

 Faculty of Physical Education for Boys

قسم نظريات وتطبيقات الرياضات Department of theories and applications of track

 And Field Events

**Abstract in English
The Ratio Between Flexor And Extensor Muscle For Knee Joint As Abase To Improve Numric Level Acheivement For**

 **110Meter /Hurdles Players

Research presented with in the requirements for the degree of doctor of philosophy In Physical Education**

**Preparation
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**Introduction search**

**Provide search:**

Is a field competitions and field competitions that have multiple problems of different Bmsabqatha both in the field or field urges experts and specialists working in this field to develop solutions objectively her, whether digital or skill or physical and requires the development of the most appropriate solutions and update methods of training operations with rationing loads to lift are sufficient performance to become the problems faced by the practitioner or the player solves a scientific and objective way and novelty in various competitions in general and in the area of track and field competitions in particular.

We find that the human being is a complex structure of the object in all its aspects, physical and psychological, physiological and mechanical and requires further study to understand the composition of solving existing problems inside. And workers in the field of sports is on them to alert their ideas to the benefit of science and modern instruments, tools and theories and independent care to solve the kinetic problems through modern technological advances and more problems exposed during the preparation of athletes from physically or functional are the problems associated with loads of training and how to codify depending on the type of sports activity practitioner

It has become accessible to the high levels of sports on the indicators of the progress of nations and advancement in various scientific and technological fields, including the field of sports.

Training and Sports is the means by which the physical check adaptations of muscles desired for competitions faster .oiatmd knowledge related to the development of motor performance and how to determine the muscles working and the Holding to reach the best performance skills and speed the transition from high intensity to rest and relax. To get to the accomplishment and digital work to quickly kinetic performance and high efficiency

It has become achievement levels and digital skill in Track and Field surprising and admiration which makes athletic training players high levels is the one who supports it primarily on a lot of the experimental sciences and humanities that have contributed to the different applications to increase the effectiveness and efficiency of training and physiological process.

Muscle strength and is one of the most important physical elements because of its significant impact on life in general and in the field sports in particular, past performance in all sports activities depends on how the body moves' muscles that control body movement Balanaqbad extraversion to attract parties subject to another, and whenever they these contractions more effective the better movement

**Find a problem:**

The last three decades of the twentieth century witnessed great development in the field of physical preparation of the athletes, after the developed countries and developed mathematically physical setup summit of other aspects of the setup believing that physical Anaasrallyakh must develop first and highly suitable for the nature of the activity and the level of competition.

And actually refers to a lack of Egyptian and Arab sport to the stomach physical preparation carefully planned and well, especially strength training programs.

And lead the regular practice of many sporting activities to focus on muscle groups required by the nature of the performance in practice activity and neglect training muscle groups corresponding to the increased muscle force strength without a similar increase in the strength of the muscle groups corresponding exposing them to an increasing stress and makes them more susceptible to infection as a result of imbalance in the labor force between the muscle (or group of muscle force) and the corresponding muscle (or the corresponding muscle group

We find that the competition of 110 meters / barriers of the track competitions that require special nature and the frequent movement of competitions Amarrosha men without women. They need high technical requirements in performance and speed with the speed of the entire race .oeetmaz this race performance motor complex because it combines a sprint with high-paced motor skip through 10 checkpoints along the race. In addition to an advanced level of fitness own elements with muscular agree nervous comprehensive and flexible in all joints with high and balanced muscular strength between the working muscle (extensor Holding).

And muscle strength can be developed by weightlifting or modern equipment and the training and repeat the performance of exercises ranging in number from between 8-12 times depending on the type of muscle force and the corresponding movement used .walqoh rely on two properties in two basic (Almikanekh properties - physiological characteristics) Venatj maximum force = maximum X block wheel or a maximum force = mass X maximum wheel and the two previous equations we conclude that the ability = force X speed or the job - time and so we find that for mass development through the increase in the cluster rate can reach the same result when asylum for the development of the wheel rate of any access to the highest incorporated possible movement. And the player should be producing power in time spent in training and this leads to link power capacity other such as speeding, endurance and when power link speed is inversely correlated and the relationship between force and acceleration refers to the mass decrease and increase the wheel rate or determination shall be output maximum effort to player

