

**Theories & Applications, the International Edition**

Printed Version : (ISSN 2090-5262)

Online Version : (ISSN 2090-5270)

November 2014, Volume 4, No. 3 Pages (65 - 76)

**Identifying Standard Levels for Coordination of Motor Abilities in the 11-13 Year-Old Free Style Wrestlers.****El-Sayd El-Mohamady Kandil**

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**Abstract**

*This study aims at Identifying standard levels for coordination of motor abilities in 11-13 year-old free style wrestlers. The descriptive method was used and the sample was convenience selected. It consisted of 186 junior free-style wrestlers in the age span 11 – 13 from six governorates in Egypt. Sample subjects, registered in the Egyptian Wrestling Federation in 2011-2012, were divided into two groups, one group, consisting of 30 juniors, and another a basic sample, consisting of 156 juniors. The main results included The Specific coordination of motor abilities of the junior free wrestler are the ability of motor Coupling – the ability to assess position – the ability to make the suitable effort – the ability to adapt to changing positions – the ability of Reaction– the ability of motor balance The standard levels of coordination of motor abilities were identified (the ability of motor Coupling – the ability to assess position – the ability to make the suitable effort – the ability to adapt to changing positions – the ability of Reaction– the ability of motor balance) for 11-13 year-old junior free wrestlers Values of raw scores and the corresponding standard levels in testing each coordination of motor ability show the variety in juniors' levels compared to peers. This helps us reach some positive results which we can use in evaluating performance objectively and guide the training of juniors in this age span, Recommendations included using the tests of coordination of motor abilities studied in evaluating the performance level of free style wrestling juniors; conducting research aiming at identifying the special coordination of motor abilities and focusing on the development of such abilities in Greco-Roman wrestling and other individual and team sports; conducting research aiming at extracting standard levels for coordination of motor abilities in juniors of various age groups in both types of wrestling and in other individual and team sports; developing training programs to upgrade the standard of coordination of motor abilities and skillful and tactical performance of free style and Greco-Roman wrestling in young age stages.*

**Key word:** Standard Levels – Coordination of motor Abilities - Free Style Wrestlers

**Introduction**

Standardized tests are becoming more and more important in the sporting field where they are beneficial to sports trainers. The level of players cannot be identified without tests, which are used as a research method. This is why the design and standardization of tests are important. (2)

Standards are one of the basic aims of test standardization. It is through this process of standardization, applied to the research community, that standards are derived. The importance of standards to studies conducted in the field of physical education and sport is obvious when using test sets as "batteries". This is due to the fact that different measuring units are used in tests included in such batteries. Some tests use the centimeter as a measuring unit, some use time, others still use frequency. This is why a raw score is transformed to a standard score, thus making evaluation easier. Standard scores are usually tabulated as "scales". (12)

standards (standard scores) should not, however, be regarded as standards of performance, goals to be attained by individuals or what an individual must achieve. Rather, they should be considered as a means of comparison and evaluation to be utilized when predicting possibilities of success, identifying points of strength and weakness in an

individual and measuring the development and enhancement achieved in his/her level of performance. (10)

**Requirements of developing standards**

1. Identifying tests required and conditions of the application thereof, together with instructions of proceeding, calculating scores, etc;
2. Standardization sample must be representative of the original community (showing normalcy, randomly selected, large in number and representing the commun;
3. Applying tests and using standard scores;
4. Considering the timing because standard scores (standards) are temporary and changeable with the elapse of time;
5. Good presentation through clear tables that can be easily used for purposes of diagnosis or comparison. (11)

Standards are often used in evaluating performance of psycho-motor skills, various sport activities, and also in assessing individuals' levels of achieving activities that require mastering and perfection. Teaching, training and practice are therefore important as is the need to ensure individuals have reached an acceptable degree of

performance, so that the levels reached could be used as referential benchmarks to evaluate performance. (10)

Motor performance is generally regarded as processes of a complex structure. It might be combined, successive or feint, depending on the playing situations occurring during matches, with a high degree of motor coordination. In their entirety, performance require high levels of coordination of motor abilities in all players whatever the differences are between their levels, in view of the reciprocal relationships between coordination of motor abilities and motor tactics. (13)

Developing the level of coordination of motor abilities plays an important role in acquiring motor skills because the appropriate level of such abilities is essential to learn the skills. The extent to which motor skills are mastered, which reflects the combined foundation of an individual's level, helps develop coordination of motor abilities because training seeking to change the external conditions of skills leads to identifying the quantity and quality of a player's coordination of motor abilities. Consequently, coordination of motor abilities and motor skills combine to form the coordination foundations and develop the level while practicing sport. (6)

