean | ± SD | | |
| Physical abilities | Running at full speed of 50 m | Sec | **9.88** | **0.662** | **8.975** | **0.617** | **-0.90** | **-6.28*** |
| | Agility | Sec | **10.28** | **0.702** | **9.77** | **0.547** | **-0.51** | **-1.860*** |
| | Wide jump from stability | Cm | **188.4** | **3.91** | **194.9** | **5.04** | **6.50** | **4.134*** |
| | Flexibility | Cm | **14.4** | **0.699** | **16.7** | **10.5** | **2.30** | **5.811*** |

* Significant at 0.05 (T significant = 05 = 1.833)

Table (4) shows statistically significant differences at 0.05 level between experimental and control groups in (speed, agility, muscle ability, flexibility) the largest of these differences was in speed followed by flexibility. Researcher return this to effect of proposed training program used with experimental group with cross training which had the greatest impact on the superiority of members of this group over members of control group, who used the traditional program, and that missed the cross training activities while the proposed program contains cross training activities which led to improvement of physical abilities under discussion.

This is in line with what mentioned by **Shirin ALy (2010)** that the training program led to superiority of experimental group over control group in most of the physical measurements and with what was said by **White *et al.* (2003)** that the cross training contributed to maintain aerobic fitness and good muscle groups used in he running, and is consistent with what referred to by **Maha Mohamed (2007)** that cross training has a positive effect on physical

abilities as with what mentioned by **Mohammed (2002)** about the superiority of experimental group over control group in muscle strength as a result of the use of cross training.

**So** first hypothesis could be accepted: There are statistically significant differences between pre and post measurements in special physical abilities (speed, agility, power, flexibility) between experimental and control group in favor of post measurement.

**Table (5)Differences significance between pre and post measurements for experimental group in single and composite skills under consideration n = 10**

| Variables | Tests | Measuring unit | Pre Measurement | | Post measurement | | Mean Differences | T value |
|---|---|---|---|---|---|---|---|---|
| | | | Mean | + SD | Mean | + SD | | |
| Single skills | Short and medium passing accuracy | Marks | 4.0 | 0.816 | 7.4 | 0.843 | -3.40 | -10.00* |
| | Shooting with foot Accuracy | Marks | 25.5 | 5.50 | 5.40 | 7.37 | -28.50 | -8.5* |
| Compoud skills | Receiving from motion then pass | Sec | 5.1 | 0.495 | 4.24 | 0.436 | 0.861 | 10.19* |
| | Receiving from motion and rotation, run with the ball, then pass | Sec | 5.09 | 0.672 | 4.03 | 0.42 | 1.6 | 7.49* |
| | Receiving from motion from front then cheat and pass | Sec | 6.21 | 0.750 | 5.23 | 0.73 | 0.97 | 10.86* |

Table (5) show that there is statistically significant differences between pre and post measurements for experimental group in single and composite skills at 0.05 level.Researcher attribute this to the effect of training program using training cross training, which in turn led to development of physical abilities under discussion resulting in improved single and composite skill performances, and this is consistent with what mentioned by **Hanafy (1994)** that modern football requires player to have high physical fitness and also with what indicated by **Hassan (2001)** that special physical abilities in football is a key factor to raise skill performance level.

**Table (6)Differences significance between pre and post measurements for control group in single and composite skills under consideration n = 10 Variables**

| | Tests | Measuring unit | Experimental group | | Control group | | Mean Differences | T value |
|---|---|---|---|---|---|---|---|---|
| | | | Mean | + SD | Mean | + SD | | |
| Single skills | Short and medium passing accuracy | Marks | 3.80 | 0.632 | 4.60 | 0.699 | -0.800 | -2.58* |
| | Shooting with foot Accuracy | Marks | 22.5 | 2.63 | 28.00 | 2.58 | -5.50 | -11.00* |
| Compound skills | Receiving from motion then pass | Sec | 4.94 | 0.447 | 4.73 | 0.228 | 0.216 | 2.26* |
| | Receiving from motion and rotation, run with the ball, then pass | Sec | 4.66 | 0.569 | 4.52 | 0.55 | 0.149 | 13.93* |
| | Receiving from motion from front then cheat and pass | Sec | 6.23 | 0.564 | 6.09 | 0.50 | -0.142 | 4.06* |

