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## THE EFFECT OF KINESTHETIC PERCEPTION EXERCISES ON DISTANCE AND TIME START IN CRAWL SWIMMING

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### Abstract

**Purpose.** Learning new motor skills or adjusting them during the learning process is one of the most important goals in the field of motor learning. Therefore, it is difficult for a swimmer to see all the parts of his body and to know its directions and the angles in which he moves. Hence, the cognitive operations such as perception, imagination and motor recognition are of the most important factors affecting the process of learning skills and acquiring a good sports technique. The sensory receptors (whether they are visual, auditory or sensorimotor), as a primary condition for learning, are responsible for adjusting or modifying the body's position, direction and relation to its different parts and for the relationship between these parts. Consequently, building a sports technique, which is based on a scientific ground, requires some conditions that have their effects on constituting the right motor perception of the skill. The most important of these -- according to scientists and experts in motor learning -- are the visual, auditory and sensorimotor. These conditions are of the most important points that help in building and developing the motor perception of the learnt. This study aims at identifying the influence of specifically exercises to the sensorimotor perceptions on the distance and time of starting from upwards in crawl swimming.

**Methods.** The sample consists of (30) infant swimmers (sprouts), (15) sprouts for the suggested learning programmed of exercises for the sensorimotor perception was applied on them via its learning units. And the control group consists of (15) sprouts practiced the traditional programmed.

**Results.** Results indicated that the most important conclusion that the researcher has come to was that the suggested programmed for developing the sensorimotor perceptions under investigation via a group of specifically exercises for the sensorimotor perception on the distance and time of start in crawl swimming, has a positive effect on and is better than the traditional programmed in developing both the special sensorimotor perceptions and the skillful & numeral achievement level of the children in swimming.

**Conclusions.** In conclusion, the researcher recommends that the trainers in the Egyptian League for swimming and its training centers must be aware to the importance of developing the sensorimotor perceptions of beginners so that their level of skillful achievement raises as it is the base for improving the numeral level in swimming.

**Key words:** Kinesthetic Perception, Distance Start, Time Start, Swimming

### Introduction

Swimming is one of the individual competitive sports in which the performance takes the form of competition and it is sometimes complex. Therefore, learning new motor skills or adjusting a learnt one during the process of learning is one of the most important goals in the field of motor learning. So, it is difficult for the swimmer to see all his body's parts and to know its directions and the angles in which it moves. Hence, the responsibility of the cognitive processes such as perception, imagination and motor recognition as some of the most important factors affecting the process of learning skills and acquiring a good sports technique. The sensory receptors of this technique (whether they are visual, auditory or sensorimotor) being a primary condition for learning, are responsible for changing or adjusting the position of the body and its direction and relation with its parts and for the relationship between these parts. Since starting has a great importance in winning swimming competitions

, especially in short distances, it is classified as one of the complex skills in which the motor sequence consists of a specified group of parts, stages and motor elements. Thus the swimmer, in order to achieve the largest distance in air and in water and on entering the water, while maintaining the body's angle when it enters water and the great smoothness of slipping, should start as much powerful as possible and in the most suitable angle, under the available conditions. This suggests setting up the right technique of starting in order to contribute mainly and effectively to develop the level of numeral achievement in competitions (Hussein, 1986)

Therefore, building a sports technique on a scientific basis requires providing the conditions that affect setting up the right motor perception of this skill. The most important of these conditions - according to scientists and experts in the field of motor learning - are the visual, auditory and sensorimotor. These are of the most important elements which help develop the

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motor perception of the learnt.

The kinesthetic perceptions play a significant role in developing the corresponding processes related to complex movements, which require the distinction between its different parts and the precise control in the performance while keeping correct positions.

The individual becomes aware of his environment through his senses. The changes in his internal as well as external environment excite his senses that in turn affect his nervous system so that he can recognize the fact.

Through the survey study and the researcher observation to the process of learning, we found that the swimmers' low numerical level in most free competitions (crawl swimming) may sometimes be due to their retard in the time and distance of start as a result of not performing the starting skill correctly and not concentrating on the start signal which in turn leads to a decrease in the swimmer's reaction speed. The researcher found that the results of some primary survey experiments on the different classes' sprouts are that they have a problem in making a good start from the starting cube as they don't keep the angular appropriateness between the parts of the body (arms, stem, and legs). This causes ineffectiveness in the performance of the starting skill and the pre-thinking in the movements that will be done after the start skill and in the way of ending the race, etc., all of which will lead to a poor start for the sprouts. As a result, the power exerted for pushing the start cube may be little and there may be a poor perception and sensation of the exerted power in the muscles of arms and legs for the performance of the starting skill (Van Dahlen, 1990).