Motor coordination is the ability to perform motor tasks smoothly and accurately using the feeling and the sequence of consecutive muscle contractions which are affected by the range of motion of joints. Motor coordination is important when the junior or player perform movements that require the simultaneous use of more than one part of the body or different muscle groups in different directions. It helps a player use his or her body easily, quickly and smoothly to achieve the results desired. (18)

The term "coordination of motor abilities" indicates phases of movements or parts of movements combined together in the framework of motor performance. (1)

Coordination of motor abilities is "an individual's ability to carry out complex (combined) movements rapidly and accurately under different circumstances and conditions". Neumaier added that this definition is limited to complex and combined movements, because simple and easy movements that are performed rapidly and accurately under different circumstances and conditions may also belong to coordination of motor abilities. (17)

Coordination of motor abilities emanate from the requirements of sports performance and are dictated by an individual's ability to perform motor skills accurately perfectly.

Coordination of motor abilities do not appear individually, but are associated to other conditions of sport achievement, such as physical abilities and skillful and tactical performance. They are also inter-connected in most cases. They help build up whole movement from partial movements in a coordinated manner. When coordination of motor abilities are coordinated, the highest level of the

general motor coordination required for performing motor tasks. (8)

A good level of coordination of motor abilities help players to quickly learn and acquire motor skills, so that time is used for training and enhancing performance. A high level of coordination help players diversify skillful performance and improve the technical level as coordination of motor abilities are directly proportional to skillful performance, affect and is affected by it. (9) (14)

Coordination of motor abilities are important because they have an effect on speed, accuracy and skill acquisition time. They are directly based on the level of functional and morphological efficiency. Training the coordination of motor abilities can be done either individually or through training units for the skillful and physical aspects. coordination of motor abilities can be divided into two types, based on terminology. One type is the ability of regulation which has a neuro-psychological basis, while the other includes the psycho motor abilities connecting cognitive aspects. Both types are to be found in the field of sport. (22)

Coordination of motor abilities are a cornerstone of sports achievement necessary for the enhancement of the technical performance of juniors and players alike, because coordination of motor abilities results from the qualitative analysis of the specialized activity requirements. Seeking to develop them therefore positively affects the skillful aspect, because they are the foundations for achievement related to motor control processes during the different motor performances. Possessing such abilities by juniors and players enables them to achieve the best scores of motor performance coordination required for achieve motor tasks. (7)

Objective observations by the author of this paper, as coach and lecturer to third and fourth year students of the faculty, together with a follow-up of the national wrestling championships for juniors and players, showed inter- and intra- age group variations in coordinative aspects, reflected in differences in skillful performance. This triggered a review of literature on the subject to find out whether there are tests to measure the level of coordination of motor abilities. The current locally applied tests were found to be insufficient, and they do not set up standard levels for coordination of motor abilities in junior Greco-Roman wrestlers, to be used in measuring the coordination of motor abilities in juniors so that a trainer would be aware of the junior's level of such abilities, and be able to rate them, compared to their peers in the same age group, and track the development of levels of the abilities. In this paper, some tests have been designed and standardized to measure coordination of motor abilities and setting standard levels thereof. Results, hopefully positive, may be used in the selection and raining of junior wrestlers, and also in the scientific evaluation of performance.

**Objective of the research**

- The research aims at identifying standard levels for coordination of motor abilities in the 11-13 year-old free style wrestlers through setting up standard levels for the coordination ability tests for the 11-13 year-old free style wrestling juniors.

**Research question**

- What are the standard levels for the coordination of motor abilities tests for the 11-13 year-old free style wrestling juniors?

**Research procedures****Methodology**

The descriptive method was used, being suitable for this type of study.

**Research Community and Sample:**

The research community included 11-13 year-old free style wrestling juniors in the governorates of Daqahliya, Sharqiya, Damietta, Cairo, Giza and Kafr el-Sheikh. The sample was convenience selected and consisted of 156 juniors in addition to 30 juniors representing the pilot sample. Table 1 shows the distribution of players.

**Table (1)**  
**Distribution of research sample**

No	Governorate	Number
1	Daqahliya governorate	45
2	Sharqiya governorate	24
3	Damietta governorate	23
4	Kafr el-Sheikh governorate	25
5	Cairo governorate	37
6	Giza governorate	27
Total		186

**Homogeneity of Sample**

**Table (2)**  
**Mean, standard deviation and contortion coefficient of the basic sample in the basic variables (N =186 )**

No	Variables	Measuring unit	Mean	Median	Standard deviation	Contortion coefficient
1	Age	Year	11.97	12	0.16	0.562-
2	Height	Cm	153.64	150	7.314	1.493
3	Weight	Kgm	45.19	40	8.04	1.937
4	Training age	Month	11.53	12	2.01	0.701-

Table (2) shows the values of mean, standard deviation and coefficient of contortion for the basic measurements of the basic study sample in the variables of age, height, weight and training age. It shows normalcy of distribution of the basic study sample as the contortion coefficient values ranged between -0.701 and 1.937, which means that they are below the +3 level.

