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# Basic Motor Skills as an Indicator for Predicting the Requirements Needed to Get the Yellow Belt for Cubs in Karate

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**Abstract:** Basic motor skills - being investigated - are extremely important for developing the requirements needed for cubs to get the yellow belt in Karate, the research aims at predicting the performance level required to get the yellow belt in Karate in terms of some basic motor skills. The basic motor skills - being investigated - are applied on a random sample of 337 cubs aged 6-9 years old who are member in Al-Dakahlia zone for Karate. The sample was divided into three categories according to age. The most important results showed a positive relation between the majority of the basic motor skills - being investigated - and the requirements needed for cubs, in the three groups, to get the yellow belt in Karate.

The variables that affect the requirements needed for cubs, in the three groups, to get the yellow belt in Karate, are ordered as follow:

- Kicking-speed performance, Board jump (the first group).
- Throwing and catching, throwing the Hockey ball to the right (the second group).
- Throwing the Hockey ball to the left, 30m running, hopping 10m to the left, Kicking-speed performance (the third group).

The predictive equation for each group of the three research groups are ordered as follow:

- The first group: E = (7.565) + (0.419) (score of board jump test) + (8.134) + (0.305) (score of kicking-speed performance test)
- The second group: E = (8.791) + (0.292) (score of throwing the hockey ball to the right test) + (8.222) + (0.208) (score of throwing and catching test)
- The third group: E = (8.715) + (0.367) (score of kicking-speed performance test) + (9.048) + (0.340) (score of 10m hopping to the left test) + (8.922) + (0.286) (30m running test) + (8.497) + (0.199) (score of throwing the hockey ball to the left test).

**Key words:** Basic motor skills · Predicting · Karate · Yellow Belt · Cubs

## INTRODUCTION

Childhood is considered one of the most important developmental stages that greatly affect the child's future life, as it is the mainstay in forming the basic features of the child's integrated personality and in guiding the child's abilities, tendencies and attitudes to the right direction. Therefore, the progress and development of nations and communities is measured by the extent of their interest in this phase, thus the process of preparing and bringing up children is much like preparing them to face cultural challenges inevitably posed by development, for this the developed countries interest in physical education and sports in the different developmental stages of the child as they believe of the effective role sports and physical education play in bringing up a good citizen who participates in raising the civilized progress of homeland [1-4].

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Primary school is one of the important educational phases in Egypt, as it forms the base for the educational hierarchy according to what stated in the Egyptian constitution to consider this phase obligatory and gratis for all. The time span ranging from 6 to 9 years old in considered the most appropriate age within the primary school to guide, promote and develop the students' abilities to acquire them basic motor skills related to different sportive and physical activities [1, 5, 6].

In addition, in this phase fundamental movements turn from just a movement learnt by the child into a tool which the child uses in sports, competitive and collaborative games and in capitalizing his spare time. Also, in this phase fundamental movements becomes more accurate, speed, connected and complicated, consequently the child's motor skill to practice sports and games is grown [7, 8].

Basic motor skills as running, hopping, jumping, kicking, throwing and catching are of special importance in studying the movement growth and development for primary school children, they are the base to form movement patterns (a series of special related sportive movements). The basis of these movement patterns are the fundamental movement shapes that depend on basic factors as strength, speed, ability, lissomness and harmony between hands and eyes to perform. Acquiring and mastering fundamental movements in this age and integrating these movements with each other contribute to forming sportive skills, the continuous development of these fundamental movements indicate an obvious development of motor abilities related to competitive sports [9-11].

Different competitions and matches are necessary for children and youth, so, they need wise and decisive leadership as well as sound and advanced experiences. All games and sports' skills requires several skills in each specific phase, these several skills rely on fundamental movement categories as:

- Locomotion movements.
- Manipulation movements.
- Stability movements [7].

Some studies related to the research topic were conducted [12-16]. None of these studies referred to the relation between predicting skilled performance in terms of basic motor skills, this explains the importance of the current study as an attempt to recognize the effect of some basic motor skills in predicting the performance level required to get the yellow belt for cubs in Karate.

Through teaching and training Karate, the researcher has noted that the skilled performance level of cubs aged 6-9 years drops in some skills related to basic motor skills, therefore the researcher believed it is necessary to deal with this problem by research and study to recognize the effect of some basic motor skills in predicting the performance level required to get the yellow belt for cubs aged 6-9 years in Karate.

**Research Objectives:**

- Predicting the performance level required to get the yellow belt in Karate in terms of some basic motor skills for cubs aged 6-7 years.
- Predicting the performance level required to get the yellow belt in Karate in terms of some basic motor skills for cubs aged 7.1-8 years.
- Predicting the performance level required to get the yellow belt in Karate in terms of some basic motor skills for cubs aged 8.1-9 years.

**Research Hypothesis:**

- The contribution ratio of basic motor skills -being investigated- in promoting the performance level required to get the yellow belt vary among cubs aged 6-7 years.
- The contribution ratio of basic motor skills -being investigated- in promoting the performance level required to get the yellow belt vary among cubs aged 7.1-8 years.
- The contribution ratio of basic motor skills -being investigated- in promoting the performance level required to get the yellow belt vary among cubs aged 8.1-9 years.

