INTERCOLLEGIATEKABADDI PLAYERS' ANAEROBIC CAPACITY EXPLOSIVE POWER AS A RESULT OF MEDICINE BALL TRAINING

Assistant Professor Dr. P Ramesh,
Vinayaka Mission's Research Foundation (Deemed University), Vinayaka Mission's College of Physical Education, Salem, Tamil Nadu, India

Abstract

Twelve (12) intercollegiate men's kabaddi players from the Salem, Tamil Nadu-based Vinayaka Mission College of Physical Education were chosen at random as topics to carry out the study's objectives. They were between the ages of 21 and 28. Randomly chosen participants in college-level competitions were the athletes. The chosen participants trained with medicine balls for an alternate third day of the week for a maximum of six weeks. Anaerobic capacity and explosive power were chosen as the criteria variables among the fitness-related factors. A standardized Test was used to evaluate the factors that were previously chosen. The twelve (12) intercollegiate men's kabaddi players make up the sample of the current study. Before and after the training session, all individuals underwent tests on a set of abilities.The pre-and post-test single-group design was used to choose the subjects. The single-group pre-and post-test design was usedto choose the subjects.

Keywords: kabaddi,medicine ball,anaerobic capacity, explosive power

INSTRUCTION

TRAINING

"Since the dawn of time, humans have used the word training in their communication. It refers to the process of getting ready to do something. This process often took several days, sometimes even months or years. In sports, the word "training" is frequently used. However, there is significant debate over the precise definition of this phrase among sports scientists

and coaches. Some professionals, particularly those involved in sports medicine, view physical activity as the foundation of sports training. This way of thinking is reflected in a number of training words, including strength training, interval training, and both technical and tactical instruction.

The most straightforward part of the training procedure is the training session. undergoing training. The real training method is implemented throughout the training session. Consequently, the popularity of sports The focus of sports pedagogy is on how well-planned and executed the training process is during training sessions (Singh, 1991).

MEDICAL BALL PRACTICE

A weighted ball called a "medicine ball" can be used for a number of exercises to improve coordination, strength, and fitness.speed the healing process for athletes who have sustained injuries. This kind of ball is available in a wide range of weights, from 2 lb to 25 lb, and can be constructed of leather, nylon, vinyl, rubber, polyurethane, and other materials. There are numerous sizes available in addition to the 14-inch diameter of the typical medicine ball.

Persian wrestlers trained using sand-filled bladders approximately 3,000 years ago, which is the first known use of the medicine ball. Later, during the period of ancient Greece, renowned doctor Hippocrates made medicine balls by stuffing animal skins with sand.. His patients were required to throw the balls back and forth as part of their rehabilitation therapy for injuries. The phrases "medicine" and "health" started to be used interchangeably in the late 19th century, and the medicine ball was employed to promote health. It grew to be known as one of the "4 Horsemen of Fitness," together with the dumbbell, wand, and Indian club. The current medicine ball was born out of this.

STATEMENT OF THE PROBLEM

Modern sports have made medicine ball training more competitive and demanding in order to improve sports performance. As a result, players and coaches always strive to improve and maintain their playing skills in order to compete. Due to the rising level of competition, new approaches, skill development, and physical training may be necessary to raise the players' level of performance. In order to determine how intercollegiate kabaddi players' anaerobic capacity and explosive power as a result of training with medicine balls.

The study's objective was to determine how Intercollegiate kabaddi players' anaerobic capacity and explosive power as a result of medicine ball training.

HYPOTHESES

It has long been established in science that consistent training and practice over time will result in changes in the chosen dependent variable. The investigator formulated the hypothesis and tested it at a 0.05 degree of certainty based on the research that was carried out and after studying the relevant literature that was accessible in the field.

1. As a result of medicine ball training, anaerobic capacity would significantly improve.
2. As a result of medicine ball training, explosive power would significantly increase.

