

**An analytical study of the electrical activity of the working muscles for some offensive skills from the opposite focus as a basis for developing qualitative exercises for the players of "Sanda" in the sport of kung fu**

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**Introduction and research problem:**

Recent years have witnessed a scientific explosion in various fields. And helped good knowledge of the principles of scientific as well as technical development in the development of programs and the development of solutions to many problems related to the field of sports and developed countries are working to benefit from the results of studies and scientific research believing in the value of sport as a civilized phenomenon indicates the extent of sophistication and progress reached by the state, which is reflected in its impact on the liberated victories in various championships.

The sport of kung fu has developed significantly during the previous years, in terms of agility, speed and ability, and its skill and tactical arts culminated in the world championships.( 31.6 )

The tests and standards are one of the pillars that helped physical education in its various fields to take great strides towards progress and development. This is due to the use of sound scientific evaluation and measurement methods, the results serve as a mirror in which the individual sees himself, where it is given an honest report on the amount of capabilities and characteristics and therefore extended its importance in the selection of players and players after determining the requirements of each activity.

The sport of kung fu is one of the competitive sports that need specialized training for the requirements of performance during its competitions, and the competition (Sanda) actual combat is considered with multiple and variable playing situations, during which a lot of the player's tactical actions appear, and the player possessed a wealth of skill from those behaviors is an advantage superior to the opponent's behavior, but if the player had the ability to change his use of those tactical behaviors and the appropriate basis to implement them within the limits of the positions in the match, this may be a contributing factor in providing an opportunity for the player in Outperform the opponent as a tactical technique in the same match during the Kung Fu Sanda. (1 : 4)

The application of this method within the training programs needs to be directed first, to develop the physical requirements – skill – for the skill methods that make up the tactical activity such as strength characterized by speed, speed endurance, performance endurance, strength endurance, and agility Second, the rationing of the tactical activity implemented, whether through spatial division over the rug or during the time division during the actual match time in the competition. (5).

The researcher analyzed the last world championship for the general men's stage held in China from 17 to 24 – 2019/10 Annex (1) to identify the cases and effectiveness of the use of the opposite pivot to perform the counter-offensive behavior against the competitor, and the analysis showed that the cases, despite the low repetition, but the one who used them was effective in achieving the results represented in the match points positive reached 86% of the total methods implemented against the competitor and that the only Egyptian player who won first place In the World Championships it is the one who performs the opposite center against the opponent.

It is necessary to know the exact details of the various motor skills with knowledge of the working muscles, and the direction of muscular work to improve skill performance. ( 3 :23)

Learners' familiarity with the principles and general foundations of the movement is a primary and fundamental goal that must be reached before embarking on the education or training of human performance in general. These principles and foundations play an important role in the work of the coach, and despite the availability of such information and the impact on the level of performance of players, there is usually a big difference between players towards the performance of learned skills. The method put forward by the coach in communicating information in its applied voice, this is considered One of the important factors that help players achieve the goal of putting this information and using it on the field. (14 : 136)

The anatomical analysis of skill performance is one of the most important positive steps of qualitative analysis, which works to understand and understand many important points of motor performance. It helps to identify the joints and muscles that are actually involved in each. The purpose of qualitative anatomical analysis is to determine the dominant muscle activity and control during the performance of the skill phase and also to clarify the great stresses that can occur as a result of increased muscle strength or exposure of joints to excessive range. Kinetic . (30:209)

### **Search problem**

The method related to strength training, must start from the kinematic and dynamic characteristics of skill performance as a basic base for building exercises used in the activity, whether in terms of form or in terms of the amounts of resistances, rhythm of performance, number of repetitions and other physical specifications to build training, which achieves development in training programs and basic objectives of skill performance, which is one of the most important criteria for the success of the training program, especially at high sports levels, in which the differences are due Between the players by a large percentage of differences in the methods of training and planning in terms of goal, content and evaluation. (1)4 : 213 )

The qualitative exercises are all the exercises that represent the motor performance of the activity in general, and should be taken into account in these exercises the foundations and rules of movement required by this activity, and work where the muscles working in the same way or in a similar way to those working during the competition and in terms of the direction of movement and strength and performance time.

Specific exercises are specialized exercises to a large degree and are related to sports activity and in the direction of performance, and there is also a dynamic match between its course and between the technical path of the skill, and help to develop the elements of physical fitness in proportion to the requirements of the activity practiced to develop technical performance.

