

INFLUENCE OF CORMS SIZE AND SPRAYING WITH BENZYLADENINE AND PACLOBUTRAZOL ON GROWTH AND FLOWERING CHARACTERISTICS OF FREESIA SP. L. PLANTS

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Abstract

This experiment was conducted at the Department of biology / College of Education for Pure Sciences / University of Diyala on the *Freesia sp. L.* which have the purple flowers in order to study the effect of the corms size which are divided into small corms with weight equal to or smaller than 3 g and large corms with weight greater than 3 g intertwined with spraying with the growth regulators (the benzyladenine) at concentration of 25 , 50 mg/l and paclobutrazol at concentration of 10 , 20 mg/L as well as the handling the comparison in the recipes of the vegetative growth of the freesia plants by using global experiment using a complete randomized design with four observations of the handling. The results that have been obtained showed the following: exceeding the plants that resulting from cultivation of the large corms in recording the biggest moral values for plant height of 43.2 cm and the number of leaves 8.4 leaf / plant and leaf area of 59.4 cm²/plant and the content of the papers of chlorophyll 158.3 SPAD units and earliness in the number of days which are necessary for the emergence of flowering buds of 136.4 days and the number of florets 10.2 florets/inflorescences as well as vase life which amounting to 11.8 day. Spraying plants with benzyladenine at concentration of 50 mg/l led to register the highest values for plant height and leaf area and in the required duration for the emergence of floral buds and the length of inflorescences of flowers and the number of florets and the coordination age which amounting to 49.2 cm, 63.6 cm²/plant , 140.6 days , 31.5 cm , 10.6 florets/inflorescences and 12.5 days respectively. While spraying with paclobutrazol at concentration of 20 mg /l , the lowest values for the height of plants and the number of days required for the emergence of floral buds and the length of inflorescences which amounting to 32.4 cm , 136.5 days and 24.7 cm respectively, by the other hand recorded the highest values of the number of leafs 8.8 leaf / plant and content of leafs of chlorophyll 198.1 SPAD units. Overall, the overlap between the size of the corms and spraying with benzyladenine at concentration of 50 mg/l to led to register the biggest values for the plants height and the leaf area and the length of inflorescences while the overlap between the size large corms and spraying with paclobutrazol at concentration of 20 mg /l led to register the highest values of the recipe of number of leaves and their content of chlorophyll and decrease the number of days which are required for the emergence of floral buds. The larger values recorded for the recipe of the number of days that are required for the emergence of floral buds and the number of florets and vase life has recorded in the overlap between plants that are resulting from small corms and sprayed with benzyladenine at concentration of 50 mg /l

KEYWORDS: CORMS. BENZYL ADENINE. VASE LIFE. PACLOBUTRAZOL. *Freesia sp.*

1. INTRODUCTION

The production of ornamental plants and trade of flowers and commercialization them became one of the important business in the global arena as the industry of production of ornamental plants and trade of flowers became large and spacious in our time and occupies a prominent place in the economies of many countries of the world especially the developed countries which their economy depends on these resources (Hassan, 2005) and the bulbs of ornamental flowers considered one of the most beautiful flowers which are rare not finding them in the gardens because of the shape and the color and time of appearance of their flowers in addition to the aromatic smell of the flowers of some kinds (Kattab and Wasfi 1988). Freesia plant considers a member of the Iridaceae family which belongs to the winter annuals bulbs which belong to the monocotyledoneae plants which its agricultural importance comes from production of cut flowers or flowering potted plants as well as aromatic smell of their flowers (Ali et.al 2011).

Many studies such as Al- Saad (2000) and Al-Sawaf and Alwan (2010) on *Freesia* plants and Mane et.al (2007) and Ahmed et.al (2009) on *Polianthus tuberosa* L. plant and Al-Shaykhli (2013) on the bulbs of *Iris holandric* showed that there are many factors which include the size of bulbs affect morally on the recipes of vegetative growth for the ornamental plant and even Hatamzadeh et.al (2012) pointed that the commercial farms and the amount of flowers yield depends mainly on the size of the planted bulbs . On the other hand, a lot of researches pointed to the importance of hormonal plants and their impact on many ornamental plants including ornamental bulbs through earliness and prolongation the coordination age and delaying aging and elongation of the leg and increasing the leaf area and increase the number of floral buds and the number of flowers in the inflorescences and increasing the length of petals and delaying their fall (Emongor, 2004 and Khan and Chaudhry, 2006 and Janowska, 2013), the cytokinin considered one of the plant hormones that play a key role in regulating the life cycle of the plant cell and many of the events in the evolutionary plant (Schmulling, 2004). Moreover many ornamental plants became treated with growth obstacles especially these who grown as flowering potted plants to improve the quality of the product without a detrimental effect on the morphology of the plant but works at the same time to delay the plant growth by blocking cell division in the under apical region including paclobutrazol and cycocel (Henny, 1990 and Dole and Wilkins, 2005). Due to the importance of Freesia plant from the economic aesthetic side and the validity of flowers for coordination as well as being one of the important flowering potted plants due to the need of commercial varieties to the support to preserve the integrity of growth, this study conducted in order to study the effect of the size of corms and spraying with benzyladenine and paclobutrazol in recipes of vegetative growth and flowering .

2. RESEARCH MATERIALS AND ITS METHODS

The experiment was conducted in a plastic house in the College of Educational for Pure Science / Diyala University for the period from October 2013 until April 2014 where the corms of *Fressia sp.* plants with purple flowers planted on 10.10.2013 in plastic pots at diameter 25 cm containing 12 kg of dried aerobically component such as soil of gardens and animal manure (sheep) with full decomposition and has volumetric ration of 3: 1: 1 and 5 cm in depth.

The study included the following factors: the size of corms which are divided into two sizes depending on the weight of the corms into small corms which have the average weights of smaller or equal to 3 g and the large corms which have the average weight of greater than 3g overlapping with spraying by growth organizers; the benzyladenine (BA) at concentration of 25, 50 mg / l and the paclobutrazol (PBZ) at concentration of 10 , 20 mg /l without overlap between them as well as treatment the comparison which sprayed with distilled water. The growth regulators was sprayed in the early morning and in two phases, the first one when there was on the plants two complete papers and the second after the arrival of plants to the fifth paper and thus the experiment included two important factors ; the size of corms and spraying with growth regulators as an experiment with the complete randomized design and with four experimental units for each the rates then compared according to polynomial Duncan test at 5% probability (Daoud and Abd- Elias, 1990). The data recorded on traits during the opening of basal rosette of floral inflorescences which included:

Recipes of vegetative growth

1. Plant height (cm): The measurement done starting from the base of the plant until the top of the longest paper with metric ruler.
2. Number of leaves Leaf/Plant.
3. The leaf area (cm²/plant) was calculated according to the method that described by Watson and Watson (1953) as a random sample of the plant has been taken one of each treatment then a known area was cut then dried in an

electric furnace at a temperature of 75°C until stability of the dry weight and then the area of the leaf calculated according to the following equation :

Leaf area (cm ²) =	the dry weight of leaves X the leaved area	X number of the known leaves
	The dried weight of the known leaf area	

- Measuring the chlorophyll content of leaves using a SPAD-502 chlorophyll meter and by SPAD units

Recipes floral growth

- The number of days required for the emergence of floral buds (day): calculated by the number of days from the date of agriculture until the emergence of floral buds.
- The length of inflorescences : which measured from the area of the inflorescences emergence of between leaves to the top.
- Number of florets / inflorescences.
- Vase life (Day): calculated from the date of picking floral inflorescences when the first basic flower opens until loss of the value of vase life value(Williom, 1987) and using only tap water and at room temperature.

Various service operations done for all plants symmetrically which included hoeing the soil and get rid of the developing bushes and irrigation was conducted manually when the soil dry . A program for the prevention of diseases used with the fungicide control sodec which contain 278g / L and 222 g / L of dimethoate and chlorpyrifos respectively and by 1 g / liter for each spray, the plants sprayed with pesticide Mancozeb 80% to combat biting insects during the emergence of symptoms of injury.

3. RESULTS AND DISCUSSION

Recipes of vegetative growth

Plant height (cm)

Data in table (1) pointed to outweigh the freesia plants that resulting from cultivation of large-size corms in the recipe of plant height which equal to 43.2 cm in comparison with the height of the plants that result from small size corms which are 34.7 cm. plants that sprayed with benzyladenine at concentration of 50 mg / l in their height which was 49.2 cm exceeds morally while the plants that sprayed with paclobutrazol at concentration of 20 mg / l showed lower values of plant height which amounting to 32.4 cm. The overlapping data between the size of corms and spraying by growth regulators showed that the highest moral values 53.0 cm recorded in plants heights that result from cultivation of large corms which sprayed with benzyladenine at concentration of 50 mg / l and this value descended to the lowest in the plants that result from cultivation of small corms that sprayed with paclobutrazol at concentration of 20 mg / l as it amounted to 24.5 cm.

Number of leaves / plant:

The results in the table (1) shows the moral superiority of plants that result from cultivation of large corms from those resulting from cultivation of small corms in the number of leaves per plant. The plants sprayed with paclobutrazol at concentration of 20 mg / l exceeded in the number of leaves as reached 8.8 leaf / plant which did not differ significantly from the treatment with paclobutrazol at concentration of 10 mg / l and benzyladenine at concentration of 50 mg / l. The data indicate that the plants resulting from cultivation of large corms which sprayed with paclobutrazol at concentration of 20 mg / l has recorded the highest moral values of the number of leaves amounting to 9.0 leaf / plant and has recorded lower values of 7.0 and leaf / plant in plants resulting from small corms that have not sprayed with growth regulators.

Table (1): Effect the size corm and spraying with benzyladenine and with paclobutrazol in the recipe of plant height (cm) and number of leaves of *Freesia sp.* plants.

Size of corms (g)	Concentration of growth regulator (mg/l)					Effect of corms size
	0	25 BA	50 BA	10 PBZ	20 PBZ	
The plant height (cm)						
The small	39.0 b-e	34.5 d-e	45.5 a-c	30.0 e-f	24.5 f	34.7 b
The large	40.3 b-d	46.6 ab	53.0 a	36.0 c-e	40.3 b-d	43.2 a
Effect of growth regulators	39.6 b	40.5 b	49.2 a	33.0 c	32.4c	
Number of leaves						
The small	7.0 d	7.5 cd	8.3 a-c	7.6 b-d	8.6 ab	7.8 b
The large	8.0 a-d	7.6 b-d	8.6 ab	8.6 ab	9.0 a	8.4 a
Effect of growth regulators	7.5 b	7.5 b	8.5 a	8.1 ab	8.8 a	

Values of the similar letters to each factor or their interventions do not differ significantly according to polynomial Duncan test under probability level of 5%.

THE LEAF AREA (CM² / PLANT):

The plants resulting from cultivation of large corms exceeded morally which amounting to 59.4 cm² (Table 2) compared to a value of 54.5 cm² which recorded for plants resulting from cultivation of small corms. The plants that sprayed with benzyladenine at concentration of 50 mg / l in the area of their leaves which amounting to 63.6 cm² exceeded over plants of comparison treatment. The overlap data indicate that plants resulting from the cultivation of large size which sprayed with benzyladenine at concentration of 50 mg / L has recorded the highest values of 72.3 cm² of leaf area and that this value be brought down to a minimum of 38.3 cm² in comparison plants resulting from cultivation of large corms that have not sprayed with growth regulators.

THE CONCENTRATION OF CHLOROPHYLL (SPAD UNITS)

Noted from the data in table (2) that the freesia plants resulting from large corms has recorded the highest moral values of the concentration of chlorophyll amounting to 158.3 SPAD units compared to plants resulting from the cultivation of small size corms which amounting to 135.5 SPAD units and the plants that sprayed with paclobutrazol at concentration of 20 mg / l exceed morally form all other treatments at concentration of chlorophyll amounting to 198.1 SPAD units. The overlapping data shows that plants resulting from the cultivation of large corms and sprayed with paclobutrazol at concentration of 20 mg / L recorded the highest moral values which amounting to 204.1 SPAD units while in comparison with plants that resulting from cultivation of small size corms.

Table (2): Effect the size of corm and spraying with benzyladenine and paclobutrazol in the leaf area (cm²/ plant) and the concentration of chlorophyll (SPAD units) in the leaves of *Freesia sp.* plants.

Size of corms(g)	Concentration of growth regulator(mg/l)					Effect of corms size
	0	25	50	10	20	

		BA	BA	PBZ	PBZ	
The leaf area (cm ² /plant)						
The small	46.8 d	54.4 cd	54.9 cd	55.4 cd	61.0 b-c	54.5 b
The large	38.3 e	67.1 ab	72.3 a	53.6 cd	65.6 ab	59.4 a
Effect of growth regulator	42.5 c	60.7 a	63.6 a	54.5 b	63.3 a	
Concentration of chlorophyll (SPAD units)						
The small	72.1 i	89.7 h	162.3 d	161.4 d	192.2 b	135.5 b
The large	109.6 g	142.1f	181.0 c	155.1 e	204.1 a	158.3 a
Effect of growth regulators	90.8 e	115.9 d	171.6 b	158.2 c	198.1 a	

Values of the similar letters for each factor or their interventions do not differ significantly according to polynomial Duncan test under probability level of 5%

RECIPES OF FLOWERING GROWTH

THE NUMBER OF DAYS REQUIRED FOR THE EMERGENCE OF FLORAL BUDS (DAY):

The results in the table (3) indicate that the cultivation of plants resulting from the large size of freesia corms had an early flowering as it took for the emergence of floral buds period amounted to 136.4 days compared to plants resulting from small-size cultivation corms which recorded a period amounted to 140.6 days. And the time required for the emergence of floral buds reduced to 136.5 days in plants that are sprayed with paclobutrazol at concentration of 20 mg / l while the delayed appearance of floral buds to 140.6 days when spraying plants benzyladenine at concentration of 50 mg / l. The overlapping data indicate that the plants resulting from cultivation of large corms and sprayed with paclobutrazol has reduction in the time required for the emergence of floral buds which amounting to 135.0 days while the highest values for the number of days required for the emergence of floral buds amounting to 142.0 days and recorded in plants resulting from cultivation of small corms and sprayed with benzyladenine and both concentrations under study.

LENGTH OF FLOWERING INFLORESCENCES (CM):

Noted from the data in the table (3) that the size of corms did not have a significant impact on the length of the flowering inflorescences although the plants resulting from the cultivation of large corms had given floral inflorescences taller than the plants resulting from cultivation of small corms. The highest values of the floral corms floral which amounting to 31.5 cm has been recorded in plants that sprayed with benzyladenine at concentration of 50 mg / l while spray plants with paclobutrazol at concentration of 20 mg / l led to the reduction of the length of floral corms to 24.7 cm. And the plants resulting from the cultivation of the small size of corms which splashed with benzyladenine at concentration of 25 mg / l recorded higher values amounting to 33.3 cm and this value descended to a minimum of 22.7 cm in inflorescences of plants resulting from the cultivation of the small size corms which sprayed with paclobutrazol at concentration of 20 mg/l.

Table (3): The effect of the size of corm and spraying with benzyladenine and paclobutrazol in the number of days required for the emergence of floral buds (day) and the length of floral corms (cm) for *Freesia sp.* plants

Size of corms(g)	Concentration of growth regulators(mg/l)					Effect of the size of corms
	0	25 BA	50 BA	10 PBZ	20 PBZ	
Number of days required for appearance of floral buds (day)						

The small	140.6 ab	142.0 a	142.0 a	140.3 ab	138.0 a-c	140.6 a
The large	136.3 bc	136.6 bc	139.3 ab	134.6 c	135 c	136.4 b
Effect of growth regulators	138.5 ab	139.3 ab	140.6 a	137.5 b	136.5 b	
Length of floral inflorescences						
The small	24.0 cd	33.3 a	30.0 a-c	25.1 cd	22.7 d	27.0 a
The large	32.3 ab	25.5 b-d	33.1 a	27.3 a-d	26.6 a-d	29.0 a
Effect of growth regulators	28.1 ab	29.4 ab	31.5 a	26.2 b	24.7 b	

Values of the similar letters to each factor or its interventions do not differ significantly according to polynomial Duncan test under level of probability equal to 5 %

NUMBER OF FLORETS / INFLORESCENCES

The results in the table (4) show superiority of the plants that resulting from cultivation of large corms in comparison with the plants resulting from cultivation of small corms in the recipe of number of florets. Spraying plants with growth regulators led to increase in the number of florets per inflorescences in comparison with plants of comparison. It seems clear from the overlapping data that the highest values of 11.0 floret/ inflorescences recorded in plants resulting from cultivation of small corms and sprayed with benzyladenine at concentration of 50 mg / L in comparison with plants of comparison that resulting from cultivation of small corms and recorded a value amounted to 7.3 floret/ inflorescences.

THE VASE LIFE (DAY)

Data in Table (4) referred to the significant superiority of the cut inflorescences of plants that resulting from cultivation of large corms in the recipe of vase life as recorded 11.8 days before the appearance of signs of wilt in comparison to vase life of the cut inflorescences of plants that resulting from cultivation of small corms which amounting to 10.7 days. Spraying plants with growth regulators which are under study shows the increase the life of the vase life of the cut inflorescences and recorded the highest values of 12.5 days when sprayed with benzyladenine at concentration of 50 mg / l. The overlapping data indicate that the highest values has recorded 13.0 days of vase life from the plants that resulting from the cultivation of the small size of freesia corms and this value has declined to 9.0 days in the life of the vase life of comparison plants that resulting from cultivation of small corms

Table (4): The effect of size of corm and spraying with benzyladenine and paclobutrazol in the number of florets / inflorescences and vase life (day) for Freesia sp. plants.

Size of corms (g)	Concentration of growth regulators(mg/l)					Effect of corms size
	0	25 BA	50 BA	10 PBZ	20 PBZ	
Number of inflorescences						
small	7.3 b	9.5 a	11.0 a	9.5 a	10.0 a	9.4 b
large	10.3 a	10.6 a	10.3 a	10.1 a	9.6 a	10.2 a
Effect of growth regulators	8.8 b	10.0 ab	10.6 a	9.8 ab	9.8 ab	
The vase life						
small	9.0 d	10.5 b-d	13.0 a	9.5 cd	11.5 a-c	10.7 b

large	11.5a-c	11.5 a-c	12.0 ab	12.0 ab	12.0 ab	11.8 a
Effect of growth regulators	10.2 b	11.- a-b	12.5 a	10.7 b	11.7 a-b	

The values of similar letters to each factor or their interventions do not differ significantly according to polynomial Duncan test under level of probability of 5%

Overall, the results of the current study indicate that the use of freesia corms of large size led to a significant increase in all the qualities of the vegetative growth of the plants produced from them which contain the recipe of plant height and the number of leaves and the leaf area and the concentration of chlorophyll in the leaves, these results are consistent with the findings of the Saad (2000) on freesia plants and Addai and Scott (2011) on the Hyacinth and lily plants, the cause may be attributed to the amount of stored food such as carbohydrates which increases with the size of corms as well as the degree of physiological maturity and which is reflected on the strength plant growth and then reflected on the floral growth recipes, as the plants that resulting from cultivation of large-sized corms outperformed morally than plants that resulting from small sized corms in the recipe of the number of days required for flowering and these results are consistent with the findings of the Moradian (1983) on the *Gladiolus* plant and Shaykhli (2013) on the iris plant and superiority was morally in every recipe of the number of florets per each inflorescences and the coordinating age of inflorescences as well as the increase in the length of floral inflorescences and this is in accordance to what Al-Saad found (2000) on the freesia plant and Mane et.al (2007).

The moral superiority which of the plants that sprayed with benzyladenine in the recipe of plant height with increase in concentration may be due to the role of cytokinin of increasing the cell division and the addition of new cells to the plant (Mazher et.al, 2011), the plants that treated with paclobutrazol recorded the lower values in plant height and in this direction several studies suggest that the growth obstacles effect on the biosynthesis of jprlin by inhibiting it through turning in its built way (Chaney, 2005) so the growth obstacles have an effect opposite to the jbrlin their effects not appear in developing tops but appear in the sub apical parts by inhibition cell elongation (Saleh, 1991). The results showed that the largest leaf area recorded when the plants sprayed with benzyladenine at concentration of 50 mg / l although the biggest values of the number of leaves recorded in the plants that are sprayed with paclobutrazol at concentration of 20 mg / l and this result could be explained on the basis that the estimation of the leaf area depended on the value of dry weight of known area which indicate that the leaves of plants treated at concentration of 50 mg / liter of benzyladenine was thicker and richer in content of dry matter which was reflected in recording the larger values. The data of leaves content of chlorophyll show that spraying plants at concentration 20 mg / l of paclobutrazol has recorded the highest moral values and has been attributed that according to Grossmann (1992) in his study about soybean and Sebastian et.al (2002) on the cloves plant that treatment plants with growth inhibitors increases the content of plant of the cytokinin which plays an important role in the differentiation and development of chloroplast and works on the construction of chlorophyll and inhibit its destruction (Horgan, 1984) and this is what confirmed by the recorded value confirms the of the content of leaves of chlorophyll during treatment of plants with benzyladenine at concentration of 50 mg / l and this determines in the same direction the effect of spraying plants at concentration of 20 mg / l with paclobutrazol in the number of leaves which recorded the highest values which did not differ significantly during the treatment at concentration of 50 mg / l with benzyladenine because of regulatory role of cytokinin in in the formation of leaves through the promotion of cell division at the developing top and their differentiation into leaves.

