

**The effectiveness of the use of ballistic exercises in
Develop explosive power and some mechanical
properties To the stage to get rid of Throwing the disk
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Introduction and research problem:

Heading of scientific research to solve the problems associated with the performance of the motor, in an attempt to develop a scientific solutions to those problems in order to reach superior performance, using scientific methods which contribute to the analysis of the sports movement and developed in light of the preparations and the capabilities of the athletes in general.

The sport of athletics sports that translates and objective manner to reflect the progress of the sport as characterized by objectively assessing human achievement in the form of digital levels from the times of the contests running, walking distances and to jump in competitions and throwing points in the vehicle competitions. (56:26)

Extrusion disk contest is one of the track and field competitions which require special preparations physical abilities because they rely on muscle

power significantly, and this forces the player to use every latent powers he has to keep on kinetic path to the center of the weight of the body, and the creation of muscles working to constrict and produce a maximum power of explosive instantaneous arm Bowler on the same motor track to fling to achieve the best digital accomplish tool. (26: 365 366)

Refers Mustafa Abdel Baki (2005) Training ballistic new method of training methods can coach through an effective training program for the development of the explosive power of design, because the nature of the performance of these exercises are characterized as lead explosively, through lifting weights light and at high speeds. (12:15)

And consistent both Edmond, r, burk (2001), bruno pauletto (1994) that the ballistic training leads to increased speed when using light weights, because it includes at training him to

expedite heaviness or body explosive way to a top speed suit the nature of performance as it incorporates exercises (Explosive Squat Jump) and push the platform (Press Bench), in addition to training medical ball.

"Kerry, P. Mcevoy & Rebert Newton (1998) also indicates that training ballistic used to overcome the lack of speed generated from traditional training, in addition to muscle force development, interview and installed, it also describes the movements, which is characterized by increasing speed to maximum over the extrusion tool or gravity in a vacuum, and includes ballistic training exercises (weight lifting lightweight and high speeds - Core Medical - jacket weights - Jeter weights), and where the ballistic training ways there is no shortage or reduction in speed, so it maintains compatibility Special to most of the games. (28: 4)

To illustrate the difference between the exercise of conventional power and strength ballistic indicates "Flanagan S. Baker" (2001) to drill the traditional strengths (non-ballistic) does not reach

the player to the explosive power only after the complete passage of a second from the start of repetition, on the contrary, the training ballistic imposed on the player access to the explosive power faster in the range of 0.2 w or less the same time, a speed of up to throwing arm in contests that rely on throwing and let the tool. (24: 11).

It is noteworthy sedek Tulane (1980) that the explosive power is the adjective most obvious when sports high levels, and that most of the sports activities based on the explosive power of more than dependence on other forms of power, as they pose with other physical attributes trait most important in sports competitions. (16: 3).

"Mohammed Brikaa, khierea elsokary" 2004 and adds that biomechanics can contribute to the improvement of training by identifying physical and skill requirements required for the performance of a particular sport and to identify technical training in many ways conducted a biomechanical analysis of performance allows select drills and exercises that are similar to a large extent with

the kind of performance Technical practitioner of the sport concerned the more it grew similarities between exercise and skill concerned characterized this exercise in the privacy of performance. (2: 8)

Extrusion disk contest is one of the track and field competitions which require special preparations physical abilities because they rely on muscle power significantly, and this forces the player to use every latent powers he has to keep on kinetic path to the center of the weight of the body, and the creation of muscles working to constrict and produce a maximum power of explosive instantaneous arm Bowler on the same motor track to fling to achieve the best digital accomplish tool. (26: 365)

The problem Search As noted by the researcher through his work and brief him on many of the previous studies and the follow-up records and supervision on specialty athletics high school sports in Zagazig, it was noticed that there was no progress in the digital level with technical excellence in throwing the disc competition, although they

exercise training on an ongoing basis under the supervision of their coaches at the school, so there are limitations as in their own training programs, which are applied in the training field competitions and the track, which represents a problem requiring search and study to identify the reasons for the low this level has been attributed by the researcher to several reasons, including the weakness of the explosive and mechanical variables force where The skill of throwing the disc subject to the law of projectiles in the sense that there are key factors that determine the projectile movement (drive) in the air, a departure angle, high starting point, the starting dynamic ballistics in air speed and if we look at I and II find them represent steady-state can be controlled, while the starting amount of acting force to fling disk speed reflects the moment of ejaculation and the most important factors, but the traditional methods of power development does not provide for the muscles of the arm speed Bowler appropriate contraction for this type of movements.

So the researcher believes that the importance of this research to take shape in an attempt to study the "effectiveness of the use of ballistic exercises to develop explosive power and some of the mechanical properties of the stage to get rid of throwing the disc."

**1/3 objectives of the research:
The research aims to try to identify:**

1) the effectiveness of the use of ballistic exercises on explosive power and digital level in a sample search tossed disk.

2) the effectiveness of the use of ballistic exercises on some mechanical properties of the phase I research sample disposed in throwing the disk.

1/4 hypotheses:

1) The use of ballistic exercises a positive impact in the explosive power of digital level in a sample search throwing the disk.

2) affect the use of ballistic exercises on some mechanical properties of the phase I research sample disposed in throwing the disk.