There are a number of basic skills in the sport of kung fu, which in turn need a high level of physical abilities and skill and from this opposite focus against the competitor, as we find it from the basic skills of effective offensive through which the team can resolve the point and thus resolve the half and then resolve the match in his favor and given that and the limits of the researcher's knowledge through reference research and currency in kung fu As a player and coach and the lack of use of modern means in the process of developing the appropriate training program, this prompted the researcher to conduct this study to find out the anatomical analysis of the most important working muscles of the opposite pivot skill against the competitor using modern devices to measure electrical muscular activity (EMG) to allow coaches to direct the most important qualitative exercises of the skill.

## 1 - Research Scorer

- 1- Analysis of the electrical activity of the muscles of the upper and lower extremities of the skill of counter-anchoring against the opponent during its various stages.
- 2- Determine the percentage of the contribution of the muscles of the upper and lower extremities to the skill of the opposite pivot against the competitor during its various stages.
- 3- Develop qualitative exercises for the muscles of the upper and lower limbs for the skill of the opposite pivot against the opponent during its various stages.

## 2 - Research Questions

- 1- What are the muscles of the upper and lower extremities of the skill of the opposite pivot against the opponent during its different stages.
- 2- What is the percentage of the contribution of some muscles of the upper and lower extremities to the skill of counter-pivot against the opponent during its different stages?
- 3- What is the scientific basis for developing qualitative exercises for the muscles of the upper and lower extremities for the skill of counter-pivot against the opponent during its various stages?

## Search definitions

### Electromuscular activity:

The method of measuring the activity that stimulates the muscles during contraction and relaxation of the muscle at any moment during the stages of skill performance.

## 4 - The skill of the opposite pivot against the competitor Spiking:

- 1- The opposite pivot is the position of the player's balance as a base through which his defensive and counter-offensive methods can be implemented during the periods of play and his requirements against the opponent's layout on the mat. 3:4 )

## Search Procedures

### Research Methodology:

The researcher followed the descriptive approach due to its suitability to the nature of this research.

### Sample Analysis

The research sample consists of one player registered in the Egyptian Federation of Kung Fu within the national team and holds the World Championship and has been selected in a deliberate way.

### Conditions and specifications of the research sample:

The researcher has set conditions for the selection of the research sample, which are as follows:

- The player's consent to perform the tests.
- The player is free of injuries.
- Participate regularly in trial or official matches.

**Table No. (1)**

### Description of the research sample in the variables of age - height - weight

n	Variables
20	Age
184.5	Length
84.300	Weight

### Tools used in analysis and recording

- Kung Fu Stadium.
- Computers (computer).
- A data dump form.
- Whistle .- Video camera
- Electrical activity measuring device EMG Appendix No. (1)

**The muscles used under consideration :**

The researcher measured the electrical activity of 16 muscles, divided into 8 muscles for the upper limb and 8 muscles for the lower limb as follows:

Left Musculus biceps femoris	Left biceps femoral muscle	.1
Left Gastrocnemius	Left lateral muscle	.2
Left Rectus Femoris	Rectus-femoral left muscle	.3
Left Tibial Anterior	Left anterior tibial muscle	.4
Right Biceps Femoris	Right biceps femoral muscle	.5
Right Gastrocnemius	Right lateral muscle	.6
Right Rectus Femoris	Right rectus-femoral muscle	.7
Right Tibialis Anterior	Right anterior tibial muscle	.8
Right Biceps	Right biceps	.9
Right Deltoid	Right deltoid muscle	.10
Right Infraspinatus	Right subspinal muscle	.11
Right Latissimus Dorsi	Right latissimus dorsal muscle	.12
Right Pectoralis Major	Right pectoralis great muscle	.13
Right Rectus Abdominus	Right abdominal rectus muscle	.14
Right Trapezius	Right trapezoidal muscle	.15
Right Triceps	Right triceps muscle	.16

**Basic study:** – The researcher applied the basic study on Saturday, 1/12/2021 AD in the covered hall of Al-Shams Sports Club at 3 pm