Thus, the angular sensation of the body's joints and the sensations of the flying distance and the place and of the motor direction of the start skill are important factors for the swimmer for the right performance of the skill in order to reduce resistance in water. Otherwise, the swimmer's body will deviate and there will be a delay in the performance of the starting movement and a problem when the body enters water (in the angle between the body and the water) all of which will cause the swimmer to lose the smoothness of the body in water and the power that comes out of the start to do the underwater slipping easily to benefit from it in doing the start distance at 7.5 meters smoothly and quickly.

As a result of these factors which affect starting and which have the greatest importance in the right performance of it, the researcher found that they should be taken into account as they have a great influence on the distance and time of start in short-distance crawl swimming. The most important requirements of a successful start include:

- A quick response so that the swimmer can precede his participants in setting out and getting into water.

- The ability to generate the greatest power for pushing the body as far as possible.
- Making use of the mechanical principles of the swimmer's body to achieve the best push and the best angle for entering water.
- Making use of the mechanical principles that helps the speedy movement of the body.

From this came the idea of this research for identifying the influence of using specific exercises for the sensorimotor perceptions on the distance and time of start in crawl swimming (under investigation).

Hence, this research aims at identifying the influence of specific exercises for the sensorimotor perceptions on the distance and time of starting from upwards in crawl swimming.

#### **Hypothesis**

There are statistically significant differences between the pre and post measures for the experimental and control groups in the sensorimotor measurements. They are of the following order:

- Time perception.
- Directions Perception.
- Distance perception.
- Place perception.
- Speed perception.
- Angular sensation of the thigh, shoulder and knee joints perception.

The post measurements for the experimental group were better.

#### **Methods**

The sample consists of (30) infant swimmers (sprouts), (15) sprouts for the suggested learning programmed of exercises for the sensorimotor perception was applied on them via its learning units. And the control group consists of (15) sprouts practiced the traditional programmed.

#### **Procedures**

##### **Steps of program design**

Components Setup program:

The components of the program include the proposed using some common perceptions - kinetics at the level of technical performance to start from the top (grab - track) crawling on the belly of the buds :

##### **Senseperceptions in which the kinetics of the program**

- Perception the distance
- Perception the place
- Perception the speed
- Perception the sense of angular hip joints - shoulder - knee
- Perception the time
- Perception the trend

##### **The duration of the educational program**

(10) Weeks, (4) modules per week with a total of 40 educational unit, the time of the module (60) minutes, the time workouts sense - motor within each educational unit 30 minutes.

### **Distribution sense perceptions - within the tutorial kinetics**

**First week:** - cognitive exercises kinesthetic sense to realize the distance

**Second week:** - Revision cognitive exercises kinesthetic sense to realize the distance + cognitive exercises kinesthetic sense to realize own place

**Third week:** - Review on cognitive exercises kinesthetic sense to realize own place + cognitive exercises kinesthetic sense to realize own speed

**Week Four:** - the first and second unit (Review on cognitive exercises kinesthetic sense to realize own speed + perceptive sense of kinesthetic exercises on the development of a sense of the shoulder joint angular) The third and fourth unit (Review on cognitive exercises kinesthetic sense to realize own speed + perceptive sense of kinesthetic exercises on the development of angular sense of the knee joint)

**Week Five:** - the first and second unit (Review on cognitive exercises kinesthetic sense on the development of the angular sense articular knee and shoulder + perceptive sense of kinesthetic exercises on the development of a sense of angular hip.

**Week Six:** - Review on cognitive exercises kinesthetic sense on the development of a sense of angular joints of the shoulder and hip and knee + cognitive exercises kinesthetic sense realization time

**Seventh week:** - Review on cognitive exercises kinesthetic sense for realization time + cognitive exercises kinesthetic sense realization trend

**Week VIII, IX and X :** - ( a review on the all sense perceptions kinetics of the program is within the distribution panels educational for those weeks as follows.

Within each educational unit will be reviewed three Perceptions average of 10 minutes per aware this way audit each unaware twice a week taking into account the focus on turnover at that stage of the program.

Time distribution of educational alone for two experimental and control groups is 60 minutes and is distributed as follows- :

First: - For the experimental group:

- A 10-minute warm - up
- Duration of educational activity 15 minutes
- A cognitive sense of dynamic exercises 30 minutes
- Calm 5 minutes

Second: - For the control group.

- Warm up 10 minutes
- Duration of educational activity 15 minutes
- Applied duration of the activity + educational completing 30 minutes
- Calm 5 minutes

### **Execute the research.**

After confirming the availability of all the conditions and devices to sense perception tests - motor

skill tests and anthropometric measurements of the total under consideration and necessary for the application of the proposed program, the researcher, including the following:

### **Pre-measurement.**

Measurement was performed for both groups as follows.