1/5 terminology used:

1. Ballistic Training:

Ballistic exercises dealing with muscle's ability to

Maximum Power accelerating contraction of muscle fibers to the maximum speed in conjunction with the speed of the actual tossing of objects in a vacuum and support this type of training on freedom from gravity, according to the nature of each performance. (24: 5)

2. explosive power: both "Abdul Aziz Elnemr ", "Nariman al-Khatib," agreed (1996), "Mohammad Hassan Allawi" (1992) definition of explosive power as the ability to complete the maximum force in the shortest time. (5: 68), (99: 9)

- Research procedures:

Research Methodology: The researcher used the experimental design of measurement (tribal - post test) for a trial period of one as it suits the nature of the study.

The research sample: was selected sample purposively kidney research community, which numbered (17) Student majoring first athletics high school secondary school sports in Zagazig for the academic year 2013/2014 were selected, including sample tested and the number (10) students with high digital level extrusion disk contest in addition to 5 other students to experience the

exploratory were excluded (2) student would not attend, and the following tables (1), (2) describes the characterization

of the homogeneity of the sample in the growth and variables physical and digital level under variables.

Table (1)

The research sample characterization of the research community

The research sample	Excluded		The research sample exploratory		Basic research sample		The research sample college	
	the number	The ratio%	the number	The ratio%	the number	The ratio%	the number	The ratio%
research community	2	11.77	5	29.41	10	58.82	17	100

In evident from Table 1 that the research community (17) demanded 100%, exploratory research sample

(5) students increased by 29.41%, experimental research sample (10) students increased by 58.82% .

Table (2)

the total sample homogeneity in growth and variables physical and digital level variables in question n = (15)

Statistical processors Variables	measruing unit	SMA	standard deviation	Mediator	Sprains	
Growth variables	Age	Year	15.03	0,55	15	0.14
	Length	cm	171.07	2.94	172	- 0.95
	the weight	Kg	63.87	3.20	64	- 0.12
Physical variables	Grip strength	Kg	34.60	2.06	35	- 0.58
	Leg strength	Kg	145.33	8.06	146	- 0.25
	Strength of the back muscles	Kg	148.60	8.30	146	0.94
	Medical football pay-handed 3 kg of sitting	meter	6.83	0.37	6.90	- 0.54
Level digital tablet	meter	29.10	0.83	29	0.36	

Is evident from Table (2) that all sprains transaction values for the sample overall ranged from (- 0.95: 0.94) in growth parameters (height - weight - age) and variables physical level digital. These values are confined between (-3, +3), which refers to the homogeneity of the sample and the results representative of the community members represented modestly .

Data collection tools:

First: - devices and instruments used to measure the research variables:

- Rstamer device for measuring height / cm. Attachment (1) - the balance of medical standards for measuring weight / kg. Attachment (2) - Dynamometers device to measure leg strength. - Measure the length of 20 meters bar. - Digital clock stop .- Dambalz medical number is enough - Aljeter balls, which is a (cloth bags filled with sand) different weights - Medical balls of different weights (2: 6) kg - Vests weights of different weights - Baoisan different discs (1,1.5,2) kg - gravely missed with a handle weight ranges from 5:10 kg - multi

special units training ballistic device weights Smith Barbell .

Second: - Equipment & Instruments kinetic analysis: for measuring mechanical variables subject of research researcher used the Motion track program to analyze the shot put competition mechanically video mode consists unit kinetic analysis of: - cones to determine after the cameras. - Combination of signs, adhesive - 2 high-speed video camera 250 cadre / s-type Imaging Fastec Facility (7) - 2 video camera with a frequency of 60 cadre / s - Two (2) videotapes VHS - kinetic analysis program Motion track - device PC - scale draw a box dimensions of 1 m × 1 m - two (2) a tripod. - Water to adjust the balance of poise cameras.

Third: - physical tests used in the search:

The researcher access to a range of specialist in test and measurement references to find better tests to measure the maximum muscle power was reached following: - payment of medical ball weighing 3 kg test the hands of sitting (m) facility (3) - to measure leg strength Dynamometers Test (kg (supplied) 4) - test the

strength of the back muscles with a Dynamometers (kg) Attachment (5) - the power of your fist Palmanyumatr (kg) facility (6).

Exploratory study: the researcher conducted the survey during the period from Thursday 02/06/2014 until Wednesday 02.12.2014 and on a sample of (5) students from the research community in order to identify appropriate proposed program for research sample exercises and ensure the validity Special imaging analysis motor and all the tools used, as well as making sure the tests used to measure the

maximum muscular ability procedures have been scientific tests used for the transactions account (honesty - steadiness) as shown following tables .

- Honesty: To calculate honesty researcher used the sincerity of differentiation between the two groups, one characteristic of the research community and outside the core sample and the number (5) students and the other is characteristic of the third grade students prep sports secondary school in Zagazig and the number (5) students as shown in Table (3).

