第 49 卷第 02 期
2022 年 2 月

湖南大学学报（自然科学版）
Journal of Hunan University（Natural Sciences）

Vol. 49. No. 02.
February 2022

Open Access Article

BRAIN STIMULATION EXERCISES WITH VISUAL TECHNIQUE (FIT LIGHT) AT DISTANCES (400) METER FREESTYLE SWIM AND ITS EFFECT ON THE ELECTRIC POWER OF THE ARMS

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Abstract

The goal of the research is to prepare exercises in which the visual technique (Fit Light) is distributed over swimming distances (400) meter freestyle swim to stimulate the brain of swimmers, and to identify the effect of these exercises in the strength of the arms, and adopted the experimental approach to design the two control and experimental groups, on a sample of elite youth swimmers for (400) meter freestyle swim at Al-Jaish Sports Club who are prepared to participate in the sports season (2018-2017) of (18) swimmers, Deliberately selected all from their community of origin by (100%), the researcher placed daylight water units in the middle of the bottom of the legal Olympic pool at a distance of (25) meters from the start and a width of (25) meters to form a technology (Fit Light) controlled by the remote control from outside the pool for the purpose of diversifying the level and color of light, To be an activation that motivates swimmers when their training in segmenting the legal distance of the pool of (50) meters, in which the achievement of (400) meter freestyle swim for eight stages or eight courses back and forth, Thus, the goal of this technique is to active or stimulate the awareness and alertness of the brain during the race, and the experiment took (6) consecutive weeks at the rate of (4) units per week in the period of the special preparation, After the completion of the bobt experiment The results of the pre-and post-tests to be processed by a system (SPSS) to be the conclusions and applications that to stimulate the brain technique (Fit Light) positively influential role in increasing the level of the peak signal(EMG) and the lack of space for each of the biceps brachii muscle, And the two muscles brachial radial flexor of the forearm of the muscles of the right and left arms at swimmers distance (400) meter freestyle swim, and it is necessary for the training of swimmers technique (Fit Light) to take into account the trainers not to exaggerate the number or increase the division of the pool distance to avoid dispersion and seek to improve the achievement, this calls for the development of the capabilities of trainers with the technology of AIDS in sports training that affect the physiological indicators required for achievement.

Keywords: optical technique (Fit Light), electric power of the arms, swimming (400) meter freestyle swim.

抽象的

该研究的目的是准备练习，其中视觉技术（Fit Light）分布在游泳距离（400）米的自由泳游泳中，以刺激游泳者的大脑，并确定这些练习对手臂力量的影响，并采用实验的方法设计了两个对照组和实验组，以准备参加2018-2017赛季（2018-2017）的Al-Jaish体育俱乐部（Al-Jaish Sports

Received: November 18, 2021 / Revised: December 09, 2021 / Accepted: January 30, 2021 / Published: February 28, 2022

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Club）进行（400）米自由泳的精英青年游泳运动员为样本。 (18) 游泳者, 故意从他们的原住社区中选择所有 (100%), 研究人员将日光水单元放置在距离起点 (25) 米和宽度的合法奥林匹克游泳池底部的中间（25）米形成一种技术（Fit Light）， 由游泳池外的遥控器控制，目的是使光线的水平和颜色多样化，成为激发游泳者在训练分割 1 时的激活（50）米池的等距离，其中实现（400）米自由泳游泳八个阶段或八个课程来回，因此，该技术的目标是激活或激发意识和警觉性比赛期间的大脑，在特别准备期间以每周 (4) 个单位的速度连续进行了 (6) 周的实验，在完成 bob 实验后，将前后测试的结果由系统（SPSS）处理得出的结论和应用，刺激大脑技术（Fit Light）在增加峰值信号（EMG）水平和每个肱二头肌空间不足方面具有积极影响的作用，以及游泳者距离（400）米自由泳游泳距离（400）米自由泳时，左右臂肌肉前臂桡侧屈肌两块肌肉，游泳者技术（Fit Light）的训练有必要考虑到教练员不要夸大其词e 增加泳池距离的划分数量或增加距离以避免分散并寻求提高成绩，这要求训练者在运动训练中发展具有艾滋病技术的能力，从而影响成绩所需的生理指标。