The increase in the number of days required for the emergence of floral buds directly proportional with the increased in the concentration of the used benzyladenine (Table 1) may be as the result of the lengthening the bully phase of plants as said Abd-Elhamid et.al (1993) that the overlapping between the cytokinin and some internal hormones may lead to inhibit the emergence of buds. And that the increase in the length of the inflorescences bearer during treatment with benzyladenine may be due to the effective role of cytokinin in increasing the concentration of internal gibberellin which led to increase cell division and their elongation (Abdoul 1991). Also the accumulation of nutrients in the plant which sprayed with growth regulators may has a role in increasing the number of florets / inflorescences in comparison with the treatment comparison and the results observed in the data of vase life reinforce this interpretation as noted that spraying plants with benzyladenine and paclobutrazol and in different concentrations adopted in the experiment increased the vase life although they are no different morally form comparison treatment which may be attributed to the increase in the content of plants from carbohydrates which would be reflected on the content of the flowers of carbohydrates which as a result on the content of

flowers because they are the main source of energy in the plant cell and this increase reflected on the coordination age, as reported by Capdeville et.al(2003) that there are many reasons for the role of carbohydrates (such as sucrose) in prolong the age of the coordinating flowers such as maintaining the structure and function of mitochondria and other organelles in the cell and its role in regulating the withdrawal of water and minerals to the vessels of wood through the control of transpiration as well as the highest values of the vase life which registered for the inflorescences which cut from plants that sprayed with benzyladenine at concentration of 50 mg / l may be due to the role of cytokinins in maintaining the permeability of cell membranes and water balance (Bufler et.al, 1980) or its role in inhibition protein analyzing and RNA in plant cells as it works at its accumulation sites on the withdrawal of nutrients and free amino acids and sugars (Wasfi,1995) and that the existence of ideal concentration works to reduce the sensitivity of flowers to ethylene and thus delay florets wilting and falling them which terminates the vase life of them (Sankhla et.al 2005). It is noted that the results taken an inverse relationship with the concentrations of paclobutrazol in the recipe of the period required for the emergence of floral buds and the length of floral inflorescences which may explain according to the role of paclobutrazol in obstruction the effect of gibberellin (GA₃) (Scott et.al 1999) through its role in the inhibition of biosynthesis of gibberellin or interference with its effects or even speed up the destruction process and therefore this is also reflected on reducing its role in the decomposition of starch into sugars in the leaves and flowers which is reflected in the improvement of the coordination age by improving water balance where through increasing the dissolved parts in the cell and thus withdraw larger amounts of water (Emongor, 2004 and Hopkins and Huner, 2004).

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PREPARATION AND CHARACTERISATION OF SOME TRANSITION METAL COMPLEXES OF NEW 4-[(5-ETHYL-1,3,4-OXADIAZOL-2-YL)SULFANYL]ANILINE

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Abstract

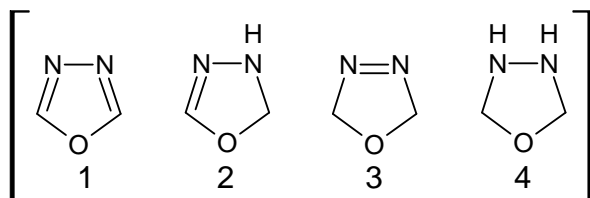
1,3,4-oxadiazoles are important because of its versatile biological actions such as antimicrobial, anti-malarial, anticonvulsant, hypoglycemic, also analgesic, anti-inflammatory, anticancer, anti-HIV agent. In the present study the solid complexes of Fe(II), Cr(III), Co(II), Ni(II), and Cu(II) with Synthesis of 4-[(5-ethyl-1,3,4-oxadiazol-2-yl)sulfanyl]aniline have been synthesized and characterized by using the spectroscopic IR, ¹HNMR, Mass as well as by elemental analyses C, H, N and Molar conductance they were studied. It may be concluded that the ligands coordinate through Nitrogen and Sulfur as atoms shown in Scheme (2). For all the complexes. The ligand acts as a didentate ligand coordinating through the oxadiazole nitrogen and the Sulfur atom of 2-sulfanyl. This view is further supported by the appearance of a band corresponding to the metal–nitrogen and the metal–Sulfur stretching vibration at 503–553 cm⁻¹ and 474–484 cm⁻¹ in the complexes. The physicochemical data suggest the octahedral geometry for all complexes except for Ni and Ca complexes which were tetrahedral respectively.

KEYWORDS: PREPARATION. CHARACTERISATION. TRANSITION. METAL. SULFANYL.

1. INTRODUCTION

1,3,4-Oxadiazole is a heterocyclic molecule with oxygen atom at 1 and two nitrogen atoms at 3 and 4 position. They have been known for about 80 years, it is only in the last decade that investigations in this field have been intensified. This is because of large number of applications of 1,3,4-oxadiazoles in the most diverse areas.

It also contains broad range of therapeutic activity Oxadiazoles belong to an important group of heterocyclic compounds having –N=C-O- linkage [1]. 1,3,4-Oxadiazole (1) is thermally stable aromatic heterocyclic and exists in two partially reduced form (2); 2,3,-dihydro 1,3,4-Oxadiazole and (3) 2,5-dihydro-1,3,4-Oxadiazole depending on the position of the double bond. The completely reduced form of 1,3,4-Oxadiazole is designated as 2,3,4,5-tetrahydro-1,3,4-Oxadiazole (4) [2].



Due to the interesting activity of 2, 5-disubstituted 1,3, 4-oxadiazole as biological agent's considerable attention has been focused on this class. The pharmaceutical importance of these compounds lies in the fact that they can be effectively utilizing as antibacterial, anti-tubercular and insecticidal agents. Some of these compounds have also analgesic, anti-inflammatory, anticancer, anti-HIV agent, anti-Parkinsonism and anti-proliferative agent. In addition, 1,3,4-oxadiazole have played a crucial part in the development of theory in heterocyclic chemistry and also used extensively in organic synthesis [3].

1,3,4-Oxadiazole is a versatile lead molecule for designing potential bioactive agents. The 1,3,4-oxadiazole derivatives have been found to exhibit diverse biological activities such as antimicrobial, anti-malarial, analgesic, anticonvulsant, hypoglycemic [4].

The coordination chemistry of transition metal complexes of heterocyclic compounds, involving oxadiazole ligand have attracted much attention in recent years due to the fact that those ligands around central metal ions in natural systems are unsymmetrical. Generally the prepared complexes exhibited a greater activity and show good models of biological systems that compared to (L).

Mahmoud Najim Al-Jibori, Sinan AL-Bayati and Majeed Rasheed had synthesized complexes of 1,3,4 oxadiazole. All complexes have been screened biologically against +ve and -ve Grams bacteria and fungi, it is found that most newly complexes showed remarkable activity against the tested microorganisms in comparison with standard Tetracycline and Amphertoriaine drugs [5].

S.K. Ibrahim, F.M. Abdul-Hammed and M.F. Alias. They were concluded the metal complexes of 1,3,4-oxadiazole Ligand exhibited a greater activity against the studied bacteria *Pseudomonas aeruginosa* and micro-organisms *Bacillus subtilis*, compared to (L) [6].

2. OBJECTIVES

1. Preparation of new 1,3,4 oxadiazole derivative 4-[(5-ethyl-1,3,4-oxadiazol-2-yl)sulfanyl]aniline Preparation of some transition metal complexes $[\text{Fe}(\text{L})_2\text{Cl}_2]\text{Cl}$, $[\text{Cr}(\text{L})_2\text{Cl}_2]\text{Cl}$, $[\text{Co}(\text{L})_2\text{Cl}_2]\text{Cl}$, $[\text{Cu}(\text{L})\text{Cl}_2]$, $[\text{Ni}(\text{L})\text{Cl}_2]$.
2. Identification of synthesized Ligand and Complexes by IR, ¹HNMR Spectra, Mass spectroscopic as well as by elemental analyses C, H, N and Molar conductance.
3. Prepared complexes has greater activity and good models of biological activity systems comparable to Ligand.

3. MATERIAL

1) Ethyl propionate 2) Hydrazine hydrate 3) absolute ethanol 4) KOH 5) CS₂ 6) hydrochloric acid
7) 4-bromoaniline 8) pyridine.

4. EXPERIMENTAL WORK

4.1 PREPARATION OF LIGAND

First step: Synthesis of propanehydrazide :

A mixture of 0.1 mole (10.2 gm) of Ethyl propionate and 0.2 mole (10ml) Hydrazine hydrate were refluxed in 150 ml of absolute ethanol for 5 hr. The resultant mixture [A] was concentrated, cooled, The resultant is Colorless liquid, The purity of the compound was followed by TLC. Yield: 85.3 %, B.p 134-136. [7]

Second step: Synthesis of 5-ethyl-1,3,4-oxadiazole-2-thiol :

A mixture of [A] (8.8 gm, 0.1 mole), KOH (5.6 gm, 0.1mole) and CS₂ (12 ml, 0.2 mole) was refluxed in absolute ethanol (200 ml) for 23 hours or until evolution of hydrogen sulfide ceases. The excess of solvent was removed under vacuum and the residue was mixed with ice and poured onto ice water containing hydrochloric acid. The Pale yellow precipitate which separated was filtered and recrystallized from ethanol to give 5-ethyl-1,3,4-oxadiazole-2-thiol [B], The purity of the compound was followed by TLC. Yield: 82.7 %, m. p. 197-199C. [8]

Third step: Synthesis of 4-[(5-ethyl-1,3,4-oxadiazol-2-yl)sulfanyl]aniline:

A mixture of (0.65gm, 0.005mol) of 5-ethyl-1,3,4-oxadiazole-2-thiol and (0.005mol) of 4-bromoaniline were refluxed in 25 ml of pyridine solution for 3.5 hrs. The resultant mixture was cooled and poured into crushed ice. The Brownish yellow [C]

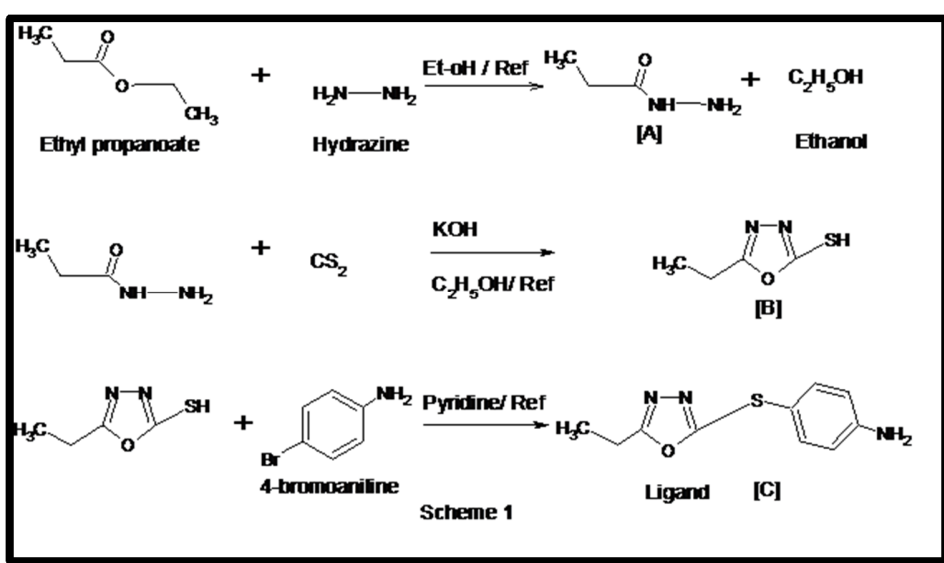
mass is thus separated out was dried and recrystallized from ethanol. The purity of the compound was followed by TLC .Yield: 74.8 %, m. p. 137-139C .[9]

4.2 PREPARATION OF COMPLEXES

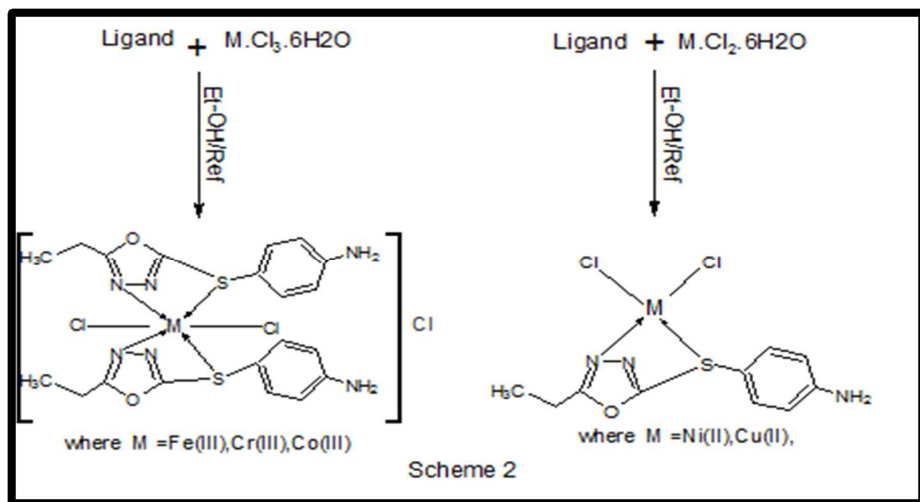
The hydrated metal chloride salts of The Fe(III), Cr(III), Co(III), Ni(II) and Cu(II) (0.01 mol) was added to solution of the ligand 2.21gm (0.01mol) in hot absolute ethanol (40 mL) and the mixture was refluxed on a water bath for 2 hours and the solvent was evaporated in vacuum to half of the original volume and then cooled . The isolated complexes were filtered off , washed several times with ethanol and finally dried in air [10] .

5. PRECENT WORK

5.1 PREPARATION OF LIGAND



5.2 PREPARATION OF COMPLEXES



6. RESULTS AND DISCUSSION

The purity of the ligand and its complexes were checked by TLC. Molecular formula, physical properties and Molecular weight and molar conductance data of the ligand and its complexes tabulated in table (1) and (2).

elemental analysis, Infra-Red Spectroscopy as shown in a figure (1,2,3) tabulated in table (3) and (4). The spectral data of ¹H-NMR Spectra for the free ligand reported in figure (4) while The Mass Spectra shown in a figure (5,6,7,8,9,10) and tabulated in Table(5). The calculated values were in a good agreement with the experimental values.

Table 1. Molecular formula, physical properties and Molecular weight data of the ligand and its complexes.

NO	Formula	M.Wt	Color	M.P C	Yield %
L	C ₁₀ H ₁₁ N ₃ OS	221	Brownish yellow	137-139	74.8
1	[Fe(L) ₂ Cl ₂]Cl	604	Brown	170-168	83.3
2	[Cr(L) ₂ Cl ₂]Cl	600	Pale Brown	163-165	89.1
3	[Co(L) ₂ Cl ₂]Cl	607	Green	177-179	77.8
4	[Cu(L)Cl ₂]	355	Pale green	153-151	75.5
5	[Ni(L)Cl ₂]	350	Pale brown	143-145	78.3

Table 2. Molar conductance data of all complexes measurements were made in anhydrous DMSO at 25°C, Concentration 10⁻⁴ at 298K.

NO	Formula	$\Lambda_M(S.cm^2.mol^{-1})$	Electrolyte Type
1	[Fe(L) ₂ Cl ₂]Cl	27,7	1:1
2	[Cr(L) ₂ Cl ₂]Cl	33.4	1:1
3	[Co(L) ₂ Cl ₂]Cl	32.2	1:1
4	[Cu(L)Cl ₂]	17.5	Non Electrolyte
5	[Ni(L)Cl ₂]	20.3	Non Electrolyte

Table3. elemental analysis data for the ligand

Experimental			Theoretical		
C%	H%	N%	C%	H%	N%
54.56	4.95	19.2	54.28	5.01	18.99

6.1 INFRA-RED SPECTROSCOPY

The FTIR spectrum for L shows a characteristic stretching absorption bands . 3300 cm⁻¹, 3065 cm⁻¹, 2943 cm⁻¹, 1581 cm⁻¹, 1419 cm⁻¹, 1321 cm⁻¹ assigned to ν N-H group , ν C-H Aromatic C-H Aliphatic , C=N of the oxadiazole ring, symmetrical C-O-C, asymmetrical C-O-C stretching respectively. The C=N stretching vibrations are important to predict the bonding mode of the ligand ,these bands shift lower wavelength in the spectra of complexes compare with ligand, observed changes are the evidences of complexation had happened [11]. The IR data of the complexes are shown in Table (4) and figures (1,2,3). The Table lists the stretching frequency (ν) for some of the characteristics groups exhibited by the ligand and complexes.

6.2 ¹H-NMR SPECTRA

The spectral data for the free ligand in DMSO-solution was reported along with the possible assignments in experimental. The proton nuclear magnetic resonance spectral data gave additional support for the composition of the ligand, All the protons are at their expected region. The Ar-H, NH₂ and CH₃, CH₂-C=N proton signals, are shown in the regions of 7.5-8.0, 5.3, 1.3, 2.8 and ppm, respectively, The number of protons calculated from integration curves and the recorded chemical shifts in figure (4)[12] .

6.3 MASS SPECTRA

The mass spectrum of the ligand shows a molecular ion peak [M/e] at 221, the ligand spectra shows fragment ion peak at m/e (205, 192, 166, 124, 97, 92, 77 and 65 due to [C₁₀H₉N₂OS]⁺, [C₈H₆N₃OS]⁺, [C₇H₆N₂OS]⁺, [C₆H₆NS]⁺, [C₄H₅N₂O]⁺, [C₆H₆N]⁺, [C₆H₅]⁺, [C₅H₅]⁺ , respectively as shown in Figure(5) . The mass spectrum of the complex [Fe(L)₂.Cl₂]Cl shows a molecular ion peak at m/z 604 which is equivalent to molecular mass of the complex. This complex shows another a fragment ion peak with loss of chlorine atom at m/z 569. the ligand spectra shows fragment ion peak with loss two chlorine atom at m/e (533, 498) due to [Fe(L)₂Cl]⁺ and [Fe(L)₂]⁺ . Respectively as shown in Figure(6).

The mass spectrum of the complex [Cr(L)₂.Cl₂]Cl shows a molecular ion peak at m/z 600 which is equivalent to molecular mass of the complex. This complex shows another a fragment ion peak with loss of chlorine atom at m/z 565. The ligand spectra shows fragment ion peak with loss two chlorine atom at m/z (530, 494) due to [Cr(L)₂Cl]⁺ And [Cr(L)₂]⁺ . Respectively as shown in Figure (7). The mass spectrum of the complex [Co(L)₂.Cl₂]Cl shows a molecular ion peak at m/z 607 which is equivalent to molecular mass of the complex. This complex shows another a fragment ion peak with loss of chlorine atom at m/z 572. the ligand spectra shows fragment ion peak with loss two chlorine atom at m/z (536, 501) due to [Co(L)₂Cl]⁺ and [Co(L)₂]⁺ . Respectively as shown in Figure(8). The mass spectrum of the complex [Ni(L)Cl₂]⁺ shows a molecular ion peak at m/z 350 , This complex shows another a fragment ion peak with loss two chlorine atom at m/z 315, 279 due to [Ni(L)Cl]⁺ , [Ni(L)]⁺ . Respectively as shown in Figure (9).

The mass spectrum of the complex [Cu(L)Cl₂]⁺ shows a molecular ion peak at m/z 355 , This complex shows another a fragment ion peak with loss two chlorine atom at m/z 320, 284 due to [Cu(L)Cl]⁺ , [Cu(L)]⁺ . Respectively as shown in Figure (10).

7. CONCLUSIONS

In the present work, a series of Fe(III), Cr(III), Co(III), Ni(II), Cu(II) complexes with new ligand (L), have been prepared and characterized on the basis of IR, ¹H NMR, Mass spectroscopic as well as by elemental analyses C, H, N and Molar conductance.