Table (3)

Significance of differences between the two groups is distinctive and special reconnaissance sample in physical tests- distinctive group - is distinctive . $n_1 = n_2 = (5)$

Physical tests	measruing unit	Distinctive		Non-distinctive group		Value "T."
		standard deviation	SMA	standard deviation	SMA	
Grip strength	Kg	34	1.58	26.20	1.92	*7.005
Leg strength	Kg	145.40	5.46	128.60	5.32	*4.928
Strength of the back muscles	Kg	155	4.64	137.20	5.45	*5.563
Pay medical football 3 kg	meter	6.88	0.37	5.20	0.74	*4.549
Level digital tablet	meter	28.90	0.74	20.80	2.59	*6.727

The value of "T" Driven at 0.05 and 8 degrees of freedom = 2.306

Shown in Table No. (3) and no statistically significant differences in the physical tests under discussion between each of the distinctive group and is distinctive and in favor of distinctive Group, as the value of the "T" calculated exceeded the value of "T" Driven at the moral level of 0.05, and the degree of freedom of 8 , which shows the sincerity of the results of tests of physical attributes in question, and that means the ability of these tests to distinguish between the different levels, that is, they are

honest tests to measure physical attributes which they were prescribed.

Persistence: To calculate the stability tests under the researcher used the test method applied and re-applied to a sample of (5) students from the research community and from outside the original sample timeline a margin (6) days between the two applications, then the researcher to find the correlation coefficient between the first two applications and the second as is shown in the table (4)

Table (4)
The correlation coefficient between the first and second application of the sample reconnaissance in physical tests I. second application n=(5)

Physical tests	measuring unit	The first application		The second application		The value of "t"
		SMA	standard deviation	SMA	standard deviation	
Grip strength	Kg	34	1.58	36	1.80	0.963*
Leg strength	Kg	145.40	5.46	147.92	4.70	0.980*
Strength of the back muscles	Kg	155	4.64	154	3.24	0.971*
Pay medical football 3 kg	meter	6.88	0.37	7.10	0.54	0.882*
Level digital tablet	meter	28.90	0.74	29.20	0.60	0.915*

The value of "t" Driven at 0.05 and 3 degrees of freedom = 0.878

Shown in Table No. (4) there is a statistically significant between each of the research sample exploratory degrees of correlation in the first application of the tests of physical and degrees of the second application for the same group reconnaissance interval time frame as the value of the correlation coefficient (r) calculated exceeded Tabulated value at the moral level of 0.05 degrees freedom 4, which means stability of test scores when re-applied under the same conditions again.

- Ballistic training program proposed: Facility (8)

- Through a reference for many of the previous studies, the survey in the preparation of a similar sample Sunni stages on the development of explosive power training programs, it has taken into account the researcher choose some exercises ballistic similar in performance to the two-track timeline and engineering of power-producing muscles working through performance in extrusion disk contest and determine the loads physical training component of the program in terms of (the intensity of pregnancy -

pregnancy - rest between groups size).

The program was aimed at the development of explosive power and develop the effectiveness of some mechanical changes aimed at improving the digital level of competition tossed disk among a sample search

- For the application of the training program:

Based on what referred to, "" Edward Fox "1997 , the number of training modules ballistic no more than four units a week until the muscles and joints can adequately hospitalization before the next unit to for this kind of training of the burden on the different parts of the body. (23: 103)

Both " Mohammed Abdul Rahim Ismail," 1998, and " Fleck SJ and Kramer" 2004, and adds that the explosive power does not develop quickly and that training for several weeks contribute to development and development period (8) weeks, time enough to get to the amount of explosive power can measured and inferred, also it indicated that the training time (module) ranges from (60-90) minutes and that enough time in the light of the total number of

weeks earlier mentioned. (13:41) (25: 129)

As the "Mufti Ibrahim Hammad" 2001, that the direct preparation for the championships often ranging between 5-8 weeks. (16: 72)

Accordingly, the researcher select the application program (8) weeks with four training units per week for the total number of training modules within the program (32) and unit training ranges time kidney unit of the (60-90) minutes, it took into account the researcher develop explosive power before It began training program application through a set of weights training, since it is a prerequisite in order to achieve these exercises ballistic purpose, until the muscles are unable to cope with the sudden change in the strength and speed together. (21:42)

Training load for the proposed program components:

- The intensity of pregnancy: Both the " Flanagan S. Baker" 2001 " Fleck SJ, Kramer WJ" 2004 AD, and that the severity of the load in the ballistic training ranging from 30% to 40% of the maximum intensity, which represents the exercise

maximum weights the weight can be lifted once (1RM) so that gravity is not a burden on the body and negatively affects the speed of muscle contraction, including causing Alasabh.oma for weights Free (Medical balls - Kettlebells) Vochara you can determine the intensity through the weight of the tool itself, ranging weights Medical balls of 2: 6 kg, while for the free weights timid with the handle weight ranges from 5:10 kg. (24) (25)

- Pregnancy size: both " Kramer WJ, Fleck SJ 2004 " referred to the appropriate size in training ballistic using weights should be from 8:10 to repeat, and groups of 4: 6 sets and rest periods of 3: 5 minutes between groups . (18) As for the free weights repetition ranges from 10:12 to repeat, and groups of 1 to 3 groups ranging rest periods between groups of 2: 3 minutes. (25)

Unity parts division training :-

Warmup: This section aims to muscle the creation of the league and the two devices and respiratory systems of the type of muscle work that will be performed within the module with an emphasis on exercise flexibility and

stretching and some exercises general warm-up ranges from the time of this part of the (10-20) minutes, and range from the intensity of the training weightlifting during the warm-up of 20:30% according to the severity of pregnancy within the main part of the unit training.