## MATERIALS AND METHODS

**Research Method:** The researcher has used the descriptive approach and the cross-sectional method to observe the variables being investigated.

**Research Sample:** The research sample has been chosen randomly among karate cubs in Al-Dakahlia zone for Karate. The sample consists of 337 cubs divided into three categories according to age, one year for each category.

**The Research Executive Steps:**

**First:** Determining the basic motor skills and the requirements needed to get the yellow belt.

Many specialized references and previous studies agreed that the most important basic motor skills are running, jumping, hopping, throwing, catching and kicking, as well as compound movements which compose of two or more of the previous skills [1, 6-8, 11, 14, 16-21]. The researcher relied on these referential opinions in choosing basic motor skills being investigated, while the basic karate skills were determined according to regulations of belt testing authorized by the Egyptian Karate Federation. The basic skills being investigated are required to get the yellow belt in Karate.

**Second:** Measurements and tests related to basic motor skills and basic karate skills being investigated:

- 30m running.
- Throwing a Hockey ball as far as possible (right - left).
- 10m hopping (right - left).
- Throwing and catching a handball inside a box from four different distances.
- Board jump.
- Contracting and expanding hip joint. (Kicking-speed performance) [1, 20, 22-24].

**Skill Tests:** The researcher assessed the performance level through the reliability of arbitrators; the researchers asked three arbitrators who are recorded in the Egyptian Karate Federation to assess the performance level of the sample being investigated, a form was designed to assess skill performance level for the skills being investigated.

**The Research Sample Homogeneity:** The arithmetic mean, the standard deviation, the median and the skewness of basic variables and basic motor skills -being investigated- have been calculated for the categories, composing the sample, according to the age of the cubs of each category, the results show that the values of skewness are ranging ±3, proving that the members of the research sample fall under the normal curve for those variables being investigated, indicating the homogeneity of the research sample members.

## RESULTS AND DISCUSSION

Table 1 shows that the cross correlation matrix of basic skills required to get the yellow belt in Karate, the third category, contains 36 correlation coefficients: 18 correlation coefficients are positive, 18 correlation coefficients are negative, the table also shows that 16 of the negative correlation coefficients are significant while 2 are insignificant and 15 of the positive correlations coefficients are significant while 3 are insignificant.

It is clear from Table 2 that the variable that comes first in contribution is throwing hockey ball to the left, it contributed with 447%; the second variable is 30m running, it contributed with 534%; the third variable is 10m hopping, it contributed with 583%, the fourth variable is kicking speed performance, it contributed with 606%. Whereas the predictive regression equation is:

Table 1: Cross correlation matrix for basic motor skills being investigated and the requirements needed to get the yellow belt in karate, the third group

| | Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 30m running | 1.00 | 0.062 | 0.102 | -0.203 | -0.178 | -0.185 | -0.230 | -0.342 | -0.369 |
| 2. | 10m hopping, right | | 1.000 | 0.954 | -0.738 | -0.529 | -0.540 | -0.419 | -0.252 | -0.377 |
| 3. | 10m hopping, left | | | 1.000 | -0.766 | -0.457 | -0.572 | -0.423 | -0.234 | -0.417 |
| 4. | Throwing hockey ball, right | | | | 1.000 | 0.640 | 0.748 | 0.411 | 0.316 | 0.405 |
| 5. | Throwing hockey ball, left | | | | | 1.000 | 0.499 | 0.172 | 0.331 | 0.447 |
| 6. | Throwing and catching | | | | | | 1.000 | 0.330 | 0.328 | 0.437 |
| 7. | Board jump | | | | | | | 1.000 | 0.427 | 0.347 |
| 8. | Kicking-speed performance | | | | | | | | 1.000 | 0.401 |
| 9. | Total of basic skills | | | | | | | | | 1.000 |

Value of r at the level of 0.05 = 0.196

Table 2: Results of the multiple regressions for basic motor skills being investigated and the requirements needed to get the yellow belt in karate, the third group

| | Variables | Constant value | Regression coefficient | Standard error | Degrees of freedom | F value | Contribution ratio |
|---|---|---|---|---|---|---|---|
| 1. | Throwing the hockey ball to the left | 8.497 | 0.199 | 0.00868 | 103 | 25.654 | 477% |
| 2. | 30m running | 8.922 | 0.286 | 0.00824 | 102 | 20.395 | 534% |
| 3. | 10m hopping, left | 9.048 | 0.340 | 0.00796 | 101 | 17.310 | 583% |
| 4. | Kicking-speed performance | 8.715 | 0.367 | 0.00783 | 100 | 14.513 | 606% |

$$E = C + R^4I^4 + R^3I^3 + R^2I^2 + R^1I^1$$

Where:

"E" estimated value of the dependent variable.
"C" constant value.
"R" regression coefficient.
"I" independent variable.

Therefore, the predictive equation after the first and second step is:

E = (8.715) + (0.367) (score of kicking speed performance test) + (9.048) + (0.340) (score of 10m hopping to the left test) + (8.922) + (0.286) (30m running test) + (8.497) + (0.199) (score of throwing the hockey ball to the left test).