**Data Collecting Means:**

A review was made of reference works and literature both in Arabic and English which are related to the subject of the research as well as the internet. The author of this paper

benefited from and was guided by results of such studies and references to identify the correct concepts of coordination of motor abilities and their relation to motor performance in individual games, specially free style wrestling, and also to identify the profile of coordination requirements of motor tasks in general and of wrestling in particular.

**I. Coordination of motor Abilities of Wrestlers**

Coordination of motor abilities were submitted to experts (attachment 1). The polls' results showed the coordination of motor ability of free wrestling juniors as shown in table (3).

**Table (3)**  
**Percentages of experts' opinions about the main coordination of motor abilities appropriate for the 11-13 year-old group age in free style wrestling**  
**N = 6**

No	Name of ability	Agreement			
		Agree		Don't agree	
		No.	%	No.	%
1	Ability to adapt to changing positions	6	%100	-	-
2	Ability to make the suitable effort	6	%100	-	-
3	Ability to assess the position	5	%84	1	%16
4	Ability of Of Motor Reaction	6	%100	-	-
5	Ability of motor Coupling	6	%100	-	-
6	Ability of motor flexibility	4	%66.66	2	%33.33
7	Ability of motor balance	5	%84	1	%16

Author accepted 80% and more as a percentage of accepting coordination of motor abilities related to the combined skillful performance:

- The Ability of Motor Coupling
- Ability to assess the position
- Ability to make the suitable effort
- Ability to adapt to changing positions
- The Ability Of Motor Reaction
- Ability of motor balance

#### **Standards of Choosing Experts:**

- Academic experience, because all experts are faculty staff members in faculties of physical education.
- Field experience in wrestling.

The wrestlers' coordination of motor abilities test battery used by El-Sayd El-Mohamady Kandil 2012 (5) was used in this paper, including:

1. Speed of combined motor response (falling on the right foot);
2. The muscular-motor feeling of the strength of arms, shoulders and trunk;
3. The time of joining the motor chain;
4. Situational wrestling from 2m back step;
5. The bridge movement while balancing on one foot and the forehead;
6. Adapting to changing positions (number of falls on the foot).

The second test (the muscular-motor feeling of the strength of arms, shoulders and trunk) was modified so that the medical ball weighed 3kgm instead of 5kgm to be suitable to the age group. The third test (the time of joining the motor chain) was modified so that near cradle skill was cancelled

and the two other skills were retained. The fifth test (the bridge movement while balancing on one foot and the forehead) was modified to (back jump on one foot for 4.5m) in view of the similarity of performance to that of free style wrestling. The sixth test (adapting to changing positions (number of falling on the foot)) was modified to (performing different skills from different positions in the shortest time) attachment 2.

#### **Research Measurements and Tests:**

- **Anthropometric measurements** (age – height – weight – training age)

#### **- Coordination of motor ability measurement tests**

1. Speed of combined motor reaction (falling on the right foot);
2. The muscular-motor feeling of the strength of arms, shoulders and trunk (throwing a 3kgm medical ball backwards);
3. The time of joining the motor chain;
4. Situational wrestling from 2m back step;
5. back jump on one foot for 4.5m;
6. Adapting to changing positions (performing different skills from different positions in the shortest time).

#### **Research Equipment's and Tools:**

- Restameter to measure height
- Calibrated medical balance to measure weight
- Measurement tape in meters
- Medical ball (3kgm)
- 1/100s digital stop-watch
- Digital video camera

#### **Pilot Studies:**

Two pilot studies were conducted aiming at making sure of the suitability of coordination of motor abilities tests chosen for the 11-13 year-old age span, putting the tests in their final form, making sure of the suitability of the tools used in taking measurements and finding their scientific qualities before applying them to the basic research sample. Studies were conducted on a sample of 30 wrestling juniors from Daqahliya governorate.

#### First Pilot Study:

The first pilot study was conducted in the period 12/3/2012 to 18/3/2012 on a sample of 10 players from Mansoura Sports Stadium to make sure of the suitability of tests designed by the author to measure coordination of motor abilities and to the age group studied. The study resulted in identifying the suitable distances and making sure of the

safety and accuracy of measurement tools used in measurements in each test.

#### Second Pilot Study:

After modifying the tests and putting them in their final form, a pilot study was conducted aiming at finding the scientific qualities of these tests (validity – reliability) reached by the author to measure coordination of motor abilities of free style wrestling juniors in the age group 11-13 year-old on a sample of 20 free style wrestlers in Dekernes Club, from the original community of research and outside the research sample. Discrimination validity was used to calculate the validity of the tests and the test & retest method on a sample of 10 players in the same community to calculate reliability.