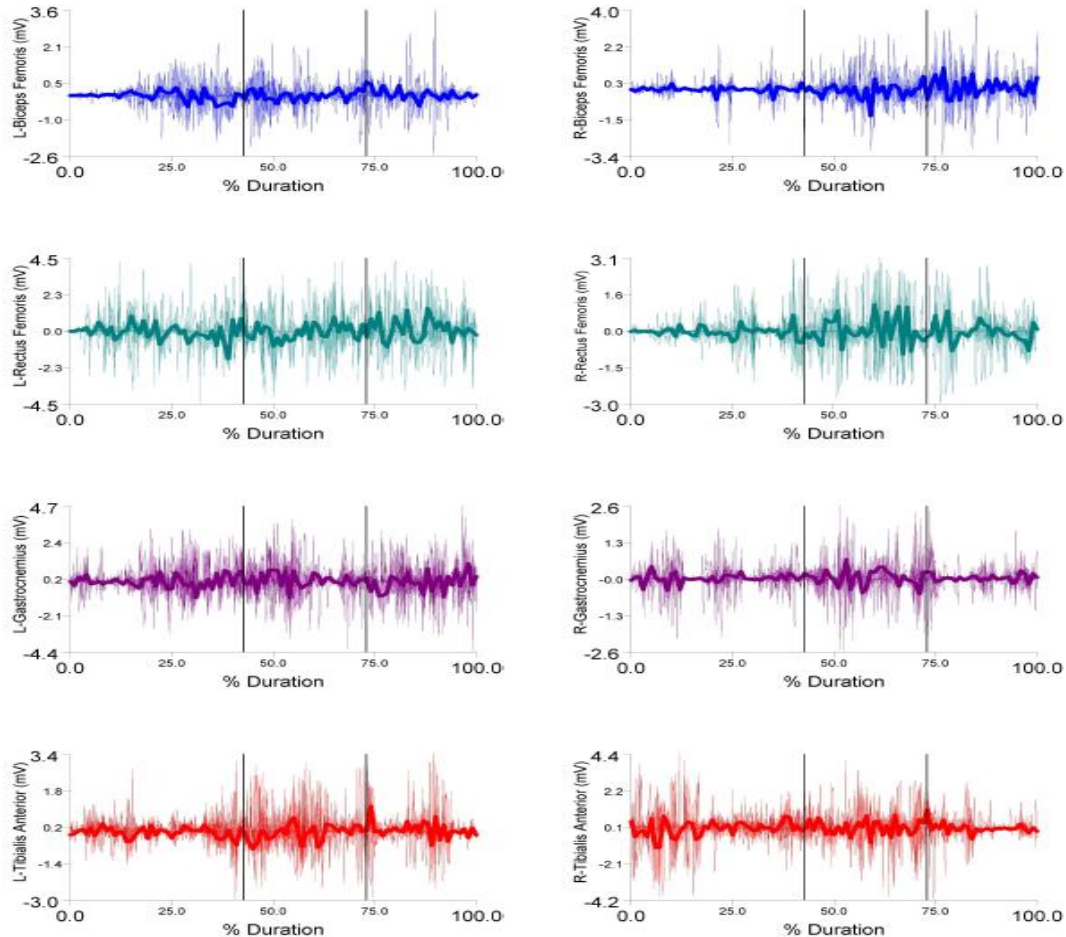
Where the measurements were applied to the number of (16) muscles divided into 8 muscles for the upper limb and 8 muscles for the lower limb on the number of only one player from the Egyptian national team and registered at Al-Shams Club.

**Statistical plan used in the research:**

Appropriate statistical treatments were carried out to achieve the objectives using statistical laws where they calculated:

- Arithmetic mean / standard deviation .
- Homogeneity coefficients.
- Highest value – lowest value.

These statistical coefficients were used for their suitability to the nature of the research.