According to all the and physiochemical measurements as the prepared complexes, we can suggested the chemical configuration for the complexes. The ligand (4-[(5-ethyl-1,3,4-oxadiazol-2-yl)sulfanyl]aniline) was successfully synthesized as shown in the scheme (1). The ligand was treated to different transition metal salt to form the corresponding complexes as shown in the scheme (2). It may be concluded that the ligand coordinate through Nitrogen and Sulfur atoms . This view is further supported by the appearance of a band corresponding to the metal-nitrogen and the metal-Sulfur stretching Vibration at 503–553 cm⁻¹, 474–484 cm⁻¹ respectively in the complexes . (Cr(III), Fe(III) and Co(III)) leading to the formation Octahedral geometry complexes . while the Cu and Ni atoms leading to the formation tetrahedral geometry complexes.

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APPENDAGES

Table4. Infra-Red Spectroscopy absorption bands of ligand and its complexes

NO	Compound	ν C-H Ali-phatic Aromatic	ν N-H	ν C=N	ν C-O-C Asy,Sy	ν C-S	ν M-N	ν M-S	ν M-Cl
1	C ₁₀ H ₁₁ N ₃ OS	2943 Ali 3065 Aro	3300	1581	1419 Sy 1321 Asy	771	----	----	----
2	[Fe(L) ₂ Cl ₂]Cl	2939 3020	3298	1637	1421 1317	763	503	474	355
3	[Cr(L) ₂ Cl ₂]Cl	2945 3050	3295	1629	1412 1313	765	511	477	360
4	[CO(L) ₂ Cl ₂]Cl	2935 3045	3296	1620	1405 1310	769	521	483	367
5	[Ni(L)Cl ₂]	2925 3030	3302	1618	1400 1306	770	536	480	374
6	[Cu(L)Cl ₂]	2941 3011	3304	1612	1396 1301	771	553	484	387

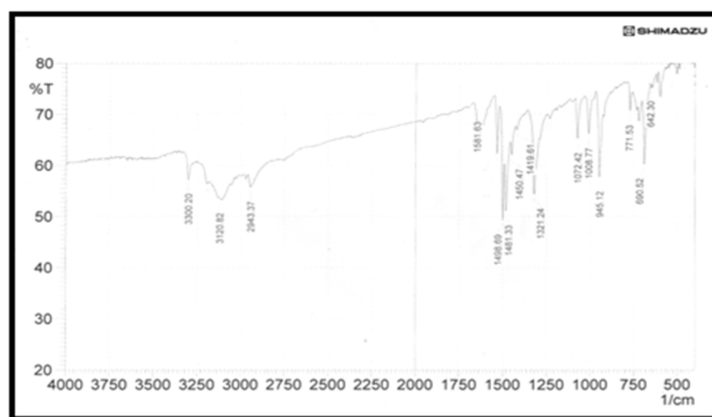


Figure (1) IR spectrum of the ligand cm-1

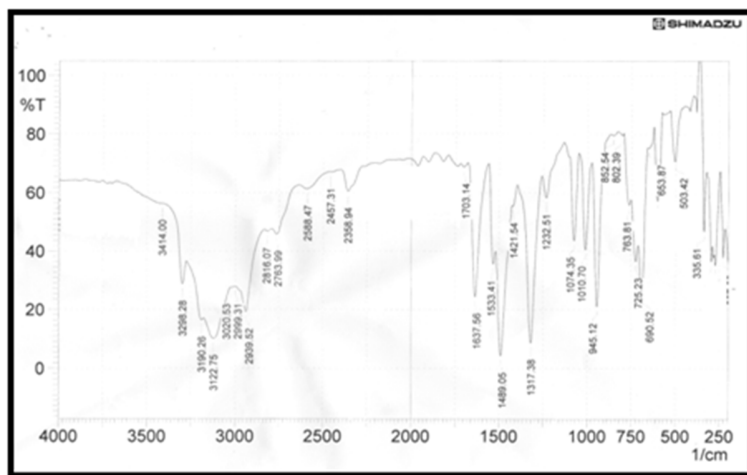


Figure (2) IR spectrum of the [Fe(L)₂Cl₂]Cl cm⁻¹

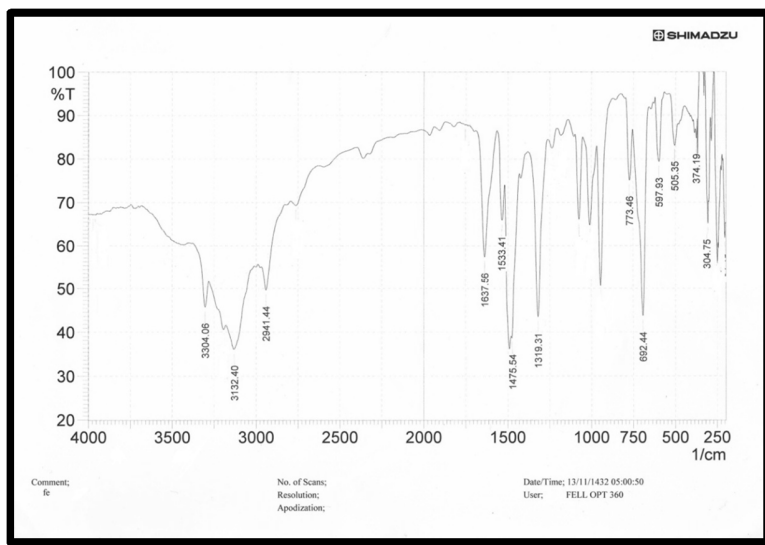


Figure (3) IR spectrum of the [Cu(L)₂Cl₂] cm⁻¹

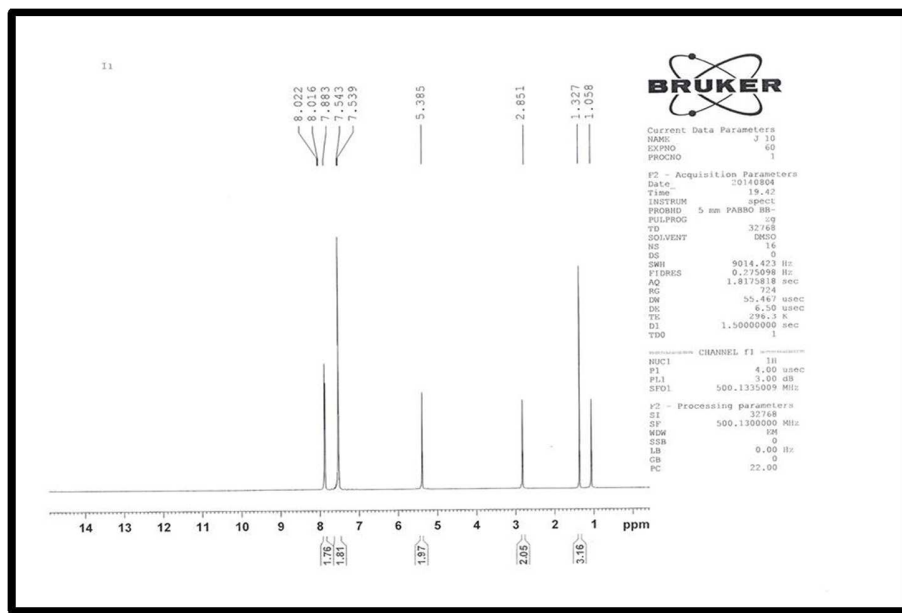
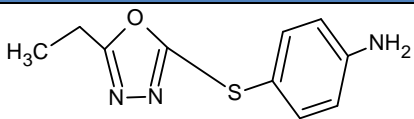
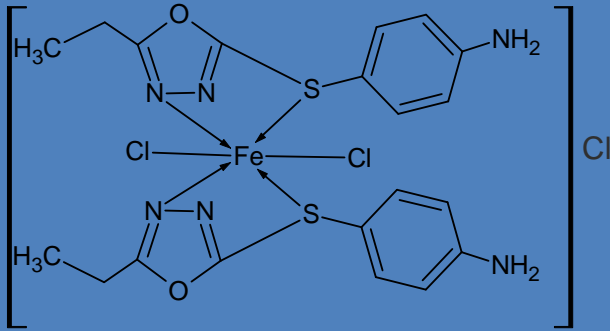
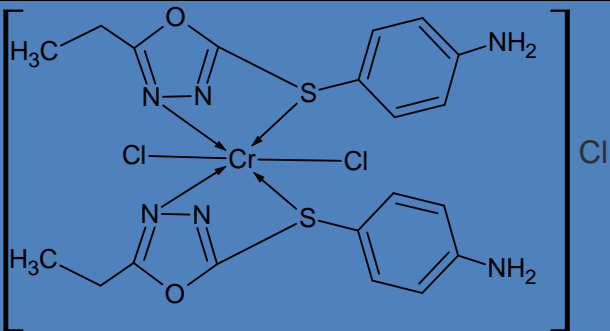


Figure (4) NMR spectra of the ligand

Table 5. The mass spectrum of ligand and its complexes		
Ion	Structure	Molecular Ion
L		221
$[C_{10}H_9N_2OS]^+$		205
$[C_8H_6N_3OS]^+$		192
$[C_7H_6N_2OS]^+$		166
$[C_6H_6NS]^+$		124
$[C_4H_5N_2O]^+$		97
$[C_6H_6N]^+$		92

$[\text{C}_6\text{H}_5]^+$		77
$[\text{C}_5\text{H}_5]^+$		65
$[\text{Fe}(\text{L})_2\text{Cl}_2]\text{Cl}$		604
$[\text{Fe}(\text{L})_2\text{Cl}_2]^+$		569
$[\text{Fe}(\text{L})_2\text{Cl}]^+$		533
$[\text{Fe}(\text{L})_2]^+$		498
$[\text{Cr}(\text{L})_2\text{Cl}_2]\text{Cl}$		600
$[\text{Cr}(\text{L})_2\text{Cl}_2]^+$		565
$[\text{Cr}(\text{L})_2\text{Cl}]^+$		530
$[\text{Cr}(\text{L})_2]^+$		494

$[\text{Co}(\text{L})_2\text{Cl}_2]\text{Cl}$		607
$[\text{Co}(\text{L})_2\text{Cl}_2]^+$		572
$[\text{Co}(\text{L})_2\text{Cl}]^+$		536
$[\text{Co}(\text{L})_2]^+$		501
$[\text{Ni}(\text{L})\text{Cl}_2]$		350
$[\text{Ni}(\text{L})\text{Cl}]^+$		315
$[\text{Ni}(\text{L})]^+$		279
$[\text{Cu}(\text{L})\text{Cl}_2]$		355
$[\text{Cu}(\text{L})\text{Cl}]^+$		320
$[\text{Cu}(\text{L})]^+$		284

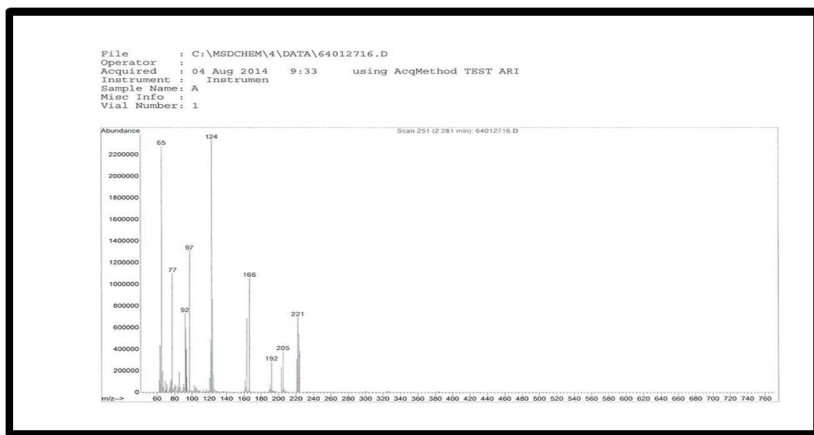


Figure (5) mass spectra of ligand

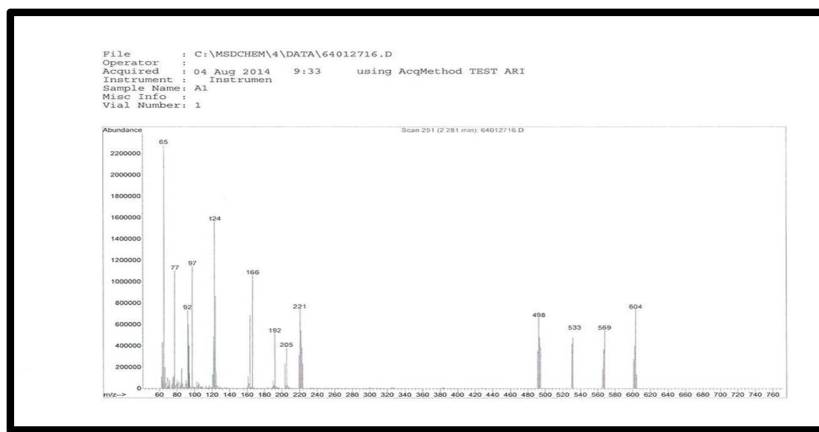


Figure (6) mass spectra of [Fe (L)2Cl2] Cl cm-1

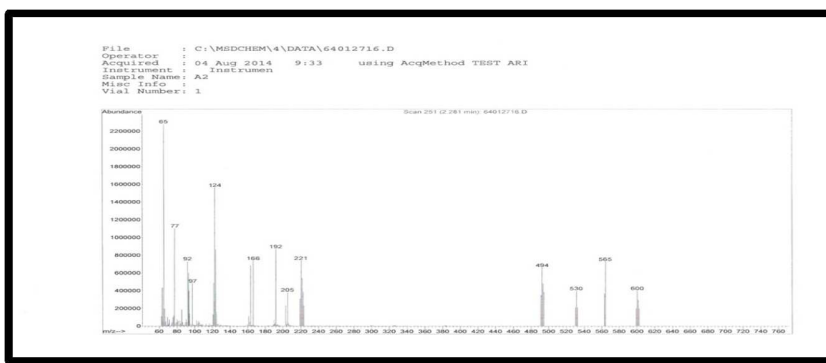


Figure (7) mass spectra of [Cr (L)2Cl2]Cl cm-1

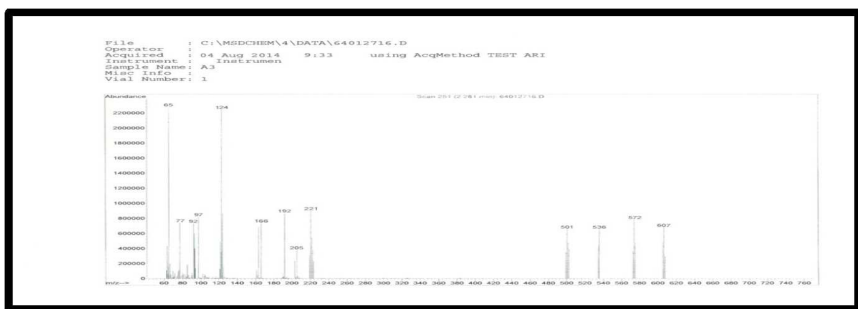


Figure (8) mass spectra of $[\text{Co}(\text{L})_2\text{Cl}_2]\text{Cl}$ cm-1

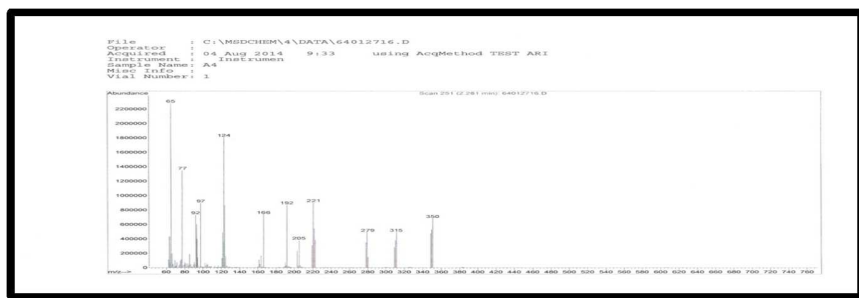


Figure (9) mass spectra of $[\text{Ni}(\text{L})_2\text{Cl}_2]$ cm-1

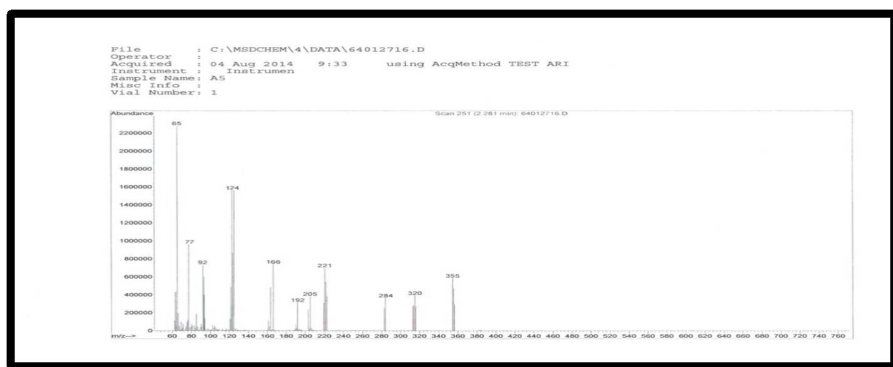


Figure (10) mass spectra of $[\text{Cu}(\text{L})_2\text{Cl}_2]$ cm-1

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SEROLOGICAL DETECTION OF CELIAC DISEASE AMONG CHILDREN IN DIYALA PROVINCE- IRAQ

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Abstract

Background: celiac disease (CD) is an autoimmune disorder that is common in the general population. Early serological diagnosis of CD access to treatment and improves the patient's quality of life.

Objectives: to explore the rate of CD among clinically suspected children in using serological tests and to assess the validity of these markers for the diagnosis of CD.

Materials and methods: This case control study was conducted in Diyala province-Iraq during the period from September 2011 to April 2012 in Al-Batool Teaching Hospital for Maternity and Children. 156 children who were clinically suspected as having CD and 124 healthy children as control group were enrolled. The patient's age range was 1 month to 6 years and above. Information regarding age, sex, residence, family history, and clinical signs were collected in a special questionnaire. Commercially available serological kits for anti-gliadin IgA (AGA-IgA) and anti-tissue transglutaminase IgA (anti-tTG-IgA) antibodies (Aeskulisa, Germany) were used by ELISA technique. Data were statistically analyzed and P value less than 0.05 was considered significant.

Results: Based on the seropositivity of both anti-AGA IgA and anti-tTG IgA, 15 (9.6%) were considered CD patients. whereas, patients who had either anti-AGA IgA (16.7%) or anti-tTG IgA (14.7%) positive were considered as symptomatic non-CD patients. The results showed that the anti-AGA IgA seropositivity was highly significant ($P < 0.001$) in CD patients compared to symptomatic non-CD patients and control groups. Likewise, the anti-tTG IgA positivity was highly significant ($P < 0.001$) in CD patients compared to symptomatic non-CD patients and control groups. Both tests had similar sensitivity, but the anti-tTG IgA has higher specificity, accuracy, and positive predictive value.

Conclusion: Serum Anti-tTG IgA is a good marker for the diagnosis of CD among clinically suspected patients; however, for more accuracy both anti-tTG IgA and anti-AGA IgA can be used.

KEYWORDS: CELIAC DISEASE. ANTI-GLUTIN. ANTI-TRANSGLUTINASE.

1. INTRODUCTION

Celiac disease (CD) is regarded as an autoimmune disorder in genetically susceptible individuals, triggered by gluten and related prolamins and characterized by severe malabsorption and flat intestinal mucosa ^[1]. CD is one of the best-known autoimmune human leukocyte antigen-dependent disorders, that has a relatively increased prevalence in first-degree relatives ^[2,3].

The identification of CD is challenging because it can begin not only with diarrhea and weight loss but also with atypical gastrointestinal and extra-intestinal symptoms, or it could be completely symptomless ^[4,5]. The accuracy of serological diagnosis of CD has progressively increased with the development of highly reliable tests. Serum antibody assays may serve as a first-step diagnostic tool: immunoglobulin A tissue transglutaminase (IgA tTG), IgA endomysial antibody (IgA EMA), IgA anti gliadin antibody (IgA AGA), and IgG anti gliadin antibody (IgG AGA) offers the best diagnostic accuracy regardless the

patient's age. [6-8]. These tests usually have high sensitivity and specificity exceeding 95% with no evidence that a combination of tests was better than a single test using either the EMA IgA or tTG IgA. [9,10]. However, the positivity of these markers does not always correlate with mucosal appearance in the small intestine [4,11].

Following the application of simple serological tests for the diagnosis of CD, the prevalence of CD in Middle East, North Africa and India countries among low risk populations was found to be similar to that of Western countries, but it was higher in high risk populations ranging between 3 and 20% [12-15]. Thus, it has been suggested that in the developing countries, both serological screening in the general population and serological testing in groups at risk are necessary for an early identification of celiac patients [16,17].

