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Study the ability of balance, length and mass of college students

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Abstract:
The aim of the study was to identify the ability of balance, height, mass and level of differences for students of the College of Physical Education and Sports Sciences University of Baghdad and for all four stages. The importance of research in an analytical study is to know the level of this trait they have and at various stages is an evaluation study of this trait, and fit the view of researchers to be a project of evaluative studies based on the development of programs that help to develop this trait, the study included a sample of (201) students, after the exclusion of the retirees as well as athletes and players in clubs, the researchers used Mass measuring tool of the body containing a ruler for measuring height, in addition to the challenge-Disc (level 5), and used the statistical bag (SPSS) to extract results as the following: (Mean), (Std),(ANOVA), (L.S.D) showed the highest stability was for the fourth stage, the third stage, the first stage, and finally the second stage. They concluded that the advanced academic stages affect the student's acquisition of this ability and this may include the rest of the abilities. The results of the overall static balance of all stages showed a preference over dynamic balance, indicating that the dynamic balance is more difficult in its performance than the static balance.

Keywords: *Dynamic. Static. Stability. Power.*

Introduction:

In the current sports science we find the spotlight by the researchers on movement abilities in general because it is important between the two qualities mixed with abilities and the mental side has great importance in them, and this affects the result directly and indirectly in improving the level of performance in all games, on the students of colleges of physical education, that balance is one of the important capabilities in this aspect and it is the basis of human qualities and without it the movement is difficult and almost impossible, as well as it is a key to the beauty and agility of the movement because the balance includes fixed and moving cases.

For many years, research has focused on issues related to balance tests specifically for sport, constant and dynamic nerve tests and balance tests have been used, and the different approaches have provided us with experience in balancing the performance of sports. This has also contributed to a better understanding of the physiological mechanisms of post-workout balance and served as a basis for designing balancing specific aims training programs[1]. For researchers this ability is the top of the kinetic pyramid and when an individual has it, he or she will have other abilities such as compatibility, agility and responsiveness ... etc., efficiently. Some literary evidence suggests that the excellent balance between experienced athletes is the result of repeated training experiences that affect movement responses[2].

The balance is believed by some researchers to be responsible for the proper implementation of complex sports movements as well as protection against injuries. Knee and ankle injuries have been found to be common in athletes today, and are most common in jumping like volleyball, football and basketball[3]. Non-contact mechanisms such as landing from the jump often result in ligament or joint injuries that may be due to a power failure or poor balance capacity[4].

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The inability or weakness of the force may not be due to weak training only, but may extend to periods that precede the stages of training during the emergence of the individual stages of childhood and the stages that come after that and the more practical experiments on balance movements at an early age, the better this characteristic will evolve in the coming stages. Researchers suggest that changes in both sensory and motor systems affect balance performance. These changes appear to be more effective if they are generated in children, within appropriate age groups, by specific training. Periodic assessment and monitoring of the static and dynamic balance of young people can be an important tool for correctly identifying and changing training programs, taking into account the sport they exercise, the average of improvement in balance over time, and the age of the athlete. This would allow in every period of evolution the athletic body created Compatibility and improve a wide range of basic movement abilities[5].

The importance of research in the analytical study of students of the College of Physical Education\University of Baghdad is to determine the level of this status for different stages is an evaluation study of this attribute, and fit the opinion of researchers to be a project for evaluative studies on the basis of which programs are developed to help develop this characteristic, the researcher explained that the problem is posed in several questions. Is this status having an effect on students? Does the school stage put differences between the students to the ratio of the existence of this trait? In addition to the lack of such studies at the level of college and students, most of them are looking at the relationship of balance with a certain ability or game and at fairly high levels, compared to the level of students.

The study aimed to identify the ability of balance, height, mass and level of differences for students of the College of Physical Education and Sports Science\University of Baghdad and at all stages.

Materials and Methods:

The study population included a sample of students from the College of Physical Education / University of Baghdad (2018-2019), and for the four stages of (201) students (males), after the exclusion of repeaters and players in clubs in various games. The researchers used a to measure the mass of the body contains a ruler to measure height, as well as the Challenge-Disc device (Level 5).