- The main part: contains this part of the training module on ballistic exercises that achieve the goal of the unit, which contribute to the development of explosive power and some of the mechanical properties of the stage disposed in the extrusion disk, and the time of this part is mostly 75% of the module time.

- Concluding part: This includes running the light relaxation exercises with the public prolongation, the researcher has identified the time of this part of 5:10 minutes, according to the severity of pregnancy inside the main part of the training module.

Implementation of the search experience:

- Tribal measurements was conducted tribal measurements of mechanical variables and digital level of Throwing the disk on the track stadium Zagazig University on Tuesday 11/2/2014 with the twelve o'clock noon until the sun is perpendicular to ensure the

lighting unit and avoid light during the performance took into account the researcher apply all conditions former mentioned in imaging procedures was recorded for each student three legal attempts, it was the best try of the digital side analysis and thus the number of trials under analysis (10) attempts-and conducted physical measurements of the strength of the explosive at the same pitch and the next day to film the search experience.

- The application of the training program: The proposed training program on the application of the research sample during the period from Sunday 16/02/2014 until Thursday 04/10/2014 for a period of 8 weeks of training by (4) units per week under the supervision of a researcher.

Dimensional Measurements:

After the completion of the application of the training program, the researcher conducted a posteriori measurements in the order and conditions of tribal measurements were made of mechanical measurements (imaging) and measuring the digital level to eject the disk on Saturday 12/4/2014 m has also been conducting physical measurements in the very next day.

Statistical processors: the researcher used appropriate statistical treatment in his

research, a parametric statistical method was used the following statistical operations:
 - the arithmetic average - standard deviation - the mediator - splying coefficient
 - torsion coefficient - the correlation coefficient - Test

"T" rate of improvement percentages - The adoption of a researcher level 0:05 moral limit of statistical significance .

- Presentation and discussion of the results:

- First Results: -

Table (5)

Denote differences between the measurement pre and post experimental sample in physical tests and digital level - the average difference n=(10)

Physical tests	Measuring unit	Measurement tribal		Measurement telemetric		The average difference	Value "T."
		SMA	standard deviation	SMA	standard deviation		
Grip strength	Kg	34.90	2.28	40.30	2.36	5.40	11.943*
Leg strength	Kg	145.3	9.37	160.7	8.99	15.40	9.753*
Strength of the back muscles	Kg	145.4	7.97	147.9	4.09	2.50	1.406
Pay medical football 3 kg	meter	6.81	0.39	7.73	0.37	0.92	9.144*
Level digital tablet	meter	29.20	0.89	32.15	0.75	2.95	18.762*

The value of "T" Driven at 0.05 and 9 degrees of freedom = 2.262

Shown in Table No. (5) and no statistically significant differences in the physical tests under discussion between each of the measurement tribal and telemetric and in favor of telemetric the experimental research sample, as the value of the "T" calculated exceeded the value of "T" Driven at the moral level of 0.05, and the

degree of freedom 9, as the table indicates that there were no statistically significant differences in the test the strength of the back muscles, where the value of the "T" calculated is greater than the value of "T" Driven at the moral level of 0.05 and the degree of freedom 9.

Table results (6)
relative improvement percentage in physical tests under the core Group
- the proportion of improvement - the average pre - post test

Variables	Core Group		The percentage improvement%
	Average tribal	Average post test	
Grip strength	34.90	40.30	15.5 %
Leg strength	145.130	160.70	10.6%
Strength of the back muscles	145.40	147.90	1.7 %
Pay medical football 3 kg	6.18	7.73	13.5%
Level digital tablet	29.20	32.15	10.1%

It is clear from Table (6) the existence of differences in the rate of improvement percentage between the two measurements pre and post core group in all the physical tests in question, where the highest differences in

improvement ratios in the strength of the grip and amounted to 15.5% and was less difference in improvement ratios in the strength of the back muscles and reached 1.7%.

Table (7)

Mechanical variables to track anatomical points (Introduction Hand - Appendix - Ketv- center of gravity) by getting rid of disk extrusion stage under discussion n=(10)

Anatomical points	Statistical characterization Variables Mechanical	Measurement tribal		Measurement Telemetric		Average differences	Value "T."
		SMA	standard deviation	SMA	standard deviation		
Introduction Hand	Horizontal displacement (m)	-0.97	0.11	0.14	0.49	-1.11	29.267*
	Horizontal Speed (m / w)	-4.36	1.70	6.67	1.95	-11.03	12.993*
	Horizontal wheel (m / s 2)	-230.77	12.81	290.52	28.18	-521.29	44.672*
	Vertical displacement (m)	0.82	0.08	1.18	0.2	-0.36	7.798*
	Vertical Speed (m / w)	-1.40	0.90	7.12	1.82	-8.52	12.700*
	Vertical wheel (m / s 2)	52.30	5.36	502.51	9.01	-450.21	26.570*

Table (7)
Mechanical variables to track anatomical points (Introduction Hand - Appendix - Kev- center of gravity) by getting rid of disk extrusion stage under discussion n=(10)