2. MATERIAL AND METHODS

This case control study was conducted in Diyala province-Iraq during the period from September 2011 to April 2012 in Al-Batool Teaching Hospital for Maternity and Children. 156 children who were clinically suspected as having CD and 124 apparently healthy children as control group were enrolled. The patient's age range was 1 month to 6 years and above. Socio-demographic data including age, sex, residence, family history, and clinical signs were collected in a special questionnaire. For human privacy, the patient parent's consensus was taken. Commercially available serological kits for anti-gliadin IgA (AGA-IgA) and anti-tissue transglutaminase IgA (anti-tTG-IgA) antibodies (Aeskulisa, Germany) were used by Enzyme-Linked Immunosorbant Assay (ELISA) technique following the manufacturer's instructions. Statistical analysis was done through the computerized software, Statistical Package Social Sciences (SPSS) version 20 by using the Chi-square. P value less than 0.05 was considered significant.

3. RESULTS

For statistical comparison, children who had positive serum anti-AGA-IgA and anti-tTG-IgA were considered CD patients, and those who had one of these markers positive were considered as symptomatic non-CD patients. Table (1) showed the range, mean and standard deviation of the study groups. The statistical analyses showed that there were insignificant differences among the study groups.

Table (1) Range, mean and standard deviation among the study groups.

Age (ys)	Healthy control (n= 124)	Symptomatic Non-CD (n= 141)	Celiac disease (n= 15)	P value
Range	(0.1-7)	(0.1-14)	(0.1-12)	0.08 [NS]
Mean	1.6	3.2	4.0	
SD	1.99	3.81	3.78	
SE	0.41	0.32	0.98	

[NS]: insignificant

Results showed that the overall anti-AGA IgA seropositivity rate in suspected patients group was 16.7% , which was significantly higher compared to control group (P= 0.031). Furthermore, the anti-AGA IgA seropositivity was highly significant (P< 0.001) in CD patients compared to symptomatic non-CD patients and control groups, table (2).

Table (2): Antigliadin IgA seropositivity rate among study groups.

Study groups	Anti-gliadin IgA			P value
	No.	Positive	%	
Control group	124	0	0.0	0.031
Suspected patients group	156	26	16.7	

Control group	24	0	0.0	< 0.001
symptomatic patients non-CD	141	11	7.8	
Celiac patients group	15	15	100.0	

Table (3) showed that the median serum concentration of anti-AGA IgA in CD patients was highly significant ($P < 0.001$) when compared to both symptomatic non-CD patients and control groups, while there was insignificant difference ($P = 0.87$) between the symptomatic non-CD patients and control group.

Table (3): concentration of anti-gliadin IgA among study groups.

Anti-gliadin Concentration	Healthy control (n= 124)	Symptomatic Non-CD (n= 141)	Celiac disease (n= 15)	P value
Range	(0.095-5)	(0.07- 88)	(12-300)	< 0.001
Median	2.03	2.10	32.0	
Interquartile range	(1.6-2.65)	(1-3)	(15-52)	
Mean rank	20.1	15.0	32.0	

The overall seropositivity rate of anti-tTG IgA in suspected patients group was 14.7%. The results revealed that there was insignificant difference ($P=0.16$) between the suspected and control groups, but it was highly significant ($P < 0.001$) in CD patients compared to symptomatic non-CD patients and control groups, table (4).

Table (4): Anti-tTG IgA positivity rate among study group.

Study groups	Anti-transglutaminase IgA			P value
	No.	Positive	%	
Control group	124	5	4.8	0.16 [NS]
Suspected patients group	156	23	14.7	
Control group	24	1	4.2	< 0.001
Symptomatic patients (not celiac)	141	8	5.7	
Celiac patients group	15	15	100.0	

The median concentration of anti-tTG IgA in CD patients was highly significant ($P < 0.001$) when compared to control and symptomatic non-CD patients group, whereas there was insignificant difference between the symptomatic non-CD patients and control group ($P = 0.24$), table (5).

Table (5): concentration of anti-transglutaminase IgA among study groups.

Anti-transglutaminase	Healthy control (n= 124)	Symptomatic Not celiac (n= 141)	Celiac disease (n= 15)	P value
Range	(1-21)	(0.1 -304)	(20-302)	< 0.001
Median	2.50	2.80	150.0	
Interquartile range	(2.25-3.4)	(2.3-4.8)	(26-300)	
Mean rank	72.5	85.2	169	

Table (6) revealed that the anti-AGA IgA and anti-tTG IgA were equal in their sensitivity, but the anti-tTG IgA test had higher specificity, accuracy, and positive PV.

Table (6): Validity of anti-AGA IgA and anti-tTA IgA.

Test	Sensitivity	Specificity	Accuracy	Positive PV		Negative PV
				50%	90%	100%
Anti-AGA IgA	100.0	92.2	92.9	92.8	99.1	100.0
Anti-tTG IgA	100.0	94.3	94.9	94.6	99.4	100.0

4. DISCUSSION

The present study is the first one in Diyala province, and one of the few studies on CD in Iraq. It was designed to explore the CD among clinically suspected children depending on serological markers, the Anti-AGA IgA and Anti-tTG IgA and to assess the validity of these tests for the diagnosis of CD. It had been documented that the correct diagnosis of CD in environmentally deprived children is frequently hindered by the common presence of other causes for the classical CD symptoms; malnutrition, failure to thrive and frequent diarrhea [4,18]. In this regard, malnutrition was well documented among Iraqi children as consequences of long term wars and deterioration of infrastructures beside the high prevalence of diarrhea causing diseases [19].

In the present study, 9.6% of the clinically suspected children had both anti-AGA IgA and anti-tTG IgA antibodies positive, while 16.7% had anti-AGA IgA positive and 14.7% had anti-tTG IgA positive. These results clearly revealed that CD in our region is within the range in the Middle East, India and North Africa [12,14,15, 18, 20]. These results can be explained on the fact that wheat has been the major staple food in these regions for a long time and it is possible that the continuous and high level of exposure to wheat proteins has induced some degree of immune tolerance, leading to milder symptoms, which are misdiagnosed as irritable bowel syndrome or unexplained gastrointestinal disorders. Of note, there was accumulating evidence of substantial underdiagnosis of CD in health care settings, where several studies had suggested that as few as a quarter of patients are recognized [21-22].

Our results also document that the combination of anti-AGA IgA and anti-tTG IgA tests represent a good diagnostic tool to confirm CD in suspected children, as these tests are manifested by high sensitivity, specificity, accuracy, and positive predictive values. Similar results were obtained by others [14,23,24]. Over the past decade, the diagnostic accuracy of serology for CD has markedly increased with the development of highly sensitive and specific tests, which were found to be an important screening tools for detection of latent CD, as these markers has the ability to discover a high number of silent CD, which can be classified as potential CD [10,11, 25]. Thus, a mass screening studies using serological markers is recommended, as the early detection of these patients would result in significant improvement of quality of their lives [2].

The study concluded that CD in our region is more prevalent than expected, and may well be under diagnosed, the combination of of serum anti-AGA IgA and anti-tTG IgA tests are a good diagnostic markers to confirm CD in suspected cases.

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THE EFFECT OF RUNNING TRAINING IN THE AQUEOUS MEDIUM IN SOME SPECIAL PHYSICAL ABILITIES AND ACCOMPLISHMENT OF 100 M RUN FOR YOUTH

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Abstract

Aim of the research Preparation Rehearsals ran on hydrosphere to develop physical abilities for running 100 m youth .And effect do workouts on the ability of speed and fast-speed and power and 100 young. You chose 10 of the 100 from hostile young intentional landing way divided into two officer and experimental and applied the tested (30 mm, and 120 mm speed with speed, and five consecutive fast force stability. and test ran 100 m) then applied researcher training different pool ran for ten weeks and two units a week, and the search results have shown that there is an improvement in the level of speed and fast-speed and power for members of the experimental group.

KEYWORDS: RUNNING. AQUEOUS. ACCOMPLISHMENT. YOUTH. MEDIUM.

1. INTRODUCTION

The aqueous exercises considered an important exercises that received an attention in the recent years by the researchers because of their significant role in the integration capabilities of physical achievement, and this type of training is no longer limited to the rehabilitation of injuries or fitness-related health improvement only, but has become a strong base in the preparation of sporting programs for various sporting games and one of the types of sporting training is running in the water and with various levels of depth and which can affect the athletic players.

Aqueous training is considered a parallel style to the ground running and especially for many of the runners who have replaced many of their ground training doses with doses of aqueous training because of fear of the potential seriousness of the injuries and kind of changing the daily routine of the training (1: 165-182). The contest of 100 m is one of the athletics events that needs to move different parts of the body in correlation and sequence one at same time so the locomotor compatibility and rhythm one of matters that have major importance for this contest. The research aims to use aqueous medium for the development of some private capacities of 100m including helping in achieving best skillful and digital levels and identifying the importance of the effect of these exercises on speed and carry the speed and rapid power for development of the level of achievement in run of 100 m for youth .the research aimed to prepare the running training in the watery medium to develop the physical capabilities of 100 m youth and identification the effect of these trainings on the ability of speed and speed bearing and rapid strength and completion of 100 m youth.

"Hossam Eldin Farouq" defines exercises of watery medium as "physical exercises performed in water either free or by using tools or some ways of swimming to develop some special physical abilities and the skillful level" (2:32).

According to "Ne'mat Abd Al-Rahman " that training in the watery medium produces resistance in multiple directions while gravity serve as a single force and this makes the learner achieves what can be achieved on the ground but in half the time and achieves a balance of muscles to resist injuries more easily and faster and more efficient because the water causes a balanced resistance in multiple directions and equally over all surfaces of the body in addition to the use of tools in the water increases the intensity of the training exercise (3: 65).

2. RESEARCH METHODOLOGY AND ITS FIELD PROCEDURES

The researcher used the experimental method

3. RESEARCH SAMPLE

Was selected by the intentional way 10m of the 100 m hostile from youth category of the clubs that participated in the Iraqi championships for young people and players of the specialized school that subjected to ministry of youth and from youth who are trained in Al- Shaab court and court of Faculty of Physical Education - and Specialist Center court for the year 2014 .Their ages are 18 years old- under 20 years old according to the rules of international Association of Athletics Federations. The sample was divided according to the achievements of the sample into two groups control group and the other one is experimental. The researcher conducted on them the principle of equivalence.

4. TESTS USED IN THE RESEARCH

Physical tests included:

1. Test of (30 m) run from a standing position:

- The objective of the test: measuring the speed (the ability to accelerate)
- Tools and supplies: a whistle, a stopwatch.
- Test Description: the experimenter stands on the start line of the high start-line mode and when hears the signal of the running start , the experimenter run with fully speed for a distance of 30 m.
- Registration: record the time that have been taken by each experimenter since giving him the signal until the finish line, given two attempts for each experimenter and calculate best of them.

2. The test running 120 meters (4:44).

- The objective of the test: measuring the speed bearing .
- Tools: stopwatch - Measuring tape in meters.
- Performance description: After giving the signal of start , the player runs from the starting line and toward the end line with minimal time and by this may the player finishes the test.
- Registration: the registrar writes down the time that takes in seconds to the nearest 1% of the second.

3. Five and constancy test.

- The purpose of the test: to measure the rapid force.
- Tools: tape to measure the area of the bounce and stopwatch
- Method of performance: from standing , the player stands on the upgrade foot and come down on the same foot and jumps by the other foot and come down on it and so in the fifth jump lands on both feet, the player is given two attempts and calculates the best of them according the Newton's second law of force.

4. achievement test 100 m according to international law.

5. TRIBAL TESTS

The tribal tests were implemented for the duration from 7- 8/ 1/2014, has been taken into account in the application of these tests be carried out according to the rules of the game regarding run of 100 meters -120 meters (speed bearing) as

well as taking into account the performance of the players for the tests of strength that distinctive with speed and the application of the tests under the supervision of dedicated team as the tests that have been applied ; test of 100 meters and strength which is distinctive with force (5 and stability) in 07/1/2014, and a test of 120 meters (speed bearing) 8/1/2014.

6. THE TRAINING CURRICULUM

The proposed training curriculum have been prepared and the application of its components at 10/1/2014 for a period of ten weeks and the curriculum included 30 training modules and by 2 training units in the week and was used the method of repetitive training and the adoption of increasing the height of water level during training in the watery medium and the beginning was by raising the water 30 cm ,60 cm, 90 cm respectively as the rise represents a specific force when conducting trainings for members of the research sample and the adoption of these rises when performing these movements and get a clear impact of the training by increasing training load (intensity and distribution of exercises with the water height control as resistant medium) and the training module time was 30-35 minutes.

7. POSTERIORI TESTS

The researcher conducted posteriori tests in accordance with the points that taken in the tribal test as location, climatic conditions and measurement instruments, cameras and dated 25/3/2014.

8. DISPLAYING THE RESULTS

8.1. DISPLAYING THE RESULTS OF PHYSICAL TESTS FOR THE TWO GROUPS OF THE RESEARCH

Table (1) Difference of arithmetic means and standard deviations and the value of calculated (t) for the two tests tribal and posteriori in the physical variables for the two groups of research (the control and experimental).

The variable	Group	Unit of measurement	F	F-H	Value of calculated (t)	Significance
Speed 30 meter	control	Sec	0.047	0.215	0.218	Not significant
	experimental		0.267	0.060	4.386	Significant
Speed bearing 120 meter	control	Sec	1.812	0.851	2.129	Not significant
	experimental		2.68	3.978	5.941	Significant
Rapid speed	control	Newton	8.02	3.978	2.016	Not significant
	experimental		31.817	3.560	8.935	Significant

The degree of freedom (5-1) = 4 and the percentage of error 0.05

The table (1) above shows that value of calculated (t) for the control group in all the tests is not significant which means that the training program for this group was not active for the development of this special speed for this group , this means that the differences between the two tests are significant , the training program for this group was not active to develop this ability for this group.

While the results of the differences between the arithmetic means of the experimental group, all are significant in the level of the capabilities of speed, speed bearing and the rapid strength for the experimental group and in the favor of the post-test, it was because of their exposure to the components of the training curriculum, which was reaffirmed in which about the development of the explosive power of the muscles involved in 100-meter running and the emphasis on taking corners of the appropriate muscular work while performing these exercises in the watery medium despite the differences in the body level and speed of the player in the water which was controlled by the researcher which gives an advantage to control parts of the body and the amount of the proper muscle contraction which is one of the scientific issues affecting the development of explosive power, which inevitably will work on the development of speed of performance of the body

and then application of the appropriate real tracks to parts of the body during the performance of this event which gives a good flow through the performance stages (5: 87). The researcher attributed the cause of development of this ability by the experimental research sample to the effectiveness of the exercises that adopted in the training curriculum and in the watery medium and according to the intensity that dependent on the speed of performance in the water , multiple jumping and running trainings and controlling with these two factors making the muscles of the legs have ability to respond rapidly which increase the capacity in the working muscles . These exercises used by the researcher have been imposed on the body high effort and in particular on the working muscles, tendons and joints for this reason that the body must adapt gradually to these types of exercises by starting with low intensity trainings and then the most difficult and the highest intensity (6: 92), therefore the researcher has adopted the principle of load gradient by increasing frequencies relative to size, and increase the body plane and water speed relative to the intensity to match the sample.

The researcher believes that the importance of these capabilities of 100 m runner comes from the importance of speed and speed bearing which occupy the first place among the other physical abilities (7: 69), so you must take a large proportion of time devoted for training and take it out as fast as possible. The ability of speed and speed bearing considered of capabilities that are linked to the skillful performance especially in the performance of 100 m running and this is said by " Abu El- Elaa Ahmad" that the explosive strength and strength characteristic with speed associated with degree of skillful performance " (8: 133), which was confirmed by " Mohammed Hassan Alawy " that this ability has importance specially in the role of skillful performance during the competition and during acquisition of skill (9:54).

While the control group although of being not achieved high development in the explosive power of the leg muscles but there was little differences between the pre and post tests for this group and for the benefit of post-test and the researcher attributes the reason for this that the run of 100 m characterized by the quick reaction that depends on the explosive power of muscles of the two legs and the link between power and speed of muscle contraction per one muscle or the muscles that perform the movement has helped to progress them , however this development of the explosive ability of this group rise up to the significance in the post tests.

8.2.DISPLAYING THE RESULTS OF TRIBAL AND POSTERIORI TESTS OF COMPLETION OF THE TWO GROUPS OF THE RESEARCH , DISCUSSING AND ANALYZING THEM

Table (2) Differences of arithmetic means , standard deviation and the value of calculated (t) and the significance of difference between the pre and post- test in the achievement for the two groups (control and experimental).

Variable	Group	Unit of measurement	F	F-S	Value of calculated t	Significance
Achievement	control	meter	0.09	0.063	1.423	Not significant
	Experimental	meter	0.67	0.101	6.624	significant

the degree of freedom (6-1) = 5 and the ratio of error 0.05

Table (2) shows that the calculated (t) for the completion of the control group was (1.423). And the value of calculated (t) for the experimental group was 6.624 and this means that the differences were significant which means that the training program for this group and the emergence of significant differences in achievement for 100 m running which indicates the presence of development in the level of achievement for the experimental group better than the control group. This indicates that the watery training was the most effective in achieving the best results which appeared in the results of the experimental group, as said by Khairiya Ibraheem (that using the appropriate style of training is to be more effective in achieving the objective of the training) (10: 128). From the view point of the researcher as well as the previous , the trainings that used as resistance trainings within the period of the training curriculum, headed towards the development of rapid and explosive power, speed, and this is evidenced by the results of the differences that had previously noted by the researcher, which is an influential and effective intervention in the development of achievement. All of this made achievement in post-test for the experimental group shows with significant differences higher than what has been achieved in the pre-test, as shown in Table (2) itself, where the progress in the ability level of performance for any skill or sporting event will contribute inevitably in the evolution of the level of achievement of that skill or effectiveness in a positive and effective.

The researcher attributes that that the training curriculum included exercises for the development of the motor performance of running by using various resistance exercises with reference to point that these exercises serve the motor track of performance and the severity of performance ranged from this exercise between slow and medium to fast and

from different modes for the purpose to access to the optimal speed that required by the effectiveness or movement and it is one of the actions that develop the technical performance (9:45) as well as the performance of these exercises led to the mobilization of the largest number of muscle fibers and the recruitment of a greater number of motor units when performing these exercises (24:11) .As well as performing jumping exercises with the body weight in watery medium and with the same motor direction of performance lead to the development of strength and speed of contraction of voluntary muscles which reflected positively in the results of the posttest of achievement 100 m run for the experimental group and as athletic training is regular repeating to perform kinetic paths and doing changes in these tracks and in building internal organs that bear the training load in order to raise the level of achievement which has led to a significant improvement in the technical performance and style of performance in a reflected manner from the exploitation the physical foundations that have been well-earned (86:11). This brings to us the target of the search.

8.3. DISPLAYING THE RESULTS OF POST TESTS OF THE PHYSICAL VARIABLES OF THE TWO GROUPS OF RE-SEARCH AND THEIR ANALYSIS AND DISCUSSION

Table (3) Arithmetic means and standard deviations and the value of calculated (t) and the significance of differences for the groups (control and experimental groups) in physical variables in a posteriori tests.

Variables	Unit of measurement	Control group		Experimental group		Value of calculated (t)	Significance of differences
		A	SD±	A	SD±		
Speed(30) meter	sec	3.547	0.335	3.380	0.46	3.41	significant
Speed bearing	sec	14.32	3.1	13.52	2.01	3.37	significant
Rapid speed	Newton	355.88	15.87	392.47	16.14	3.05	significant
Achievement	sec	11.21	0.88	10.78	1.1	4.94	significant

the degree of freedom (10.2) = 8 and ratio of error 0.05.

Appears from the results of Table (3) above : there were significant differences in favor of the experimental group in a posteriori tests of abilities under study and this confirms that the training curriculum that applied by a researcher for the members of the experimental group had a positive impact in the appearance of this development and that the training using an aqueous environment has enhanced the strength of muscular contraction of the groups which work in the running movements commensurate with achieving the ultimate time for all the tests that carried out by the researcher and what provide full freedom of movement of the legs during pushing to be able to achieve the best frequency and step length without losing speed, it appeared that the training program was effective in achieving fit for the speed of movements through the development of the required time as well as its direct impact on the level of performance in the running movements and this appeared clearly by development of the physical capabilities of the research sample (such as speed and rapid strength and speed bearing) of these tests and in favor of the experimental group that used the aqueous medium exercises.

9. CONCLUSIONS AND RECOMMENDATIONS

9.1. CONCLUSIONS

1. The aquatic exercise affected on the development of speed, strength and fast speed and speed bearing of the experimental group.
2. The prepared program which included watery exercises as assistant method that practiced by the experimental group has contributed in the development of accomplishment of 100 m run significantly.
3. Measurement of the strengths which characterized by speed by imaging and the use of mechanical laws may actually reverse the reality of development of this power in considerations the body mass which was not taken into account when measuring these indicators by meters only.
4. Doing another similar studies.

