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# Information Analyses without Cognition Through Visual Observation to Develop Some Indicators of Biomechanical of Hammer throw for Advancing Throwers

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**ABSTRACT**

The hammer throw is one of the most difficult events of track and field. Studies still have hand in improving out about throwers performance by information analysis methods for biomechanical deep insight. A lot of studies which discover the difference of the proficiency are reported for the feedback of dynamic scene of sports. In this paper, it aimed to know effect of information analyses without cognition through visual observation to develop some indicators of biomechanical of hammer throw for advancing throwers. An experimental intervention was used in present study, 6 players of hammer throw aged (23.65, ±1.7) and with training age (8.81, ±2.5), and their achievements in hammer throw (46.70, ±5.65) were participated in current study. Teaching approach was conducted for a period of 6 weeks, 3 times a week by depending on a strategy of the player control which based on filming his skill performance and then shows every endeavor immediately after completion of performance. Data was analyzed using Unpaired T Test. It was observed an improvement in the instantaneous momentum of the moment of throwing, development of outcome accelerating (vertical and tangential) during hammer throw, and declining the amount of kinetic differences between the status of throwing and final throwing and development of final achievement. So it was concluded that the constant surveillance to collect information about the performance contributed effectively to the development of instantaneous momentum and final accelerating. Moreover, the continuous monitoring and analysis of information without

cognition about performance movements, helped to move sensory information and respond to give a sign about what is required of kinetic cells performance which are responsible of performance.

***Keywords*:** Information analyses, Cognition, Visual observation, Biomechanical, Hamme.

## 1. Introduction

The hammer throw event is one of the most attractive and complicated of the track and field events. The main goal of hammer throw players and coaches is to earn more information about performance for every moment of moments of motor performance for players as well as the dependence on this information to correct and achieve the skills, as a result of this will lead us into the important of mental abilities for the player as a key and guiding for what player needs to perform during training or competition which may be help him to improve his skill level (George., 2006).

The visual observation of the stages of motor performance of the hammer in particular may help thrower monitor his performance with high accuracy and detection the error which is located outside realized when implementing this performance. However, the observation is correlated to the developing of perceptual, movement memory, and image of the kinetic skills reaction that are very important to correct and implementing the skill in good way. This image associated with the goal of skill performance which requires the player to control the position of the body especially during the main section, and this comes from achieving suitable angles for torso bend and confirm to arms extend, all of these movements require a sense of the amount of force to achieve the integration of the instantaneous velocity and acquisition the hammer final acceleration required at the moment of release (Schmidt & Richard., 1991).

These principles can't be perceived by the player, but just through technological visual aids help in the discovery of the error that can't be realized and re-focus on correcting the error (Roberton, & Halverson., 1984), whether this error resulted from the wrong angle in one of the joints or non-use of required force in working muscle. The idea of this study is that these errors can't be perceived by the player without a note and a careful analysis of the performance data to amend body parts responsible for them through the achievement of performance again, and to understand that we must understand how it can be controlled and the control of movement, or what can the player do in order to master the correct performance.

High level thrower has a mix of kinetic, mental, physical, and function capacities as well as biomechanical and anatomical limits. Exercise programs attribute these characteristics correctly, and help to give more information during any time of performance given that depending on attention concentration through skill implementation leads to concentration importance on mental preparation and mental practice. Attention is a complex aspect needs to control the concentration at the any

moment of performance moments, moreover, attention interacts with the kinetic perception and memory in decision-making. The kinetic perceptual and kinetic memory that must be characterized by advanced players are among the most important factors which can implement their skill well and who depend on attention, and so is formed the image of motor action (Morehouse., 1971). Some studies suggested that player who controls performance implementation in part to pay attention, according to estimates of self and the required movement of the requirements of physical and mental and within abilities (Omosguard., 1999), others suggested that sportsman can be controlled his attention based on the kinetic perceptual through expectations and controlled of the actual respective movements (Hay & Reid., 1988).

Studies still have hand in improving out about throwers performance by information analysis methods for biomechanical deep insight. A lot of studies which discover the difference of the proficiency are reported for the feedback of dynamic scene of sports. In this paper, it aimed to know effect of information analyses without cognition through visual observation to develop some indicators of biomechanical of hammer throw for advancing throwers.

## 2. Methodology

### 2.1 *Participates*:

Experimental research design method was used in present study, 6 players of hammer throw aged (23.65, ±1.7) and with training age (8.81, ±2.5), and their achievements in hammer throw (46.70, ±5.65) were participated in current study.

### 2.2 *Procedures of the film and analysis of biomechanical variables*:

Mechanical variables related to the immediate and self-corrections feedback were identified as following:

- Immediate push when throwing.
- The accelerate the final proceeds to hammer.
- Radius of rotation in the final stage.
- The distance between the feet at the moment of latest throwing.

These variables were measured directly through video film and program (kinvoei) after placing a camera on hand right player for a moment throwing away a distance of 7.8 meters and another camera is placing above the player distance of 4.75 meters to ensure filming all movements of the players within the three axes of movement. As well as filming the performance of the player by usual camera's video.

**2.3** ***Steps to prepare strategy monitoring and analysis of information*****:**

The researchers relied on a strategy to observe the player based on his performance filming when perform the skills, then show every endeavor immediately after the completion of the performance, each player evaluates his performance and error detection by himself and with the help of the coach to correct the mistake in the next attempt. Observation is continuing with a number of endeavors and player asks to analysis his self and decision-making and give suggestions about the correct performance to the player until he will be convinced that this error has been modified and the role of the coach is to help the player to analyze his performance and decide what he will do later. Then directing the player to repeat the performance with correction information and in particular to ask his sense regard skill, in order to use performance image which stores to correct the performance at the subsequent attempt, which can't be understood by only monitoring (without cognition). Observation is helping to develop the performance of the player to solve his problem and what he feels and dose the performance wrong or right.