Anatomical points	Statistical characterization Variables Mechanical	Measurement tribal		Measurement Telemetric		Average differences	Value "T."
		SMA	standard deviation	SMA	standard deviation		
Appendix	Horizontal displacement (m)	-0.63	0.17	-0.11	0.07	-0.52	7.603*
	Horizontal Speed (m / w)	-4.60	1.68	0.30	0.73	-4.90	9.595*
	Horizontal wheel (m / s ²)	-405.38	113.80	-24.98	122.94	-380.40	7.134*
	Vertical displacement (m)	1.04	0.11	1.68	0.15	-0.64	13.865*
	Vertical Speed (m / w)	0.58	0.81	4.84	1.19	-4.27	9.735*
	Vertical wheel (m / s ²)	25.50	5.25	231.97	13.33	-206.48	43.430*
shoulder	Horizontal displacement (m)	-0.85	0.07	0.02	0.32	-0.87	8.166*
	Horizontal Speed (m / w)	-2.93	0.12	-1.76	0.11	-1.17	25.681*
	Horizontal wheel (m / s ²)	-198.82	13.91	-12.38	10.27	-186.44	31.758*
	Vertical displacement (m)	1.21	0.04	1.47	0.05	-0.26	8.774*
	Vertical Speed (m / w)	0.42	0.49	1.72	0.13	-1.30	8.879*
	Vertical wheel (m / s ²)	-16.85	1.63	39.95	2.90	-56.80	50.275*

Follow Table (7)
Mechanical variables to track anatomical points (Introduction Hand - Appendix - Ketv- center of gravity) by getting rid of disk extrusion stage under discussion n=(10)

Anatomical points	Statistical characterization Variables Mechanical	Measurement tribal		Measurement Telemetric		Average differences	Value "T."
		SMA	standard deviation	SMA	standard deviation		
center of gravity	Horizontal displacement (m)	-0.61	0.02	-0.39	0.03	-0.22	19.273*
	Horizontal Speed (m / w)	-1.32	0.06	-0.46	0.05	-0.87	33.585*
	Horizontal wheel (m / s 2)	-47.00	3.56	-21.52	3.21	-68.53	52.720*
	Vertical displacement (m)	0.80	0.02	0.90	0.04	-0.11	13.390*
	Vertical Speed (m / w)	-0.060	0.04	0.85	0.08	-0.91	37.111*
	Vertical wheel (m / s 2)	-7.28	1.23	76.25	5.80	-83.53	46.431*

The value of "T" Driven at 0.05 and 9 degrees of freedom = 2.262

Shown in Table No. (7) and no statistically significant differences in the mechanical variables to track anatomical points difference (Introduction Hand - Appendix - shoulder - the center of gravity) by getting rid of the skill of throwing disk stage under

discussion between each of the tribal measurement and telemetric and in favor of telemetric among a sample Find the pilot, as the value of the "T" exceeded the calculated value of the "T" when tabular moral level of 0.05, and the degree of freedom .

Table (8)
Mechanical variables to track anatomical points (pelvis - knee - foot) by
getting rid of disk extrusion stage under pelvis - knee – foot n=(10)

Anatomical points	Statistical characterization Variables Mechanical	Measurement tribal		Measurement Telemetric		Average differences	Value "T."
		SMA	standard deviation	SMA	standard deviation		
Pelvis	Horizontal displacement (m)	-0.61	0.04	-0.30	0.05	-0.31	15.903*
	Horizontal Speed (m / w)	-1.76	0.05	0.23	0.04	-1.98	59.055*
	Horizontal wheel (m / s 2)	-34.06	9.03	20.83	6.92	-54.89	12.887*
	Vertical displacement (m)	0.82	0.03	1.08	0.05	-0.26	11.174*
	Vertical Speed (m / w)	0.20	0.05	0.79	0.04	-0.59	26.563*
	Vertical wheel (m / s 2)	-6.94	4.23	26.08	8.61	-33.02	12.525*
Knee	Horizontal displacement (m)	-0.49	0.05	-0.11	0.05	-0.38	17.194*
	Horizontal Speed (m / w)	-2.34	0.28	-0.21	0.13	-2.13	37.693*
	Horizontal wheel (m / s 2)	-13.18	10.70	31.65	5.25	-44.83	12.232*
	Vertical displacement (m)	0.47	0.03	0.62	0.04	-0.15	17.008*
	Vertical Speed (m / w)	0.17	0.04	0.56	0.06	-0.39	20.849*
	Vertical wheel (m / s 2)	-3.96	1.68	61.13	6.84	-65.09	*٢٨,٣٣٨
Foot	Horizontal displacement (m)	-0.29	0.02	-0.12	0.03	-0.17	11.036*
	Horizontal Speed (m / w)	-1.03	0.05	1.59	0.07	-2.62	27.984*
	Horizontal wheel (m / s 2)	73.67	9.15	1.59	1.65	-72.09	23.491*
	Vertical displacement (m)	0.14	0.02	0.28	0.03	-0.14	11.715*
	Vertical Speed (m / w)	0.13	0.01	4.84	0.02	-4.70	1.081
	Vertical wheel (m / s 2)	-3.74	1.61	22.29	3.68	-26.03	19.911*

The value of "T" Driven at 0.05 and 9 degrees of freedom = 2.262

It is shown in Table No. (8) and no statistically significant differences in the mechanical variables to track anatomical points difference (pelvis - knee - foot) during the elimination phase in the extrusion disk under discussion between each of the tribal measurement and telemetric and in favor of telemetric the experimental research sample, where she was the value of "T" calculated is greater than the value of "T" Driven at the moral level of 0.05, and the degree of freedom to 9, and the results indicated that there were no statistically significant differences in vertical speed foot difference by getting rid of the skill of throwing the disc between each of the measurement tribal and telemetric stage.