.Methodology

SELECTION OF SUBJECTS

Twelve (12) intercollegiate men's kabaddi players from the Salem, Tamil Nadu-based Vinayaka Mission College of Physical Education were chosen at random as topics to carry out the study's objectives. They were between the ages of 21 and 28. Randomly chosen participants in college-level competitions were the athletes. The chosen participants trained with medicine balls for an alternate third day of the week for a maximum of six weeks. Anaerobic capacity and explosive power were chosen as the criteria variables among the fitness-related factors. A standardized Test was used to evaluate the factors that were previously chosen. The twelve (12) intercollegiate men's kabaddi players make up the sample of the current study. Before and after the training session, all individuals underwent tests on a

set of abilities.The pre-and post-test single-group design was used to choose the subjects. The single-group pre-and post-test design was used to choose the subjects

SELECTION TESTS

S.No	Criterion Variables	Test Items	Unit of Measurement
1.	Anaerobic Potential	MargariaKalamen Anaerobic Power Test	In Kilograms / Meter^2
2.	Explosive Power	Vertical Jump	In Centimeters

TABLE I

ANALYSIS OF DATA FORMEANS, STANDARD DEVIATIONS AND DEPENDENT‘t’-TEST FOR THE PRE AND POST TESTS ON ANAEROBIC CAPACITY OF EXPERIMENTAL GROUP

Test		Number	Mean	Standard Deviation
Anaerobic Power	Pre test	12	163.17	2.41
	Post test	12	167.08	1.68
	‘t’-test	**9.02***		

*Important at the.05 level. (Performance of Anaerobic Capacity in Kilograms/M2) (With df 11, 2.14 is the table value required to reach the.05 level of significance.)

The acquired pre- and post-test mean values for the experimental group were 163.17 2.41 and 167.08 1.68, respectively, according to Table I. The experimental group's t-ratio values were obtained between the pre- and post-test means.

were 9.02. The table value needed to show a difference with df 11 that is significant at the.05 level is 2.14. The performance on anaerobic capacity among college men's kabaddi players has been greatly enhanced by medicine ball training, as evidenced by the acquiredThe t-ratios between the pre- and post-test means were calculated.

The pre- and post-test mean values for collegiate kabaddi players' anaerobic capacity are shown in Figure 1.

