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Biomechanical Analysis For Dolphin Kick For 100m Butterfly Swimmers

**A thesis Submitted in Partial Fulfillment of the Requirements of the
Ph.D. in Physical Education**

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. Research Summary

- Introduction and research subject:

God has created man to move and work on earth as movement is the essence of life. Movement modes (patterns) represent a series of movements of the skeletal system which have special features and known patterns in regard of its time and place of practice and the way is carried out. These patterns are general ones as they are movements performed by every person however his movement level is different. When such patterns are formed through rules and limits of any sport it rises to the level of skill and talent.

Swimming is the mother of all sports and such a high rank is due to its varied high values in the physical, psychological and sociological impact on its participants.

Swimming also holds admirable position in international and Olympic Games as it is given a large number of medals due to its varied ways and techniques and its different competitions whether individual or team ones.

Bio-mechanics is one of the first sciences that analyses and studies the physical performance amongst a group of factors and changeable patterns that directly interpret such a performance so as to find the most suitable solutions to movement problems and form it on stable principles of such a science that would serve a the licit performance.

Scientific research and study in the field of Bio-Mechanics depend on the analysis of the quantity and quality of variables connected with performance aiming at classifying such a performance accurately contributing to the formation of the different ways of learning and practicing their skills.

- The importance of the research (study) the still preparation process aims at promoting the athletic technique used by the athlete during competitions and trying to maintain his technique at satisfactory levels in order to achieve the utmost benefit of those skills (techniques) through studying and analyzing both the athlete's capability at one side and the athletic skills on the other side.

We can say that bio-mechanics is in the lead of other sciences specialized in studying and analyzing physical performance among a set of factors and variables that explain the performance directly so as to reach the most suitable solutions to physical problems and forming stable principles for this science and serving a the licit performance.

- Research aims:

These research aims at achieving the following:

- 1- Improving the timing of technical stages during performing the skills under study and improving the actual timing of the skills under study.
- 2- To find out the effects of quality priming program on the level of accomplishment during the actual performance of the skills during actual swimming competitions.

-Research targets :

The research targets have been stated as follows

- 1- The suggested (proposed) program has a proven effect on the improvement (enhancement) of the chosen skills performance.
- 2- To reduce the actual timing of the skills under research.

- Research procedures:

- Research Method:

The researcher will use the Experimental Method assisted by one of the pictures of experimental designs known as pre and post assessment design on one experimental group as it is assessed first and then exposed to the proposed training technique (produced area).

Will also use the descriptive method by using the physical analysis of some swimming skills.

-Research sample :

-Human Sample:

The sample will be chosen intentionally by choosing the best male swimmer in Egypt in butterfly general race and he is the nation's champion and one of the chosen players in the national Olympic hero project so as to study the kinematics features of the chosen skills. I'll as choose 10 swimmer (6 boys and 4 girls) out of Al-Ahly team under 14 years in the 100 butterfly swimming team to apply the proposed program on them.

-Skilled sample:

The dolphin movement skill.

- Used Tools:

a-Timer watch.

b-digital video camera.

c-Analytical movement program.

-Assessing skill performance level:

The performance has been assessed in two ways each aiming at measuring one aspect of the research and they are as follows:-

-Time assessment:

That's by measuring the time of performing the skill (research sample) using digital watch timer.

-through mechanical assessors:

General body weight route during the performance of the studied skills.

Angle speed of body weight during the performance of the studied skills.

- Steps of carrying out the research:

-The performance of **Ahmed salah El-Din**

Is going to be filmed and analyzed for 12.5 m during his performance of the chosen skills.

- Extracting the kinematics feature curves of the performance
- Setting performance timing and the rates of vertical and horizontal pushing of the swimmers body.
- Setting the movement and acceleration speed of the body of the swimmers both vertically and horizontally. By identifying his weight the power (energy) exerted during the different stages of the skill.
- Running experimental trials in the pool.
- The research sample (the ten swimmers) are to perform 30 attempts consecutively to give each attempt of a swimmer a target of 3 attempts per swimmer to choose the best of them

for a distance of 12.5 meters as stated by the international swimming law.

- Filming (video taping) the performance of Ahmed salah El-Din (the research sample) during the performance of the skill with the digital video camera and then analyze on the computer on a movement analysis program to identify the features' curves of the sample.
- Apply a proposed training technique for 8 weeks.
- The ten swimmers (the research sample) are to do 30 consecutive attempts to give each on its timing at a rate of 3 attempts per swimmer and then the best of the distance of 12.5 m as stated by the international swimming law.
- Ways (methods) of collecting data:
- The researcher used the private scientific lab of Professor Mostafa Attwa and used the instruments and equipments of the track motion analysis program,

- Statistical processes:

- The mathematical medium.
- Improvement percentage.

- The suggested program:

The main objective of any physical of skill preparation program lies in the attempt of influencing both the motion system (macular, joints, nerves and the circulatory system. This happens by improving the efficiency of the work of these systems and enhancing their abilities to cope with performance conditions the program was set for.

The most important results are:

Through the proposed targets and the research results the following was fund out:-

- By comparing the total timings of performance of the research sample in the pre post measurements the measurements were found in favor of the post ones which in its turn proves the first target.
- Considering the chosen skill timing of the skill both in the pre and post measurements after applying the proposed program on them we find that the time consumed in the actual performance of the skill under study is reduced which in turn proves the second target.