关键词：光学技术（Fit Light）， 手臂电力，游泳（400）米自由泳。

The problem of research and its importance: most of the training of swimmers (400) meter freestyle swim tend to divide the distance to stages four or eight to invest the starts and increase the speed of completion, In this division and the passage of the swimmer packed physical and mental efforts, or what is affected in his body of them is the fatigue of the nerve impulses received from the brain, It cannot be said that the brain goes through lethargy or lethargy after each stage, but the restoration of the adequacy of the activation of signals certainly requires excitement that covers the alarm threshold, The signals that enhance brain function are divided into three types according to the intensity of each signal, such as " signals below the minimum threshold: These are signals whose intensity is less than the minimum threshold and therefore do not cause arousal or subsequent response except in cases of combination by distance and time, Signals with a minimum threshold: signals whose intensity has reached the minimum threshold or the minimum intensity, It then causes arousal and subsequent response, and signals above the lower threshold: signals whose intensity is higher than the lower threshold, which cannot not cause arousal if the nervous tissue is in the state of arousal". (Mohammed, 2002) that " the sense of sight is of particular importance in the education and training of gymnastics skills, through which the motor ability and the correct understanding of the sequence of skill performance develop, as it is the eye that receives energy and converts it into physiological and neurological manifestations". (Adel, 2004) it is also that " when the image of the objects we are looking at is concentrated on these cells that alert them, producing electrical currents that pass through strands of nerves to the back of the eye, And here they all gather together to be the optic nerve that carries the waves to the brain, And saves the eye from being exposed to a lot of harm its position in a deep cave called the pilgrims as the eyeball lies in the fatty thalamus is her as pillows

protect the evil of painful shocks to the head either
surface exposed has a suitable mobile cover easy to
move is the eyelid, Closes if the eye is staring any of
possible result of reflex action, The tear gland produces
a continuous stream of saline fluid that washes its
exposed surface and then drains into the nose Through
the lacrimal ducts and we call that fluid a tear, when
its secretion increases until it overflows at the edge of
the lower eyelid, the eye can rotate within its socket
with limited rotation thanks to the muscles of his eyes.
(Goldberger & Gurney,2013) "that investment
stimulation of the brain activation which offer optical
products in the training process and which ones brain
stimulation technique (Fit Light) visual support
training swimmers because the capsules do not spend
on the interdependence of interpretations in mental
movement, Thus, two cases of electrophysiology
related to pre-fatigue or failure points are the increase
in the amplitude of the connection in the
synchronization of motor units, and the conduction of
the average frequency of muscle energy". (Bao &
Other,2013) "A technical mechanism (Fit Light) in
training does not provide restrictions on the training
load as much as it acts as a stimulus that provokes
attention and concentration in various games that
require mastery and speed of movements in the
performance, and stress at the chemical level in the
brain is related to Chemical dynamics, the cell feeds on
the amount of trophic transformation, after it's finished,
units of the cell throw out the waste, so they exert
energy, and the energy that it releases when it is thrown
out, and if the opposite happens it occurs so-called
intoxication which generates a functional deficiency at
the cell level and then shows the dispersion in
performance". (Suad, 2006) also that " during muscle
contraction the internal pressure associated with
shortening of the length of the muscle fibers increases,
the amount of this internal pressure at an intensity (10-
50 %) of the maximum muscle contraction is sufficient
to fold the walls of the micro vessels that feed the
muscle, during successive muscle contractions, the
pressure of the contraction waves helps the muscles
distribute the sources of metabolism as well as
eliminate its products, this is probably one of the
primary reasons why the muscle gets a partial rest
before contraction, which is estimated at less than half
a second because it is under the influence of the
accumulation of toxic substances resulting from work
and lack of sources of nutrition." (Roberto &
Philip,2004) "Excitation plays a role in nerve
stimulation and in the end, the strength and speed of
mechanical action of the muscles affected or resulting
from this stimulation requires vital energy to continue,
and then the cessation of stimulation leads to the
cessation of the chemical processes of releasing the
energy of these muscles". (Guyton,2010) The amount
of speed achieved in muscle contraction and the extent
of muscle shortening is closely related to external
loads, and the amount of speed of shortening is at its
maximum values when the external load reaches zero
begins, That's a drop in speed with increased loads on
the contractile muscle, if the amount of external load
reaches the maximum load that can be borne by the
muscle then the speed of contraction of the muscle is
equal to zero and note the form of contraction here is a
constant contraction, but if the load continues to
increase to more than the maximum muscle
susceptibility then occurs decentralized muscle
contraction". (Sareeh, 2010) "that a single muscle fiber
is subject to the principle of' all or no ' the cell's motor
voltage arises only when the nerve impulse is able to
change the permeability of the Motor end plate so that
the end plate voltage falls below the threshold level of
excitation". (Hasan, 2005) if the electrical excitation
passes actively along and below the sarcolemma, the
calcium pump releases calcium from the sarcoplasmic
reticulum into the sarcoplasm, it then works later to
activate and shrink the filament row, this excitation
begins with the nerve stimulus reaching the muscle
membrane via the Motor end plate (Motor unit) (Ira &