**Presentation, interpretation and discussion of results****Lower limb****Figure (1)**

**Electrical activity of the muscles of the lower limb Opposite pivot**

**Electrical activity of the muscles of the upper limb opposite pivot**



## Upper limb REC

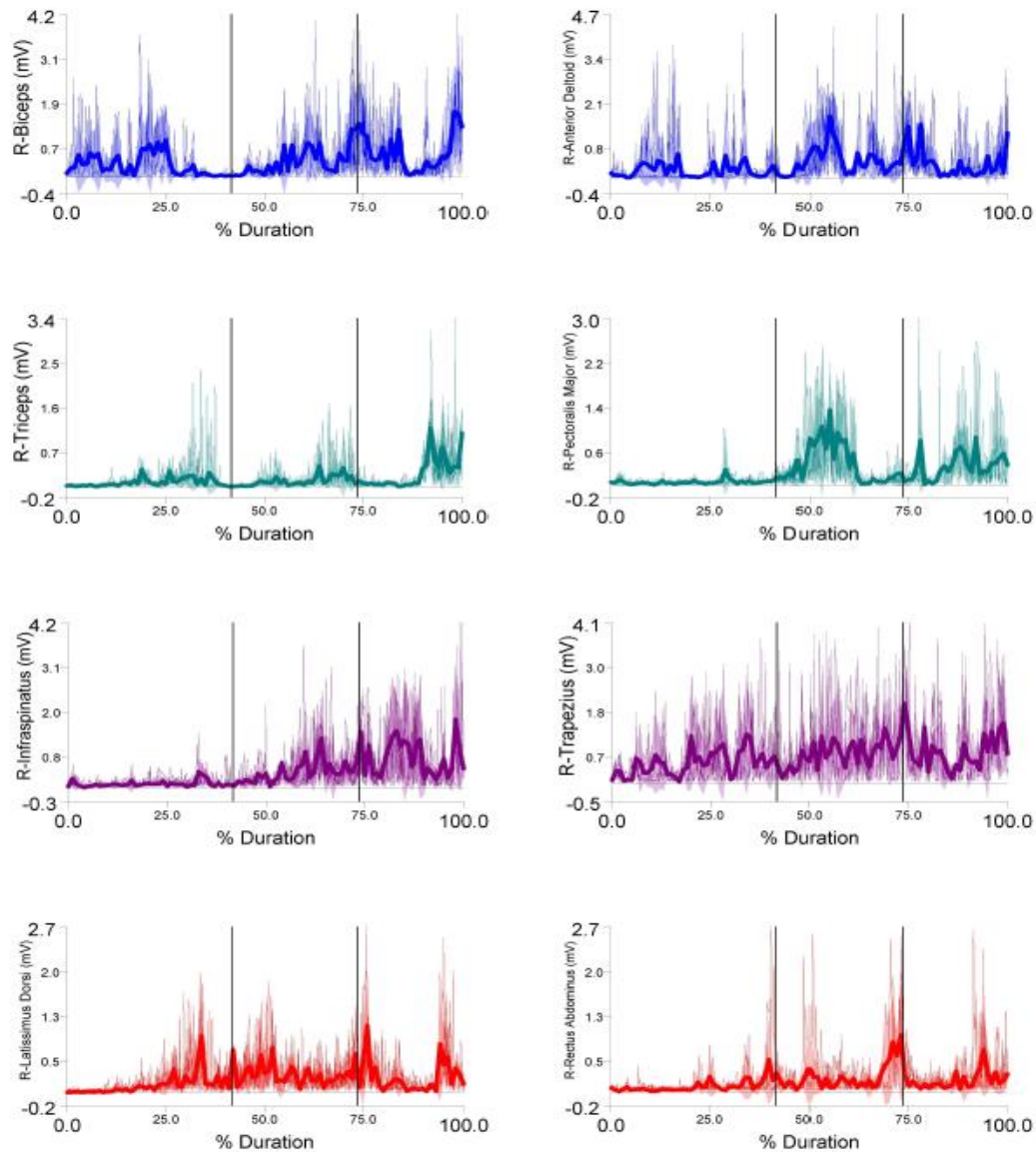