Table (9)

Significance of differences between the measurement pre and post Angular change in the anatomical points in the body to get rid of the skill of throwing disk stage under discussion - Introduction hand angle (degrees) - angle disk springboard n=(10)

Variables	measruing unit	Measurement tribal		Measurement Telemetric		Average differences	Value "T."
		SMA	standard deviation	SMA	standard deviation		
Introduction hand corner	Degree	117.90	3.43	197.26	2.92	79.36	49.773*
Appendix angle	Degree	79.41	3.24	200.97	5.16	121.56	54.061*
Shoulder angle	Degree	40.99	2.98	139.71	2.92	98.73	47.588*
Pelvic angle	Degree	179.96	1.85	244.58	3.28	64.62	46.106*
Knee angle	Degree	132.80	3.98	211.01	4.57	78.21	49.420*
Foot angle	Degree	93.52	4.57	247.57	8.16	154.23	54.751*
Disk starting angle	Degree	51.02	4.28	44.47	2.69	6.55	6.390*

The value of "T" Driven at 0.05 and 9 degrees of freedom = 2.262

Shown in Table No. (9) and no statistically significant differences in the Angular change points the body anatomy of disposing of the skill of throwing the disc is in

phase differences Find between each of the tribal measurement and telemetric and in favor of telemetric the experimental research sample, as the value of the "T" calculated exceeded

the value of "T" when tabular moral level of 0.05, and the degree of freedom 9.

Second, discuss the results:

- Discuss the results of the first goal: seen from the table (5) and your average mean and standard deviation and the value of "T" for the research sample in explosive power and level digital to eject the disk, there are significant differences between the two measurements pre and post physical variables function on explosive power and level of digital differences to eject the disk when the level of significance (0.05) among a sample search with the exception of the power of the muscles of the back, where the value of t calculated bigger than T. spreadsheet. Due researcher why there are these differences to the impact of the proposed training program using ballistic exercises which has had a positive and effective role in the development of explosive power, as well as digital level because it brings in the way of performance (power, speed) in addition to being closer to the nature of the performance of the skill of throwing the disc. These findings are consistent with the study, carried out by " Kerry P.

Robert U." 2000 and reached that ballistic training increases the speed and strength of throwing and batting in baseball, where this type of training leads to the adaptation of the neuromuscular system speed with the nature of the performance of the skills of throwing, beatings, unlike training with weights traditional high loads and slow speeds, which may not lead to adaptations device neuromuscular commensurate with the speed and power performance. (28) as well as with what indicated to him " Fleck S. J. Kramer W.J" 2004 that sports that rely on throwing stop the launch of the tool to a large extent on the speed and strength of contraction of muscle fibers speed and this can only be achieved in the training of ballistic force. (25: 119)

And also with what indicated which Muhammad Ahmad Muhammad Esnawy and others "2009 that ballistic specialist training a positive impact on the physical impact of the special abilities of the goalkeepers football in variables strength, explosive power, agility and endurance, flexibility and speed. (7)

The researcher believes that the differences found in the strength of the muscles of the back, but a variable is a function that is due to this variable was needed to exercise more, and increase the training program period.

It is clear from the table (6) and private rates of improvement in function to the maximum muscular ability and level digital to eject the disk in a sample search because there is improved between the two measurements pre and post and in favor of telemetric in all the physical tests function on explosive power, as well as the digital level to eject the disc ratios tests, and this improvement Researcher attributed to the proposed training program using ballistic training, which has been applied to the research sample.

Improvement rates ranged between 15.5% the highest rate of improvement in the strength test your grip, (1.7) as the minimum percentage of improvement in the strength test back muscles and this is attributing the improvement researcher to the positive impact of the training ballistic in the development of the explosive power of the

sample and the impact on the development of distance throwing contest disk in question.

These findings are consistent with the findings of both "Ahmad Farouk behind" 2003 (1) "Nawal El Mahdi Obeidi et al.," 2006 (17) "Mohsen Zakaria Ahmed," 2007 (6), "Mohamed Ahmed Mohamed Esnawy and others" 2009 (7), Mohammed Mahmoud Labib (2008) (14) where he reached the ballistic training program led to an improvement in all physical and skill variables.

And it stresses that Mustafa Abdel Baki (2005 m) ballistic training new style of training methods can coach through an effective training program for the development of the explosive power of design, because the nature of the performance of these exercises are characterized as lead explosively, through lifting weights light and high speeds (12: 13)

As well as Edmond, r, burk (2001), the training ballistic leads to increased speed when using the weights light, and because it includes the training by speeding up of

heaviness or body to a top speed commensurate with the nature of the performance (51:21) and through what has been prone in the tables (5.6) is clear that it has been possible to achieve the first hypothesis, which states affect the use of ballistic exercises a positive impact on the explosive power of digital level in a sample search tossed the disk.