Judy ,2008) the biochemical mechanism of muscle contraction is "when calcium ion and(ATP) are available in sufficient quantities, the filaments interact to form actomycin and shorten by sliding on each other, and the passage of electrical excitation is effectually along and below the sarcoma, the calcium pump releases the calcium ion from the sarcoplasmic reticulum into the sarcoplasm, and then works later to activate and shrink the filament row, this excitation begins with the nerve stimulus reaching the muscle membrane through the plate of the Motor end (motor unit) (Guyton,2010) Thus, the influence on the physiology of the force of this contraction from external sources should be directed towards understanding the mechanism of neuromuscular action of swimmers and the nature of the movements in free swimming along the race distance in the back and forth repeated in the pool, "The instructor must understand that technology is a friendly tool, not a substitute for it, and that it complements the teaching media and learning resources he or she prepares to provide a productive and effective learning environment, what is important is the good use of them and the appropriate attitudes to use them for the benefit of the trainee and achieve the objectives of the training process and facilitate the innovative work in the training units".

(William, 2010) after the introduction of the technique (Fit Light) in the training of most games and non-water events, what calls for its applications in this research is what the researcher noticed a problem in the training of the achievement of this distance of swimming it appears clear in the lack of coordination of movements of the arms, especially in the third and fourth sessions of the distances (400) meter freestyle swim, which negatively affects the level of achievement, considering that strength training is closely related to training to improve the speed of achievement, and the first develops in several ways and methods adopted by trainers using different types of resistances and the focus on skeletal muscles to develop types of strength for the arms, so comes what is hoped from this research in increasing the potential and capabilities of swimmers (400) meter freestyle swim to activate their brain responsible for issuing neuromuscular directives by invest the sense of sight, which is one of the most specialized senses stimulatory receptors of the brain, the aim of this research is to prepare exercises in which the visual technique (Fit Light) is distributed over distances (400) meter freestyle swim to stimulate the brain of swimmers, and learn about the effect of these exercises in electric strength of the arms, the researcher assumes that there are significant differences between the results of the signal tests (EMG) for the strength of the tribal and dimensional arms of the experimental and control research groups, and there are significant differences between the results of the experimental and dimensional control research groups for the (EMG) signal tests for the strength of the arms.

Research method: I adopt the experimental research method, which is defined as "a pattern of research in which the researcher controls one or more variables to make a deliberate and controlled change to the specified conditions and interprets the results of this change". (Adel, 2016) also adopted the experimental design with two sets of experimental and control equal "exactly the previous arbitrator.

Research community and its sample: the boundaries of the study community are represented by elite young swimmers for (400) meter freestyle swim in the al Jiash Sports Club who are ready to participate in the sports season (2018-2017) Registered in the Iraqi central Swimming Federation of (18) swimmers, all of them were deliberately selected from their community of origin by (100%) because they are the community of the phenomenon investigated in the research problem themselves, and then they were randomly divided into two equally numbered groups to be experimental and controlled.

Measurement, tests and procedures: to measure the electrical strength of the arms adopted an American

device (EMG) Made with (Bluetooth) a four-bit transmitter for each of the biceps brachii, and the flexor brachial muscle of the forearm from the right and left arm muscles to obtain signal results (EMG) And analyzed by the program (Myo Research XP 1.06.67) to read both the top and the area of the electrical signal after synchronization between as a digital imaging command type (SONY) quickly (100 images.Seconds) when the swimmer performs a test throwing a medicine ball over the head while sitting on a chair after isolating the chest muscles with a leather belt, the results of this test are not counted in the search, but for the purposes of synchronization when producing the explosive force of the arms, in these exercises, the researcher placed daylight water units in the middle of the bottom of the legal Olympic pool at a distance of (25) meters from the start and a width of (25) meters to form the technology (Fit Light) controlled by remote control from outside the pool for the purpose of diversifying the level and color of lighting, to be an activation that stimulates the swimmers when training in the division of the legal distance of the pool of (50) meters, in which the achievement of swimming (400) meter freestyle swim for eight stages or eight courses back and forth, thus, the goal of this technique is to activate or stimulate the awareness and alertness of the brain during the race, which gives the connotations of both the peak and the area of the electrical signal (EMG) about the efficiency and fatigue and muscle or not, the physical and skilled aspect remains the same as the experimental and control tears and the difference is the experimentation mediated by the independent factor represented by the technique (Fit Light) at the bottom of the pool and control, and the experiment lasted (6) consecutive weeks at the rate of (4) units per week in the period of special preparation for elite swimmers in swimming (400) meter freestyle swim of young people, after the completion of the experiment, the results of the tribal and post-secondary tests were processed by a system (SPSS) To extract the values of both the percentage, the arithmetic mean, and the standard deviation, and test(T) for unrelated samples, and test(T) for interrelated samples.