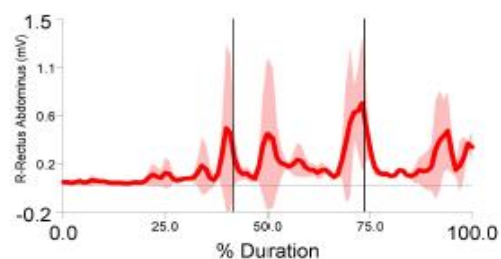
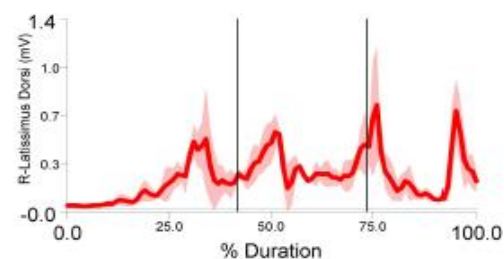
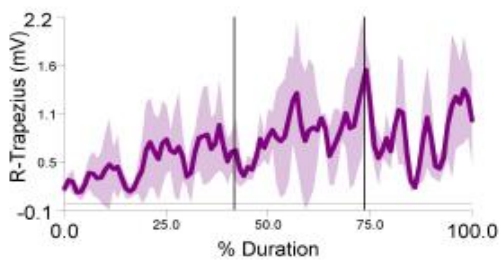
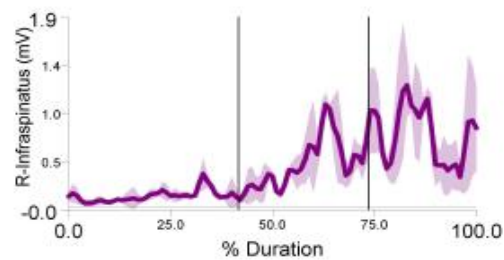
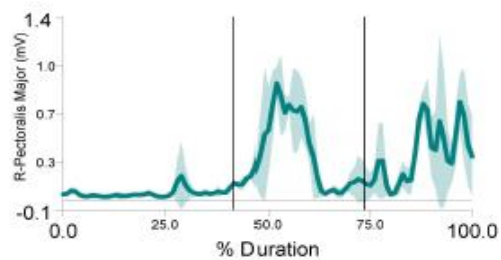
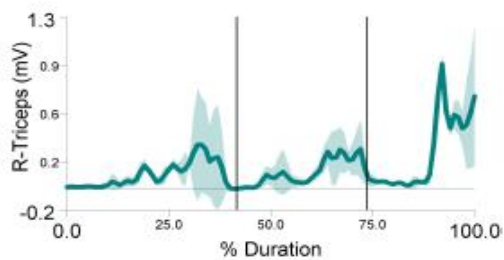
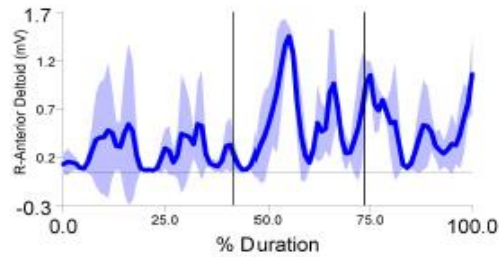
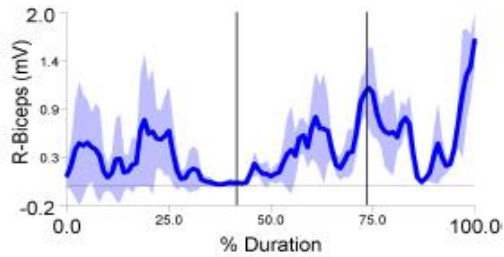