## DISCUSSION

It is clear form Table 1 which represents the cross correlation matrix of the variables being investigated for the third group that it contains 36 correlation coefficients: 31 correlation coefficients are statistically significant with a percent of 86.11%, 5 correlation coefficients are statistically insignificant with a percent of 13.9%, while the highest, positive and significant correlation coefficient between 10m hopping right and 10m hopping left is (0.954) and the highest, positive and significant correlation coefficient for the first and second categories are 0.890 for the first and 0.618 for the second.

These results agrees with motor performance requirements in Karate, as the first step in practicing Karate is foot position and movements, these positions and movements are repeated in the different directions in the shortest possible time, which need power and speed to perform these skills correctly and more efficiently.

These results agrees also with what have been mentioned by Alawi [25], he mentioned that muscular strength is the main factor for getting the highest rank in champions, also it affects greatly some physical qualities as speed, bearing and fitness especially for sports activities that needs both muscular strength and the aforementioned physical qualities.

The researcher attributes this correlation to the physical growth associated with aging which increases the level of motor performance for cubs in this age, also the completion of growth in terms of tallness, weight, muscular strength and the body composition affects positively on all the different motor aspects for cubs in this phase. Also, Badran [21] emphasizes on these results, he says that it is useless to ask a sportsman to do specific motor skill, while he lacks the suitable body composition that allows him to perform it. Physical maturity is the general level that allows the sportsman to perform the required the motor skills. Mastering Karate skills is an essential requirement to attain the worldwide level; this requires the players to be characterized with strength, speed and the explosive power of legs, arms and torso as well as fitness and distinctive bearing and limberness [26]. Bradley [27] mentioned that the skill performance in Karate depends mainly on the strength and speed that the player own.

Table 2 shows that throwing the hockey ball to the left is the variable that contributes mainly to the requirements needed to get the yellow belt in Karate for the third group with a contribution percent of 447%. Comparing the standard error with the regression coefficient, we find that it is less than the half of the numerical value of the regression coefficient, whereas the variable which contributes mainly in the first group is kicking speed performance with a contribution ratio of 552%, in the second group the main variable is throwing and catching with a contribution ratio of 456%, these results agree with the performance nature in karate where the strength associated with speed is of the main physical requirements needed in karate, so it is considered as one of the important factors affecting the motor performance of Karate players. These results also agree with the study results of Arbab[22], he assures that there is a gradual increase in the level of the basic motor skills (running - jumping - hopping - throwing - throwing and catching) of the students comprising the research sample with age.

This was also assured by Ebrahim [28], he stated that the most important requirement needed in Karate are the strength associated with speed for legs and arms which affect the motor performance of the offensive and defensive techniques, as well as bearing the functional performance, flexibility, accuracy, lissomness and stability, if the cub owns these abilities with an above-average level, this indicates that he has a high susceptibility to perform well. Strength associated with speed is a special kind of strength which is very important to Karate player as it allows the player to do fast, short and strong contractions while executing the skill performance of punches and kicks [29].

Of the previously mentioned, the research hypothesis which state "The contribution ratio of basic motor skills -being investigated- in promoting the performance level required to get the yellow belt vary among cubs aged 6-9 years" has been achieved.

## CONCLUSION

- There is a positive significant correlation among the majority of the basic motor skills being investigated and the requirements needed to get the yellow belt in Karate for the three groups.
- The variables contributing to the requirements needed to get the yellow belt in karate for the first group could be deducted, they are (kicking speed performance - board jump).
- Deducting the predictive equation for the first group, it consists of:

$$E = C + R^2I^2 + R^1I^1$$

E = (7.565) + (0.419) (the score of board jump test) + (8.134) + (0.305) (the score of kicking speed performance test).

- The variables contributing to the requirements needed to get the yellow belt in karate for the second group could be deducted, they are (throwing and catching - throwing the hockey ball to the right).
- Deducting the predictive equation for the second group, it consists of:

$$E = C + R^2I^2 + R^1I^1$$

E = (8.791) + (0.292) (score of throwing the hockey ball to the right test) + (8.222) + (0.208) (score of throwing and catching test).

- The variables contributing to the requirements needed to get the yellow belt in karate for the third group could be deducted; they are (throwing the hockey ball to the left - 30m running - 10m hopping to the left - kicking speed performance).
- Deducting the predictive equation for the third group, it consists of:

$$E = C + R^4I^4 + R^3I^3 + R^2I^2 + R^1I^1$$

E = (8.715) + (0.367) (score of kicking-speed performance test) + (9.048) + (0.340) (score of 10m hopping to the left test) + (8.922) + (0.286) (30m running test) + (8.497) + (0.199) (score of throwing the hockey ball to the left test).

### Recommendation

- Using the predictive equations - obtained by the study - in choosing cubs in karate.
- Designing educational and training programs for karate cubs in terms of basic motor skills, because of the effective role they play in promoting skill performance.
- Conducting similar studies on different samples (girls) and in different ages to assure the results obtained.

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