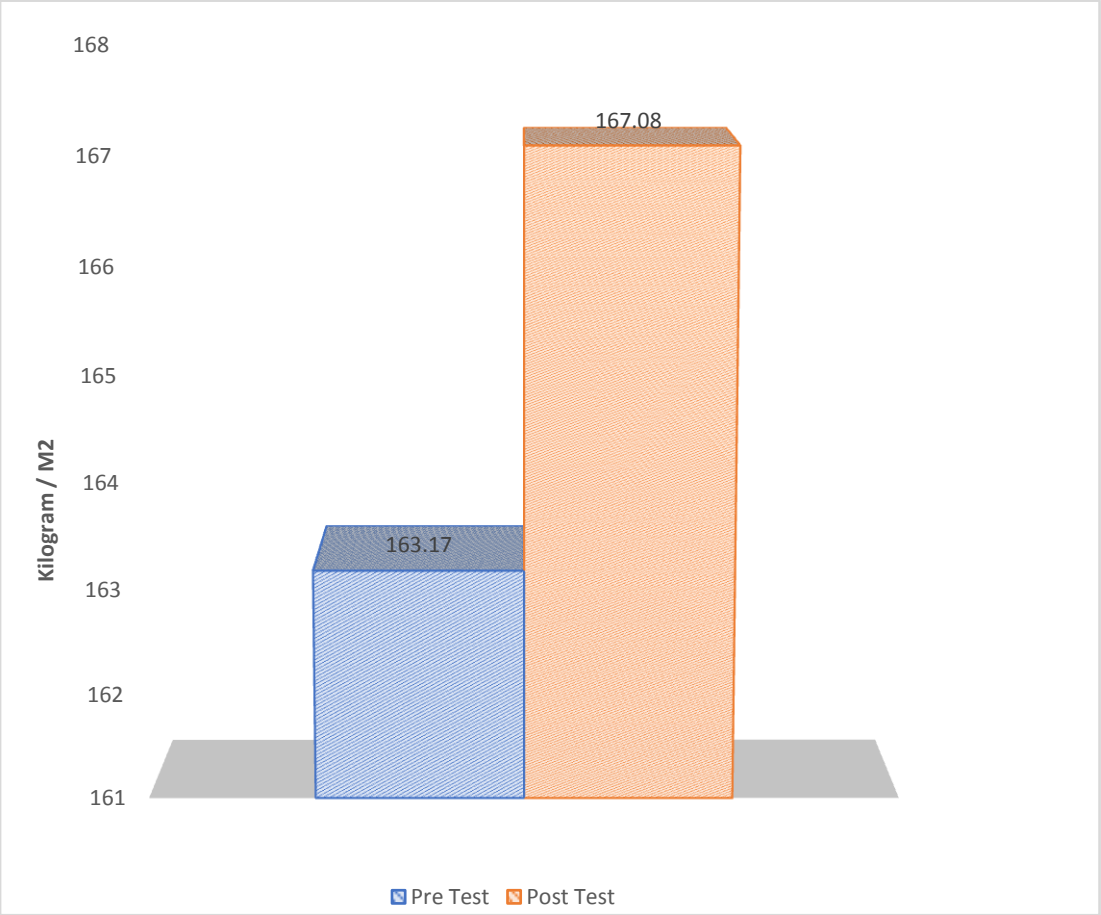

FIGURE - 1 : MEAN VALUES OF MEDICINE BALL TRAINING GROUPON ANAEROBIC CAPACITY.

RESULTS OF THE STUDY

According to Table I, texperimental group's obtained pre and post-test mean values 63.17 2.41 and 167.01 1.68, respectively, and the dependent 't'-ratio between the experimental group's pre-test and post-test means was 9.01. Value in the table needed to show a difference with df 11 that is significant at the.05 level is 2.14. Since the experimental group's achieved 't' ratio values are greater than the value in the table, it isclear that instruction with medicine balls considerably increased college kabaddi players' anaerobic capacity.

ANALYSIS OF THE DATA FROM THE MEANS, STANDARD DEVIATIONS, AND DEPENDENT 'T'-TEST FOR THE PRE- AND POST-TESTS ON THE EXPLOSIVE POWER OF THE EXPERIMENTAL GROUP IS PRESENTED IN

TABLE II.

Test		Number	Mean	Standard Deviation
Explosive Power	Pre test	12	55.25	2.42
	Post test	12	57.08	2.02
	't'-test	**8.45***		

*Important at the.05 level. (Performance of Explosive Power in Centimetres)(With df 11, 2.14 is the table value required to reach the.05 level of significance.)

The collected pre- and post-test means for the experimental group were 55.25 2.42 and 57.08 2.02 respectively, as shown in Table II, and the determined dependent 'to-ratio values between the pre-and post-test averages for the experimental group were 8.45. For a significant difference with df 11 at the.05 level, a table value of 2.14 is needed. Since the experimental group's 't' ratio values are greater than the figures in the table, it is evident that training with medicine balls helped college kabaddi players execute more explosively.

The pre- and post-test mean values for college kabaddi players' explosive power are shown in Figure 2.