Measurements and tests of the electric			Experimental		control		Live n	p-value	T-value	p-value	Significance
			Mean	SD	Mean	SD					
Right arm	Brachial biceps	Summit	641.44	10.138	642.78	8.555	0.388	0.542	302	0.767	NS
		Area	75.11	2.369	74.89	3.257	0.427	0.523	0.166	0.871	NS
	Flexor of the forearm	Summit	630.33	4.637	626.89	3.371	1.819	0.196	1.803	0.09	NS
		Area	82	3.162	83.11	1.537	0.375	0.549	0.948	0.357	NS
Left arm	Brachial biceps	Summit	641.11	9.93	639.89	9.171	0.086	0.773	0.271	0.79	NS
		Area	74.56	2.068	74.67	3	0.358	0.558	0.091	0.928	NS
	Flexor of the forearm	Summit	627.33	6.285	626.11	3.951	2.551	0.13	0.494	0.628	NS

		Area	**81**	**3.391**	**81.33**	**2.872**	**0.028**	**0.87**	**0.225**	**0.825**	NS

Results and discussion:

Table (1) showing the results of tribal tests between the two groups in dependent variables

Degree of freedom N - 2 = (16), non-D if (Sig) < (0.05) is at the level of indication (0.05).

Table (2) showing the results of the tribal and dimensional tests of the two groups in dependent variables

Measurements and tests of the electric			**Group**	**Tribal testing**		**Dimensional testing**		F	SD	t	**Sig**	**Significance**
				Mean	SD	Mean	SD					
Right arm	**Brachial biceps**	**Summit**	**Exp**	**641.44**	**10.138**	**760.44**	**3.432**	**119**	**9.5**	**37.579**	**0**	**D**
			Con	**642.78**	**8.555**	**695.56**	**4.773**	**52.778**	**11.344**	**13.957**	**0**	**D**
		Area	**Exp**	**75.11**	**2.369**	**55.56**	**2.506**	**19.556**	**3.206**	**18.3**	**0**	**D**
			Con	**74.89**	**3.257**	**64.89**	**2.369**	**10**	**2.958**	**10.142**	**0**	**D**
	Flexor of the forearm	**Summit**	**Exp**	**630.33**	**4.637**	**728**	**4.301**	**97.667**	**7.194**	**40.73**	**0**	**D**
			Con	**626.89**	**3.371**	**680.33**	**3.536**	**53.444**	**2.877**	**55.727**	**0**	**D**
		Area	**Exp**	**82**	**3.162**	**69.89**	**1.537**	**12.111**	**3.48**	**10.44**	**0**	**D**
			Con	**83.11**	**1.537**	**77.44**	**2.555**	**5.667**	**2.345**	**7.249**	**0**	**D**
Left arm	**Brachial biceps**	**Summit**	**Exp**	**641.11**	**9.93**	**828.44**	**3.844**	**187.333**	**12.894**	**43.587**	**0**	**D**
			Con	**639.89**	**9.171**	**762.22**	**11.377**	**122.333**	**14.967**	**24.521**	**0**	**D**
		Area	**Exp**	**74.56**	**2.068**	**59.67**	**1.871**	**14.889**	**3.14**	**14.224**	**0**	**D**
			Con	**74.67**	**3**	**67.56**	**2.404**	**7.111**	**3.79**	**5.629**	**0**	**D**
	Flexor of the forearm	**Summit**	**Exp**	**627.33**	**6.285**	**746.56**	**3.712**	**119.222**	**7.629**	**46.885**	**0**	**D**
			Con	**626.11**	**3.951**	**678.67**	**4.472**	**52.556**	**3.812**	**41.366**	**0**	**D**

		Area	Exp	81	3.391	73.78	1.986	7.222	3.833	5.652	0	D
			Con	81.33	2.872	79.33	2.236	2	1.936	3.098	0.015	D

Degree of freedom(N)-(1) for each group, level indication (0.05), difference indication (Sig) ≥ (0.05)

Measurements and tests of the electric			Experimental		control		T-value	p-value	Significance
			Mean	SD	Mean	SD			
Right arm	Brachial biceps	Summit	760.44	3.432	695.56	4.773	33.116	0	S
		Area	55.56	2.506	64.89	2.369	8.121	0	S
	Flexor of the forearm	Summit	728	4.301	680.33	3.536	25.684	0	S
		Area	69.89	1.537	77.44	2.555	7.603	0	S
Left arm	Brachial biceps	Summit	828.44	3.844	762.22	11.377	16.543	0	S
		Area	59.67	1.871	67.56	2.404	7.77	0	S
	Flexor of the forearm	Summit	746.56	3.712	678.67	4.472	35.043	0	S
		Area	73.78	1.986	79.33	2.236	5.573	0	S

Table (3) showing the results of dimensional tests between the two groups in dependent variables

Degree of freedom N - 2 = (16), non-D if (Sig) < (0.05) is at the level of indication (0.05).