**Table (4)**  
**Discriminant validity of coordination of motor abilities tests for junior free style wrestlers ( N 1 = N 2 = 10)**

No	Variables	Measurement unit	Name of Test	Discriminating group		Non-discriminating group		T-value
				mean	Standard deviation	mean	Standard deviation	
1	Ability of Reaction	s	falling on the foot	0.808	0.071	1.482	0.129	*28.185
2	Ability to make the suitable effort	cm	throwing a 3 kgm medical ball 2 m backwards using both hands	13.789	1.436	70.811	4.789	*70.236
3	Ability to assess the position	cm	situational wrestling from 2 m backwards	10.395	1.264	34.432	2.102	*60.204
4	Ability of motor Coupling	s	time of relating the motor chain	1.125	0.175	2.203	0.108	*31.949
5	Ability to adapt to changing positions	s	performing different skills from different positions in the shortest time	9.947	0.837	14.865	1.566	*17.022
6	Ability of motor balance	s	Jumping back on one foot for 4.5m	5.830	0.393	10.099	0.707	*32.453

**Tabular T value at freedom degree of 18 and significance level of 0.05 = 1.673      \* = significant**

Table 4 shows that there are statistically significant differences between the mean scores of the two discriminate and non-discriminate groups in the coordination of motor abilities tests, favoring the discriminate group, as the

calculated T value is higher than its tabular value at the significance level of 0.05. this demonstrates validity of the tests used and their ability to discriminate between different levels.

**Table (5)**  
**Reliability of coordination of motor abilities tests for junior free style wrestlers ( N 1 = N 2 = 10)**

No	Variables	Measurement unit	Name of Test	Discriminating group		Non-discriminating group		T-value
				mean	Standard deviation	mean	Standard deviation	
1	Ability of Reaction	S	falling on the foot	0.714	0.022	0.719	0.026	*0.916
2	Ability to make the suitable effort	Cm	throwing a 3 kgm medical ball 2 m backwards using both hands	11.8	0.789	12.2	1.229	*0.735
3	Ability to assess the position	Cm	situational wrestling from 2 m backwards	8.7	0.483	8.9	0.568	*0.757
4	Ability of motor Coupling	S	time of relating the motor chain	0.908	0.183	0.888	0.191	*0.888
5	Ability to adapt to changing positions	S	performing different skills from different positions in the shortest time	8.9	0.316	9.2	0.422	*0.759
6	Ability of motor balance	S	Jumping back on one foot for 4.5m	5.442	0.062	5.42	0.087	*0.863

**Tabular T value at freedom degree of 8 and significance level of 0.05 = .632      \* = significant**

Table (5) shows that there is a significant direct relationship between the first and second application of the coordination ability tests, as the values of calculated coefficient of correlation is higher than its tabular value at a significant level of 0.05, thus demonstrating reliability of tests.

#### The Basic Study:

The basic study was conducted in the period from Saturday 7/4/2012 to Monday 18/6/2012 on a sample of under 11-13 year-old junior free style wrestlers as follows:

- Daqahliya 7/4 – 18/4/2012.
- Damietta 20/4 – 25/4/2012.
- Kafr el-Sheikh 28/4 – 10/5/2012.
- Sharqiya 15/5 – 22/5/2012.
- Cairo 25/5 – 7/6/2012.
- Giza 9/6 – 18/6/2012

#### Statistical Treatments:

- Mean

- Median
- Range
- Standard deviation
- Coefficient of contortion
- Independent samples T test
- Pearson coefficient of correlation

#### Result Presentation and Discussion:

In the light of research procedures and results of applying the coordination of motor ability tests (ability of Reaction – ability to make the suitable effort – ability of direction – ability of motor Coupling – ability to adapt to changing positions – ability of motor balance) in the 11-13 year-old junior free style wrestlers, results of the research question are presented and discussed in the following part:

- Results of the research question: what are the standard levels of coordination of motor ability tests for the 11-13 year-old junior free style wrestlers.

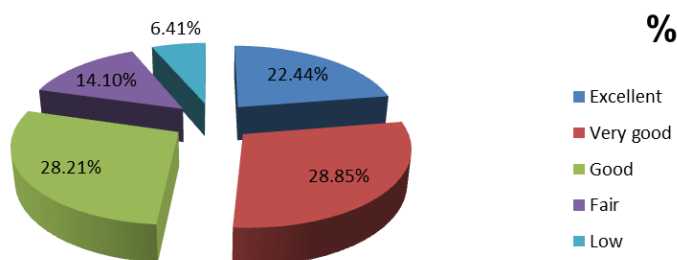
**Table (6)**  
**Mean, standard deviation, range and standard levels of the ability of Reaction**