Muscular The balance is the strength of single muscle or group of muscle relative and their relationship to muscle or muscle another group, expressed muscular balance the relative boundaries of power, labor agonists interview her and muscle muscle same detailed like comparing muscle article articular knees second muscles for them as well as the often compared muscle Article the elbow (brachial biceps) second muscles for them (the brachial with three heads), also includes a comparison between the muscles working on both sides of the body, such as comparing the muscles article right hand muscles article left hand, as well as compared to the muscles of the lower limb versus muscles upper limb like comparing muscle Article the two men in the train bend your knees half strongly pectoral muscle in the Great Payment hands in front of chest training

The concept of the specific ratio between the muscles working and the corresponding muscles on the joint may house around multiple Tsaullac in medical references, which confirmed the presence of a difference between the muscles working and the interview has identified these scientists that difference by 10% in the opposite muscle strength for the benefit of the muscles working on the knee joint, which makes the sport vulnerable to infection, as scientists have discovered that many of the activities cause increased muscle strength in one muscle group without concomitant increase in the corresponding muscles. Examples include muscle femoral heads with four Quadricepes players running "runners" and muscles and internal Director Internal Rotators shoulder players flinging

Refers both to login logn "" Makani mckinney "" (2002 m) that when the muscle in the direction of movement, the best mechanical effect in the production of power will be at the detailed work of the angle at (90 degrees) and cases in which it occurs Alanfbad muscle Come gravity - Instrumentation kinetic (Alaazukintek) - Fixed resistance - or electrical stimulation alerts

The noted David Liebman David Lipman (2000 m) to be one of the main causes of injury, especially during training with weights is a power difference between the left and right sides of the body, which should not exceed the natural difference between the sides of the body in the power of 10% and an increase in weightlifting in training during training against gravity increases muscle tension and contraction this dynamic minus inaccurate and affect and leads to constriction Baltgosairalzy displays the player to injury

The way to prevent injuries begins balanced development on both sides of the joint between the basic dynamics of muscle Prime Mover Muscles, muscles anti Antagonistic Muscles, In the sport of athletics in general and in Jawadz race particularly the core muscles driving in the 110 meters / Joadz is the front muscles of the thigh Quadricepes m. The muscles of the buttocks Gluteals m. And muscle twin Gastrocnemius m., And after several months of specialized training this group become more powerful than a muscle anti leg muscles and the muscles of the back thigh Hamstrings m. As well as the muscles of the back, and because of this imbalance in the muscle groups, the gallery's high degree of risk of injury in the knee joint Knee Joint and soft tissue injuries such as Soft Tissue Stub Calcaneal tendon and muscle tension in the background Hamstrings Tightmess m. Almaid and screwing in the front of the thigh muscle Quadricepes pulls in addition to discomfort in the lower back muscles, however, it is clear that a focus on specialized training is partly responsible for many of the muscle and tissue injuries Association. The best way to prevent such Azh injuries is through the development of a high degree of strength in all the major muscle groups on both sides of the joints of the body, when all the muscles become strong, the odds of exposure player for injuries resulting from the unbalanced growth of the muscles become less as possible

The knee joint is the largest joint in the human body and formed the joint head of the lower end of the thigh bone Femur consisting of Althdban (morsel Alontheh brutality and condyle) and covers the joint head of the convex surface layer of cartilage Alartfaqah (transparent) up to a thickness of about 5 ms.

And the detailed shape right from the upper end of the Fibula Fibula, and comparing it with the joint head is flat or flat, and covers the detailed right-transparent layer of cartilage.

The examples of the knee joints and single axis Hinge and where the structure and shape of the bones in the knee in a weak correlation was to be compensated by a strong strengthen the ligaments of the knee joint and the number nine.

Where it is to provide protection for the knee joint through Rabatan lateral and Rabatan Mtsalpin located inside the joint. Stems internal lateral ligament of the Alontheh femur and instills in the Alontheh and rear Fibula, as it relates to the joint portfolio. And the external lateral ligament originates from outer extrusion femur, nor associated with the joint capsule where lined in Fibula.

Having considered the many references (6, 8.9, 20, 29.43) and scientific studies (3, 10, 12.15, 16, 40.41, 42, 52.53), which dealt with the study of muscular balance researcher noted that most studies that have been conducted to study to improve muscular balance without exposure to the proportion of muscle strength between each other and the muscle or muscle group to another.