Table (6) show that there is statistically significant differences between pre and post measurements for control group in single and composite skills at 0.05 level.Researcher return these differences to the effect of traditional program, which some skill development ways and means used in it; but improvement percentage is clearly high within experimental group and difference between the effect if two programs is clear when comparing results of both of them.

**Table (7)Differences significance between post-measurements in single and composite skill performance for experimental and control groups**

| Variables | Tests | Measuring unit | Experimental group | | Control group | | Mean differences | T value |
|---|---|---|---|---|---|---|---|---|
| | | | Mean | ± SD | Mean | ± SD | | |
| Single skills | Short and medium passing accuracy | Marks | **7.4** | **0.843** | **4.6** | **0.699** | **2.80** | **7.20*** |
| | Shooting with foot Accuracy | Marks | **54.00** | **7.37** | **28.00** | **2.58** | **26.00** | **12.49*** |
| Compound skills | Receiving from motion then pass | Sec | **4.24** | **0.436** | **4.73** | **0.228** | **-0.49** | **-2.91*** |
| | Receiving from motion and rotation, run with the ball, then pass | Sec | **4.52** | **0.55** | **4.03** | **0.42** | **0.49** | **-1.81*** |
| | Receiving from motion from front then cheat and pass | Sec | **6.09** | **0.50** | **5.23** | **0.73** | **-0.68** | **-2.47*** |

n 1 + n 2 = 20 value

Table (7) show statistically significance differences between post-measurements of experimental and control groups in single and composite skill of at 0.05 level in favor of experimental group, the largest of these differences was (Shooting accuracy) followed by (Passing accuracy) and then the composite skill (receiving then passing).Researcher attribute these differences to the effect of the proposed training program using cross training which led to improvement and development of some single and composite skills in question. These results are in consistent with results of **Mohammed** (**2005**) which confirmed that the training program has led to improvement and development of some composite skill performances for Football juniors, results also agree with what was said by Mahmoud & Ahmed (**2008**) that use of cross-training method has a positive impact on the football players under 18 years of age, and also with what was mentioned by **Yasser** (**2009**) about that using cross-training led to improve physical and skill variables for football juniors.

So second hypothesis could be accepted: There are statistically significant differences between pre and post measurements in compound skill performances (receiving then passing, receiving, running then passing, receiving, dribbling then passing) and individual (passing accuracy, shooting accuracy) between experimental and control group in favor of post measurement.

**Table (8)Improvement percentage between pre-and post measurement for experimental group in measurements of variables under consideration** n =10

| Variables | Tests | Measuring Unit | Pre-measurement | Post-measurement | Mean differences | Improving % |
|---|---|---|---|---|---|---|
| Physical abilities | Running at full speed of 50 m | Sec | 10.56 | 8.97 | **1.59** | **15.05** |
| | Agility | Sec | 10.44 | 9.77 | **0.67** | **6.41** |
| | Wide jump from stability | Cm | 189.5 | 194.9 | **-5.4** | **2.84** |
| | Flexibility | Cm | 13.4 | 16.7 | **-3.3** | **24.62** |
| Single skills | Short and medium passing accuracy | Marks | 4 | 7.4 | **-3.4** | **85.00** |
| | Shooting with foot Accuracy | Marks | 25.5 | 5.40 | **-28.5** | **111.76** |
| Compound skills | Receiving from motion then pass | Sec | 5.1 | 4.24 | **0.9** | **0.001** |
| | Receiving from motion and rotation, run with the ball, then pass | Sec | 5.09 | 4.03 | **1.06** | **20.83** |
| | Receiving from motion from front then cheat and pass | Sec | 6.21 | 5.23 | **0.98** | **15.78** |