Level	Mean	Deviation	Range	Lowest score	Highest score
	1.13	0.26	1.10	0.67	1.77
	Standard score	T score	Time in seconds	Number	%
Excellent	-1.77 to less than -0.92	32.3 to less than 40.8	0.67 to less than 0.89	35	%22.44
Very good	-0.92 to less than -0.08	40.8 to less than 49.2	0.89 to less than 1.11	45	%28.85
Good	-0.08 to less than 0.77	49.2 to less than 57.7	1.11 to less than 1.33	44	%28.21
Fair	0.77 to less than 1.62	57.7 to less than 66.2	1.33 to less than 1.55	22	%14.10
Low	1.62 to less than 2.64	66.2 to less than 74.6	1.55 to less than 1.77	10	%6.41
Total				156	100

Table (6) shows the standard levels and the corresponding raw scores of the ability of Reaction in 11-13 year-old junior free style wrestlers. Raw scores corresponding to the excellent level ranged from 0.67s to less than 0.89s. Number of juniors reaching the excellent level was 35 with a percentage of 22.44% of the total number of the sample. The very good level ranged from 0.89s to less than 1.11s. Number of juniors reaching the very good level was 45 with a percentage of 28.85% of the total number of the sample. The good level ranged from 1.11s to less than 1.33s. Number of juniors reaching the good level was 44 with a percentage of 28.21% of the total number of the sample. The fair level ranged from 1.33s to less than 1.55s. Number of juniors reaching the fair level was 22 with a percentage of 14.10% of the total number of the sample. The low level ranged from 1.55s to less than 1.77s. Number of juniors reaching the low level was 10 with a percentage of 6.41% of the total number of the sample. This means that based on

percentage of the sample in each level, the order of levels was as follows: very good – good – excellent – fair – low. This may be due to the similarity between the test and the technical performance of free style wrestling, which had an effect on the high level reached by the sample in the results of this test. It may also be due to the high skillful level of the juniors in this age span and the mutual effect between such a level and the coordination ability level, besides the characteristics of biological maturity of this age. Ossama Kamel Rateb & Amin Anwar El-Kholy (1994) and Ossama Kamel Rateb (1999) (3), (4) suggest that the age span 11-13 years is a stage of stability in the development in the nervous system and the person is very close to a ultimate maturity. This stability may favor juniors at this age in excelling in situation that required rapid reactions when achieving the motor activity of the skills, as is the case with the Reaction ability test studied in this paper.

**Form (1)**  
**levels of the ability of Reaction**



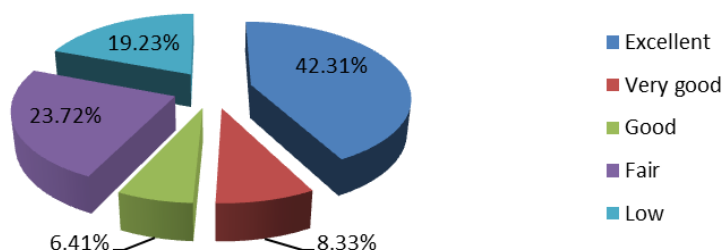
**Table (7)**  
**Mean, standard deviation, range and standard levels of the ability to make the suitable effort**

Level	Mean	Deviation	Range	Lowest score	Highest score
	40.34	23.75	69.00	11.00	80.00
	Standard score	T score	Distance (cm)	Number	%
Excellent	-1.23 to less than -0.65	37.6 to less than 43.5	11 to less than 24.8	66	%42.31
Very good	-0.65 to less than -0.07	43.5 to less than 49.3	24.8 to less than 38.6	13	%8.33
Good	-0.07 to less than 0.51	49.3 to less than 55.1	38.6 to less than 52.4	10	%6.41
Fair	0.51 to less than 1.09	55.1 to less than 60.9	52.4 to less than 66.2	37	%23.72
Low	1.09 to less than 1.67	60.9 to less than 66.7	66.2 to less than 80	30	%19.23
Total				156	100

Table (7) shows the standard levels and the corresponding raw scores of the ability to make the suitable effort in 11-13 year-old junior free style wrestlers. Raw scores corresponding to the excellent level ranged from 11cm to less than 24.8cm. Number of juniors reaching the excellent level was 66 with a percentage of 42.31% of the total number of the sample. The very good level ranged from 24.8cm to less than 38.6cm. Number of juniors reaching the very good level was 13 with a percentage of 8.33% of the total number of the sample. The good level ranged from 38.6cm to less than 52.4cm. Number of juniors reaching the good level was 10 with a percentage of 6.41% of the total number of the sample. The fair level ranged from 52.4cm to

less than 66.2cm. Number of juniors reaching the fair level was 37 with a percentage of 23.72% of the total number of the sample. The low level ranged from 66.2cm to less than 80cm. Number of juniors reaching the low level was 30 with a percentage of 19.23% of the total number of the sample. This means that based on percentage of the sample in each level, the order of levels was as follows: excellent – fair – low – very good – good. This may be due to the high technical level of free style wrestlers (research sample). This increased coordination of the strength used to achieve the desired results when performing the test. This conforms with the definition of ability by Juhans Rea Engborg Rieter (1988) (16) as the ability to make the suitable effort.