9.2. RECOMMENDATIONS

1. Necessity of using watery exercise as an aid method in the development of physical abilities and achievement of the young players of the effectiveness of 100 m.
2. Be sure of using watery exercises for the rest of the speed events and the emphasis on such use through training courses.
3. mainstream the exercise that prepared by the researcher on the trainers of this event and training category
4. Conducting similar studies and researches on the effectiveness of these players and other athletics events.
5. The researcher proposes the use of aqueous medium for collective training events as well.

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THE EFFECT OF SPRAYING WITH LICORICE EXTRACT AND ORGANIC FERTILIZATION OF POULTRY IN THE GROWTH OF FENUGREEK PLANT (*TRIGONELLA FOENUM-GRAECUM L.*)

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Abstract

The Research was conducted in the vegetable's house of Biology Department - College of Education for Pure Sciences-University of Diyala during the season 2014-2013 on fenugreek (*Trigonella foenum - graecum L.*) in order to study the effect of spraying with licorice extract by three levels 0, 2,3 g /l and spraying by four levels with poultry is 0,10, 15, 20 ml /l and their overlap in the growth of fenugreek In some recipes of vegetative growth and the product by using the global experience according to a complete randomized design C.R.D with four observations and the averages were compared by using Duncan test which is polynomial test at probability level of 0.05. The results indicated lack of a significant effect for the all used concentrations of licorice extract in all traits while the spray with the organic fertilization extract of the poultry at concentration of 15 ml / liter led to register the highest moral values in the recipe of pods number 62.22 pod / plant and the number of branches which reached to 5.55 Branch / plant compared with control treatment which recorded 46.11 and 4.33 respectively and there were no significant differences in each of the recipe of length and concentration of chlorophyll and weight of the registered pod in plants that are sprayed with the extract at concentration of 20 ml / liter which reaching to 117.77, 52.87, 93.05, respectively than in the treatment of spraying at concentration of 15 ml / liter which recorded 117.11, 51.93, 93.07 respectively. General, the interaction data indicate that the highest values for all traits in plants that were not sprayed with the extract of licorice and sprayed with the extract of organic fertilization of poultry.

KEYWORDS: LICORICE. ORGANIC. FERTILIZATION. POULTRY. FENUGREEK.

1. INTRODUCTION

The fenugreek (*Trigonella foenum - graecum L.*) is a plant belongs to the legume family (Fabaceae) and its English name (Fenugreek) is derived from the ancient Greek name (Greek hay) animal feed (straw or hay) and has many Arabic names such as Hallab – Halab (Al Batanouny 1999, Aldbai and Khulaidi 1997), commonly used in medicine since ancient times and is used today in the form of food and medicine in most countries of the world and because of being a rich source of a range of food ingredients such as proteins, fats, minerals and vitamins (Barnes, 2002) as well as its medical use such as increasing the milk secretion after birth by stimulating the mammary glands and regulating the cases of unstable menstruation among adolescent girls and used to increase appetite and in the treatment of anemia cases and weakness of the body and in the treatment of whooping cough and chest diseases and ease the pain of hemorrhoids and severe cases of constipation and some animal experiments showed that the Fenugreek works to inhibit liver cancer (Chevalier, 2003).

The recent studies pointed to the possibility of using some plant extracts such as licorice extract (*glycyrrhiza glabra L.*) which belongs to the legume family (Fabaceae) which is one of the perennial weeds as rises to 120 cm and the main root branched

into the sub veins grow horizontally below the soil surface and at depth of about 30 cm (Aldrouh 1976). This plant contains many of chemical compounds with a sweet taste as it contains a substance of gleserezin and glycyrrhejel and licorice acid compounds of vlavonideh including glabridin and glaring and et al., (alajaili 2005) which have a similar effect of growth regulators to improve the vegetative and flowering characteristics of various plants , moreover they contain a wide range of elements and nutrients (Moses et. al, 2002).

Recently attention tend to use the organic fertilization as alternative to the chemical fertilization that being a friend of environment as it explained the results of the study carried out by Al-Obeidi and et al., (2013) on the growth and product of cowpea by using several types of fertilizations as the fertilization treatment with remnants of poultry gave better result and with significant increase than the chemical fertilization and several studies showed a positive effect of organic fertilization for plants as Zidane and et al., (2010) showed that the addition of organic fertilization and interaction agriculture of cowpea and maize that the organic fertilization treatment gave the highest product of cowpea and maize.

2. MATERIALS AND METHODS OF THE WORK

The experiment was conducted in the Department of Biology – college of education for Pure Science / Diyala University from September 2013 until the April 2014 on fenugreek, the study included on two factors: spraying the plants with licorice extract at three concentrations 0, 2,3 g / L , as sprayed by two phases after a month of cultivation, the second one a month after the first spray, the licorice extract was prepared by grinding plant roots which are well dried and dissolved in warm water for 24 hours then nominated by foil type 12 whatman. And spraying with organic fertilization extract of poultry waste at concentrations are 0,10, 15,20 ml / liter and by four phases during the growing season as the first spray was after 15 days of agriculture and then the process repeated for the same duration and the organic fertilization extract of poultry was prepared by taking a certain weight of the organic fertilization which is dissolved well and added to distilled water by (4: 1) weight / size and left in plastic containers for 24 hours and then concussed well and was nominated through the filter paper type 12 whatman (Al-Fartusy 2003).

Seeds are sown at 09/27/2013 in a plastic pot which is 25 in diameter which contains 12 kg of anaerobically dried space of garden soil and petmos by proportion of (1: 3) and the irrigation made manually when the soil dried and Hoeing to dismantle the soil and dispose of the growing bushes.

The following characteristics are studied : plant height (cm), number of branches (branch / plant), measuring the content of leaves of chlorophyll using a SPAD -502 Chlorophyll meter which produced from Minolta company which is a Japanese company and by SPAD units, number of pods (pod / plant), the weight of pods.

By this, the experiment ensured two factors which are spraying with licorice extract (Petkizin) and the organic fertilization of poultry at three concentrations as well as the comparison, the experiment carried out by the complete random design (Daoud and Abdul Elias 1990). And the analysis of variance was conducted by using the SAS program and then a comparison of the differences between the treatments was made according to polynomial Duncan test at probability level of 5%.

3. RESULTS AND DISCUSSION

• Plant height(cm): -

The data of (Table 1) of the plant height recipe show the existence of significant differences between treatments when adding licorice to the treatments since the highest average in the treatment of comparison reached to 120.83 cm while the lowest rate of plant height in the treatment of 3 g / l licorice reached to 89.00 cm while reached to 106.83 cm in the treatment of 2 g / L.

Spraying with organic fertilization of poultry waste led to existence of significant differences between the treatments as the highest average of plant height in the treatment of 20 ml reached 117.77 cm while the lowest average of plant height amounted to 87.44 cm in the comparison treatment.

The interaction data between licorice and poultry indicate that the highest average of plant height amounted to 134.00 in the treatment of 15 ml of poultry with the comparison treatment that not sprayed with the licorice while the lowest average of plant height when treated with 3 g licorice with comparison treatment which amounted to 82.00 cm .

• **Number of branches / plant: -**

The Table (1) shows the existence of significant differences between treatments for the number of branches recipe during spraying with licorice extract as the highest average in plants of comparison treatment amounted to 6.25 branch / plant while the lowest rate in the number of branches amounted to 4 branch / plant in the treatment of spraying at concentration of 3 g / l of Licorice while amounted to 4.83 branch / plant in the treatment which sprayed at concentration of 2 g / l.

The results of spraying with organic fertilization of poultry showed the existence of significant differences between treatments, as the highest average of the number of branches in the treatment of 15 ml / liter reached to 5.55 branch / plant while the lowest average of the number of branches in the treatment of comparison that not sprayed with organic fertilization extract of poultry waste amounted to 4.33 branch / plant.

The results of the interaction between licorice and poultry showed that the highest average for the number of branches in the treatment of 10 and 15 ml / l remnants of poultry with the treatment that not sprayed with the licorice extract reached to 6.33 and 7.00 respectively while the lowest average in the number of branches during interaction 15 ml / liter of poultry with 3 g / l Licorice and 10 ml / liter poultry with 3 g / l Licorice which amounted to 4 branch / plant.

Table (1) the effect of spraying with licorice extract and the organic fertilization of poultry and interaction between the two Recipes; plant height and (cm) number of branches of *T. foenum-graecum* L.

Concentration of licorice extract (g/l)	Effect of organic fertilization of the poultry (ml/l)				Effect of licorice extract
	0	10	15	20	
plant length (cm)					
0	95.33 c	123.33 b	134 a	130.66 a-b	120.83 a
2	85.00 d-e	90.00 c-d-e	126.33 a-b	126.00 a-b	106.83 b
3	82 e	86.33 d-e	91.00 c-d	96.66 c	89.00 c
Effect of extract of the organic fertilization of the poultry	87.44 c	99.88 b	117.11 a	117.77 a	
branches number branch/plant					
0	5.66 b	6.33 a-b	7.00 a	6.00 b	6.25 a
2	3.66 c	4.33 c	5.66 b	5.66 b	4.83 b
3	3.66 c	4.00 c	4.00 c	4.33 c	4.00 c
Effect of the organic fertilization extract of the poultry	3.33 c	4.88 b	5.55 a	5.55 a	5.33 a-b

* the numbers that carry similar letters do not differ significantly among themselves according to the polynomial Duncan test at probability level of 5%.

• **The number of pods: -**

The results in Table (2) for the number of pods showed the existence of significant differences between treatments during adding licorice to the treatments since the highest average in the treatment of comparison reached to 69.66 pod / plant while the lowest rate of the number of pods in the treatment of 2 g / l licorice amounted to 44.00 pod / plant while amounted to 47.75 in the treatment of 3 g / l licorice.

Spraying with the organic fertilization for poultry led to the emergence of significant differences between the treatments as the highest average number of pods in the treatment of 10 ml / liter reached to 62.22 pod / plant while the lowest average of the number of pods in the treatment of comparison reached to 46.11 pod/ plant. The results of overlap between the spraying with licorice extract and poultry showed that the highest average of the number of pods in the treatment of 15 ml with poultry with the treatment that did not spray with licorice extract reached to 83.33 pod / plant while the lowest average number of pods 33.33 pod / plant.

• **Concentration of chlorophyll (SPAD units) : -**

Table (2) shows the existence of significant differences for the recipe of chlorophyll concentration between treatments during spraying with the licorice extract as the highest average in the plants of comparison treatment reached to 52.18 SPAD units while the lowest rate in the treatment of 2 and 3g/l licorice reached to 48.75 and 49.33 SPAD units respectively.

The results of spraying with organic fertilization for poultry waste showed the existence of significant differences between treatments as the highest average for the content of chlorophyll in the treatment of 15 and 20 ml / liter reached to 51.93 and 52.87 SPAD units respectively while the lower content of chlorophyll in the comparison treatment and 10 ml / l amounted to 47.27 and 48.27 SPAD units respectively.

During the interaction between licorice and poultry was founded that the highest average concentration of chlorophyll in the treatment of 15 and 20 ml / liter remnants of poultry with treatment that not sprayed with licorice which amounted to 54.76 and 54.50 SPAD units while the lowest average concentration of chlorophyll amounted to 46.00 SPAD units with interaction of 3 g / l licorice with treatment that not sprayed with the poultry extract .

Table (2) the effect of spraying with licorice extract and organic fertilization of poultry and the interaction between them for the two recipes ; the number of pods and chlorophyll concentration of *T. foenum-graecum* L.

Effect of the licorice extract	Effect of the organic fertilization of the poultry (ml/l)				Concentration of the licorice extract g/l
	0	10	15	20	
number of pods pod/plant					
0	68.66 c	69.66 b	83.33 a	61.00 c	69.16 a
2	33.33 g	38.66 f	53.00 d	51.00 d	44.00 c
3	42.33 d	45.66 d	50.33 d	52.66 d	47.75 b
Effect of the organic fertilization extract of poultry	46.11 d	51.33 c	62.22 a	54.88 b	
chlorophyll concentration SPAD units					
0	49.13 b-c-d	46.33 b-c-d	54.76 a	54.50 a	52.18 a
2	49.70 e-f	46.83 e-f	50.36 b-c-d	51.13 b-c	48.75 b
3	46.00 f	47.66 c-e-f	50.66 b-c-d	53.00 a-b	
Effect of the organic fertilization extract of poultry	47.27 b	48.27 b	51.93 a	52.87 a	

* the numbers that carry similar letters dose not different significantly among themselves according to polynomial Duncan test at probability level of 5%.

• Weight of pods: -

Table (3) shows the existence of significant differences for the recipe of pods weight between treatments when adding licorice to the treatments as the highest average in the comparison treatment reached to 97.92 g / plant while the lowest rate in the pods weight in the treatment of 2 g / l licorice reached to 66.13 g / plant while reached to 70.77 g / plant in the treatment of g / l licorice.

spraying with the organic fertilization of poultry led to the emergence of significant differences between the treatments as the highest average weight of pods in the treatment of 10 and 15 ml / l reached to 93.07 and 93.05 g / plant while the lowest rate for this trait in the comparison treatment that not sprayed with the extract amounted to 61.77 g / plant.

The interaction data between licorice and poultry indicate that the highest average weight of pods reached to 112.53 g / plant in the treatment of 15 ml / liter of poultry with treatment that not sprayed with licorice while the lowest average in pods weight during overlap 2 g / l with the treatment that not sprayed with licorice and treatment of 10 ml / l of poultry with 2 g / l licorice which amounted to 36.16 and 37.16 g / l respectively.

Table (3) the impact of spraying with licorice extract and organic fertilization of poultry and the interaction between them in the pods weight of *T. foenum-graecum* L.

Concentration of licorice extract g/l	Effect of the organic fertilization of poultry (ml/l)				Effect of the licorice extract
	0	10	15	20	
0	82.76 e	88.58 d	112.53 a	107.80 b	97.92 a
2	36.16 i	37.16 i	94.66 c	96.53 c	66.13 c
3	66.40 h	69.83 g-h	72.03 f-g	74.83 f	70.77 b
Effect of organic fertilization of the poultry	61.77 c	65.83 b	93.07 a	93.05 a	

* the numbers that carry similar letters dose not different significantly among themselves according to the polynomial Duncan test at probability level of 5% .

Did not appear in the results any effect of licorice on the characteristics of the vegetative growth and the result agrees with what said by Alwan and et al., (2010) as there was not any effect of extract of licorice on the characteristics of the cucumber plant under the circumstances of greenhouses and that cause may be attributed to the lack of the presence of light inside the plastic house which did not stimulates the hormonal path which is located in licorice or the reason for this may be due to the lack of concentrations used in this research. The outweigh of spraying with organic fertilization in some recipes of vegetative growth may be due to the fact that this fertilization is an important source of nutrients, particularly nitrogen, phosphorus, potassium and calcium (Krishnamurthy and et al.,, 2009) and that the presence of such elements have an important role in the conduct of physiological processes of the plant especially the process of photosynthesis and the process of amino acids and proteins building that have a role in the plant growth (Ahmed and et al., , 2009).

As well as the poultry provides nitrogen which leads to increase the number of leaves and the leafy area and in turn increases the effectiveness of carbon representation and manufacturing carbohydrates , the increase in chlorophyll content may be attributed to the increase in the readiness of the nitrogen element by spraying the fertilization extract which has an important effect in the formation of chlorophyll particle (Addiscott, 1974). What has been obtained from the results in the recipe of number of pods as a result of spraying with organic fertilization extract of poultry may be due to the influence of the components of the organic fertilization extract as nutrients which are important and necessary and play an important role in accelerating the growth of the plant as a result of increasing manufacture of carbohydrates in the plant (Abu Dahi and Al-Younis 0.1988) and this is what ensured by the increase in the vegetative growth in the (plant height - number of branches - the concentration of chlorophyll) when spraying with the organic fertilization extract of poultry which led to the increase the nutrients in the leaves and their travel to the consumed parts (pods), and the poultry contain most of the

mineral elements which leads to a good supply of nutrients that is reflected in the recipe of growth and production and these results are agreed with what said by El-Desuki and et al., (2010).

4. CONCLUSIONS

The spraying with poultry extract had a positive effect in recipes of vegetative growth and chlorophyll content and weight of the pods, and founded increase the readiness of nutrients in the plant when sprayed extract of poultry and that the spraying with extract of licorice did not give the positive effects and there were no significant differences when spraying with it and when used the overlap between the treatments the negative impact of licorice reduced.

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THE IMPACT OF TWO TEACHING PROGRAMS WITH MOTOR CONTROL SYSTEMS IN DEVELOPING THE ACCURACY, SPEED AND TECHNIQUE OF PERFORMANCE OF SOME BASIC SKILLS IN VOLLEYBALL

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ABSTRACT

Volleyball is one of group games and has prominent position in performing and attracting great number of players and audience for its special speed rhythm and the accuracy in the speed skillful performance it has. It contains many basic skills that cannot be separated for their significance and integrating.

In volleyball, two teams compete using many of the basic game skills as closed skills and some as opened skills in the learning domain.

The study aims at setting two learning programs with motor control systems , opened and closed , circles in the accuracy , speed and technique of basic skills performance in volleyball , and knowing the effects of the two learning programs with motor control systems , opened and closed , circles in the accuracy , speed and technique of basic skills performance in volleyball , in addition to recognizing the priority of one of the two programs over the other in the accuracy , speed and technique of basic skills performance in volleyball.

The researcher uses the experimental method with two experimental equal groups design to deal with the problem of the study on a sample of (24) randomly chosen beginner students of the third stage during the academic year 2014-2015 in the school of physical education in the university of Garmian. The sample is divided into two group (12) students in each.

The researcher finds the following results:

- 1- The two learning programs with motor control systems have positive effect on the accuracy , speed and technique of performance of front upper serve (tennis), receiving the serve and front pass skills in volleyball.
- 2- The priority of the first experimental group that used the learning program with closed circle over the second experimental group that used the learning program of the open circle in the accuracy of performance of front upper serve (tennis), receiving the serve and front pass skills in volleyball.
- 3- The priority of the learning program with closed circle over the learning program of the open circle.

KEYWORDS: VOLLEYBALL. IMPACT.TEACHING. SYSTEM. SKILL.

INTRODUCTION

The nowadays changes motivate the responsible for the process of teaching to review their teaching programs , goals and methods to help the learners achieving helpful cooperation among the learner , the teacher and the way of learning, in addition to considering growing and developing the motor control systems , represented by closed and opened circle systems , which the learners need because of their great importance in improving the accuracy , speed and technique of skillful performance . in addition to interaction with the environment through the visual and audio feelings while paying attention to the motivators which the learner receive to achieve the aimed goals from the learning and coaching processes in sport games .

Programs have significant role in preparing the learner in different types of sport games in general and specially in volleyball, because it aims at increasing the learner's proficiency to fulfill the requirements of the game. The process of learning the motor skills has great importance in the two learning and coaching processes because it aims at getting the learner acquire the motor skill, mastering and using them economically with less effort.

Volleyball is one of group games and has prominent position in performing and attracting great number of players and audience for its special speed rhythm and the accuracy in the speed skillful performance it has. It contains many basic skills that cannot be separated for their significance -and integrating. Playing the game and applying the easiest type of plans cannot be done if we neglect any skill.

In volleyball, two teams compete using many of the basic game skills as closed skills and some as opened skills in the learning domain.

Thus , the importance of the study lies in dealing with active subject that concerns the responsible for the learning process through setting two learning programs with motor control systems , opened and closed , circles in the accuracy , speed and technique of basic skills performance in volleyball, for the rareness of the studies on the subject of the closed and opened circle skills in volleyball in the Iraqi environment , wishing that it may cover a small part of the field which it may need more studies and researches. Despite the appearance of many systems in the domain of motor learning aiming at learning the skills of sport games skills with less time and effort . Through the researcher's observation to a number of researches and studies , in addition to following up the teaching process , the researcher notices that there are some opinions prefers one system on the other , thus the researcher specifies his problems by these two questions:

- 1- Does the use of opened circle and closed circle motor control systems lead to a better accuracy , speed and technique of performance of front upper serve (tennis), receiving the serve and front pass skills in volleyball.
- 2- The priority of the two circles accuracy, speed and technique of performance of front upper serve (tennis), receiving the serve and overhead front pass skills in volleyball.

