The importance of motor analysis in the exercise of motor skills and in improving performance.

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ملخص الدراسة:

هدفت الدراسة للتعرف على أهمية التحليل الحركي في تحسين وتطوير الأداء الرياضي كما هدفت للتعرف على العلاقة بين المتغيرات الكينماتيكية بين أفراد العينة في تحسين الأداء ، وكذا التعرف على العلاقة بين أفراد عينة الدراسة في عملية الانجاز الرياضي حيث تمت الدراسة على عينة تم اختيارها بالطريقة العمدية على طلبة السنة الثالثة ل م د حيث بلغت 20 طالب تم تقسيمه الى عينتين تجريبية وضابطة ، تم تقسيمهم بالتساوي 10 لكل عينة ، حيث تم تطبيق برنامج تعليمي في الوثب الطويل(خاص بالعينة التجريبية) تخلله تصوير لأفراد العينتين ، وللقيام بالدراسة قام الباحث بالمنهج التجريبي ، وكذا التحليل عن طريق استخدام برنامج التحليل الحركي

،وللقيام بجمع البيانات قام الباحث باستخدام بطاقة ملاحظة خاصة بتقييم الأداء ، ولقد x-kenova توصلت الدراسة إلى أنه توجد علاقة بين المتغيرات البيوميكانيكية بين افراد العينتين ولصالح العينة التجريبية ، ،وكذا وجود فرق غير معنوي في طول الخطوة بين أفراد العينتين ، وكذا وجود علاقة بين المتغيرات الكينماتيكية وكذا تحسين الأداء ، كما دلت الدراسة على أهمية التحليل الحركي في الكشف على العلاقة بين الأداء والمتغيرات الكينماتيكية في عملية الانجاز ، ويوصي الباحث على اهمية دراسة المتغيرات الكينماتيكية وتحسين الأداء الفني لفعالية الوثب الطويل وكذا اجراء دراسات خاصة لمختلف الفعاليات الأخرى في العاب القوى.

Introduction

The importance of studying the motor skill component parts through means of Biomechanical motor analysis provides important information for workers in the field of sports at various levels in order to describe the performance and to correct its errors, where Biomechanical motor analysis is one of the most important means to identify the accuracy of the motor path and one of the scientific methods to know the mechanical properties according to scientific programs. The natural laws are used to obtain the numerical values of the motor variables that govern these events which enable the athlete, the trainer and the researcher to achieve the best level of knowledge in developing the achievement in various sports events.

Motor analysis is one of the principles of biomechanics it is also the main structure of the various sports sciences, and the key to knowledge of both performance and motor path. (Louay Ghanem, 1980, 180)

According toTalha Hussein Hossam Eddine the human body is a mechanical system, shared with the rest of the other objects in many of motor characteristics, and the use of biomechanics in different branches has benefited greatly in the movement's study of the human body and in identifying many of its motor characteristics.

The athletics competitions, require specifications and capabilities and special preparations to the players, which have a clear and remarkable development in its numbers as well as in the capabilities of players to promote a digital or technical level

In Algeria, the long jump sport is considered one of the sports that are included in the athletics events in various Institutes of Sciences and Techniques of Physical Activities and Sports. Where we note the shortcomings of many students in the performance of this sport in all its technical aspects, especially with regard to the various biomechanical variables which control this sport, all this produces a negative achievement of every athlete

Since the researcher is a professor of athletics, he wanted to study the importance of motor analysis in the practice of motor skills to improve the performance. This is through

an analytical study of some biomechanical variables of long jump sport in a sample of students of physical education department affiliated with the Institute of Sciences and Techniques of Physical Activities and sports

The Study's key words:

Analysis: are a Sorting and tabulating of many data in its main elements and then processing them logically or statistically and summarizing them into numerical results, under which we give an appropriate explication to transform them from deaf form to useful meanings in order to solve the problem dealt by the researcher.

It is also defined as a means of biomechanical measurement (Thamer Hassan Ismail et others., 1991, 230).

Skill: defined by Wajih Mahgoub as "the solution of the motor path to form its set of parts (wajih mahjoub 1987,56)

Motor skill: defined by Essam Abdul Khalik "It is a voluntary steady motor performance with control and, accuracy and economy in the effort and rapid

response to the changing positions to achieve the best results." (Essam Abdel Khaliq, 1992, 6.7).

The problem of study .

The actual development today in various fields forces us as educators in the field of sport to dive in technology and use it to serve the interest of both educator and learner where motor analysis and biomechanics are the important sciences in teaching students the motor skills and detection of performance defects in order to improve it and achieve better results in different sports competitions which is the goal of every athlete.

The long jump is one of the competitions related to achieving the highest suitable speed approaching and balanced rhythm in the last steps to achieve the longest horizontal distance after doing all the technical stages by athlete of this competition with the best possible according to the mechanical requirements, to win all athletes aspire to achieve these requirements and compatibility between different stages to achieve good performance which requires the compatibility of all mechanical variables that control this sport, and therefore came the general question of the study:

Since the researcher is an athletics teacher, he noticed some insufficiency of students who are graduating and may teach this mature in the future. The researcher does an experimental study on 3rd year LMD students of athletics specialty to bristle the importance of kinematic variables and their relation in improving both the performance and the achievement process.