From a review of the results of Table (2) it is clear that the swimmers (400) meter freestyle swim in the two research groups have improved the effectiveness of the signal (EMG) in the dimensional tests than they were in the tribal tests by increasing the top and the lack of space for both biceps brachii, the brachiocasalis muscles of the forearm from the muscles of the right and left arms, this is indicative of an improvement in the effectiveness of the nerve signals that the brain sends to the muscles of the arms that are involved in repetitive movements, from a review of the results of Table (3) shows the superiority of the swimmers of the experimental group over the swimmers of the control group in these dimensional results, the researcher attributes that the improvement and superiority of the swimmers of the experimental group the effect of experimentation through the independent factor represented by the technique (Fit Light) at the bottom of the pool and control them in the diversification of the level and type of light that increases the brain alert by investing attention, which is at the same time tells the swimmer alerts about half of the distance of the pool in each of the swimming sessions distance (400) meter freestyle swim this allows it to better distribute neuromuscular energy to reduce the possibility of tired, the researcher was keen to not be a technique (Fit Light) distracting the attention of the swimmer or preoccupied by more than its role of activation and for a period of (6) consecutive weeks, this control and alignment with physical and skill exercises had a positive role in the emergence of this improvement and excellence Considering that " brain activation will increase the required perception of the

nerve impulses issued, especially the perception and visual in the player and helps to prepare the acceptance or mobilization of the mind of information, storage and retrieval to allow or help the emergence of the required response, this activation depends on the type and strength of the alarm or calmer received by the player and this activation can occur either forcibly or at the desire of the player himself, however, the brain cannot be forcibly activated and elicit desirable responses, the organizer of the training environment must create the conditions of activation by moving away from the compulsion, whatever the type of activation method affecting the receptors of that activation. (Nazer, 2010) that " when the body responds to external stimuli, complex chemical reactions and simple electrical charges occur" , quickly transmitted in nerve fibers (Axons), then followed by another neural message mediated by another alert and so millions and millions of these electrical nerve impulses, ,every second goes through the conscious and unconscious life of human, heading to and from the brain, muscles and glands.(Wilmore and Costill, 2007) and " in the succession of exercise strengthens the relationship between the brain and muscles and repetition helps to neglect external stimuli in the performance of movement, and this succession serves as the body undergoes a change of improvement in strength and athletic skill in the end. (lee & Brenda, 2007) "trainers invest repetitive movements as repetitions that enhance brain stimulation and increase the level of arousal, the nerve signal in the muscle is strengthened by the effect of physical exercise in the efficiency of the motor system, it alerts the movement centers in the cerebral cortex and suppresses the emotional centers". (Siddiq & Others 2012) sports coaches, players and sports scientists are constantly looking for modern methods to improve athletic performance and gain a competitive advantage, vision stimulation is one of the most important techniques offered in sports, this type of stimulation is also a repeated series of eye exercises aimed at improving basic visual abilities, it is important for athletes in all competitive sports. (Isabel Walker, 2001) "the progress and change of the player's training can be observed through functional tests, they reflect the ability of the body's vital systems and their adequacy to work with physical effort," it is a vital aid to the athlete's physical and functional ability in physical performance." (Kazem, 1999) that "stress, whatever its sources, will lead to fatigue of the receptors and senses associated with the nervous system and that stress mediates negative effects on the activity of the central nervous system." (Adel, 2009)

Abstracts and applications:

1- To stimulate the brain with the technique (Fit Light) a positive influential role in increasing the level of peak signal (EMG) and the lack of space for both biceps brachii, and the flexor brachiocasal muscles of the forearm of the right and left arms of the swimmer (400) meter freestyle swim.
2- It is necessary for the training of swimmers with the technique (Fit Light) to take into account the trainers not to overdo it or increase the division of the pool distance to avoid distractions and seek to improve achievement more than attention to improve attention in sports training, this calls for the development of the capabilities of trainers with the technology of AIDS in sports training that affect the physiological indicators required for achievement.

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