And this aims at contributing in achieving facts that help the specialized setting the suitable future programs to meet the learning the beginners and instruct them and develop their abilities to a better level .The study aims at:

- 1- Setting two programs with motor control systems, opened circle and closed circle, for the accuracy, speed and technique of performance of some basic skills in volleyball.
- 2- Recognizing the effects two learning programs motor control systems, opened circle and closed circle, for the accuracy, speed and technique of some basic skills in volleyball.
- 3- Recognizing the priority two learning program in the accuracy, speed and technique of some basic skills in volleyball.

DEFINING TERMS:

- 1- Motor control systems: "systematizing the work on the basis of harmony and concordance between the work of the central neural system and the work of the neural round system to control the physical capacity to produce the movement". (Adil Fadhil Ali : 1)
- 2- Closed circle system : " it is that system in which the process of comparison is done , which are neural orders from the neural system and getting back again to the neural system for comparison purpose of recognizing the motor action (skill)" (Wajeeh Mahjoob , 2000, 101)
- 3- Opened circle system: "it is that system in which there is no comparison done the decision is made in a speed way from the mind, in this system, the environmental circumstances are unknown". (Wajeeh Mahjoob , 2000, 103)
- 4- The technique of skillful performance: " it is technical , serial and detailed form from the beginning of the skill until its end " (Wajeeh Mahjoob , 1989, 101)

METHOD AND FIELD PROCEDURES

METHOD OF THE STUDY:

The researcher uses the experimental method with two experimental equal and random groups design with posttest and pretest for its suitability for the nature of the study.

SAMPLE OF STUDY:

The sample of the study is the students of the third stage during the academic year 2014-2015 in the school of physical education in the University of Garmian. They are (49) students representing two classes (29) students in class (A) and (20) students in class (B) after conducting the pretests and parity tests, they have been divided into two experimental groups randomly by lottery then some students have been excluded and they are:

- 1- The injured who are (5)
- 2- Those students who play the game and they are (10)
- 3- The reliability and pilot experiment sample and they are (10)

Thus the final total of the sample are (24) students forming (%48.979) of the main sample who are (49) and with (12) students in each experimental group. Table (1) explains this.

Table (1) Shows explains the sample of the study

Total Sample	Main Sample	The excluded from the sample	Sample after exclusion		The reliability and pilot experiment sample
			Experimental	Controlling	
(49)	(24)	(15)	(12)	(12)	(10)
			(24)		
The Total of sample			(34)		

The researcher says that the sample of the study is in harmony because they represent on academic stage and the sample can be distributed normally on its arithmetic mean.

TOOLS OF THE STUDY:

- 1- Official volleyball play court
- 2- Volleyball balls (micasa) (10)
- 3- Form of a questionnaire
- 4- Calculator
- 5- Measuring line
- 6- Column (10)
- 7- Form of a questionnaire

MEANS OF COLLECTING INFORMATION:

- 1- Arabic and foreign resources and references
- 2- Observing and experiment
- 3- Tests and assessments

THE USED TESTS:

1. The test of front upper serves (tennis). (Adnan Hadi Mosa and Polos Hanona: 219)
2. The test of receiving the serve from down. (Mohammed Subhi Hasaneen and Hamdi AbdulMoni'm: 243)
3. The test of overhead front passes. (Adnan Hadi Mosa and Polos Hanona: 225)

PILOT EXPERIMENT:

The researcher made a pilot a study on (10) sample students of the third stage , who are randomly chosen from the total sample of the study , in the closed court in in the school of physical education .on 27th of Oct. 2013.

THE SCIENTIFIC BASES FOR THE TESTS THAT ARE USED:

To know the scientific bases for the test that are used, and after looking into many studies and resources, it has been made clear that the tests are typified to the Iraqi environment and they have been used in many studies in addition to using them on similar samples. And those are clear and understood and cannot be misinterpreted and far away from the subjectivity. Thus the researcher concluded not to find the scientific bases for the tests because they have the scientific conditions (Validity, reliability and objectivity).

THE PRETESTS

Before conducting the pretests, an introductory session has been given to all the individuals of the sample to know the first form of the skills and how to perform them. Then the pretests have been made on 28th-29th Oct. 2013 for the two experimental groups on two days, one day for each experimental group.

PARITY OF THE SAMPLE

The researcher made the parity between the two experimental groups and for all the skillful tests, T-Test has been made for the samples. The results showed that there no incorporeal differences between the two groups and this certifies that there is parity between them as explained in table (2).

Table (2) Shows the parity between two experimental groups in the skillful pretests, for the accuracy , speed and technique of performance of some basic skills in volleyball , and the values of counted and table "T" and their Statistical reference

No	Statistics Tests	The Two experimental groups					Counted "T" Value	Statistical reference
		Measuring Tool	Closed		Opened			
			Mean	Std. Deviation	Mean	Std. Deviation		
1	Accuracy of front upper serve	Degree	11.416	2.274	10.333	1.497	1.320	Not incorporeal
	Speed of front upper serve	Second	2.018	0.109	2.047	0.109	0.659	Not incorporeal
	Technique of front upper serve	Degree	3.666	0.492	3.583	0.514	0.179	Not incorporeal
2	Accuracy of receiving serve	Degree	12.916	4.757	12.583	5.632	0.149	Not incorporeal
	Speed of receiving serve	Second	41.653	2.206	40.238	3.066	1.243	Not incorporeal
	Technique of receiving serve	Degree	4.231	0.241	4.363	0.281	1.211	Not incorporeal
3	Accuracy of overhead front pass	Degree	30.750	3.222	29.667	4.997	0.604	Not incorporeal
	Speed of overhead front pass	Second	41.853	3.380	41.911	3.066	0.042	Not incorporeal
	Technique of overhead front pass	Degree	3.042	0.450	2.958	0.396	0.472	Not incorporeal

Table "T" value under (0.05) and freedom degree (22)= 2.07

The above table shows that there are no incorporeal differences. The total value of counted "T" is more than table "T" which is (2.07) and Reference level under (0.05) and freedom degree (22) and that certifies the parity in the learning and skill level in that they are beginners.

LEARNING PROGRAM:

The researcher sets two programs two programs with motor control systems, opened circle and closed circle, for the accuracy, speed and technique of performance of some basic skills in volleyball. Taking into consideration the scientific bases in setting and applying the two programs and variety in doing the exercises in the session, in addition the following:

- 1- Both the first and second experimental groups, open and closed circles implemented the exercises.
- 2- The two learning programs were implemented in the closed court in the school of physical education.
- 3- The two learning programs were implemented during the period from 10/10/2013 until 4/11/2013
- 4- Motivating the players to paying attention and be committed to the learning sessions.
- 5- The number of the learning sessions were two in a week for each experimental group
- 6- The total number of the learning sessions are (16) sessions
- 7- The period of implementing the two learning programs is (8) weeks
- 8- The period of the learning session is (90) minutes

THE POSTTESTS:

Having finished with implementing the two learning programs, the researcher conducted the posttests for the variables that are being studied and that was on 5-6/11/2013, the researcher followed the same standards of the pretests in addition to taking into consideration the time and place circumstances and the means of the tests and the tests tools.

THE STATISTICAL MEANS:

The researcher used the following statistical means (Wadeea' Yaseen Al-Tikrity and Hassan Mohammed Al-Obiedy, 1999): The arithmetic mean, the standard deviation and the "T" test for the asymmetric sample and "T" test for the independent samples.

DISPLAYING THE RESULTS AND DISCUSSING THEM:

DISPLAYING AND ANALYZING THE RESULTS OF THE PRETESTS AND THE POSTTESTS FOR THE TWO EXPERIMENTAL GROUPS IN THE ACCURACY, SPEED AND TECHNIQUE OF PERFORMANCE, OF SOME BASIC SKILLS IN VOLLEYBALL

Table (3) Shows The arithmetic means, the standard deviations and the values of the counted and table "T" and their statistical references for the pretests and the posttests for the two experimental groups in the accuracy of performance of some basic skills in volleyball

No	Skills	Experimental groups	Tests					Counted "T" Value	Statistical reference
			Pretest			Posttest			
			Measuring Tool	Mean	Std. Deviation	Mean	Std. Deviation		
1	Serving	1 st group closed circle system	Degree	11.416	2.274	19.416	2.609	9.285	Incorporal
		2 nd group opened circle system	Degree	10.333	1.497	18.333	2.708	9.101	Incorporal
2	Receiving the serve	1 st group closed circle system	Degree	12.916	4.757	19.916	7.304	6.846	Incorporal
		2 nd group opened circle system	Degree	12.583	5.632	28.166	4.174	9.055	Incorporal
		1 st group closed circle system	Degree	30.750	3.222	54.000	8.068	8.844	Incorporal

3	Passing	2 nd group opened circle system	Degree	29.667	4.997	48.833	5.778	6.863	Incorporeal
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Table "T" value under (0.05) reference and freedom degree (11)= 2.20

It is clear from the results of the table of the pretests and posttests, for the two experimental groups in the accuracy of performance of some basic skills in volleyball, that there are incorporeal differences between the pretests and posttests and the priority is for the posttests because the values of the counted "T" more than the Table "T", which is (2.20) under (0.05) reference and freedom degree (11).

Table (4) Shows The arithmetic means, the standard deviations and the values of the counted and table "T" and their statistical references for the pretests and the posttests for the two experimental groups in the speed of performance of some basic skills in volleyball

No	Skills	Experimental groups	Tests					Counted "T" Value	Statistical reference
			Pretest			Posttest			
			Measuring Tool	Mean	Std. Deviation	Mean	Std. Deviation		
1	Serving	1 st group closed circle system	Degree	2.018	0.109	1.898	0.104	2.554	Incorporeal
		2 nd group opened circle system	Degree	2.047	0.109	1.972	0.151	3.138	Incorporeal
2	Receiving the serve	1 st group closed circle system	Degree	41.653	2.206	40.226	1.614	5.009	Incorporeal
		2 nd group opened circle system	Degree	40.238	3.066	37.485	1.741	4.217	Incorporeal
3	Passing	1 st group closed circle system	Degree	41.853	3.380	38.587	2.074	3.432	Incorporeal
		2 nd group opened circle system	Degree	41.911	3.066	40.226	1.614	2.729	Incorporeal

Table "T" value under (0.05) reference and freedom degree (11)= 2.20

It is clear from the results of the table of the pretests and posttests, for the two experimental groups in the speed of performance of some basic skills in volleyball, that there are incorporeal differences between the pretests and posttests and the priority is for the posttests because the values of the counted "T" more than the Table "T", which is (2.20) under (0.05) reference and freedom degree (11).

Table (5) Shows The arithmetic means, the standard deviations and the values of the counted and table "T" and their statistical references for the pretests and the posttests for the two experimental groups in the technique of performance of some basic skills in volleyball

No	Skills	Experimental groups	Tests					Counted "T" Value	Statistical reference
			Pretest			Posttest			
			Measuring Tool	Mean	Std. Deviation	Mean	Std. Deviation		
		1 st group closed circle system	Degree	3.666	0.492	6.167	0.615	12.845	Incorporeal

1	Serving	2 nd group opened circle system	Degree	3.583	0.514	5.708	0.752	8.878	Incorporeal
2	Receiving the serve	1 st group closed circle system	Degree	4.231	0.241	6.063	0.720	10.490	Incorporeal
		2 nd group opened circle system	Degree	4.363	0.281	6.713	0.624	16.790	Incorporeal
3	Passing	1 st group closed circle system	Degree	3.042	0.450	6.083	0.973	8.300	Incorporeal
		2 nd group opened circle system	Degree	2.958	0.396	5.792	0.782	9.741	Incorporeal

Table "T" value under (0.05) reference and freedom degree (11)= 2.20

It is clear from the results of the table of the pretests and posttests, for the two experimental groups in the technique of performance of some basic skills in volleyball, that there are incorporeal differences between the pretests and posttests and the priority is for the posttests because the values of the counted "T" more than the Table "T", which is (2.20) under (0.05) reference and freedom degree (11)

DISPLAYING AND ANALYZING THE RESULTS OF THE POSTTESTS FOR THE TWO EXPERIMENTAL GROUPS IN THE ACCURACY, SPEED AND TECHNIQUE OF PERFORMANCE, OF SOME BASIC SKILLS IN VOLLEYBALL:

Table (6) shows the arithmetic means, the standard deviations and the values of the counted and table "T" and their statistical references for the posttests for the two experimental groups for the accuracy, speed and technique of performance of some basic skills in volleyball

No	Statistics Tests	The Two experimental groups					Counted "T" Value	Statistical reference
		Measuring Tool	Closed		Opened			
			Mean	Std. Deviation	Mean	Std. Deviation		
1	Accuracy of front upper serve	Degree	19.416	2.609	18.333	2.708	0.955	Not incorporeal
	Speed of front upper serve	Second	1.898	0.104	1.972	0.151	1.370	Not incorporeal
	Technique of front upper serve	Degree	6.167	0.615	5.708	0.752	1.577	Not incorporeal
2	Accuracy of receiving serve	Degree	19.916	7.304	28.166	4.174	3.253	Incorporeal
	Speed of receiving serve	Second	40.226	1.614	37.485	1.741	3.833	Incorporeal
	Technique of receiving serve	Degree	6.063	0.720	6.713	0.624	2.272	Incorporeal
3	Accuracy of overhead front pass	Degree	54.000	8.068	48.833	5.778	1.727	Not incorporeal
	Speed of overhead front pass	Second	38.587	2.074	40.226	1.614	2.072	Incorporeal

	Technique of overhead front pass	Degree	6.083	0.973	5.792	0.782	0.776	Not incorporeal
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Table "T" value under (0.05) reference and freedom degree (22)= 2.07

Table (6) of the posttest, for the two experimental groups for the accuracy, speed and technique of performance of some basic skills in volleyball, shows that there are incorporeal differences in the test of the accuracy and technique of and speed performance of receiving serve and the speed of overhead front pass. The value of the counted "T" is more than the table "T" (2.07) under (0.05) reference and freedom degree (22).

DISCUSSING THE RESULTS:

Through what has been displayed in tables (3,4,5) , we can find that there are incorporeal differences between the pretests and posttests of the two experimental groups : the first one used the program of the closed circle system and the second group that used the program in the opened circle system in the accuracy , speed and technique of performance for the skills of front upper serve (tennis), receiving the serve and front pass and the priority is for posttest .

The researcher says that the reason behind this is the positive effect of the two learning programs and what was contained in the training lessons of the varied exercises for the skills of the current study, which contributes in improving the accuracy through relying on the scientific bases in selecting the exercises according to the systems of motor control systems, the opened and the closed circles; and this answer the first question.

This improve in the skillful performance , its accuracy and its speed due to the resemblance of the quality exercises set by the researcher that leads to control the level of performance. The principal role of the quality exercises is that they work on the same path of the motor performance, thus, the work will be specified to specific group of muscles in the performance (Suleiman Farouq Sulieman, 200, 148)

Generally , the researcher thinks that all the repetitions were performed by the learners in each learning session and in different repetitions according to the difficulty and time of the exercise and tis leaves effect and image in the memory of the learner and this image to be used by the learner to or develop the next movements because the repetition of the information moves it from the short term memory to the long term memory which makes it easier to remember in any moment , besides , the availability of accuracy in the performance has great effect in learning the skills of the current study. The variation in the exercises and the type of skill and explaining and the clarification by the coach have positive reflection in the speed of skill performance, specially the skillful abilities which to be considered the backbone to achieve the sport aim.

The serve skill is of the closed skills which has individual role to the right place quickly and accurately and for important reasons that make it one of the important and direct offensive shots (Mohammed Saad Zaglol and Mohammed Lutfy Al-Said, 2001, 60). Whenever the player undergoes application experiences and develop in the application stage , he will be make positive differences in performing the learned skill (Mofty Ibrahim Hammad ,2002,228), Besides, each leaning program has strength points that can be made use of in the process of skillful learning in volleyball through the explanation , clarification and complete accuracy for the skills of the current study which contributes in giving complete image aand an understanding of the nature of and their meanings while performing , because the clearness of the learning goals and their values and concordance with the level of the learner lead to clear improve in his performance and gives him motive to learn and physical and motor readiness to fulfill the duty and training on it . (Yaarub Khayoon, 2002, 193) The researcher says that the reason behind this is the repetition and the desire to learn by the sample because they are beginners, for the feature this age stage in, i.e. speed in learning because of maturity, this is so because there a real relation between leaning and maturity, learning depends heavily on maturity and the level of what the learner can do of activity and the quantity of the experiences and skills (Mohammed Hassan ALawy , 1992,102) , in addition to increase the concepts and recognitions of the beginners and establishing the information in their minds and this cannot be done only if the process of learning accompanied by the exercise which are the base of the motor learning .

The two learning programs were new to the beginners which led to rejecting the boredom factor and evoking the spirit of actual participation.

The success of the of performance in the first attempts of the skills and knowing the results of their performance, whether be by the feedback of from the teacher or personal, led to increase their enthusiasm an motivation to continue; because there would be no development no improvement in the performance without feedback, which should be suitable to the mental, age and stage levels (Abdullah Hussein AL-Lami, 2006, 78)

As for table (6) of the posttest ,for the two experimental groups , we notice that there are incorporeal differences between the arithmetic means and the standard deviations of the posttests degrees for the two experimental groups, the first and the second , in the variables of the accuracy and technique of and speed performance of receiving serve skill , and there is no in corporeal differences for the variables of accuracy , speed and technique of performance of the serve skill , and the accuracy and technique of performance of overhead front pass , and answers the second questions.

The researcher says that the reason behind the differences with no statistical references is the hastening of some learners of the first experimental group the performance despite the correct set out stand which is considered as the base upon which skillful success may be achieved. That hastening led to weakness in suitable timing with the ball. Despite the importance of the skills of serve and pass ,and paying great attention to them in the learning sessions but some game teachers do not give them great importance or they do not take them seriously in addition to the less in the experience and the illness in some senses of some learners of the first experimental group which implemented the learning program in the closed system , what led to the happening of mistakes in the recognition process, because presenting the information and explaining them requires motivating many of the sensual organs because the process of recognition is a complicated process and any error in the senses leads to mistake in the recognition of the movement because there is a relation between the recognition and the sense of the motor duty (Nabeel Mahmood Shakir , 2007,118) , in addition to the error in reading by the learner because of the lack in field experience; the more applying and correcting experiences the learner undergoes ,the more positive changes happen in the performance the learned skill , the recognition of the volleyball may develop by repetition and performance and what effect this may have on the accuracy and speed of performing many of the game skills technically and tactically . Nevertheless, recognition never come surprisingly, because the experience and ex-performance and repetition develop recognition, thus there is primary recognition of the movement and comes from the explanation and clarification displaying the movement (Forat Jabbar SaadAllah, 2008 113),

Despite this , the means of the posttests of the two experimental groups are better than those of the pretests as shown in table (3,4,5) and this means the nearness of all posttest of the two experimental groups but there is priority in the surface difference between the arithmetic means for the two experimental groups and for the benefit of the second experimental group that implemented the learning program in the opened circle system, the researcher believes that the first experimental group implemented the learning program in the closed system for the skills of the current study , after explaining and displaying the skill by the teacher the learners perform all the repetitions of the exercises in the closed system in each learning session to a specified place then moves to another place and with the same repetition and durations, the correcting of the errors and giving the immediate feedback by the teacher or using the self- correction leads to learn the studied skills and improving their accuracy , speed and technique of their performance . The application and the theoretical aspects help the learners to control their movements and increase the motor harmony while performing the skills. While the second experimental group implemented the learning program in the opened circle system for the skills of the current study, after explaining and displaying the skill by the teacher ,with a model, the learners perform the required skills practically during learning session, the learner perform all the repetitions of the exercises randomly , in that there is no repetition for two attempts -in any place until the learner finishes the required repetitions , thus the learner perform in each repetition anew program because he does not repeat the exercise in two sequenced attempts , and her the learner cannot correct the error he makes because the stimulus is different every time quick response ,the performance of the skill practically according to specified repetitions and durations within the main part of the program the teacher corrects the errors and gives the postponed feedback.

CONCLUSIONS:

- 1- The two learning programs in the motor control systems have positive effect the accuracy, speed and technique of performance of front upper serve (tennis), receiving the serve and front pass skills in volleyball.
- 2- The priority of the first experimental group that used the learning program of the closed circle system over the second experimental group that used the learning program of the opened circle system the accuracy, speed and technique of performance of front upper serve (tennis), receiving the serve and front pass skills in volleyball.
- 3- The priority of the second experimental group over the first experimental group the accuracy, speed and technique of performance of receiving the serve in volleyball.