**Form (2)**  
**levels of the ability of make the suitable effort**



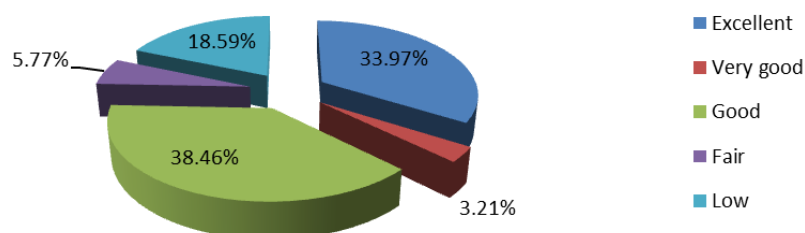
**Table (8)**  
**Mean, standard deviation, range and standard levels of the ability to assess the position**

Level	Mean	Deviation	Range	Lowest score	Highest score
	21.62	9.03	31.00	8.00	39.00
	Standard score	T score	Distance (cm)	Number	%
Excellent	-1.51 to less than -0.82	34.9 to less than 41.8	8 to less than 14.2	53	%33.97
Very good	-0.82 to less than -0.14	41.8 to less than 48.6	14.2 to less than 20.4	5	%3.21
Good	-0.14 to less than 0.55	48.6 to less than 55.5	20.4 to less than 26.6	60	%38.46
Fair	0.55 to less than 1.24	55.5 to less than 62.4	26.6 to less than 32.8	9	%5.77
Low	1.24 to less than 1.93	62.4 to less than 69.2	32.8 to less than 39	29	%18.59
Total				156	100

Table (8) shows the standard levels and the corresponding raw scores of the ability to make the suitable effort in 11-13 year-old junior free style wrestlers. Raw scores corresponding to the excellent level ranged from 8cm to less than 14.2cm. Number of juniors reaching the excellent level was 53 with a percentage of 33.97% of the total number of the sample. The very good level ranged from 14.2cm to less than 20.4cm. Number of juniors reaching the very good level was 5 with a percentage of 3.21% of the total number of the sample. The good level ranged from 20.4cm to less than 26.6cm. Number of juniors reaching the good level was 60 with a percentage of 38.46% of the total number of the sample. The fair level ranged from 26.6cm to less than 32.8cm. Number of juniors reaching the fair level was 9

with a percentage of 5.77% of the total number of the sample. The low level ranged from 32.8cm to less than 39cm. Number of juniors reaching the low level was 29 with a percentage of 18.59% of the total number of the sample. This means that based on percentage of the sample in each level, the order of levels was as follows: good – excellent – low – fair – very good. This may be due to the fact that the international law of wrestling counts one point against the player who moves out of the area specified for the combat. This is why coaches train players not to go beyond the wrestling mat. It was because of this that more than 72% of the sample subjects fall only within the good and excellent levels.

**Form (3)**  
**levels of the ability of assess the position**



**Table (9)**  
**Mean, standard deviation, range and standard levels of the ability of motor Coupling**

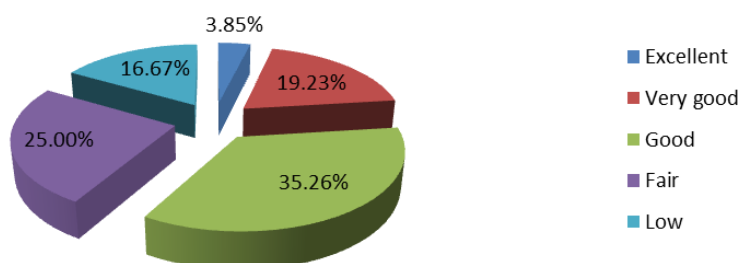
Level	Mean	Deviation	Range	Lowest score	Highest score
	1.66	0.40	1.92	0.59	2.51
	Standard score	T score	Time (seconds)	Number	%
Excellent	-2.68 to less than -1.72	23.3 to less than 32.9	0.59 to less than 0.97	6	%3.85
Very good	-1.72 to less than -0.76	32.9 to less than 42.5	0.97 to less than 1.36	30	%19.23
Good	-0.76 to less than 0.21	42.5 to less than 52.1	1.36 to less than 1.74	55	%35.26
Fair	0.21 to less than 1.17	52.1 to less than 61.7	1.74 to less than 2.13	39	%25.00
Low	1.17 to less than 2.13	61.7 to less than 71.3	2.13 to less than 2.51	26	%16.67
Total				156	100