- Discuss the results for the second goal: seen from the table (7) and your average mean and standard deviation and the value of "T" for the research sample in mechanical variables to track anatomical points (Introduction Hand - Appendix - shoulder - the center of gravity) by getting rid of extrusion disk stage under discussion to and no statistically significant differences at the level (0.05%) between the two measurements (tribal, post test) in favor of telemetric the research sample in mechanical variables under consideration -as evidenced by the table (8) and no statistically significant differences at the 0.05 level between the two measurements (tribal , post test) in favor of telemetric the research sample in mechanical variables to track anatomical

points (pelvis - knee - foot) by getting rid of extrusion disk phase under the presence of statistically significant differences at the level (0.05%) between the two measurements (tribal, post test) in favor of telemetric the research sample in mechanical variables under consideration except variable (vertical speed of the feet), due researcher existence of such differences in mechanical variables function statistically to the positive impact of the training program ballistic proposed by phasing in the skill of throwing disk phase, also due researcher this improvement to the impact of ballistic training program on the biceps and brachial positive Adilta shoulder and chest muscles to increase the capacity of the disk ejection moment fulcrum front man on the ground.

This underlines the "Suleiman Ali Hassan and others" in 1983 where he pointed out that to get the most power for the moment to get rid of extrusion disk depends on the longest distance in which it operates the muscles of the shoulders, chest, back, pelvis and legs an instant payment. (2: 228)

Also notes, "Kramer WJ Fleck SJ" 2004 that the ballistic training depends on the movements on the freedom from gravity. This forces the muscle fibers on the speed of contraction to produce the maximum force in the shortest time, and given that the mechanical basis in competitions a pedestal is the speed of the start of the tool, the this type of training is best suited to develop the muscle's ability to speed contraction so as to achieve a higher rate of speed of the arm aimed at throwing the disc. (25: 120)

The researcher attributed the lack of mechanical variables is statistically significant that these variables are more dependent on performance skill of the competition the subject of research and technical mastery requires a higher level of research sample level players. It is clear from Table (9) and no statistically significant differences at the 0.05 level in Angular change points the body anatomy of disposing of skill tossed disk stage under discussion between each of the measurement (tribal, post test) and in favor of telemetric the research sample in mechanical

variables in question. Uerga researcher these differences to the positive impact of the training program by getting rid ballistic phase and that depends on what the player acquired from the speed, the movement of the performance level, the ability of muscle maximum positive impact angular change of the body's anatomical points in the disposal stage. The arm muscles are the main cause of the movement of the Angular change around the shoulder joint depends on the ability of the muscle to increase in the production capacity of muscle maximum acceleration of the arm in the direction of the work force to produce a kinetic energy greater angle and this is illustrated by the results.

This is consistent with what indicated to him "Talha Hossam El-Din and others" in 1998 to achieve greater horizontal distance in throwing competitions depends primarily on all of the speed that can give them the instrument and the angle of launch. (4: 176)

As well as with what referred to "Michael Stone" Michael H. Stone 1998 m to the muscle strength represents a physical elements that

significantly affect the mechanical properties of the performance of the motor in terms of both variables Elkinmetekih or Elkinetekih or corners and the conditions of the body, according to the requirements of each stage of the performance. (29: 17)

Also confirms the above "Dyson Geoffrey Dyson Jeoffery" 2000 AD, noting that any activity kinesthetic depends performed on the acceleration of body mass or mass tool also competed in bowling, when the player or the tool requires the ability to accomplish this job and this ability is called energy, and energy when affected by moves effectiveness movement (speed) is called kinetic energy and this energy is driving the disc in flight arc moment of departure, and the amount of energy depends on the speed of the object. when multiplied body velocity kinetic energy of more than four-fold, and when movement occurs around an axis (detailed) take the kinetic energy dye angle and the same method can increase the kinetic energy angle by increasing the angular velocity. (20:42)

Through what has been displayed in tables (7-12) is

clear that he has been possible to achieve the second hypothesis, which states that "affect the use of ballistic exercises on some mechanical properties of the phase I research sample disposed in throwing the disk."

Conclusions and recommendations:

First conclusions: In the sample of the research and training program proposed using drills ballistic limits and in the light of the results referred to researcher reached the following conclusions: 1. The training program ballistic proposed a positive impact in terms of morale on the explosive power of the sample in the extrusion disk contest.

1. The training program proposed ballistic positive impact in terms of morale on the digital level in a sample search on throwing the disc competition.

2. The training program proposed ballistic positive impact in the development of some mechanical changes to the stage of the research sample disposed in throwing the disk.

3. The ballistic training overcomes the lack of speed output of traditional training

with weights, in addition to the nature of the performance that are closer to the actual performance during the in throwing the disk.

Second: Recommendations:

In light of the findings and conclusions researcher recommends the following: (1) the use of ballistic training for disk players tossed the Egyptians because of its importance in the development of explosive power (Maximum Power) on the one hand, and the development of mechanical variables on the other.

2. guided by the content of the training program proposed in the development of ballistic similar exercises using various tools and rationing training loads for this type of training.

3. The quantity guided by the values of mechanical variables by getting rid throwing disk as can be mechanically similar performance to assess a sample stage.