RECOMMENDATIONS:

- 1- The learning program in the closed circle system should be depended on in the accuracy, speed and technique of performance of front upper serve (tennis) and overhead front pass skills in volleyball.
- 2- The learning program in the opened circle system should be depended on in the accuracy, speed and technique of performance of receiving the serve skill in volleyball.
- 3- The necessity of reviewing the current learning programs to greatly contribute in the accuracy, speed and technique of performance of front upper serve (tennis); receiving the serve and overhead front pass skills in volleyball.
- 4- Conducting similar studies converging the (the closed - the opened circles) and (the opened – closed) circles on the skills of volleyball.
- 5- Conducting similar studies on different skills and activities

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THE MOST IMPORTANT MOTOR SKILLS AND THEIR RELATIONSHIP TO THEIR PERFORMANCE OF FRONTAL HANDS JUMP ON THE TABLE FOR GROUND MOVEMENTS ARTISTIC GYMNASTIC

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Abstract

This research was carried out in the internal hall of gymnastic in elementary school for boys in Diyala province for the year (2013) in order to identify the relationship between motor skills and their relationship to the performance of frontal hand jump on the ground movements rug of the technical gymnastic. The research sample consisted of 24 students representing the fourth stage - Institute of preparing teachers / effectiveness of artistic gymnastics, which can be invested properly and in a scientific manner that serves the achievement through the good performance. He has been used a descriptive approach with screening style for suitability of the nature of the problem. The sample was selected by intentional way and after the completion of the tests , data were processed according to the statistical program (spss) and analysis it in tables and discussed it , values of calculated (t) of the studied recipes (compatibility, speed of response, agility, flexibility) the total (0.70, 0.73, 0.80, 0.79) respectively, to achieve the goals of the research and provide everything modern like equipment and tools of technical gymnastic . The researcher found that there is a significant correlation between motor abilities and their relationship to the performance of frontal hand jump on the ground movement rug of gymnastic.

KEYWORDS: MOTOR. ABILITIES. FRONTAL. JUMP. HANDS.

1. INTRODUCTION

the motor abilities are considered one of the important factors affecting all the games and sporting events, and the availability of motor abilities for the gymnast sufficiently enable him to achieve better performance and high achievement, the importance of motor abilities are not confined only within the field of sports, but it also is important for everyone in the community in general.

According to each of Najwa Solomon and et al., 1991 that "motor abilities is one of the basic substrates on which depends the setup of skill in different activities as there is a relationship between motor abilities and the level of skilled performance and even if there is a difference in the levels of this relationship depending on the type of sporting activity, and therefore the possession of the individual a high level of the motor ability suggesting that this individual has a degree of ability to practice sporting activity successfully. "

Many nations of the world began to harness all the possibilities and scientific capacity in order to reach to the advanced levels in different sports, the continuous development in the collective and individual sporting games depends on the way in and how to setup and configure the players in all respects and motor abilities (physical skills as well as tactical, psychological and educational) for success and access to high levels.

The gymnastics considered one of the special sports that received attention from nations because the performance in this game reached to the creativity and innovation, and is also working to develop psychological and mental characteristics and boldness, courage, and the development of motor skills.

Also the ground movements considered as a basis for most of the movements on the rest of the hardware as learning them is associated with the basic conditions because it is being the basis of learning these movements and learning it in the suitable time, and the frontal hand jump on the ground movement rug is one of the skills that need a correlation and motor link which is a rotation of the body a full cycle around the transverse axis as well as the ability to require motor ability of legs and arms muscles, and here lies the importance of research to find out the relationship between the capacity and performance of motor skill of the frontal jump of hands on the land for students phase III / Institute of the preparation of teachers.

2. RESEARCH PROBLEM

Through the experience of the researchers in teaching and training, they noted that there is a weakness in motor and skilled abilities for the performance of students of Department of Physical Education- Institute of teachers preparing of Baquba, especially when their performance skills on the rug of ground movements of gymnastic. So the researchers felt to study the most important motor skills and their relationship with the performance of the frontal hand jump on the ground movement's rug of gymnastic.

3. AIM OF THE RESEARCH

To identify the most important motor skills and their relationship to the performance of the technical skill of the hand jump on the ground movement rug of gymnastic

4. RESEARCH HYPOTHESES

There is a significant correlation between motor abilities and technical performance of the hands jump skill on the rug of ground movement of gymnastic.

5. RESEARCH METHODOLOGY

For the purpose to access to scientific facts based on objective grounds, it is important to choose the right choice for the curriculum and to study the problem of being "the way used by the researcher in the studying the real problem" (Ahmad Badr 0.1987) so the researcher used a descriptive approach because it is suitable for the research problem.

6. RESEARCH SAMPLE

The sample is the group that are being tested or studied, may be from one person or more (Wajih Mahjoub, 2002) and on this basis the research sample is selected from the community which is represented by students of the fourth phase - Department of Physical Education / Institute of preparing teachers, the sample reached to (20 students) from the research community which is twenty-four students and were excluded from the four students who conducted exploratory experiment on them and so that the sample represents 83% of the research community.

7. IDENTIFYING THE MOST IMPORTANT MOTOR ABILITIES

For the purpose of determining the most important motor skills, the researcher organized a questionnaire form and then presented it to the group of experts and specialists in the field (science of training, testing and measurement - gymnastics) and after unloading forms and extraction ratio of (80%) or more and the researcher has the right to choose the rate at which it deems appropriate when selecting indicators (Mohamed Nasr and et al., 2000) as shown in the following table.

Table (1) shows the relative importance of the capacity of the motor abilities which are selected by the opinions of experts and specialists.

The basic skill	The total degree	The relative importance	The accepted rates	The unaccepted rates
Compatibility	32	80%	√	
Agility	35	87.5%	√	
Response speed	33	82%	√	
Flexibility	36	90%	√	
Motor accuracy	20	50%		X
balance	28	70%		X

Standardized tests of motor abilities by (Mohamed Sobhi 2000 and Salum Ali, 2004)

First / throw and receive balls:

- The purpose of the test: measuring the compatibility between the eye and the hand.

Secondly / running zigzag by Barrow manner:

- The purpose of the test: Barrow put this test within his known battery to measure the motor ability and it is a valid test for measuring agility.

Third / Nelson test of motor speed:

- The purpose of the test: measuring the link between reaction speed and motor speed of the arms.

Fourthly / test of bending the trunk from standing

- The purpose of the test: measuring the extent of the flexibility of the torso and thigh movements in front of the crease to a standing position.

8. THE MAIN EXPERIMENT

The main experiment was conducted on 16.11.2013 on the research sample as included tests of motor abilities as was filmed the performance of hands jump at 19.11.2013 and has been presented to the rulers which totaling (4) for the purpose of evaluate the performance of the frontal hands jump.

9. STATISTICAL METHODS

The researcher used the following statistical methods according to SPSS to deal with the results which are obtained from the experiment, and according to the following laws (Ayed Kareem 2009)

Arithmetic mean, standard deviation, correlation coefficient (Pearson).

10. SHOWING RESULTS ANALYZING AND DISCUSSED THEM

This chapter include displaying the results analyzed and discussed them , so the researchers presented the results of research in the form of a table, as it is considered an illustrative way of the research results, the researchers also displays the results for the purpose of access to the achievement of the objectives and research hypotheses.

SHOWING RESULTS OF ARITHMETIC MEANS AND STANDARD DEVIATIONS OF MOTOR CAPABILITIES AND PERFORMANCE OF HANDS JUMP AND ANALYZING THEM

Table (2) shows the values of arithmetic means and standard deviations of motor abilities and skilled performance of the frontal hands jump

variables	mean	Standard deviation
compatibility	9.266	1.341
Speed of response	18.066	2.086
agility	9.266	1.341
flexibility	6.643	0.525
Performance the skill of frontal jump	6.958	1.071

Table (2) shows arithmetic means and standard deviations for the variables as the arithmetic mean reached (9.266) and standard deviation (1.341) and the arithmetic mean – the speed of response (18.066) and standard deviation (2.086) and the value of the arithmetic mean -agility (9.266) and standard deviation (1.341) and the value of the arithmetic mean - flexibility (6.54) and standard deviation (3.67) and the arithmetic mean of the performance of the skill of frontal hands jump (6.958) and standard deviation (1.071).

Showing the results of calculated (t) between motor abilities and their relationship to the performance of frontal hands jump on the ground movement’s rug, analyzing and discussing them.

Table(3) shows the value of calculated (t) between motor abilities and their relationship to the performance of frontal hands jump on the ground movement’s rug.

Motor abilities	Calculated (t)	Tabulated (t)	Significance
compatibility	0.70	0.387	significant
Response speed	0.73	0.387	significant
agility	0.80	0.387	significant
flexibility	0.79	0.387	significant

The Value of tabulated (t) with level of significance (0.05) and the degree of freedom (18) equal to 0.387

The table (3) shows the values of the relationship between motor abilities and performance of hands jump on the ground movements rug since the value of the correlation coefficient between compatibility and performance of frontal hands jump was (0.70) while the value of the correlation coefficient between the speed of the response and performance of the frontal hands jump (0.73) and the value of the correlation coefficient between the agility and performance of frontal hand jump reached (0.80) and the value of the correlation coefficient between flexibility and performance of frontal hands jump (0.79) and when compared with the value of tabulated (t) below the level of significance (0.05) and the degree of freedom (18) which is (0.387) we conclude the existence of a correlation between the motor abilities like (synergy, speed motor, agility, flexibility) and performance of frontal hand jump on ground movements rug as the value of calculated (t) is greater than the value of tabulated (t) and this indicates the presence of a high correlation between motor abilities by performance of frontal hands the ground movements rug.

DISCUSSING THE RESULTS OF THE SIMPLE CORRELATION COEFFICIENT BETWEEN MOTOR ABILITIES AND PERFORMANCE OF FRONTAL HANDS JUMP ON THE GROUND MOVEMENTS RUG.

from the above results, which showed that all the values of the correlation coefficient are significant, which indicate the presence of significant correlation and the researchers attribute this to the motor compatibility which is an important factor

to help the student to perform the prescribed movements skillfully especially if there were so many of these movements because it is difficult for him to do them to the fullest if not characterized by compatibility which is considered the first factor to perform it (Abdul Ali and et .al. , 1988), and the frontal hands jump considers rich in gradient movements by compatibility as the student can install movements, skills and understanding their sequences and achievement frontal hands jump needs well compatibility between the arms and the eye and this is what Aweys Hayani confirmed in 2000 that owning a player and student high capabilities of compatibility not only assisted him in the performance of motor skills and fully accurate, but beyond that to include avoiding the expected errors.

The results also indicated the presence of strong links between the speed of motor response and hands jump and the speed of response has an extreme importance in most sports, if not all, and gymnastics sport is one of the sports that depends on the speed of response dramatically because this motor ability has an importance in achieving the desired benefit this is confirmed by (Abbas Hadi, 2002) that "the introduction of stimuli and sudden situations help the player to visualize the location and the accuracy of performance, and with high response speed and continuous observation and constant vigilance and speed of making the right decision for the suitable performance, which requires early preparation through training on motor abilities and thus helps the player to overcome sudden situations and unexpected difficulties that appear often in real playing conditions "

While agility , it also has pointed to the existence of strong links among research samples although it is very important for the performance of the skill in the game of gymnastics as confirmed by (Qassim Hassan, 1998), quoting from Harrah's that agility is the ability of an individual to control the consensus and capabilities of the rapid control of the sporting movements and application of the motor performance specifically and suitable in accordance with the requirements of rapid and serious change) and also it is an important factor for the movement and this is confirmed by (Ayad Hamid and et .al.,) that "the abilities of agility in motor performance in terms of the adaptation ability and ability of the right response to the variable requirements and ability to control and not losing the aesthetic movement, and the possibility of changing direction, according to the requirements of the game and the ability to direct the path of the movement in order to serve the achievement of the objectives of the movement and its purpose "

The researchers attribute the flexibility as it is bending the trunk from standing to the use of prolongation trainings orderly and the use of the arms and feet movements and the ratios of increase running movements and speed changing and the pivot during the work and rubbery of ligaments and muscles during movements and maintaining the good muscular equilibrium. And on this basis that the flexibility of the joints and muscles play an important and senior role in gymnastics because the rug of ground movements is small in size and with the large number of movements of the players and the different skilled performance and from skill to skill raises the temperature of the muscles and change their viscosity and raise the level of their rubbery and flexibility, and this is confirmed by (Salim Ahmed 2012)the change in muscle temperature raises or decrease flexibility in the range of 20% and individuals usually with high temperatures more flexible for people with low temperature.

11. CONCLUSIONS

1. presence of significant correlation between compatibility and frontal hands jump on the ground movements rug
2. presence of significant correlation between the speed of response and the frontal hands jump on the ground movement rug
3. there is a significant correlation between agility and hands jump on the ground movement rug
4. there is a significant correlation between flexibility and frontal hands jump on the ground movement rug.

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STRATEGIC IMPACT OF THE SIX CAPS IN THE ACHIEVEMENT FOR THE SIXTH STAGE STUDENTS IN THE SUBJECT OF HISTORY

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Abstract

The current research aims to know the strategic impact of the six caps in the achievement of the sixth stage students in the subject of history and in order to achieve the goal of research, we have developed the following null hypothesis:

There is no differences with statistically significance at the level of (0005) between the average scores of the experimental group students who are studying the history by using the six caps and between the average scores of the control group who are studying the same material by the normal way.

Follow the experimental design as a design for the research : the community of the research consisted of students of the sixth literary and the researcher chose the research sample and by simple random selection , two divisions are chosen, one of them represent the experimental group and the other represent the control group and the number of sample members reached to (60) by (30) student for the experimental group and (30) students for the control group and was held between them equality in the variables in terms of (the degree of the achievement of the students in the subject of history for the first semester, chronological age) in order to adjust some of the variables that may affect the research results.

A collective test has been prepared which consists of (30) paragraph of multiple-choice type where included the content and goals of behavioral material and t-test was used for two independent samples (T. test) and Chi-square and to calculate the stability and the coefficient of difficulty and the coefficient of excellence and effective alternatives as a statistical methods to process the research data .

The results of the research indicated the presence of statistically significant differences at the level of significance (0.05) for the benefit of experimental group that studied history by strategy of the six caps on the control group who studied it by the same way by the normal way and according to the results we conclude the following:

Effectiveness of the six caps strategy on academic achievement level in history, and the six caps strategy makes students the educational process axis.

- 1-The need for identifying to the history teachers the modern teaching methods and strategies and teaching methods to the students and one of them is the strategy of the six caps .
- 2-Developmental contract and qualifying sessions for teachers .
- 3-Distribution of a special booklet which include all modern teaching methods which include all high schools in Iraq until it is found by teachers to select an appropriate method in teaching by the teacher .

KEYWORDS: STRATERG. SIX CAPS. ACHIEVEMENT. HISTORY. SIXTH STAGE

1. RESEARCH PROBLEM AND ITS IMPORTANCE

The teaching of history is facing many difficulties that limit the ability to achieve the desired educational goals (Ferjany: 1998: 83) , teaching techniques and methods are responsible for a lot of these difficulties that limit the role of students and make him take the ready information (Ghalib: 1970: 341) were the only means of school is the book and it was the duty of the teacher is explaining and interpreting information as written in the textbook (Radwan: 1973: 12) as the teaching of this article is necessary to learn the students and showing to them the historical events as well as affects and is affected with future historical events (the Cloob: 1983: 27)

The traditional teaching methods which based on conservation and rote memorization takes its place in history teaching without the involvement of students in self-learning which make the students in the future depend on themselves in the acquisition of knowledge as modern trends confirm the positive student position in the educational process and provide him with new educational experiences (diabetes: 1985: 7) and through that can achieve the desired educational goals from the events as well as it creates a kind of intimacy and interaction between the teacher and his students and as the strategies that were used in the teaching of the history of the influencing factors in the achievement of students in such strategies is an important because it helps to know the impact of some variables in the achievement and this in turn help to access to some of the solutions of problem faced by teachers which is weakness of the students in the history through field visits to these schools , the concern for social materials had much attention at this time because of the rapid transformations in the recent era that require rapid change in current generations in schools ideas to become members and actors in their current society but also in the changed society so it became necessary for the history subject to be interested in studying doorways to follow the students' needs especially with regard to the psychological and social aspects such as the need for the poll and the formation of a philosophy of life (Ryan: 1972: 18)

Achieving this depends on the effectiveness of the use and its quality in the practices that included in the areas of teaching which are represented by teaching strategies that should fit with the view of educational and modern trends to raise the level of achievement of students and keep them away from conservation and memorization and built on the understanding mainly in the learning process and make students engaged in mentality processes and from these strategies is the strategy of the six caps and from here the problem of the current search comes by answering to the following question ((Is there an effect by using the six caps strategy in the achievement of the female students in the sixth stage in history literature))

2. AIM OF THE RESEARCH

The current research aims to know the effect of the using the six caps strategy in the achievement of the sixth stage students in history subject

3. RESEARCH HYPOTHESES

To achieve the goal of research, we have developed the following hypothesis:

There are no statistically significant differences at the level of significance (0.05) in the achievement of the sixth stage students who are studying history according to the six caps by the usual way

4. RESEARCH TOOLS

The collective test for history

5. THE TWO GROUPS EQUALITY

Table 1 shows the arithmetic mean and the variance and the value of calculated and tabular (t) and for the degrees of two sets of research material in modern and contemporary history in the final exam for the first semester of the sixth-stage literary in the variable of achievement

Group	The sample size	Arithmetic Mean	Variance	Degree of freedom	Value of (t)	
Experimental	30	67.5	72	58	Calculated	Tabulated

Officer	30	65	117		1	2
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Table 2 shows the arithmetic average, variance and the calculated and tabulated value of T for the two groups of research students (experimental and control)

Group	The sample size	Arithmetic Mean	variance	Degree of freedom	T value	
Experimental	30	189	124	58	Calculated	Tabulated
control	30	188	84		0.29	2

6. DEFINE TERMS

6.1 FIRST STRATEGY

Defines by the trick (2002)

((As specific measures or methods to implement skill certain)) (hella: 2002: 64)

Defined by Abo Sareea (2008)

((As plan or method of directing questions which go to farther of knowing what learned by students and lift the levels of students answers or changing the way of answer if it is necessary

Defined by Bishara (1983)

((As sets of methods and techniques Which ensure application of subjected purposes .

(Defined by Brown: 1989)

(specific methods to treat problem or do task which are scientific ways to achieve certain goal and also for controlling with the certain information and also for identification on them).

(Brown: 1989p79)

The procedural definition of strategy

A set of procedures used by the teacher in a research sample or the experimental group in achieving the goals during the duration of the experiment.

6.2 THE SIX CAPS

Defined by Abo Gado and Nawfal (2007)

(Strategy Aims to simplify the process of thinking and increase the effectiveness which allow the user to move or change in the used pattern of thinking and it is a method used by the individual in most moments of his life))

(Abu Gado And Nawfal : 20-07:49)

Defined by Al- Hashemi and Al-Dulaimi (2008)

(As mental strategy makes thinking clear And simple and more Effectiveness And production and away from complexity and confusion)) (Al-Hashemi and Al- Dulaimi: 2008: 58)

Defined by the Obeidat and Abu Al- Sameed(2005)

(Strategy that allow for the student to participate in all lesson stages * starting from searching about information till offering guidance and regulation) (Obeidat and Nawfal: 2005: 183)

Procedural definition of the six caps: this is strategy which based on the idea of six caps for each there is particular color used by the teacher with students of the fifth grade in history subject.

6.2 ACHEIVEMENT

Defined at 1977

((Is the achievement which measured by series of tests and may be used mostly to describe achievement in the methodological Topics)) (Page: 1977P: 10)

Defined by Al-Gaoud (1992)

((Produced by what has been learnt by students after Learning directly and measured by the result of the student in the achievement tests)) (Gaoud : 1992: 100)

Defined by Obadda (2001)

((That level that the student reached in his achievement in the school)) (Obada : 2001: 146)

Procedural definition of the achievement:

What is gotten by the research sample students from degrees in the achievement test for the history literature for the sixth stage which prepared for this purpose?

7. PROCEDURAL DEFINITION OF THE ACHIEVEMENT

What is gotten by the research sample students from degrees in the achievement test for the history literature for the sixth stage which prepared for this purpose?