Balance test (Challenge Disk):

It is a device in the form of a disc that the player stands above and works to maintain his balance according to the requirements that appear in front of him on the computer screen. These requirements are circles that give different movements and different directions the tester works to maintain his balance within the center of these circles.

The researchers started the experiment on Sunday (4/11/2018), and the experiment ended on Thursday (6/12/2018), and used the statistical bag (SPSS) to extract the results of the research as the following: (Mean), (Std),), (ANOVA), (L.S.D).

Results:

Table (1) Descriptives The sample in (Mean) and (Std) for the search variables

S	Variables	Measuring Unit	Group	N	Mean	Std
1	Balance	Degree	Stage.1	50	509.68	58.93
			Stage.2	50	437.68	55.23
			Stage.3	50	521.32	60.37
			Stage.4	51	541.32	45.31
			Total	201	502.69	67.38
2	Static	%	Stage.1	50	0.69	0.20
			Stage.2	50	0.76	0.18
			Stage.3	50	0.85	0.08
			Stage.4	51	0.76	0.13
			Total	201	0.76	0.16
3	Dynamic	%	Stage.1	50	0.39	0.10
			Stage.2	50	0.29	0.05
			Stage.3	50	0.47	0.08
			Stage.4	51	0.49	0.08
			Total	201	0.41	0.11
4	Mass	Kg	Stage.1	50	70.30	7.89
			Stage.2	50	66.49	10.13

			Stage.3	50	68.58	10.52
			Stage.4	51	68.42	9.52
			Total	201	68.45	9.59
5	Height	Cm	Stage.1	50	170.93	6.01
			Stage.2	50	175.73	5.83
			Stage.3	50	173.08	7.34
			Stage.4	51	169.94	6.60
			Total	201	172.41	6.80

Table (1) shows that the highest level of balance is for the fourth stage, then the third stage and then the first stage and finally the second stage.

In the static balance the third stage was the highest then the equivalent of the fourth and second stages and finally the first stage.

In the moving balance, the highest was the fourth stage, then the third stage, the first stage, and finally the second stage.

In the measurement of mass the first stage was the largest and then the third stage and then the fourth stage and finally the second stage.

In the measurement of height was the highest average for the second stage and then the third stage and then the first stage and finally the fourth stage.

It is also noted that the mean static balance is greater than the moving balance level of the whole research sample.

Table (2) (ANOVA) Search variables between totals

S	Variables	Group	Sum of Squares	Df	Mean Square	F	Sig.
1	Balance	Between Groups	307191.47	3	102397.16	33.57	.000
		Within Groups	600853.76	197	3050.02		
		Total	908045.24	200			
2	Static	Between Groups	0.67	3	0.22	9.29	.000
		Within Groups	4.73	197	0.02		
		Total	5.40	200			
3	Dynamic	Between Groups	1.22	3	0.41	64.68	.000
		Within Groups	1.24	197	0.01		
		Total	2.46	200			
4	Mass	Between Groups	363.43	3	121.14	1.32	.268
		Within Groups	18033.83	197	91.54		
		Total	18397.26	200			
5	Height	Between Groups	993.99	3	331.33	7.91	.000
		Within Groups	8249.62	197	41.88		
		Total	9243.61	200			

Table (2) shows that there are significant differences between the stages in all research variables except the mass and that the highest differences by the value of (F) were in the moving balance variable and then the total balance and then the static balance and finally the height.

Table (3) (L.S.D) (Multiple Comparisons) between the stages in the research variables.

S	Dependent Variable	Group	Mean Difference	Std. Error	Sig.