References:

First: The Arabic references:

1. Ahmed Farouk behind: the impact of ballistic training program on some physical and skill variables for basketball players, published research, the scientific journal of Physical

Education and Sports, Physical Education College for Boys, Helwan University, 2003.

2. Suleiman Ali Hassan: Scientific analysis of track and field, Knowledge House, Cairo, 1983.

3. sedek Mohammed Tulan : the impact of the development of distinctive force quickly to improve some of the movements of a group upgrade in the sport of gymnastics, PhD thesis, Faculty of Physical Education for Boys, Juma Alexandria, 1980

4. Talha Hossam El-Din: Applied Kinesiology, book publishing center, Cairo, 1998.

5. Abdul Aziz Ahmed Abdel Aziz Tiger, Nariman al-Khatib: Sport Training, training weightlifting (strength design programs and planning of the training season, book publishing center, Cairo, 1996.

6. Mohsen Zakaria Ahmed: The effect of the use of ballistic stylistic exercises and functional training on some physical and skill variables for football players, Journal of the Faculty of Physical Education in Sadat City, Menoufia University, No. XI, Vol. III, 2007.

7. Mohamed Ahmed Mohamed Esnawy et al: The

effect of the use of ballistic training to develop explosive power and its relationship to the performance of some of the special skills of goalkeepers in football, the Third International Scientific Conference, Faculty of Physical Education-Boys, Zagazig University, Volume II, 4 to 5 March 2009 m.

8. Mohammed Briva, charitable Ibrahim diabetes: Albyumkanaky qualitative analysis to improve the training process, the eighth International Scientific Conference for Science Physical Education and Sports October 5 to 7, Faculty of Physical Education for Boys, Alexandria University, 2004.

9. Mohammad Hassan Allawi: sports science training, the second edition ten, Knowledge House, Cairo, 1992.

10. Mohammad Hassan Allawi, Mohamed Nasreddin Radwan: motor performance tests, Cairo, Dar Arab Thought, Cairo, 2001.

11. Mohammed Abdul Latif Suleiman: Biomechanics is equipped to measure the motor performance, i 1, the printing press, Port Said, 2003

12. Sobhy Mohamed Hassanein: Measurement and Evaluation of Physical

Education and Sport, Dar Arab Thought, Cairo 2001.

13. Mohammed Abdul Rahim Ismail: muscle strength training and weightlifting programs, facility knowledge, Alexandria, 1998.

14. Mohamed Mahmoud Labib (2008): A comparative study of the effect of using different for the development of muscle power two methods (Alelometry, ballistic, on the level of achievement for the digital player long jump) a scientific study published, scientific journal of the Faculty of Physical Education, for boys at Abu Qir - Alexandria University.)

15. Mustafa Abdel Baki Hashem: a comparative study of the effect of the use of my style of training and training Albleomtry Albaasty on some physical and skill variables basketball player Messag .. Unpublished MA, Faculty of Physical Education-Boys pyramid Helwan University, 2005

16. Mufti Ibrahim Hammad: modern sports training (application and driving), 3rd floor planning, Dar Arab Thought, Cairo, 2001.

17. Nawal Al Mahdi Obeidi et al: Effect of a training program ballistic on some physical and skill variables for

handball players, published research, the International Scientific Conference Second, Faculty of Physical Education for Boys, Zagazig University, Volume II 0.21 - March 22, 2007,

Second: Foreign References:

18- burno pauletto: strength training for basket ball, human kinetics publisher, 1994.

19- Donald A. chu: Jumping into plyometric, 3rd ed., Human Kinetics, champing united States, 2000.

20 - Dyson Geoffrey, H.: Dyson's mechanics of athletics ,9th ed., Biddles, L.T.D. Guilford, London, 2000.

21- Edmund R.Burk :ballistic training for explosive resultes, human kinetics publisher2001

22- Edmund R. Burke : Effects of Ballistic training on pre-season preparation of elite volleyball players, The journal of strength and conditioning Research, vol. (21), No. (3). , pp. 180-189. 2003.

23- Edward K. Fox. Bases of fitness, McMillan publishing company, New York, USA, 1997.

24- Flanagan S. Baker: Improve performance with ballistic training, American Journal of sports science, vol.

(22) University of Ontario, Canada, 2001.

25 - Fleck , S.J and Kramer, W.J: Designing resistance training program, 3rd ed., Human Kinetics Champaign, New York, USA, 2004.

26- Gerhardt Schmolinsky: Track and Field, 3rd ed., sport verlage, Berlin, 2000.

27- Kerry P. Mcevoy & Rebert U. Newton : Baseball throwing speed and base ramming speed, The effects of training ballistic resistance ,Journal of strength and conditioning research , volume 12 number 4 , 1998 .

28- Kerry P.Mc - evaoy and Robert U.Newton: The effect of Ballistic Resistance Training on Baseball throwing and Hitting speed, Journal of sport research, volume (12), part (II) November, 2000.

29- Michael H. Stone: Athletic Performance development, strength and Conditioning , sport science Journal volume (20) Saint Louis, USA, 1998.

30- Newton RU and Kramer WJ.: Kinematics and Kinetics and muscle activation during explosive upper Body movement, sport medicine journal vol. 14, 1997.