Table (8) show that there are differences in improvement percentage between pre and post measurement for experimental group in variables under consideration the highest improvement percentage was (111.7 %) in favor of post measurement of Shooting accuracy variable while the lowest improvement percentage (0.001%) in favor of dimensional (receiving then passing) variable

**Table (9)Improvement percentage between pre-and post measurement for control group in measurements of variables under consideration** n =10

| Variables | Tests | Measuring Unit | Pre-measurement | Post measurement | Mean differences | Improving % |
|---|---|---|---|---|---|---|
| Physical abilities | Running at full speed of 50 m | Sec | **10.39** | **9.88** | **0.512** | **4.92** |
| | Agility | Sec | **10.47** | **10.28** | **0.190** | **1.81** |
| | Wide jump from stability | Cm | **186.9** | **188.4** | **-1.50** | **0.80** |
| | Flexibility | Cm | **12.9** | **14.4** | **-1.50** | **11.62** |
| Single skills | Short and medium passing accuracy | Marks | **3.80** | **4.60** | **-0.800** | **21.05** |
| | Shooting with foot Accuracy | Marks | **22.50** | **28.00** | **-5.50** | **24.44** |
| Compound skills | Receiving from motion then pass | Sec | **4.94** | **4.73** | **0.216** | **4.37** |
| | Receiving from motion and rotation, run with the ball, then pass | Sec | **4.66** | **4.52** | **-0.14** | **3.00** |
| | Receiving from motion from front then cheat and pass | Sec | **6.23** | **6.09** | **-0.14** | **2.24** |

Table (9) show that there are differences in improvement percentage between pre and post measurement for control group in variables under consideration the highest improvement percentage was (24.4%) in favor of post measurement of Shooting accuracy variable while the lowest improvement percentage (0.80%) in favor of muscle ability variable.

**Table (10) Comparing improvement rates between the experimental and control groups in post measurements of variables under consideration n = 10**

| Variables | Tests | Group | Pre measurement Mean | Post measurement Mean | Mean Differences | Improvement Percentage |
|---|---|---|---|---|---|---|
| Physical abilities | Running at full speed of 50 m | **E** | 10.56 | 8.97 | **1.59** | **1.07** |
| | | **C** | **10.39** | **9.88** | **0.512** | |
| | Agility | **E** | 10.44 | 9.77 | **0.67** | **0.48** |
| | | **C** | **10.47** | **10.28** | **0.19** | |
| | Wide jump from stability | **E** | 189.5 | 194.9 | **-5.4** | **3.9** |
| | | **C** | **186.9** | **188.4** | **-1.5** | |
| | Flexibility | **E** | 13.4 | 16.7 | **-3.3** | **1.8** |
| | | **C** | **12.9** | **14.4** | **-1.5** | |
| Single skills | Short and medium passing accuracy | **E** | 4 | 7.4 | **-3.4** | **2.6** |
| | | **C** | **3.8** | **4.6** | **-0.8** | |
| | Shooting with foot Accuracy | **E** | 25.5 | 5.4 | **-28.5** | **23.00** |
| | | **C** | **22.5** | **28** | **-5.5** | |
| Compound skills | Receiving from motion then pass | **E** | 5.1 | 4.24 | **0.9** | **0.68** |
| | | **C** | **4.94** | **4.73** | **0.216** | |
| | **Receiving from motion and rotation, run with the ball, then pass** | **E** | 5.09 | 4.03 | **0.42** | **0.28** |
| | | **C** | **4.66** | **4.52** | **0.149** | |
| | Receiving from motion from front then cheat and pass | **E** | 6.21 | 5.23 | **-0.98** | **0.68** |
| | | **C** | **6.23** | **6.09** | **-0.142** | |

Table (10) show that there is significant differences between improvement percentage for both groups highest value is (92.8 %) in shooting accuracy and lowest value (3.4%) in muscle ability. researcher

attribute these improvement ratios to the proposed training program, which had a positive impact on some of special physical abilities (speed, agility, muscle ability, flexibility) and some single and composite skills (passing accuracy, shooting accuracy, receiving and then passing, receiving, run with the ball and then passing, receiving, dribbling and then passing) within football juniors research sample.