Is there relation between some kinematic variables in improving the performance and the sporty achievement process of third year LMD students?

Partial questions:

1-Is there a relationship between some kinematic variables among the study sample?

2- Is there a relationship between the kinematic variables and the jump distance achieved in the long jump?

Aims of the Study:

1- Identifying the importance of motor analysis in the sport's field.

2- Identifying the relationship between kinematic variables among the sample of study in improving performance.

3- Identifying the relationship between the members of the study's sample in the achievement's level.

The importance of study:

The importance of the study is to highlight the role played by motor analysis in the sport's field by studying the various aspects related to the motor skills and the relationship between kinematic variables and technical performance and level of achievement together, as well as highlighting the importance of using analysis programs
to achieve the highest levels of results.

Previous studies:

1- (The study of hasnaa settar):The motor analysis of some variables and their relation to the performance of the skill of tennis serve in the two types of straight, and the cutter in tennis,The aim was to identify some kinematic variables affecting the level of performance of the tennis serve skill and its nature, as well as to identify the relationship between some kinematic variables in the two types mentioned in advance The experimental method has been used on a Intentional sample by using a imaging camera video ,the researcher concluded the importance of motor analysis in the study of the relationship between variables and explained the nature of the relationship between them

2- (The study of Abdelouahab Elbiachi): Kinematic analysis of some special skills required on a parallel device for men 2009.

The objective of the study was to identify the most important biomechanical variables affecting the performance of the Roll back with support on a parallel bar device for men, the researcher used the descriptive method in the survey method on a sample that was chosen in a deliberate manner and was represented in the Iraqi team for the gymnastic, the researcher used as means the observation and the analysis, camera video, computer, and used the analysis program soft ware, and used to analyze films dart fish, the study has reached an improvement in the performance of players in the skills and this by controlling the affecting variables .

Theoretical Background:

the motor analysis: The motor analysis is the study of the parts of the movement that achieves the goal, and it is understood as a selected interactive group according to the objectives of the study and its duties in mechanical research methods (Qasim Hassan Hussein, 1998, 41)

the motor analysis also studies the components of the movement as an integral unit, and it is also one of the fundamental methods uses laws and principles of biomechanics for studying and analyzing mechanically the movement (Qasem Hassan Hussein, 1998, 15

Types of motor analysis:

The biomechanical motor analysis includes several sections that are related to the Descriptive state (Kenematic) And causal state, basing on this ,the Biomechanical analysis tend to analyze abstract mechanical phenomena without addressing the cause or studying the causes of the occurrence, so the main sections of biomechanical analysis are :

+Descriptive Kinetical Analysis :

It is based on the descriptive analysis of the mechanics that characterizes the movement of the human body. Thus, "Kinematic analysis deals with abstract descriptive aspects in terms of their geometrical and temporal paths as well as the study of the variables of displacement, speed, acceleration and other variables, whether linear or angular and the relationship between these variables with each other(Hasna Thaer, 2006,7)

Kenitic causal analysis:

This analysis includes the study of all the causes of movement that affect the appearance of all biomechanical variables during athletic performance, so this analysis is the search for premise correlation between the influence of power and different types of movements as well as the search for Negatives of movement through the study of power that affect the movement and is used to achieve this ready-recording force that exploit external ground resistance as a force associated with the reaction of muscular strength influential in the development of focal, which cares through the study of the influential force in the movement and how to deal with this force as the movement is a reciprocal effect between the internal and external force (as a ground attraction, the force of pushing water(Adel Abdel Basir, 1998, 161). .

The purposes of motor analysis:

. *Analysis for the purpose of identifying the technical performance of the skill

. *Analysis for the purpose of detecting performance defects

*Analysis for the purpose of comparing performance with the ideal performance, which is called the theoretical curves.

*Analysis for the purpose of building a performance model for sports movements (Talha Hussam eddin, 1991, 210)

The long jump:

The long jump is one of the events that require the necessary maximum horizontal speed with the vertical speed to hop, and takeoff. According to the rules of the game, the long jump is one of the most powerful and fast activities. It consists of four stages (approaching, hopping, flying, landing) The primary goal of long jump athlete is to achieve the possible furthest horizontal distance

by achieving the appropriate flight speed, which contributes to get horizontal and vertical speed. (Qasim Hussain, 1998,6) **The Survey Study**:

Since the researcher is a professor in the field of athletics and *acquainted* with the aspects of the technical performance of the long jump stages as well as the mechanical variables which control his performance, society and sample of the study are students that is why the researcher notes the shortcomings related with this sport, that is why the researcher did not do the Survey Study.

study Methodology

The researcher used the experimental method, as well as analysis by video imaging and using also the X-Kenova for motor analysis, and motor analysis program.