Table (9) shows the standard levels and the corresponding raw scores of the ability to make the suitable effort in 11-13 year-old junior free style wrestlers. Raw scores corresponding to the excellent level ranged from 0.59s to less than 0.97s. Number of juniors reaching the excellent level was 6 with a percentage of 3.85% of the total number of the sample. The very good level ranged from 0.97s to less than 1.36s. Number of juniors reaching the very good level was 30 with a percentage of 19.23% of the total number of the sample. The good level ranged from 1.36s to less than 1.74s. Number of juniors reaching the good level was 55 with a percentage of 35.26% of the total number of the sample. The fair level ranged from 1.74s to less than 2.13s. Number of juniors reaching the fair level was 39 with a

percentage of 25% of the total number of the sample. The low level ranged from 2.13s to less than 2.51s. Number of juniors reaching the low level was 26 with a percentage of 16.67% of the total number of the sample. This means that based on percentage of the sample in each level, the order of levels was as follows: good – fair – very good – low – excellent. The relatively low percentage in the level of the sample subjects in this coordination ability may be due to the fact that many wrestling coaches neglect training on the combined skills, as indicated by El-Sayed El-Mohamady Kandil (5) though Dick and Frank emphasized that the ability of motor Coupling help stabilize the motor tracks of skills through nervous passages thus leading to smooth and rapid combined skillful performance. (19)

**Form (4)**  
**levels of the ability of motor Coupling**



**Table (10)**  
**Mean, standard deviation, range and standard levels of the ability to adapt to changing positions**

Ability to adapt to changing positions					
Level	Mean	Deviation	Range	Lowest score	Highest score
	12.07	2.00	9.31	9.01	18.32
	Standard score	T score	Time (seconds)	Number	%
Excellent	-1.54 to less than -0.63	34.7 to less than 43.7	9.01 to less than 10.8	26	%16.67
Very good	-0.63 to less than 0.27	43.7 to less than 52.7	10.8 to less than 12.6	80	%51.28
Good	0.27 to less than 1.17	52.7 to less than 61.7	12.6 to less than 14.4	31	%19.87
Fair	1.17 to less than 2.07	61.7 to less than 70.7	14.4 to less than 16.2	12	%7.69
Low	2.07 to less than 2.96	70.7 to less than 79.7	16.2 to less than 18.32	7	%4.49
Total				156	100

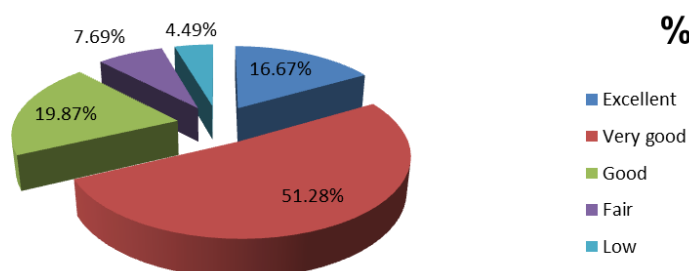
Table (10) shows the standard levels and the corresponding raw scores of the ability to make the suitable effort in 11-13 year-old junior free style wrestlers. Raw scores corresponding to the excellent level ranged from 9.01s to less than 10.8s. Number of juniors reaching the excellent level was 26 with a percentage of 16.67% of the total number of the sample. The very good level ranged from 10.8s to less than 12.6s. Number of juniors reaching the very good level was 80 with a percentage of 51.28% of the total number of the sample. The good level ranged from 12.6s to less than 14.4s. Number of juniors reaching the good level was 31 with a percentage of 19.87% of the total number of the sample. The fair level ranged from 14.4s to less than

16.2s. Number of juniors reaching the fair level was 12 with a percentage of 7.69% of the total number of the sample. The low level ranged from 16.2s to less than 18.32s. Number of juniors reaching the low level was 7 with a percentage of 4.49% of the total number of the sample. This means that based on percentage of the sample in each level, the order of levels was as follows: very good – good – excellent – fair – low. The high level of the majority of research sample in this test may be due to the nature of free style wrestling which is practiced in complicated dynamic situations where the wrestler uses different levels of the body in the combat such as the high, coma, the middle and the deep levels when falling on the feet as indicated by

Mossad Aly Mahmoud (2005) (15). This also conforms with results reached by Gierczuk, D. & Ljach W. (2012) who

stressed that wrestlers had the ability to adapt to changing positions. (21)

**Form (5)**  
**levels of the ability of adapt to changing positions**



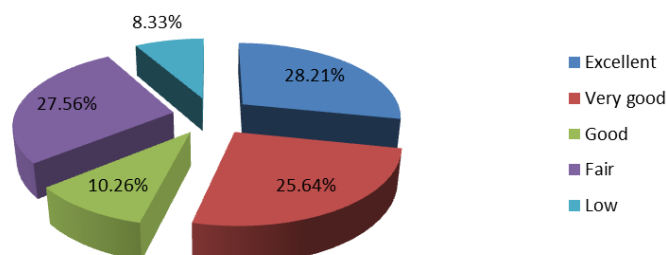
**Table (11)**  
**Mean, standard deviation, range and standard levels of the ability of motor balance**