- Growth variables selected under discussion.
- Perceptions sense - selected kinetics under discussion.
- Measuring the level of technical performance skills under discussion.
- And in the period from Saturday 14 / 7 / 2010 to Wednesday 18 / 7 / 2010.

### **Basic search experience.**

The researcher applied the proposed educational program on the experimental group for period of (10) weeks from the day Wednesday, 25 / 7 / 2011 until Monday, 15 / 7 / 2011, of which 4 units weekly.

### **Post-measurement.**

After the completion of the application of the proposed program, the researcher conducting the dimensional measurement on Saturday, Sunday and Monday, 20, 21, 22/ 10 /2011 for both the experimental and control groups in the same circumstances during the same tests selected in the measurements of the two groups in the tribal perceptions under discussion and the level of performance skill to start a swim belly crawl under discussion.

### **Statistical analysis**

All statistical analyses were calculated by the SPSS statistical package. The results are reported as means and standard deviations (SD). Differences between two groups were reported as mean difference  $\pm 95\%$  confidence intervals (meandiff  $\pm 95\%$  CI). Student's t-test for independent samples was used to determine the differences in mental parameters between the two groups. The  $p < 0.05$  was considered as statistically significant.

**Results**

**Table 1. Anthropometric Characteristics and training experience of the Groups (Mean ± SD)**

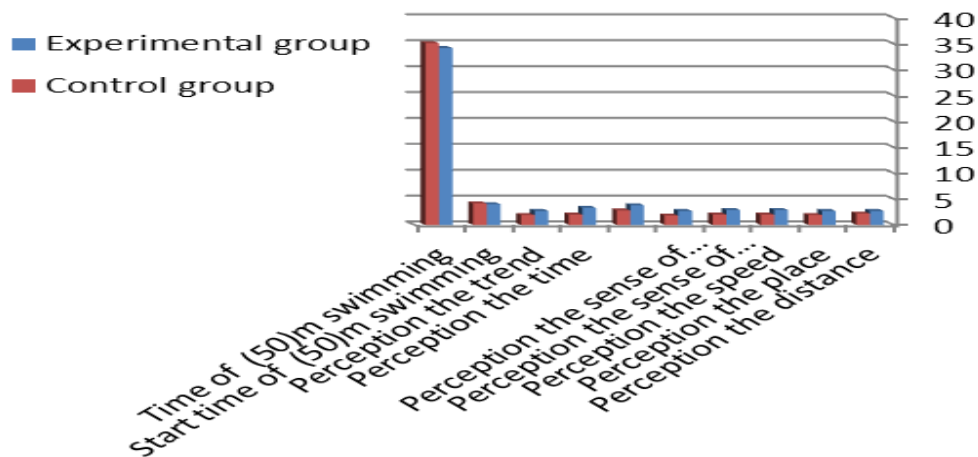
Group	N	Age [years]	Weight [kg]	Height [cm]	Training experience [years]
Experimental	10	11 ± 1.5	40 ± 2.7	145 ± 2.95	4 ± 0.7
Control	10	10 ± 1.2	41 ± 3.4	146 ± 3.11	4 ± 0.8

Table 1 shows the age and anthropometric characteristics of the subjects. There were no significant differences were observed in the anthropometric characteristics and Training experience for the subjects in the different groups.

**Table 2. Mean ± SD and "T" sign. Among two groups (experimental and control) in sense perceptions and performance level of 50m swimming**

Variables	Experimental group		Control group		T sign.
	Pre	Post	Pre	Post	
Perception the distance	1.60 ± 0.70	2.70 ± 0.67	1.60 ± 0.69	2.20 ± 0.67	Sign.
Perception the place	1.60 ± 0.70	2.70 ± 0.67	1.60 ± 0.71	1.90 ± 0.67	Sign.
Perception the speed	1.70 ± 0.67	2.90 ± 0.88	1.75 ± 0.70	2.00 ± 0.77	Sign.
Perception the sense of angular hip joints	1.60 ± 0.52	2.90 ± 0.32	1.60 ± 0.55	2.00 ± 0.50	Sign.
Perception the sense of angular shoulder joint	1.60 ± 0.52	2.70 ± 0.67	1.60 ± 0.50	1.80 ± 0.79	Sign.
Perception the sense of angular knee joint	2.20 ± 0.42	3.80 ± 0.92	2.20 ± 0.47	2.80 ± 0.95	Sign.
Perception the time	1.90 ± 0.58	3.30 ± 0.48	1.90 ± 0.67	2.00 ± 0.55	Sign.
Perception the trend	1.40 ± 0.52	2.70 ± 0.67	1.40 ± 0.55	1.90 ± 0.70	Sign.
Start time of (50)m swimming	4.19 ± 0.12	4.01 ± 0.11	4.22 ± 0.14	4.15 ± 0.13	Sign.
Time of (50)m swimming	35.26 ± 0.87	34.16 ± 0.79	35.39 ± 0.77	35.12 ± 0.65	Sign.