8. DIFINITIONS OF THE SIX CAPS

1. the white cap : symbolizes to the neutral thinking and this this style of thinking characterized by Objectivity based on optimism In order get facts (Abu Obaid : 2003: 3) stated by Suwaidan And Adlouni (2002) that white caps Wearer must concentrate on the following characteristics :

- Giving information and obtained them
- Focus on the facts and information
- Not changing the information
- Complete impartiality and objectivity
- Attention with specific questions to get the facts or information
- direct or specific answers for the questions
- good listening
- Distinction between the degree of right and the degree of error in each view

(Al-Suwaidan and Al-Adlouni: 2003: 6)

2. Red cap: symbolizes to the what lies in depth like emotions, also the concentration of this cap on Intuition and one of their prominent characteristics as said by Jomaan (2004) as follows :

- Asking about emotions
- The student thinks about it by his feelings and emotions
- The teacher asks students to concentrate their sense about something
- The thinker student concentrate by this style of thinking on Intuition and excludes logic and justifications

(Jamaan : 2004: 4)

3. Black cap: symbolize to the fear and caution during decisions and says Abu Gado And Nawfal(2007) that Wearers of this black cap must focus on the following characteristics :

- all aspects of the person should be asked

- The student look for the investigation and disadvantages.
- The student asks the teacher to determine the difficulties and problems which can be .
- The thinker interested in this type with negative scores and showing special things and asking negative questions (Abu Gado and Nawfal: 2007: 491)

4. The yellow cap: The thinking with this cap considered positive and yellow color symbolizes to the sun rays and optimism and clarity and (De Bono 2001) said that wearers this cap must concentrate on the following characteristics:

- The focus on the positive aspects
- Thinking includes what is logical and practical and what is part of the dreams and fantasies and hopes the other hand
- Looking for value and interest
- It is thinking to build and giving from it the scientific suggestions
- It is contemplative and opportunities chances and looking for them (de Bono, 2001: 183)

5.Green cap: symbolizing to the creative thinking and green from creativity and innovation such as growth of plants from small one and that indicates the growth and changing and getting out from old ideas

(de Bono, 1992) says that the wearers of this cap must concentrate on the following characteristics :

- Asking about the new ideas
- The student being in a creative state
- The student asking about the available possibilities and for what can lead to
- Represents the creative thinking and that the person who puts the Green cap makes the outputs and their results a creative outputs and ideal and also give the alternatives
- the green color Symbolize to plants and new life, therefore this trait is the recipe of creative thinking (De bono: 1992: p201)

6.Blue cap : Symbolize to the directing thinking (holistic), which looks at the case an overview issue .The reason for choosing of the blue color is that The sky is blue and it covers everything and represent underneath it everything and as the blue color suggests to surrounding and force as sea and think through it how to direct our thinking to get to the best result of any process of thinking which means controlling with the thinking process and setting it in the desired direction as it is the cap of thinking and controlling and evaluation as shown by (Obidat and Abu- Sameed 2005) the wearers of this cap should concentrate on the following characteristics :

- Asking though it about thinking
- The student's role in it is leading
- The student asked to express about thinking who needs to understand something or move forward
- Learning thinking in general and thinking in it looks like a thinker and leader, and as a result the control with the other
- Its color symbolizes to the sky and sea and so it is the cap of power and logical thinking which is regular and directed

Table 3 (Obidat and Abu- Sameed: 2005: 91) As shown in the following table (the six caps and their descriptions)

Sequence	Hats	Their descriptions
1	White	White neutral paper, focus on the available information and objectively facts and what is required and how can get it .
2	Red	Fire, tambourine, emotions, feelings, intuition, and current views without explanation

3	Black	Harsh judge who wore a black cloak Why is something error , a negative logic view
4	Yellow	Sunrise, optimism and positive logic view ,searching for benefits, what is the good thing
5	Green	Plants, creative thinking, the possibilities of good ideas
6	Blue	Sky, calm, public perception and scientific steps to control the other hats, the head of structured thinking in thinking

(Obidat and Abu- Sameed : 2005: 93)

9. WORKING THE STRATEGY OF SIX CAPS

The six hats strategy gives the person the opportunity to think in a certain way and then switch to another way if, for example, turns into green hat thinking and symbolizes the creativity (Al- Sweidan and Al- Alwany 2001, p. 102), there is no obligated rank to navigate between caps but starting by the white cap then yellow and letting the green and blue at the end and the work is continuous till the end of the limited time and completing all the patterns and ideas contained in the lesson and the role of the teacher during the implementation of the strategy is to create the funny psychological condition that associated with colors and thinking and navigation between different caps so that its role is limited to determine when to move from one pattern to another one and the focus will be on the educated (Fouda and Abda 2005: 95)

Through the application of the six hats in the educational situations we see a strategy is flexible, as this strategy not be required to apply a particular hat at the beginning of the sequence or at the end of it sequence and not require using all the caps in the educational situation . Where the experience and the view of each person put the strategy of application and the use of the caps and the most important in the application is how to use all caps and find out the purpose of the use of each hat especially every hat is going in parallel with the rest of the other hats in a regular manner without interfering in thinking in organizing thinking and increase the motivation of learners (Barakany: 2008: 75)

10. ACHIEVMENT TEST

Q 1 / Put the mark () in front of the correct phrase and mark () in front of the wrong phrase in each of the following :

1. The Arabic revolution in Egypt was at 1920
2. After the end of the first world war , the Libyans patriots tried to form a government of Saad Zaghloul
3. Ain Gofneel Ahmed Nami , president of Syria state at 26 April, 1926 AD
4. Was to give the British occupiers about their promises according to the approval of the San Remo Conference that held in 25 April , 1925 AD
5. The founder of the Arab resistance in Libya is Omar Al- Mukhtar
6. The 1920 revolution was in Syria
7. THE Arab resistance in the Moroccan countryside was led by Gen. Sylvester
8. The establishment of the Arab League in 1945
9. After the end of World War II, decided to evacuate from Lebanon and the withdrawal of the last French soldier from the land of Lebanon on 21 December, 1946 AD
10. Baghdad Charter was between Iraq and Turkey, Pakistan, Iran and Britain and the United states

Q 2 / Complete with the following blanks with appropriate words

1. The British have pursued different ways and methods to abort the revolution in Egypt , the most important ways are _____
2. Of the most important factors that helped to revolution of 1920 in Iraq _____
3. Results of the 1919 revolution in Egypt _____

4. Of the factors that led to the signing the National Charter in Syria in 1936 _____
5. From the ten guideline principles announced by the Algerian revolution is _____
6. Omar Mukhtar is _____
7. From the principles of the Arab League in 1945, is _____
8. The project of Risun is _____
9. Causes of the Arab defeat in the war of 1948 _____
10. The founder of the Suez Canal in Egypt is President _____

Q 3 / Draw Circle around the letter which represent the correct answer

1-Syria has entered the League of Nations in

1. 1937
2. 1941
3. 1950
4. 1924

2-From the items of Syrian National Charter 1926

- A- French government fully recognize Syria
- B- securing transportation
- C- the protection of foreign interests in Syria
- D- ending mandate from Syria

3-The reasons that helped to fall the Republic of the countryside

- A- It faced two powerful states as well as the major US military support
- B- the lack of the political situation between the Arab countries
- C- the absence of revolutionary theory and revolutionary action
- D- Weakness of military leaderships from the side of military thinking and military competencies

4- Principles of the Arab League in 1945

- A- commitment with the principles of United Nations
- B- taking into account the guideline principles of the Islamic and international laws
- C- Strengthening the link between centers of leaderships and the units
- D- Continue Struggle till the countries become liberated and completely Independence

5- One of the reasons for the defeat of the war in 1948 in Palestine

- A- Lack of the actual Coordination between the Arabic governments which sent their troops to Palestine
- B- Announcement the general mourning
- C- rejection what is said by the head of government to separate between people
- D- agreement of approval of National Committee for workers and students

6-Algerian revolution announced the ten principles to work out and from these guideline principles

- A- strengthening the link between the leaders centers and units
- B- its right in the external representation

- C- creation national government based on constitution Placed by constituent association
 - D- Inserting the necessary reforms
- 7-The national association for the Liberation of South Yemen was established in
- A- 1963
 - B- 1942
 - C- 1951
 - D- 1938
- 8-From the results of the 1919 revolution in Egypt
- A- tried to eliminate the revolution by telling indirectly to Saad Zaghloul about the Egyptian throne instead of Fouad but should accept remaining the British protection
 - B- taking them with force if refuses the orders
 - C- talking about the protection and discuss it
 - D- the establishment of the obstacles in front of the government
- 9-Arab resistance in the Moroccan countryside was under the leader
- A- Abdelkrim
 - B- Saad Zaghloul
 - C- Omar Mukhtar
 - D- Shukri Al-Qotly
- 10-After ending the first World War, the Libyans patriots tried to form a government of Al-Sheikh
- A- Sulaiman Al-Barony
 - B- Omar Mukhtar
 - C- Abdelkrim Al-Khutaby
 - D- Youssef Wahba

11. INTERPRETATION THE RESULTS

Table 4 shows the arithmetic mean and variance and value of calculated (t) for the degrees of the two sets of scores in the achievement test

Group	The sample size	Arithmetic mean	variance	Degree of freedom	T value	
experimental	30	16	10.5	58	Calculated	Tabulated
control	30	13	8.2		4	2

From the table above shown that the value of calculated (t)value (4) which greater that the tabular value which is (2) when the level of significance (0.05) and the degree of freedom (58) and by this , the null hypothesis which states that ((There is no statistically significant differences at the level (0.05) between the average scores of students according to six caps strategy who are studying according to the usual way, and this means the superiority of the experimental group that studied according to (by the six hats strategy) on the control group which studied according to the usual method .This result is attributed to the following reasons:

1. The strategy of the six hats originally based on mastering learning as basic part of the strategy which may have its effect in achieving such perfection
2. This six hats strategy opportunities for the student to learn according to his or her potential abilities
3. The variable activities in the six hats strategy help the students to upgrade their level of learning
4. Because learning by this strategy is learning with a real good sense and good learning held by it more than the not good learning and using the six caps strategy will lead to store storing information in a right manner which easily retrieved when needed

The researcher recommends using six caps strategy in teaching other materials in raising the level of achievement.

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TRAINING THE MOMENTUM (POWER AND TORQUE) OF THE LEGS AND ARMS AND ITS IMPACT ON THE EF- FICIENCY OF PUSHING AND MOTOR TRANSPORT AND ACHIEVEMENT OF THE LONG JUMP

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Abstract

The problem of the research represented by that there is no one of the researchers or the trainers ensures about the importance of the correlated trainings of the instantaneous force as it is considered the basis to achieve the integrity to retain the linear momentum before and after upgrade and training the linear momentum training as it is a complementary factor for the weighted movements after pushing and upgrading and maintaining the mechanical situation of the body and its angular momentum and specially the conductor during application the skillful performance and what is the role of these trainings for legs and arms in dealing with the body mass and length as a whole during performance the skill of long jump, so the researchers depended on the second law of Newton of linear and angular movements to prepare the pushing trainings and the momentum and determination the pushing efficacy and the nature of motor transportation and mechanism of training and their role in the achievement. The goals of the research about identification the instantaneous pushing of the leg muscles and the instantaneous momentum of the leading leg muscles and arms which are necessary to perform Integration to upgrade with the long jump of the applicants and was chosen (8) jumpers who achieved best achievements during tests before championship clubs that Held at 22-24 / 10/2014 and divided into two groups and the experimental group applied the special program of power pushing training of the pushing leg and the instantaneous momentums for the leading legs and arms, tribal and posteriori tests were conducted in the variables of instantaneous pushing and motor transport and achievement. The results showed the superiority of the experimental group in all the variables and achievement for the long jump.

KEYWORDS: TRAINING. MOMENTUM. TORQUE. EFFICIENCY. TRANSPORT.

1. INTRODUCTION

The Total instantaneous pushing during upgrade for the jumpers considered one of the physical abilities that the level of performance stops at it in different jumping competitions (3:19) which are linked with the internal and external forces that face the jump during upgrading that the jumper supposed to get benefits from it to do the good achievement after completion the mechanical benefit that reflex on his performance if applied according to the optimal relationship between linear and angular forces at this moment to achieve best results in the long jump competition as considered the main cause to change the amount of jumper movement without large decrease during upgrade many researchers agreed that the jumper must be characterized by integrity by the final instantaneous so enables him to do best achievement and so the importance of the research represented by the importance of the training force and instantaneous momentum for the integrity of the upgrade performance by long jumping that in it, the level stops on the high performance and on the power quantities that can be produced by the athlete in his muscles which work on the correlated joints in this skill at this

moment . The attempt of the body to retain an amount of movement comes from preservation of the body on the instantaneous pushing force and achieving the suitable momentum for the other parts of the body that correlate directly with the its mass and speed (linear and angular) and this case is required in some movements which need stability of the movement and this needs harmony between the skill parts and without noted stops during upgrade. retaining the amount of the body movements (body momentum) at the upgrading moment means retaining the self-decrease that means body mass \times body speed at its kinetic force as noted in the long jumping and this is considered a standard for the high kinetic streamline and motor transport and consistency of the movement of body parts and the high motor rhythm ..etc. (1: 121). For this the strength training must be directed towards the instantaneous pushing development and the instantaneous momentum and the ratio between them as the result represent the integration of instantaneous pushing efficacy that associated with momentums training according to the absolute angle that correlated with the body (2: 104).(Mac Callaway) sees that the individuals whose characterized by strength can achieve better athletic level (4: 163) and (Harrah's) and (Moleef) confirm on the importance of the muscular strength and their types during performance the kinetic skills (4:34) (5: 73)and agreed with him both of (Welmeez) and (Mattyous) that athletes need the muscular power whatever their activities (6:32) (7:12). Some researches sees that the muscular force of any group of body groups represent absolute force of that group and the summation of these absolute forces of the muscular groups of the body represent the maximum force (8: 92).

The researchers aims to explain the importance of the instantaneous force and momentum of the linear and angular movements during upgrade and building a special training program for the long jumping Iraqi applicants that suffer from stopping the level of achievement of them as well as the need of this event to training indicators that explain and determine the relationship between the instantaneous force and momentum to reach to better skillful performance level. The research aims to identify the values of instantaneous pushing efficacy indicators (linear and angular)and motor transport with the significance of momentum and chancing it and achievement for the research sample and achieving its hypothesis that say that there are statistical significance differences between the tribal and post tests for these variables.

2. RESEARCH METHODOLOGY

2.1 RESEARCH CURRICULUM

The researchers used the experimental research curriculum.

2.2 RESEARCH SAMPLE

8 jumpers who did best achievements during tests before the championship of 2014 for the long jumping activity .The researchers divided the sample into two groups randomly , one of them is experimental and the other is control after conducting the pumpkin to determine that , the number for each group were 4 players .

2.3 MEANS AND TOOLS OF THE RESEARCH

the researchers used All references and researches and the international information network which is related with the research subject as well as using the platform of measurement of the force and some mechanical laws , rapid cameras (1000 picture / sec) (2)

- The research variables were calculated after photographing all the attempts by using video camera putted vertically on the upgrade plate at distance of 13 meter and height of 1.10 meter and after analyzing the data , the following variables extracted (3:45):
- Efficiency of instantaneous pushing = (the instantaneous momentum of the leading leg and arms / instantaneous pushing) $\times 100\%$ and the momentum was measured according to the following equation :
Instantaneous momentum = momentum of self-decrease \times the angular speed) which is equal to:
Force = (mass of the leg or arm \times the half of the diameter² \times angular speed) \div distance \times Time (Newton)
- The Motor transport with significance of linear momentum = angle of flying \div
(The final momentum – the primary momentum) (m / m / sec)
- As well as measuring the Achievement (in meters)

2.4 TRIBAL TESTS

Conducted on 08.01.2014

2.5 TRAINING CURRICULUM

The researchers prepared a training curriculum for the training of the instantaneous power of the two legs and relied in determining training intensity in which on the amounts of rapid force which related to the two legs that obtained by researchers through a jump test for five consecutive jumping of stability by changing the legs (which are related) by using Newton's second law, where the researchers used additive weights for the weight of the two legs (to train force push) and the application of a player for long jump movements with these weights, jump training with the resistance of rubber cords by two legs and arms (as instantaneous momentums) and the use of different sloping platforms to upgrade on them , and the approach continued for three months, and by two training sessions per one week (in accordance to scientific practical approach prepared by the researchers)and applied this approach on the members of the experimental group and the control group left for training trainers.

2.6 POSTERIORI TESTS

Conducted on 04.10.2014

2.6 STATISTICAL METHODS

the use of SPSS statistical system.

3. PRESENTATION AND INTERPRETATION OF DATA AND ANALYSIS

Table (1) : (T) Values for the level of achievement and efficiency of and the instantaneous pushing and motor transport for the two sets of tests (tribal and posteriori)

Variables	Group	Tribal		Posttest		P -	P _h	Calculated t	Level of Error	Significance
		A -	SD±	A -	SD±					
Achievement (M)	Experimental	6.75	0.46	6.93	.06	6.17	1.68	3.67	0.002	significance
	control	6.75	0.32	6.80	0.1	1.12	0.59	1.89	0.264	Not significance
Instantaneous pushing efficacy (%)	Experimental	0.42	0.12	0.82	.091	0.105	0.029	3.62	0.032	significance
	control	0.40	0.14	0.45	0:11	0.5	0.513	0.974	.342	Not significance
Motor transport (M / M / SEC)	Experimental	4.68	0.64	7.38	0.58	13.05	3.89	3.278	0.006	significance
	control	4.37	1.11	4.54	1.1	1.17	2.38	0.491	0.641	Not significance

Level of error ≤ 0.05 and below degree of freedom (4-1) = 3

Table (2): Values of (t) for level of achievement of the instantaneous pushing efficacy and motor transport for the two groups of the research between the posteriori tests

Variables	Experimental		control		Calculated (t)	Level of error	Significance
	A -	SD±	A -	SD±			
Achievement(meters)	6.93	0.06	6.80	0.1	9.28	0.000	significance

Pushing efficacy (%)	0.82	0.091	0.45	0:11	20.55	0.000	significance
Motor transport (m /m / sec)	7.38	0.58	4.54	1.1	5.020	0.001	Significance

4. DISCUSSION THE RESULTS

Shown in Table (1) the existence of statistical differences by achievement for the two sets of research and in the efficacy of instantaneous pushing and motor efficiency after the implementation of the training program of the development of forces and momentums of the two legs of upgrade and leader and arms. the achievement developed with great effect as a result of the development of the power in the muscle groups that work on both legs and arms during the movement of the body as a whole during the effective upgrading, and training with added weights as an added mass to the body and its parts during the training was effective in the occurrence of development in the instantaneous the torque force in each of the pushing leg and the leader as well as the arms as well as the impact of training of rubber ropes and oblique surfaces during upgrading which boosted the skillful performance at the moment of upgrading in line with the occurrence of integration between the force of instantaneous and angular and thus these exercises have given positive effect in the development of the muscular strength and so development of the force and torque of these muscles and thus the evolution of power and torque to the muscles of these parts . as also led to the development of motor transport level in terms of flight angle and changing momentum for members of this group and the control and with control of various body parts at the performance for the long jump application and for this, these trainings achieved the benefits in two basic directions at the same time which is development of the instantaneous muscular strength and momentum as well as development the level of achievement and this is reflected positively on the development of achievement as well as the mastery of technical performance, which is one of the requirements for success in the performance of long jump .While the results of the control group refers to a lack of statistically significant differences in the values of (t) between tribal tests and post- tests in the variables of the study, in spite of the arithmetic means achieved some progress in the posteriori tests and this progress is attributable to the daily trainings and their effect on the instantaneous force and achievement which not reached to the level of appearance the differences.

Table (2) shows that the differences in the amounts of pushing efficiency in the posteriori tests between the two groups was statistically significant and this means superiority of the members of the experimental group on the control group in this indicator as a result of their use the training program and as a result a clear progress in the achievement has emerged for this group when compared with what has been achieved for the same level of achievement for the control group, and this shows that there is a particular trend in the training of these groups to serve the motor track of jumping when directed along the motor track when implementing technical stages and to the moment of starting the player the upgrade moment.

It also shows a statistically significant differences in motor transport between both groups, as a result of the exercises practiced by the experimental group members and reflected on the integration of effective link between the instantaneous force during pushing and instantaneous momentum and torque when become near and the torque during start and achievement of the optimal angle for starting without large change in the linear torque , all indicate the development of pushing efficacy and motor transport , as special exercises worked to develop the integration in pushing and motor transport of the experimental group because the nature of the strength trainings was very similar to the motor paths for most working parts of the body.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

1. Appearance of development in the instantaneous pushing (power and torque) to the muscles of legs and arms and the level of achievement and performance with long jumping for the experimental group.

2. Did not show any significant difference between the instantaneous pushing efficacy tests for the muscles of the arms and legs and the level of achievement with long jump for the experimental group.
3. Development of the motor transport for the experimental group clearly as a result of the special training that applied on this group.
4. The differences emerged in the favor of the experimental group in the post tests in all research variables.

5.2 RECOMMENDATIONS

1. Interest in measuring the instantaneous force and torque for the leg muscles and arms to ensure the integrity of the basis that affect in the achievement of performance of the long jump.
2. Ensure the availability of necessary force to perform this contest in the application of these indicators.
3. Trying to use the indicators of instantaneous pushing and momentum for training to the other events of jump
4. The use of motor transport and flight angle and changing the momentum as indicator for training and education.
5. Conducting a study to determine the relative strength of its importance in training and determination of payment received and that must be met at the completion of the various jumps.

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