As mentioned above the monitoring strategic and analysis for each player is according to the following:

- **Error detecting:** Player will endeavor to discover the error through watching his kinetic performance and tries to imagine how to avoid the error by choosing the best conditions in the corners of his body to make a new attempt to correct later.
- **After error detection:** Concentration on the player, what he wants in the next attempt after discovering the error and what can alter the performance in order to make new correct attempt.
- **Nature of using information:** Coach intervenes to help the player regards type of corrections in motor performance and procedures used by the player to implement the new motor task.
- **Preparation to achieve next endeavor:** Coach helps the player to use basics of performance and error correction to aid the player on correct his attempts by himself and gives an answer related to his performance sense for each endeavor after watching the performance. This helps the player in the implement of the correct information and on what has to focus in order to be his attempts very successful. We have to know that the coach provides more positive furtherance to error analysis in order to integrate a sense of movement to the athlete when doing the actual performance.

**2.4** ***Main experiment*****:**

Teaching approach was conducted on December 15, 2013 to February 2, 2014 for a period of 6 weeks, 3 times a week by depending on a strategy of the player control which based on filming his skill performance and then shows every endeavor immediately after

completion of performance. It was emphasized in the teaching and training units on the technical stages and connection between the main position of throwing and the final throwing.

**2.5 *Post-tests*:**

We have been achieved post-tests after the completion of the main experiment on February 4, 2014 and under the same conditions.

**2.6 *Statistical analysis*:**

Data was analyzed using unpaired T Test, mean, and standard deviation.

## 3. Results and Discussion

**(Table 1)**
**Shows mean, standard deviation, and tabulate and calculate T value between pre and post-tests of the study variations**

| Variations | Pre-test | | Post-test | | F | Fh | T | Error level |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | | | |
| Immediate push | 3015 | 342 | 3251 | 267 | 236 | 15 | 15.72 | *0.014 |
| Accelerate | 364.7 | 98.13 | 373.5 | 67.12 | 8.8 | 2.2 | 4 | *0.003 |
| Radius of rotation | 2.09 | 0.07 | 2.15 | 0.5 | 0.06 | 0.013 | 4.55 | *0.00 |
| Distance between the feet | 0.65 | 0.11 | 0.43 | 0.03 | 0.22 | 0.036 | 6.1 | *0.011 |

Table (1) showed that significant results in favor of post-tests in present variations. Researchers attributed the developing because of affected subject of the study by information strength and expectations about what they are watching. Roberton, & Halverson., (1984) investigated the most important information which have to be learnt from watching is regarded what is the player looking for through depending on his experience which helps him to see appropriate information and a sense of them and provide a good ground to collect information on cases of the person's movement perform. Our program included above information, so immediate push increased and improved. On the other hand, the reason for this development to achieve the best positions to perform the effective push and achievement of a final accelerate which is the total square of each diameter accelerating and tangential accelerate. Immediate push is developed largely as a result of continuous corrections which were depended on information of monitoring repeat endeavors.

Researchers focused on watching movements of subject during carrying out two foundations, the first to push the attention to something that is watching by thrower and the second is how to be monitoring (monitoring plan). However, these two principles guarantee to be seen regularly and decisive in collecting important information about the

performance. Sarih (2010) said that has to specify the characteristics of each skill with accurate as possible and stored in the mind, the player understands that this information is affected by the deviation of the body and take the right preparatory situation and the subsequent taking angles to generate the movement required in the upper part of the body in an effective and efficient method. Based on this development occurred in the radius of rotation relative increase in length, and this increase is directly proportional to an increase of tangent speed or tangential accelerate and according to what showed from the results in the acceleration of proceeds.

Researchers see that the method of work according to the viewing and analysis of dynamic self for stages of hammer throw performance is working on improving the technical aspects and the ability of perception of movement and correct movement of the arms, torso and legs during the development of throw position and push to final throw, so this kind of practice is a great benefit if perfected the use in the development of mechanical conditions for the hammer throw performance which is necessary and important in achieving good achievement. In addition, the distance between feet during the moment of throw was developed in which player gets the best position to perform effective rotation and this development needs to be ongoing training in line with the level of activity practitioner. As a positive effect on the viability of the individual to reduce the amount of energy expended to achieve the goal of the movement is to perform in line, balance and with a minimum of errors (Talha., 1994).

The plan adopted by the researchers using the continuous monitoring to detection the error and constant correction was helped the sample to highlight the errors and the lack of performance and then give the necessary treatments to avoid the weaknesses of performance. Some of studies have confirmed that there are two different methods note them in performance, Hay and Reid (1988) used these two methods, namely "cascade style" and "mechanical style", as it can be used in succession mental images of the positions of the body at every stage of the movement. Most of coaches use eye figure - the mind of the desired movements and phases of the movement compared with the real performance.

## 4. Conclusion

It was observed an improvement in the instantaneous momentum of the moment of throwing, development of outcome accelerating (vertical and tangential) during hammer throw, and declining the amount of kinetic differences between the status of throwing and final throwing and development of final achievement. In addition, the constant surveillance to collect information about the performance contributed effectively to the development of instantaneous momentum and final accelerating. Moreover, the continuous monitoring and analysis of information without cognition about performance movements, helped to move sensory information and respond to give a sign about what is required of kinetic cells performance which are responsible of performance.

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