Table 2 showed that significant differences were found among the groups in all variables.



**Fig 1 shows the differences between the two groups (experimental and control) in sense perceptions and performance level of 50m swimming.**

**Discussion**

Due researcher differences function Statistically, ratios improved incident among students in the experimental group in the factors of cognitive sense - kinesthetic under discussion for the control group to the positive impact of the proposed program using exercises diverse perceptions of the sense of mobility under discussion, represented in the exercises arms and

legs and exercises rotation and a sense of angles of the body inside and outside water which led to the development of responses motor that occurred as a result of capacity development sense - kinetics under discussion, where little (Mona, 1998) that the process of motor learning is sensory input and cognition have the same importance of the ability to move easily and agile as any individual cannot be skillful in athletic



performance without being friendly to cognitive function incomplete and influential.

And refers (Magdy, 2007) that the mutual influence between the organs of the body and the surrounding medium plays a big role in the process of routing and cognition sense - kinesthetic. A special abilities associated with the operation higher mental that qualify for the performance of any skill mobility efficiently and allows to control the steering motor in terms of the performed (range and direction and time).

As a shepherd researcher diversity in the exercises cognitive sense - kinetic diversity of elements under discussion, which confirms (Ehab, 2008) that the cognitive sense - kinesthetic settle in the sense of procedure of the joints, muscles and tendons, which is like any sense of another extension can be provoked or alert, and this could be alert the result of pressure or tension or contraction or twitching muscles and diastole of this movement is given watchful for nerves and sense perception.

Indicates (Weinberg, 1998) to that it must be the perception of mental skill of the same speed, rhythm motor skill to be developed and upgraded in the sense that equal time visualization with real-time performance, and this contributes to the transition from perception to reality as soon as possible, this has been confirmed by many and studies that were conducted in a variety of areas on the effectiveness of mental visualization to develop and enhance performance on the importance of access to accomplishment.

It is noteworthy (Wael, 2002) that the sense of distance and time and a sense of dynamic behavior of the joints of the body of the aspects affecting aspects of performing in the light of the findings of the some of the researchers and the amount of the importance of these capabilities in the field of training swim trying to guide the trainers to capacity sense of mobility and its impact on the level of digital as the effectiveness of and directing the movement lacking in the absence of information on variables basic (time - power - distance) and because the organs and sensory perception are the sources of self-core of that information so clear the importance of studying different types of capacity sense - kinetics of both phenomena individually or in their mutual relations gaining special importance.

#### **Conclusion:**

In the light of the study's sample, aims and hypotheses and depending on the scientific procedures related to the study's subject and the results found through application and statistical measurements, the researcher has come to the following conclusions:

1- The suggested learning programmed using the sensorimotor perceptions under investigation has a

positive effect on developing these sensorimotor perceptions.

2- The suggested learning programme using the sensorimotor perceptions under investigation has a positive effect on improving the time of start performance in crawl swimming which is under investigation.

3- The suggested learning programme using the sensorimotor perceptions under investigation has a positive effect on improving the time of performance for the distance in crawl swimming which is under investigation.

4- There are statistically significant differences between the pre and post measurements for the benefit of the post measurements of the experimental group in the variables (time of performance - sensimeter perceptions under investigation)

5- There are statistically significant differences between the pre and post measurements for the benefit of the post measurements of the control group in the variables (time of performance - sensimeter perceptions under investigation)

6- There are statistically significant differences between the pre and post measurements for the experimental and control groups for the benefit of the experimental group in the variables (time of performance - sensimeter perceptions under investigation)

7- The experimental group is better than the control group in the rates of improvement in the variables of time of performance and the sensimeter perceptions under investigation.

8- The learning programme used in the learning process is insufficient for achieving an appropriate level of skillful performance. This is evident in the results of the control group compared to the results of the experimental group.

#### **Recommendations.**

According to the results and conclusions of the study, the researcher recommends:

1- Applying the suggested learning programmed, which uses the sensorimotor under investigation on children and beginners in the different clubs and youth centers as it, achieved positive results?

2- Conducting more studies and scientific researches in addition to learning programme on children in different sports using the sensorimotor perceptions for improving the process of learning and a good acquire of skills.

3- Taking care of the special programme in different fields at this age as it has many characteristics, which help the rapid learning.

4- Taking care of the programme of starting as they have an effective influence and a close relationship with the entire time of performance in swimming.



5- Conducting similar researches for developing the aspects of sensorimotor perception for the other types of swimming so that we can depend on their results in raising the level of performance.

6- Making a real use of the results of these studies and researches in improving the levels of the different sports in general and of swimming in particular.

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