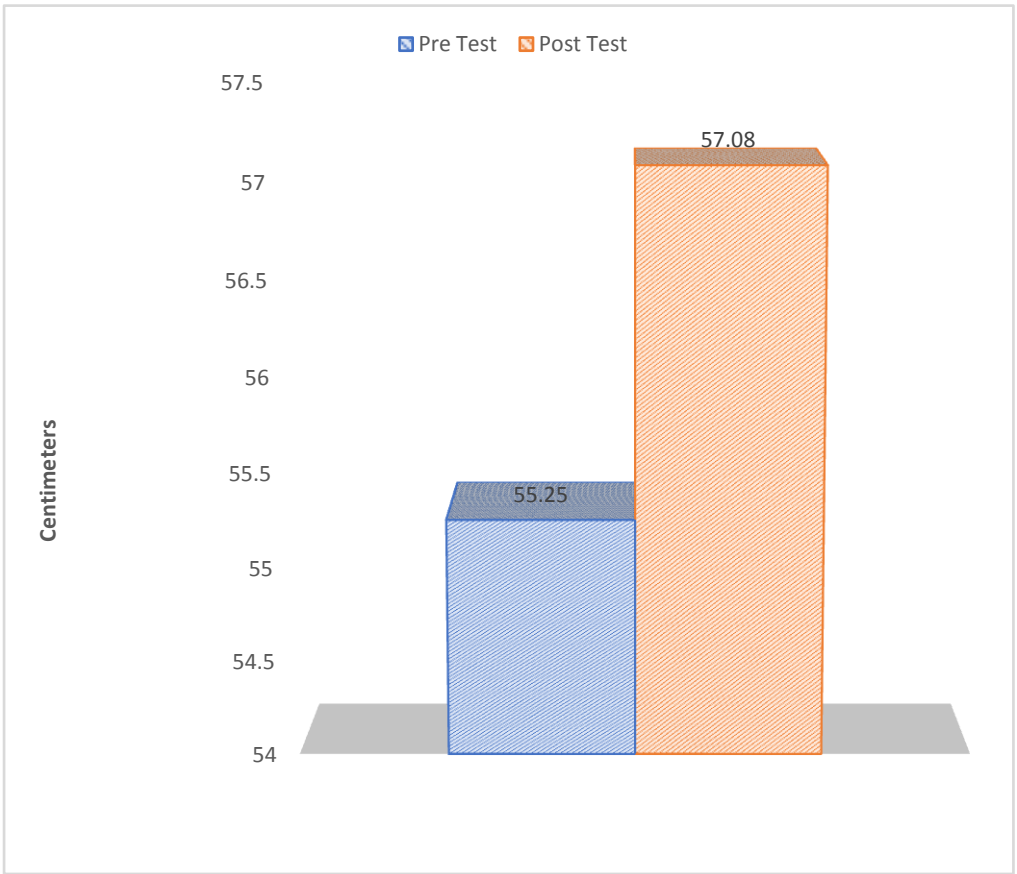

FIGURE - 2 : MEAN V

RESULTS OF THE STUDY

Table II displays the pre-and post-test means for the experimental group as well as the obtained dependent 'to-ratio values between the experimental group's pre- and post-test means. were 8.45. For a significant difference with df 11 at the.05 level, a table value of 2.14 is needed. Since the experimental group's 't' ratio values are substantially greater than the numbers in the table, it is obvious that training with medicine balls helped college kabaddi players execute more explosively.

DISCUSSION OF RESULTS

It was anticipated that collegiate kabaddi players' anaerobic capacity would increase during the course of the trial. would significantly increase as a result of medicine ball training. The findings of the current investigation support the idea. As a result, the investigator's null hypothesis was refuted, and the research hypothesis was accepted.

According to the second hypothesis, college-level kabaddi players' explosive power would significantly improve as a result of medicine ball training. The findings of the current investigation support the idea. As a result, the investigator's The research hypothesis was confirmed, and the null hypothesis was found to be incorrect.

Reference

Raeder C, Fernandez-Fernandez J and Ferrauti A. (2015) Effects of Six Weeks of Medicine Ball Training on Throwing Velocity, Throwing Precision, and Isokinetic Strength of Shoulder Rotators in Female Handball Players**.** ***Journal of Strength and Conditioning Research.*** Jul;29(7) PP:1904-1914. doi: 10.1519/JSC.0000000000000847.