Through previous offer and the experience of the researcher in the field of athletics as a player and a former coach in the academic field noted that many coaches are focusing on the working muscles only and the development of muscle groups that determine the kinetic path of the race or skill without exposure corresponding to the muscles, and after several months of specialized training to become this more powerful than the anti-muscle group (the interview), and that a lot of coaches are not on the full knowledge that the muscles usually work in duplication and not a single condition, and so we find that the Egyptian figure of 110m / hurdles 14.06 seconds and was on 04/28/2010 m and the Registrar on behalf of the player Abdul Rahman Idriss Tahir player Vanguards called the army, we find a player Primera be steady for long periods in the figures and if there is a change is very slow and here crystallized the problem of this study, which were represented in the absence of such specialized software which helps in the physical side of development in general and muscle strength in particular and the balance muscular more privacy which made the work of a researcher in the study between Holding and extensor muscles of the knee joint as a basis for improving digital level players 110 meters / barriers.

**The importance of research:**

**Scientific importance:**

Scientific importance due to discuss the scarcity of studies on the subject of muscular balance as the theme demo within the limits of science researcher.

- To identify the muscular balance of the muscles working and the corresponding ratios of the knee joint.

- Current training programs that offer a degree of muscular balance of the muscles working and the corresponding knee joint more accurately and individually to each player individually.

- The use of modern devices such as Alaazukintek not in the measurement process or Altahia only in training but also this recent research.

- Balaab access to the functional and physical efficiency and muscle which reduces the incidence of injuries to players.

**Applied Popularity:**

- Improve the muscular imbalances balance of the muscles through individual programs for the players to get to the appropriate force levels by skill type used.

- Improve muscle performance improved efficiency and skill so the player can move smoothly performance and best production of strength and speed are concentrated and centralized.

**Aim of the research:**

The research aims to identify the ratio between flexors and extensor of the knee joint as a basis for improving digital level players 110 meters / barriers through:

- Use Aloazukintek device as a means of training to improve muscular balance.

- Training device Aloazukintek to improve muscular balance between the muscles working and the corresponding muscle of the knee joint and the impact of the digital level.

**Find question:**

Are there significant differences between the two measurements pre and post in favor of telemetric experimental group in working muscles and muscles corresponding to the detailed Alrkphoualemstoy digital?

**Research procedures**

**Research Method**

The researcher used descriptive trial using a single experimental group with tribal dimensional measurement appropriate to the nature of this research and descriptive method (case study) in the data analysis of each player individually.

**The research community:**

Included research community players 110m / barriers totaling 12 players registered and records of the Egyptian Federation of Athletics for the year 2014/2015.

The research sample: Research Sample

The researcher to choose the research sample way intentional players barriers club Al-Ahli and registered the Egyptian Federation of Athletics records reaching the core sample size (5) players and (3) players have been used in the scoping study Vaasubh total sample size totaling (8) player.

 This is evident from Table (4) of the total number of respondents and the basic numerical distribution of the sample and the sample reconnaissance

Homogeneity of the research sample: Homogeneity of the sample

The researcher homogeneously research sample in the variables that may affect the independent variable and, according to indicated by previous studies and theoretical readings and expert opinions are as follows (Ataiwl- weight - Age - Age Altdrebe- digit level)

Tools and data collection tools: Tools and Mean of data collection

The researcher used the many and varied ways to collect data commensurate with the nature of the research and data to be obtained.

Conditions required in the tools and means of data collection:

- That are available in the scientific standards.

- Ease of use and the possibility of execution.

- Ease of available data translation and tabulation.

Classification tools and means of data collection

The researcher classification tools and means of data collection, according to the mechanisms of action within the search to the following:

Tools and equipment used in the research

Tools and devices used in research

Tools used in search

- Alrstamitr device for measuring the total length of the body.

- The balance of medical standards for the measurement of body weight.

- Stopwatch

Devices used in research

Aloazukintek device

 Iso Kinetic Dynamometer (muscle performance testing)

Aloazukintek device is the latest model in the world, and is one of the most important devices used in muscular performance analysis.

Aims to measure various aspects of muscular performance comes at the forefront:

- The ability of muscles to exert moments about the different joints of the body and spine during different types of muscular contraction and also of muscular effort.