Figure ()

Electrical activity of the muscles of the upper limb Opposite

## Upper limb RMS



Upper limb (upper limb muscles)						Lower limb (lower limb muscles)						File		
	Right Latissimus Dorsi	Right Infrapinatus	Right Deltoid	Right Biceps	Right Tibialis anterior	Right Rectus femoris	Right Gastrocnemius	Right Biceps femoris	Left Tibial anterior	Left Rectus femoris	Left Gastrocnemius	Left Biceps femoris	Muscles	
	0.095888	0.079379	0.313423	0.151222	0.19686	0.108133	0.146959	0.129455	0.164545	0.223177	0.609839	0.15667	Last Step (الخداع)	INTEGRATION
	0.163976	0.212151	0.294061	0.182861	0.342524	0.371486	0.167132	0.348715	0.341889	0.399969	0.483096	0.163223	Take off (kicking stage)	
	0.136546	0.333471	0.21358	0.236153	0.108926	0.106203	0.028131	0.210634	0.039488	0.337619	0.242614	0.087576	Landing (Final Stage	
	0.39641	0.625001	0.821064	0.570237	0.64831	0.585821	0.342222	0.688805	0.545922	0.960765	1.335549	0.407469	Skill (skill as a whole)	
	0.154651	0.12822	0.504885	0.243518	0.218815	0.120035	0.163135	0.143779	0.182828	0.248069	0.677777	0.174292	Last Step (الخداع)	MEAN (Arithmetic Average)
	0.315255	0.408456	0.565723	0.352055	0.571091	0.618237	0.278162	0.580898	0.569135	0.667254	0.806044	0.2729	Take off (kicking stage)	
	0.324829	0.794794	0.510606	0.563819	0.341623	0.331218	0.087739	0.659187	0.123397	1.05541	0.759513	0.274212	Landing (Final Stage )	
	0.254001	0.400852	0.526508	0.365722	0.356197	0.321737	0.187939	0.378613	0.299873	0.527849	0.733795	0.223774	Skill (skill as a whole)	
	0.140817	0.097705	0.45819	0.419842	0.143581	0.142456	0.190051	0.214115	0.143029	0.335685	0.323775	0.170095	Last Step (الخداع)	StdDev (Standard Deviation)
	0.147642	0.296103	0.554273	0.272027	0.31001	0.538109	0.219251	0.326006	0.354393	0.436229	0.446151	0.237396	Take off (kicking stage)	
	0.32416	0.370646	0.386914	0.399127	0.25114	0.184085	0.073741	0.390692	0.067846	0.536963	0.32859	0.289942	Landing (Final Stage )	
	0.223547	0.375862	0.475705	0.392121	0.277997	0.400713	0.198508	0.373015	0.297532	0.51278	0.373412	0.223087	Skill (skill as a whole)	
	0.52337	0.521953	1.526612	1.605957	0.54773	0.652058	0.837362	1.157153	0.770687	1.282695	1.419275	0.722461	Last Step (الخداع)	MAXIMUM (Largest Value)
	0.693001	1.226284	1.705663	1.154287	1.422753	1.817461	0.89991	1.320487	1.399027	1.598801	1.486502	0.950816	Take off (kicking stage)	
	1.369779	1.534373	1.410578	1.577705	1.140989	0.667337	0.277368	1.708671	0.294994	1.951369	1.383685	1.07902	Landing (Final Stage )	
	1.369779	1.534373	1.705663	1.605957	1.422753	1.817461	0.89991	1.708671	1.399027	1.951369	1.486502	1.07902	Skill (skill as a whole)	
	0.008608	0.01362	-0.00034	0.000383	-0.00382	0.003674	-0.01478	0.005227	0.002733	-0.00553	0.033275	0.006058	Last Step (الخداع)	MINIMUM (Lowest Value)
	0.127509	0.063254	-0.01787	0.001259	0.095796	0.023373	-0.00357	0.098082	0.006757	0.099119	-0.02258	0.023199	Take off (kicking stage)	
	0.048767	0.266669	0.000265	0.073728	0.053929	0.049257	0.011667	0.062	0.033054	0.064085	0.223873	0.03156	Landing (Final Stage )	
	0.008608	0.01362	-0.01787	0.000383	-0.00382	0.003674	-0.01478	0.005227	0.002733	-0.00553	-0.02258	0.006058	Skill (skill as a whole)	
	96.03803	79.6247	313.5337	151.2245	197.1522	108.1512	146.9845	129.5445	164.7285	223.5098	610.6773	57.0372	Last Step (الخداع)	SUM (sum of values)
	164.2476	212.8054	294.7416	183.4208	343.2262	371.5602	167.1756	349.1198	342.0499	401.0201	484.4324	64.0129	Take off (kicking stage)	
	136.753	334.6082	214.965	237.3676	109.6609	106.321	28.16425	211.599	39.61057	338.7867	243.8037	88.022	Landing (Final Stage )	
	396.4951	625.7298	821.8786	570.8928	648.6346	585.8841	342.2372	689.4538	546.0678	961.2141	1336.24	07.4919	Skill (skill as a whole)	

### **Results of the opposite electromuscular activity of the muscles of the lower limb:**

Table (2) shows that the electrical activity of the left biceps femoral muscle is the integration coefficient in the stage of the last step of the opposite pivot (0.15667) and in the stage of kicking from the opposite pivot (0.163223) and in the stage of return from the opposite pivot against the competitor (0.087576) and the coefficient of integration of the left biceps femoral muscle for the skill of the opposite pivot against the competitor as a whole (0.407469 ) and recorded the arithmetic mean of the electrical activity of the left biceps muscle during the stage of the last step opposite anchor (0.174292)

### **Conclusions:**

**In light of the results of the research, the limits of the research sample, the method used and the statistical treatment, the researcher was able to reach the following conclusions:**

- Values of the electrical activity of the muscles of the lower limb  
The opposite focus of the total muscular activity of the skill Record of the left lateral muscle The highest electrical muscle activity with a value of (1336.24) mV
- The values of the electrical activity of the right trapezoidal muscle have the highest value (1014.427) mV for the values of the electrical activity of the muscles of the upper limb opposite to the total muscle activity.

**Recommendations :**

**In light of the objectives and conclusions of the research and depending on the data and results of this research, the researcher recommends the following:**

- 1- The need to conduct research in the electrical muscular activity of the working muscles for different skills.
- 2- The need to direct the attention of coaches to train on the results of electrical muscle activity research because of the development and improvement of performance, which contributes to raising the level of players and the game.
- 3 - The need to equip and prepare qualitative exercises and others on the scientific basis that contributes to the development of public and private muscles.
- 4- Using the results of research, development and updating the necessary data for the various stages of training.
- 5- Conducting similar studies to identify the most important weaknesses and strengths of the electrical activity of the muscles of the different skills in kung fu.

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