Ignjatovic AM, Markovic ZM and Radovanovic DS. (2012) Effects of 12-week medicine ball training on muscle strength and power in young female handball players. ***Journal of Strength and Conditioning Research.*** Aug;26(8) PP:2166-2173. doi: 10.1519/JSC.0b013e31823c477e.

Szymanski DJ, Szymanski JM, Bradford TJ, Schade RL and Pascoe DD. (2007) Effect of twelve weeks of medicine ball training on high school baseball players. ***Journal of Strength and Conditioning Research***. Aug;21(3) PP:894-901.

Van den Tillaar R and Marques MC. (2013) Effect of different training workload on overhead throwing performance with different weighted balls. ***Journal of Strength and Conditioning Research***. May;27(5) PP:1196-1201. doi: 10.1519/JSC.0b013e318267a494.

Mayhew JL, Bird M, Cole ML, Koch AJ, Jacques JA, Ware JS, Buford BN and Fletcher KM. (2005) Comparison of the backward overhead medicine ball throw to power production in college football players. ***Journal of Strength and Conditioning Research***. Aug;19(3) PP:514-518.

Van den Tillaar R and Marques MC. (2011) A comparison of three training programs with the same workload on overhead throwing velocity with different weighted balls**.** ***Journal of Strength and Conditioning Research.*** Aug;25(8) PP:2316-2321. doi: 10.1519/JSC.0b013e3181f159d6.

Van den Tillaar R and Marques MC. (2009) Effect of two different training programs with the same workload on soccer overhead throwing velocity. ***International Journal of Sports Physiology and Performance.*** Dec;4(4) PP:474-484.

Van den Tillaar R and Marques MC. (2009) Effect of two different training programs with the same workload on soccer overhead throwing velocity. ***International Journal of Sports Physiology and Performance.*** Dec;4(4) PP:474-484.

Marques MC, Liberal SM, Costa AM, van den Tillaar R, Sánchez-Medina L, Martins JC and Marinho DA. (2012) Effects of two different training programs with same workload on throwing velocity by experienced water polo players. ***Perceptual and Motor Skills***. Dec;115(3):895-902.

Ettema G, Glosen T and van den Tillaar R. (2008) Effect of specific resistance training on overarm throwing performance. ***International Journal of Sports Physiology and Performance.*** Jun;3(2) PP:164-175.

Glenn, JM, Gray, M, Jensen,A,, Stone, MS., and Vincenzo JL. (2016). Acute citrulline-malate supplementation improves maximal strength and anaerobic power in female, masters athletes tennis players.***European Journal of Sports Sciences.*** Mar 28 PP:1-9. [Epub ahead of print]

Aedma M, Timpmann S, Lätt E and Ööpik V. (2015) Short-term creatine supplementation has no impact on upper-body anaerobic power in trained wrestlers**.** ***Journal of the International Society of Sports Nutrition.*** Dec 9;12 P:45. doi: 10.1186/s12970-015-0107-6. eCollection 2015.

Savoie FA, Kenefick RW, Ely BR, Cheuvront SN and Goulet ED. (2015) Effect of Hypohydration on Muscle Endurance, Strength, Anaerobic Power and Capacity

and Vertical Jumping Ability: A Meta-Analysis. ***Sports Medicine***. Aug;45(8) PP:1207-1227. doi: 10.1007/s40279-015-0349-0.

Bongers BC, Werkman MS, Blokland D, Eijsermans MJ, Van der Torre P, Bartels B, Verschuren O and Takken T. (2015) Validity of the Pediatric Running-Based Anaerobic Sprint Test to Determine Anaerobic Performance in Healthy Children. ***Pediatric Exercise Science***. May;27(2) PP:268-276. doi: 10.1123/pes.2014-0078. Epub 2014 Nov 10.