This is consistent with the results of **Mohammed (2005)** and **Sherif (1997)** that the training program led to improvement and development of some of composite skill performance vehicle for football juniors. **Abdel Basset (1998)** mentioned the presence of statistically significant differences in skill performance level in football in favor of experimental group and the occurrence of large improvement percentage of the experimental group.

**Through the previous results and as confirmed by the results of tables (8), (9), (10) the researcher can accept the third hypothesis: There are statistically significance differences between experiment gand control group in favor of experimental group in improvement percentage for all research measurement.**

**5.Results and Discussion**

Table (2) results reveal the presence of statistically significant differences between the pre and post measurements of experimental group in (speed, agility, muscle ability, and flexibility) at 0.05 level in favor of post measurement, Researcher attribute this to the objective selection of cross training activities in the training program which featured with using this method overall the training sessions also session characterized with its suitability for under 18 years age group in the formation of the training loads and follow sound foundations in development of physical elements under discussion and achieve the target of these elements after the training program end.

This is in line with **Mohammed (2004)**study about that there is positive effect of cross training method on developing physical abilities of volleyball players, according to **Mohammed (2006)** study cross training method has positive impact on developing physical side of Judo players,, also these results in agreement with **Mohammed (2002)** study, which confirmed the superiority of experimental group that used cross- training in the physical side than the control group, which used the traditional program. Results also agreed with what mentioned by **Fitzgerald (2004)** and **Brislin (1998)** that cross-training improves the performance of technical and develop special physical abilities, it is a tool for the training underlying strength and helps to reach the top level in competitions.

**Conclusions**

In light of research objectives and within its sample, data, and statistics work the researcher reached the following conclusions:

1- Proposed training program using cross-training led to development of some special physical abilities (speed, agility, muscle ability, flexibility) within football juniors research sample.

2- Proposed training program using cross-training led to development of some composite skills (receiving then passing- receiving, run with the ball, then passing- receiving, dribbling with ball, and then passing) within football juniors research sample.

3- Proposed training program using cross-training led to development of some single skills (Short and medium passing accuracy – shooting with foot accuracy) within football juniors research sample

4- Proposed training program using cross-training led to clear improvement rates between experimental and control groups in all variables under consideration in favor of experimental group.

**Recommendations**

In the light of research conclusions researcher recommends the following:

1. There is necessity to apply the proposed training program using cross-training with football juniors to develop physical abilities and skill performance.
2. Use the activities and cross- training exercises during the period of physical preparation and public sectors to develop physical abilities own youth team football
3. Motor balance measurements should be considered when developing football training programs
4. Attention should be given to develop and improve single skill performances (Short a medium passing accuracy, Shooting with foot accuracy) composite skills (receiving, and the passing-receiving, run with the ball and then passing-receiving, dribbling with the ball and then passing) in football as they have a positive impact on tactical performance and superiority during matches.

**References**

1. Abdel Basset Abdel Halim (1998): The effect of training program for some skill composite performances for football juniors, unpublished Ph.D. thesis, Faculty of Physical Education for Men, Alexandria University. (in Arabic Language)
2. Ben Eliyahu, D.J. (1996): Developing power, speed, and endurance in the soccer athlete, J. of