Level	Mean	Deviation	Range	Lowest score	Highest score
	7.94	1.72	6.38	5.33	11.71
	Standard score	T score	Time (seconds)	Number	%
Excellent	-1.52 to less than -0.78	34.8 to less than 42.2	5.33 to less than 6.61	44	%28.21
Very good	-0.78 to less than -0.04	42.2 to less than 49.7	6.61 to less than 7.88	40	%25.64
Good	-0.04 to less than 0.71	49.7 to less than 57.1	7.88 to less than 9.16	16	%10.26
Fair	0.71 to less than 1.45	57.1 to less than 64.5	9.16 to less than 10.43	43	%27.56
Low	1.45 to less than 2.19	64.5 to less than 71.9	10.43 to less than 11.71	13	%8.33
Total				156	100

Table (11) shows the standard levels and the corresponding raw scores of the ability to make the suitable effort in 11-13 year-old junior free style wrestlers. Raw scores corresponding to the excellent level ranged from 5.33s to less than 6.61s. Number of juniors reaching the excellent level was 44 with a percentage of 28.21% of the total number of the sample. The very good level ranged from 6.61s to less than 7.88s. Number of juniors reaching the very good level was 40 with a percentage of 25.64% of the total number of the sample. The good level ranged from 7.88s to less than 9.16s. Number of juniors reaching the good level was 16 with a percentage of 10.26% of the total number of the sample. The fair level ranged from 9.16s to less than 10.43s. Number of juniors reaching the fair level was 43 with a percentage of 27.56% of the total number of the

sample. The low level ranged from 10.43s to less than 11.71s. Number of juniors reaching the low level was 13 with a percentage of 8.33% of the total number of the sample. This means that based on percentage of the sample in each level, the order of levels was as follows: excellent – fair – very good – good – low. This conforms with the study by Gierczuk, D. (2008) who suggested that free style wrestlers had the ability of motor balance (20). This also conforms with results reached by Mossad Aly Mahmoud (2005) who said that wrestling of both types contribute to developing balance whether static or dynamic which results from the wrestlers' care to keep a suitable supporting base between his feet so as not to lose balance in the face of the pressures practiced by the opponent's force. (15)

**Form (6)**  
**levels of the ability of motor balance**



Values of raw scores and the corresponding standard levels in testing each coordination ability show the variety in juniors' levels compared to peers. This helps us reach some positive results which we can use in evaluating performance objectively and guide the training of juniors in this age span. It also conforms with results reached by Muhammad Sobhy Hassanein (2004) (12) who said that raw scores deduced from applying the tests will have no significance unless referred to a standard that will give a meaning to these scores. This will help us identify the situation of each subject compared to the whole group, and whether he is above average, average or below average and how far he is from the average of the whole group and his position compared to peers of the standardization sample subjects. This gives the answer to the research question.

### Conclusions:

Based on result of the research and in the light of research objective and question and procedures in study sample, the following conclusions were reached:

- The Specific coordination of motor abilities of the junior free wrestler are the ability of motor Coupling – the ability to assess position – the ability to make the suitable effort – the ability to adapt to changing positions – the ability of Reaction– the ability of motor balance;
- An objective test battery was designed to measure the coordination of motor abilities studied, and was applied to a sample of 11-13 year-old juniors;
- The standard levels of coordination of motor abilities were identified (the ability of motor Coupling – the ability to assess position – the ability to make the suitable effort – the ability to adapt to changing positions – the ability of Reaction– the ability of motor balance) for 11-13 year-old junior free wrestlers;
- Values of raw scores and the corresponding standard levels in testing each coordination of motor ability show the variety in juniors' levels compared to peers. This helps us reach some positive results which we can use in evaluating performance objectively and guide the training of juniors in this age span.

### Recommendations:

As far as the research sample and conclusions reached are concerned, the author made the following recommendations:

- The coordination of motor ability tests studied (the ability of motor Coupling – the ability to assess position – the ability to make the suitable effort – the ability to adapt to changing positions – the ability of Reaction– the ability of motor balance) should be used in evaluating and classifying the level of junior free wrestlers;

- The coordination of motor abilities should be used as a guide in training junior free style and Greco-Roman wrestling juniors and upgrading their skillful levels;
- Conducting further research to identify the special coordination of motor abilities and their development in individual and team sport activities;
- Conducting further research to deduce standard levels for the coordination of motor abilities of juniors in different age stages in the two types of wrestling and also in the rest of individual and team activities;
- Guided training programs should be designed to upgrade the level of coordination of motor abilities and skillful and tactical performance in free style and Greco-Roman wrestling in young age stage.

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