Maciejczyk M, Wiecek M, Szymura J, Szygula Z and Brown LE. (2015) Influence of increased body mass and body composition on cycling anaerobic power. ***Journal of Strength and Conditioning Research***. 2015 Jan;29(1):58-65. doi: 10.1519/JSC.0000000000000727.

Pasiakos SM, McLellan TM and Lieberman HR. (2015) The effects of protein supplements on muscle mass, strength, and aerobic and anaerobicpower in healthy adults: a systematic review. ***Sports Medicine.*** Jan;45(1) PP:111-131. doi: 10.1007/s40279-014-0242-2.

Surowiec RK, Wang H, Nagelkirk PR, Frame JW and Dickin DC. (2014) The effects of whole-body vibration on the Wingate test for anaerobic power when applying individualized frequencies. ***Journal of Strength and Conditioning Research.*** Jul;28(7) PP:2035-2041. doi: 10.1519/JSC.0000000000000341.

Gent DNand Norton K. (2013) Aging has greater impact on anaerobic versus aerobic power in trained masters athletes. ***Journal of Sports Sciences***. PP:97-103. doi: 10.1080/02640414.2012.721561. Epub 2012 Sep 13.

Kingsley JD, Zakrajsek RA, Nesser TW and Gage MJ. (2013) The effect of motor imagery and static stretching on anaerobic performance in trained cyclists**.** ***Journal of***

Strength and Conditioning Research. Jan;27(1) PP:265-269. doi: 10.1519/JSC.0b013e3182541d1c.

Kim J, Cho HC, Jung HS and Yoon JD. (2011) Influence of performance level on anaerobic power and body composition in elite male judoists***Journal of Strength and Conditioning Research.*** May;25(5) PP:1346-1354. doi: 10.1519/JSC.0b013e3181d6d97c.

Mikulic P. (2011) Development of aerobic and anaerobic power in adolescent rowers: a 5-year follow-up study. ***Scandinavian Journal of Medicine and Science in Sports***.Dec;21(6) PP:143-149. doi: 10.1111/j.1600-0838.2010.01200.x.Epub 2010 Aug 30.

Carvalho HM, Coelho e Silva MJ, Figueiredo AJ, Gonçalves CE, Castagna C, Philippaerts RM and Malina RM. (2011) Cross-validation and reliability of the line-drill test of anaerobic performance in basketball players 14-16 years***. Journal of Strength and Conditioning Research***. Apr;25(4) PP:1113-1119. doi: 10.1519/JSC.0b013e3181d09e38.

Guchan Z, Bayramlar K and Ergun N. (2016) Determination of the effects of playing soccer on physical fitness in individuals with transtibial amputation. ***Journal of Sports Medicine and Physical Fitness.*** Apr 7. [Epub ahead of print]

Nikolaïdis PT. (2014) Short-term power output and local muscular endurance of young male soccer players according to playing position. ***Collegium Antropologicum***. Jun;38(2) PP:525-531.

Sedano S, Marín PJ, Cuadrado G and Redondo JC. (2013) Concurrent training in elite male runners: the influence of strength versus muscular endurance training on

performance outcomes***. Journal of Strength and Conditioning Research.*** Sep;27(9) PP:2433-2443. doi: 10.1519/JSC.0b013e318280cc26.

Sales AT, Fregonezi GA, Ramsook AH, Guenette JA, Lima IN and Reid WD. (2016) Respiratory muscle endurance after training in athletes and non-athletes: A systematic review and meta-analysis. ***Physical Therapy in Sport.*** Jan;17 PP:76-86. doi: 10.1016/j.ptsp.2015.08.001. Epub 2015 Aug 13.

Lardon A, Leboeuf-Yde C and Le Scanff C. (2015) Is back pain during childhood or adolescence associated with muscle strength, muscle endurance or aerobic capacity: three systematic literature reviews with one meta-analysis. ***Chiropractic & Manual Therapies***. Jul 16;23 P:21. doi: 10.1186/s12998-015-0065-8. eCollection 2015.