1	Balance	Stage.1	Stage.2	71.99*	11.05	.000
			Stage.3	-11.64	11.05	.293
			Stage.4	-31.64*	10.99	.004
		Stage.2	Stage.3	-83.63*	11.05	.000
			Stage.4	-103.64*	10.99	.000
		Stage.3	Stage.4	-20.00	10.99	.070
2	Static	Stage.1	Stage.2	-.07*	0.03	.033
			Stage.3	-.16*	0.03	.000
			Stage.4	-.06*	0.03	.040
		Stage.2	Stage.3	-1.00*	0.03	.002
			Stage.4	.002	0.03	.935
		Stage.3	Stage.4	1.00*	0.03	.002
3	Dynamic	Stage.1	Stage.2	.10*	0.02	.000
			Stage.3	-.08*	0.02	.000
			Stage.4	-.09*	0.02	.000
		Stage.2	Stage.3	-.18*	0.02	.000
			Stage.4	-20.00*	0.02	.000
		Stage.3	Stage.4	-.01	0.02	.395
4	Mass	Stage.1	Stage.2	3.81*	1.91	.048
			Stage.3	1.72	1.91	.371
			Stage.4	1.88	1.90	.326
		Stage.2	Stage.3	-2.09	1.91	.276
			Stage.4	-1.93	1.90	.312
		Stage.3	Stage.4	.16	1.90	.933
5	Height	Stage.1	Stage.2	-4.80*	1.29	.000
			Stage.3	-2.15	1.29	.098
			Stage.4	.98	1.29	.446
		Stage.2	Stage.3	2.65*	1.29	.042
			Stage.4	5.79*	1.29	.000
		Stage.3	Stage.4	3.14*	1.29	.016

- **The mean difference is significant at the (0.05) level.**

DISCUSSION:

Proper control of the balance in the achievement of motor skills depends mainly on muscular cooperation that reduces deviation in the center of gravity and this forms the basis for the correct implementation in complex technical movements as well as to reduce the risk of injury[6].

The dynamic balance is developed through the continuous practice of motor dynamic exercises because sensory motor receptors develop through this, this may give an indication of the results that showed that the preference was for the fourth and third stages. However, in these results, the second stage was the lowest in the level of dynamic balance while the first stage was better. The researchers believe that there is another reason for this that is the nature of the practical lectures taken by the student, and may lead us to the conclusion that the nature of practical lessons in the first stage develop the dynamic balance more than the practical lessons in the second stage. Sports' training enhances the ability to use somatosensory and neurological information, which improves posture abilities and changes in posture according to the exercise practiced[7].

Therefore, according to the curricula developed for the college students, there is a clear effect on the degree of balance between the academic stages, and The researchers believe that when there are practical lessons that require the

ability to balance more than others in the other practical lessons affect the level of student's balance ability, for example when we compare the track and field course, which includes the curriculum of teaching and training running distances (100) m, (200) m, (400) m, and (800) m, in a full academic year, the balance requirements for such events are less than the requirements balancing in the lessons of the gymnastic and the duel of another stage, and this affects in one way or another on the student's balance ability. There is certainly a sport in which the stability requirements are greater than the effectiveness of others. It is possible to develop this ability in a particular game by adding different game exercises with greater stability requirements.

Showed how dance can stimulate a strong improvement in the performance of a static balance on 9-year-old footballers during a six-month training period, as it is particularly important in developing this ability more than the football sport[8].

It is very important to observe these curricula and their contents of special exercises to develop balance and note the variety in which they are extremely important in the level of performance for practical lessons and even for public life because of their advantages that earned youth strength and agility and the ability to avoid injuries and create a state of students outstanding in their motor abilities.

Balance is related to a set of physical factors such as physiological, physical and strength, and this certainly has an impact on the level of the third and fourth stage, where successive years have earned them some kind of abilities better than the previous ones. Balance performance is a response to the entire body and depends on many basic factors such as physiological factors, including sensitization, vision, vestibular function, reaction time, coordination, and strength[9].

The stages in the colleges of physical education are not limited to academic theoretical information only, though we seek to acquire this information at a high level. At the same time, there are practical lessons and we want the student to acquire a good level of performance and must understand the method of development and other aspects. Future studies have shown that the addition of a balance training component to physical education students' materials leads to improvements in vertical jumping, agility, skiing, etc. In addition, the balance leads to an increase in the average of strength development[10]. We all know the importance of strength to the performance of students and it comes through the development of muscle ability, reactions and responses, as well as strengthen the joints responsible for movement and all this is done if the balance ability is taken care of and developed.