Study Sample: The sample study was chosen by the intentional method, which is 20 students, whose 10 students were taken from each group, where the first group represents the control sample, and the second group represents the experimental sample, the comparison was done between some motor variables.

study Variables:

Last step length: It is the distance between the rising feet from the moment of last touch before hopping to the first touch which measured in meters.

velocity of jumper in the last step: the distance traveled to The jumper center of gravity of his last step, which measured in meters / second

Flight distance: The horizontal distance between the foot contact point with the center of gravity in the last touching moment of the Flight plate measured in meters..

speed Flight: the lowest distance traveled after leaving the ground divided by the time of this distance and measured in meters / second

-Legal traveled distance: the distance achieved and measured in meters

Used equipments: A number of equipments were used in this study as:

-Achievement assessment card

- -Special card to discharge proportions kinetic variable

-Camera video, type Sonny film 8 mm

- -Metric bar

-motor analysis program: X-Kenova

Main experience:

On 18/02/2015,The researcher filmed the members of the study sample during a practice *session* of athletics ,after several sessions of long jump

event using a camera type Sonny film (8) mm with speed photography of (25) photos / second

The camera was placed vertically on the flight plate, which was about 110 cm high, to take photos to the last three steps of both stage approach and stage flight, where the best attempt was chosen to analyze.

Statistical means:

the arithmetic mean - Standard deviation - t test for two equal samples

Showing, analyzing and discussing the results:

The table shows the results of the t-test as well as the arithmetic mean and the standard deviations between the sample:.

Significance	The value of t Calculated	Differences between averages	Experimental Sample		Control sample		Variables
			y	x	y	x	Search Variables
Not significant	2	0.06	0.09	2.08	0.04	2.02	Step length
significant	3.19	0.19	0.45	10.02	0.83	9.03	Speedof the center of gravity in the last step
significant	3.73	0.12	0.04	0.42	0.01	0.3	Flight distance
significant	2.61	0.68	0.50	9.25	0.61	9.53	Flight speed
significant	7.54	0.54	0.50	6.33	0.24	5.89	Legal distance

The significance level at (0.05) where the value of tabular T = 2.26

The results shown in the table show that the values of the comparative results and the medium of the research variables are as follows:.

Step length: The arithmetic mean of the control sample is (2.02) and the standard deviation is (0.04) while the arithmetic mean of the experimental sample is (2.08) and the standard deviation is (2.09) and the computed value is (2.00) smaller than the planned value (2.26)) At the significance level 0.05 so the difference is not significant and the difference between the two averages is 0.06

speed of center of gravity in the last step: The arithmetic mean of the control sample (9.53) and the standard deviation of (0.83) while the arithmetic mean of the experimental sample (10.02) and the standard deviation (0.45) The calculated value of 3.19 is greater than the value of the scheduled so the difference For the experimental sample where the difference between the averages was 0.19 .

Speed distance :The arithmetic mean of the control sample was (0.03) and the standard deviation (0.01). The arithmetic mean of the experimental sample (0.42) and the standard deviation (0.04) were the calculated values (3.33), which is greater than the planned value. In favor of the experimental sample where the difference between the averages (0.12.(

The arithmetic mean of the control sample was (9.93) and the standard deviation (0.61). The arithmetic mean of the experimental sample (9.25) and the standard deviation (0.50) were the calculated values (2.61), which is greater than the set value. The experimental sample, and the difference between the averages (0.68)

legal distance : the arithmetic mean of the control sample was (5.89) and the standard deviation of (0.24) while the mean of the experimental sample (6.33) and the standard deviation of (0.50) and the calculated value (7.54) The difference was significant for the benefit of the experimental sample, where the difference between the averages was (0.54)

Discussion of results

The results indicated that there are statistically significant differences for some kinetic variables in the table for the benefit of the experimental sample in all variables except the variable (length of the step). There is no statistical significance differences of the averages of this variable. The researcher attributed the absence of differences between the two samples in this variable, because of The last step is smaller than the previous steps and therefore the variable is not significant . While the rest of the variables were significant for the benefit of the experimental sample ,The researcher attributed this superiority in the experimental sample to their superiority in many physical characteristics as well as the morphological structure of the length of legs, and by the sessions provided by the professor the exercises applied for each sample. Kinetic variables and distance of achievement, which is evident in the experimental sample, if these variables improved and have been controlled, the jump distance was greater and the same thing conforms to the good performance, through the above we conclude the realization of the general and partial hypotheses which confirm the dynamic role of motor analysis in the level improvement of performance and achievement, which is consistent with the study of Hasna Starr as well as the study of Abdul Wahab al-Bayashi Teen recognize the important role of motor analysis

CONCLUSIONS:

There is a relationship between the biomechanical variables between the sample and the experimental sample.

There was a significant difference in the length of the step among the study sample.

There is a relationship between the kinetic variables studied and the level improvment performance.

Motor analysis has an important role in the process of achievement and performance improvement through the detection of performance defects.

The use of motor analysis programs has an important role in detecting performance defects and improving the level by eliminating these errors.

Recommendations:

Focus on the importance of studying the variables and studying the mechanical variables in the development of the technical performance of the long jump event.

Doing more analytical research on various athletics events at all levels.

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