- Measurement of the energy expended by the muscles and how much the job output.

And then you can identify the causes of the weakness of the muscle performance resulting in weakness in the level of traffic, which helps to develop the appropriate program accurately

Some measurements are available through Aloazukintek

- Measurement of electrical activity in sync with muscular performance Aloazukinteka to various joints.

Training Program

The researcher proposed training program design using Alaazukintek tribal measurement device after each player individually and shows that Table (6) Training Program

Scoping study: Survey Study

The survey was conducted on Saturday, 04/10/2014 sample from outside the core sample and the strength of 3 players in order to discover what can be downsides can be treated before starting the implementation of the core study, to identify the following points:

The objective of the exploratory study

- Knowledge of the time required to conduct all measurements.

- To identify the method of introduction of data for each player on the user's machine.

- Ensure the safety of the device used in the measurement.

- Selection of assistants

- Identify the exact time to train players on the device

The researcher has used a variety of helpers's (7) members Facility (2) has been the work of meetings with them to explain the idea of research and target him and the nature of the charge by the role of each individual in the search, as well as providing them with the information that will enable them to answer the various questions and inquiries.

**The results of the survey:**

**Results indicated to:.**

- Suitable ordering parts Measurement

- Understanding assistants and knowledge of each individual special tasks in the study.

- Suitable for your time to train each player separately on the device without disrupting.

Perform basic study: Basic Survey

The researcher conducting the study on a set of basic research and experimental represented in (5) players from Ahly players from 110 meters / barriers

**Tribal measurements**

Was a tribal measurements of a sample basic research will be held on Saturday, 10/11/2014, after the researcher to study the exploratory and the results of the results was conducted basic study on a sample of (5) players from the players 110 meters / barriers have basic study was carried out as follows :

**Application program**

The program was performed on the core sample will be held on Saturday, 10.18.2014 until Wednesday 26.11.2014 by 3 training modules in the week and the following tables (7-8-9-10-11) explain the training model of the units used for five players both separately and explains Facility No. 4 the rest of the program

**Dimensional measurements**

Dimensional measurements were conducted on Tuesday, 12/01/2014 experimental group on your Alaazokinnic to see how Holding and extensor muscles and digital level for each player on the unit improved.

**Statistical Coefficient**

After data collection and recording of different measurements of the variables used in this research was conducted appropriate statistical treatments to achieve the goals and confirm hypotheses using statistical laws as well as the computer through Excel statistical program of the package code, Microsoft office and program Statistical Statistical Package for Social Sciences, which has the symbol (SPSS) was the data using statistical methods to address the following:

- Arithmetic average.

- The standard deviation.

- The difference between the averages

- Torsion modulus

- Mediator

- Improvement ratios

 **conclusions and recommendations**

**conclusions**

In light of what refers to the results of this study, according to the statistical outcome of the treatment could be reached the following conclusions:

- Improved digital level to 110m / barriers among a sample search.

- That the private coaching muscles working at the knee joint, which used Alaazukintek device as a means A training led to improved ratio between flexors and extensor ranged higher proportion of the muscles holding the player fifth rate (8.333%) and the lowest rate of the muscles holding the third player pro rata (2.777%)

- That the private coaching muscles working at the knee joint, which used Alaazukintek device as a means A training led to improved ratio between flexors and extensor ranged highest percentage of extensor muscles of the player fifth rate (4.216%) and the lowest rate of the muscles holding the fourth player pro rata (1.069%)

- That the private coaching muscles working at the knee joint, which Alaazukintek device used as a training tool led to improvements in the ability of muscle.

**Recommendations**

Through the search results and in the light of the findings of the researcher's conclusions researcher recommends the following: -

- The use of the proposed training program using Alaazukintek device because of its impact on the level of digital players barriers.

- The use of the proposed training program using Alaazukintek device to improve the work of the flexors and extensor of the knee joint.

- use of the proposed training program using Alaazukintek device to improve the ability of the muscles working at the knee joint.

- use Alaazukintek device as a means to measure and as a means courses to muscles labor at other joints and in other races and different stages Sneh different sex.

- need to consider the replacement of the training modules and special (of speculation muscle) and the use of modern equipment because of its rapid effect of improving the technical level, similar to using Alaazukintek device.