Mutchler JA, Weinhandl JT, Hoch MC and Van Lunen BL. (2015) Reliability and fatigue characteristics of a standing hip isometric endurance protocol. ***Journal of Electromyography and Kinesiology***. Aug;25(4) PP:667-674. doi: 10.1016/j.jelekin.2015.02.003. Epub 2015 Feb 12.

Juan-Recio C, López-Vivancos A, Moya M, Sarabia JM and Vera-Garcia FJ. (2015) Short-term effect of crunch exercise frequency on abdominal muscle endurance**.** ***Journal of Sports Medicine and Physical Fitness.***Apr;55(4) PP:280-289.

Hagen L, Hebert JJ, Dekanich J and Koppenhaver S. (2015) The effect of elastic therapeutic taping on back extensor muscle endurance in patients with low back pain: a randomized, controlled, crossover trial**.** ***Journal ofOrthopaedic and Sports Physical Therapy***. Mar;45(3) PP:215-219. doi: 10.2519/jospt.2015.5177. Epub 2015 Feb 13.

Homma T, Hamaoka T, Osada T, Murase N, Kime R, Kurosawa Y, Ichimura S, Esaki K, Nakamura F and Katsumura T. (2015) Once-weekly muscle endurance and strength training prevents deterioration of muscle oxidative function and attenuates the degree of strength decline during 3-week forearm immobilization. ***European Journal of Applied Physiology***. Mar;115(3) PP:555-563. doi: 10.1007/s00421-014-3029-0. Epub 2014 Oct 26.

McGill SM, Cambridge ED and Andersen JT. (2015) A six-week trial of hula hooping using a weighted hoop: effects on skinfold, girths, weight, and torso muscle endurance. ***Journal of Strength and Conditioning Research.*** May;29(5) PP:1279-1284. doi: 10.1519/JSC.0000000000000653.

Vaara JP, Vasankari T, Fogelholm M, Häkkinen K, Santtila M and Kyröläinen H. (2014) Maximal strength, muscular endurance and inflammatory biomarkers in young adult men.***International Journal of Sports Medicine.*** Dec;35(14) PP:1229-1234. doi: 10.1055/s-0034-1375615. Epub 2014 Sep 25.

Ozer Kaya D, Düzgün I and Baltacı G. (2014) Differences in body fat mass, muscular endurance, coordination and proprioception in woman with and without knee pain: a cross-sectional study. ***ActaOrthopaedicaTraumatologicaturcica.***PP:43-49. doi: 10.3944/AOTT.2014.3135.

del Pozo-Cruz B, Mocholi MH, del Pozo-Cruz J, Parraca JA, Adsuar JC and Gusi N. (2014) Reliability and validity of lumbar and abdominal trunk muscle endurance tests in office workers with nonspecific subacute low back pain. ***Journal of Back Musculoskeletal Rehabilitation***. ;27(4) PP:399-408. doi: 10.3233/BMR-140460.

WEB SOURCES

"An Introduction to the Medicine Ball". Retrieved from **http://www.fitday.com/fitness-articles/fitness/equipment/an-introduction-to-the-medicine-ball.html//**. On 01 / 05 / 2016.

"Medicine Ball Training". Retrieved from http://www.brianmac.co.uk/medball.htm///. On 01 / 05 / 2016.

"Medicine Ball Training and Then Some". http://www.crossfitpraha.com/wp-content/uploads/2010/10/Ross-Enamait-.-Medicine-Ball-Training.pdf///. On 01 / 05 / 2016.

"Anaerobic Power". Retrieved from http://www.topendsports.com//. On 02 / 05 / 2016.

"Explosive Training: Technique, speed and strength are the key to Explosive Exercises". Retrieved from https://cnu.edu/weightroom/pdf/explosive.pdf//. On 02 / 05 / 2016.