Sports Chiropract. & Rehab, Baltimore (Maryld.)), 3, S. 115-120, Lit.
3. Brislin. G, M.S., C.S.C.S (1998): Improved performance through cross training techniques, winter sidelines.
4. Eric Small,Linda Spear:Kids & sports (2002): everything you and your child need to know about sports, New market Press,usa.
5. Hanafi Mahmoud Mokhtar (1994): Scientific foundations in football training, Dar ElFekr ElAraby. (in Arabic Language)
6. Hassan ElSayed Abu Abda (2001): Modern Trends in football planning and training, Eshaa Press, Alexandria. (in Arabic Language)
7. Houfy Mahmoud Hassan and Ahmad Amin Shafie (2008): the use of cross- training to improve muscular balance among football players, published research, Third International Scientific Conference, Faculty of Physical Education for Girls, Zagazig University. (in Arabic Language)
8. John Yacenda (1994): Fitness Cross-Training, Human Kinetic, Illinois, U.S.A, 1994.
9. Loy, s.f., Holla nd, cj., Mutton, D.L, Snow.J, HoffmanJ.J, &Shaw, S (1992): Cross Training Supported for General Fitness, of stair climbing vs. run training pm tread mill and track running performance medicine.science in sports and exercise.
10. Maha Mohamed Alhjurse (2007): the impact of the proposed training program in a cross- training on some physical and skills abilities among volleyball, and skills unpublished Ph.D. thesis, Faculty of Physical Education, Minia University. (in Arabic Language)
11. Martin Bidzinski(1996): The soccer coaching Hand book, the Crowood press, JW Arrow smith ltd, Bristol, 1996.
12. Matt Fitzgerald (2004): Runner's World Guide to Cross-Training, Rodale Books,U.S.A.
13. Mohamed Abdel Sattar Mahmoud)2005): the impact of developing some compound skills on some of fitness components for football junior, published research, Faculty of Physical Education, University of Mansoura. (in Arabic Language)
14. Mohamed Hussein Ahmed Jawed (2004): The effect of using cross- training on the effective performance of attack tactical within volleyball players, unpublished Ph.D. thesis, Faculty of Physical Education for Men, Alexandria University (in Arabic Language).
15. Mohamed Shawky Kishk, AMrAllah Ahmad Al-Busatti (2000): Foundations of skill and tactical preparation in football. (in Arabic Language)
16. Mohammed Hamid Shaddad(2006): the impact of cross- training in transitional phase to improve physical performance level within judo players, theories and applications journal of Faculty of Physical Education for Men, Abu Qir, Alexandria, Issue 59. (in Arabic Language).
17. Mohammed Hassan Mohammed (2002): using of cross-training in development of muscle strength for junior swimmers and its impact on the achievement level, Ph.D. thesis, unpublished, Faculty of Physical Education, Abu Qir, Alexandria University. (in Arabic Language)
18. Moran T. G & Mcglynn H. G (1997): Cross Training for Sports, Human Kinetics Books, San Francisco, U.S.A.
19. Roy Ress & Corvan Dermeer (1997): Coaching soccer successfully, human Kinetics.
20. Sharif Ibrahim Abdo (1997): an analytical study of some composite and single performances and their relationship to the results of matches in the World Cup 1995 U-17 football, Master Thesis, Faculty of Physical Education in Port Said, Suez Canal University, (in Arabic Language)
21. Shirin Aly Hassan (2010): Use of flexibility cross-training and its ability to develop the muscle endurance for swimmers and its impact on achievement level, unpublished Ph.D. thesis, Faculty of Physical Education for Men, Alexandria University. (in Arabic Language)
22. Stamford, Bryant (1996): Cross-Training: Giving Yourself a Whol-Body Workout, PhD, published in The Physician and Sports Medicine Vol 24, No., 1996.
23. White LJ, Dressendorfer RH, Muller SM, Ferguson MA (2003): Effectiveness of cycle cross-training between competitive seasons in female distance runners, Strength Cond Res Vol.,17(2):319-23.
24. Yasser Othman Mohamed Othman (2009): the impact of using cross- training method on physical and skill variables for football juniors, unpublished Master Thesis,Faculty of Physical Education for Men, Helwan University. (in Arabic Language)
25. Zaki Mohamed Hassan (2004): cross- training, a recent trend in sports training, Egyptian Library, Alexandria. (in Arabic Lang age).

3/1/2014