The ability of balance for college students does not stop its importance Including mentioned, its development will give positive results in improving the performance of various activities, which include movements requiring strength and agility such as gymnastics, and other activities that include the success of the accuracy of performance such as volleyball, basketball, handball and football, improving the accuracy of performance improves the performance of students and this is what we seek in such colleges. It has been found that the ability to balance is closely related to a number of performance measures in many sports[11]. In addition, we observed that there were differences in the static and dynamic balance, which was clear in most of the results of the first stage for the static balance, while for the dynamic balance, it is indicated that the preference is for the fourth stage, and the dynamic balance seems to be more effective on the result of the total balance than the static balance, but both remain dependent on the specificity of sport in practice and its results are affected by it, there are games that affect dynamic balance and others affect static balance. In many sports, a static or dynamic balance is a determinant of performance that may not only affect the outcome, but also increase the risk of injury[1].

Some studies have added that the development of dynamic balance ability improves the speed level of sports activities, including speed of movement and reactions in open games such as fencing, boxing, wrestling or ball games of all kinds, or speed as physical ability as in the track and field activities. The dynamic balance of young ice hockey players has been shown to have an important relationship with the maximum speed of skiing[12].

The reasons for the existence of a level of balance in the third and fourth stages may be due to the fact that the time period for them and their training in different games by a greater proportion than the second and first stages led to the development of different capacities that are related to the level of balance ability. The superior performance of athletes may be the result of repeated experience that affects motor reactions and the athlete's ability to pay attention to relevant visual and proactive signals, as well as the training experience may also improve compatibility, strength and range of motion that may enhance the ability of balance[13].

The results of the tables showed that the level of static balance is better than the dynamic balance, which indicates that there is a better quality than the other, but additionally, the requirements of the static balance are easier than the dynamic balance. The static balance is the ability to maintain the body's stability with minimal movement, while the

dynamic balance is the ability to perform the movement while maintaining or restoring the stable state, or the ability to maintain or restore the balance of the body on an unstable surface[14].

Because in the case of static balance it is possible to control the variables that affect it, but the dynamic balance difficult to change the position of the body constantly according to the requirements of the movement. Dynamic balance is more difficult because it requires the ability to maintain balance during the transition from a dynamic state to a static state, this requires an effective integration of visual susceptibility, vestibular input, and initial response to produce an effective response to control the body within the balance base[15].

The balance includes a complex network of neural connections and central and peripheral feedback mechanisms[16]. The balance consists motor, vestibular and visual information, in order to achieve balance, vestibular systems and sensitivity must be a conscious integration of data[17]. The researchers argue that the dynamic balance needs more feedback mechanisms than the static balance in addition to the data received. These are reasons that the dynamic balance is more difficult than the static balance, the more information received and required to be processed, which is imposed on the dynamic balance due to the multiplicity of stimuli is larger than the received information. In order to maintain static balance it needs less processors.

And by observing the results of the height in which the fourth stage recorded the smallest average, which recorded the best results in balance and this gives a constant fact in balance that the highest is the best balance for this type of test because the rule of impact will be better suited to the higher body mass center than the longest.

CONCLUSION:

The fourth and third stages were the best in the results of the balance of the first and second stages, as well as static and dynamic balance, and this may mean that the advanced stages in the colleges of physical education affect the student's acquisition of this ability and it may include the rest of the abilities, in general all stages recorded a preference for dynamic balance, indicating that the dynamic balance is more difficult in its performance than the static balance. It also shows that the height was one of the factors that helped in the superiority of the fourth stage in this ability, which recorded the lowest average in that, except that there is one different result and it is the average height in the third stage is greater than the first stage, but nevertheless the results of balance is better in the third stage, this may be affected as we mentioned above that the advanced academic levels show an advantage in that, training in advanced stages gives an improvement to the ability better than the physical characteristics of the balance.

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