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Influence of Resistance Training on Selected Osteokinematics Variables of Badminton Players

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Abstract – The study was designed to investigate the "influence of resistance training with yoga on selected osteokinematics variables of badminton plyers". To achieve this purpose forty school level badminton players were randomly selected from Coimbatore district as subjects. Their age ranged between 14 and 17 years. The selected subjects were divided into two equal groups consisting of twenty each. No attempt was made to equate the groups. Experimental group I (n = 20) underwent resistance training (RT), for a period of 12 weeks and group II (n = 20) acted as control group (CG), the subjects in control group were not engaged in any training programme other than their regular work. The osteokinematics variables wrist- Flexion andExtension was assessed by 180˚ Goniometer. The data collected from the subject was statistically analyzed with't' ratio to find out significant improvement if any at 0.05 level of confidence. The results of the selected variables improved significantly due to Influence of resistance training. The result of the present study Influence of resistance training significantly improved wrist- Flexion and Extension of badminton players.

Keyword: Resistance Training, Osteokinematics, Range of Motion and Badminton.

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1. INTRODUCTION

Kinematics is the word specified to the study of movement. Osteokinematics is the learning of the movement of the bone in space. The movement of the bone is evaluated, measured, and recorded to symbolize the joint ROM. Joint ROM is the total of movement that occurs at a joint to produce movement of a bone in space. To execute active range of motion (AROM), the patient contracts muscle to voluntarily move the body part through the ROM without assistance. To perform passive range of motion (PROM), the therapist or alternative external force moves the body part through the ROM. A sound knowledge of anatomy is compulsory to assess the ROM at a joint. This includes information of joint articulations, motions, and normal limiting factors. (**Clarkson 2012**)

Anatomy and Osteokinematics

Although *Gray's Anatomy* terms the radiocarpal joint as "the wrist joint proper," additional authors describe a wrist joint complex that includes the extra distal metacarpal joint as well as the radiocarpal joint. The radiocarpal joint consists of the articulation between the distal finish of the radius and the radioulnar disk proximally, and the proximal row of carpal bones distally. The articulation between the proximal and distal rows of carpal bones makes up the metacarpal joint. Movement at both joints is needed to achieve the full range of motion (ROM) of the wrist, which has been classified as a condyloid joint. Motions present at the wrist consist of flexion, extension, abduction (radial deviation), and adduction (ulnar deviation).

Limitations of Motion: Wrist Joint

With the fingers free to move, limitation of wrist flexion and extension range of motion is made by passive tension in ligaments crossing the dorsal and volar surfaces of the wrist, individually. Thus, the end-feel for passive flexion and extension of the wrist is firm. But, if the fingers are not free to move and are flexed, the station of the fingers will limit wrist flexion secondary to passive tension in the extrinsic finger extensors. Equally, extension of the fingers will limit wrist extension owing to passive tension in the extrinsic finger flexors. Wrist adduction is limited by ligamentous structures (radial collateral ligament) and is related with a capsular end-feel, whereas wrist abduction is limited by bony contact between the radial styloid method and the trapezium, producing a bony end-feel at the limit of wrist abduction., bi

Information about normal ranges of motion for all movements of the wrist is originate. **(REESE *et al.,* 2002)**

2. MATERIALS AND METHODS

2.1 Experimental Approach to the Problem

To report the assumption presented here, we a selection of forty school-level badminton players. Their age's variety from 14 to 17 years old. The particular subjects were divided into two equal groups of twenty people each. No attempt was made to level the groups. Experiment group I (n = 20) accompanied resistance training (RT) for 12 weeks and group II (n = 20) acted as a control group (CG), however subjects in the control group did not participate in any other exercise program than their natural work.

2.2 Design

Assessed parameters are wrist flexion and extension (180◦ goniometer). After 12 weeks of resistance training, the parameters were measured at baseline and the effects of training were investigated.

2.3 Training Program

The training program continued 60 minutes per session, 3 days a week for an eight-week period. These 60 minutes consist of 10 minutes of warm-up, 40 minutes of their particular training, and 10 minutes of warm-up. During every three weeks of training, the 5% load intensity increased from 65% to 80% of the workload. The amount of training is mentioned based on the number of sets and repetitions.

2.4 Statistical Technique

The collected data were analyzed with application of 't' test to find out the individual effect from base line to post-test if any. 0.05 level of confidence was fixed to test the level of significance.

TABLE – I

COMPUTATION OF't' RATIO ON OSTEOKINEMATICS VARIABLES OF BADMINTON PLAYERS ON EXPERIMENTAL GROUP AND CONTROL GROUP

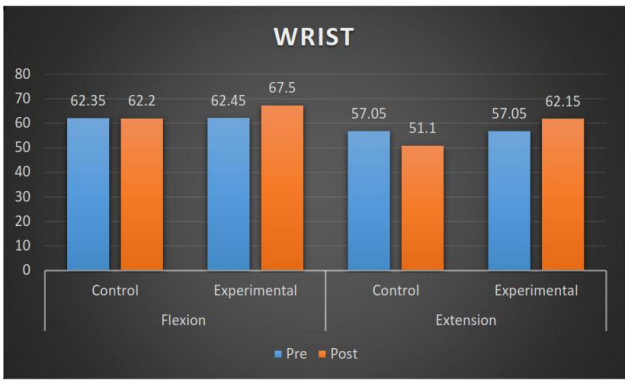
(Scores in degree)

Group	Variables	Group	Mean	S.D	T ratio
Control	Flexion	Pre test	62.35	1.42	1.14
		Post test	62.20	1.51	
	Extension	Pre test	57.05	1.10	0.33
		Post test	57.10	1.12	
Experimental	Flexion	Pre test	62.45	2.21	11.69*
		Post test	67.50	2.37	
	Extension	Pre test	57.05	1.82	16.17*
		Post test	62.15	1.95	

*Significant level 0.05 level of confidence (2.09),1 and 19

The above table reveals the computation of't' ratio between mean of pretest and posttest of control and experimental group on wrist flexion and extension, of badminton players. The mean values of pre and posttest of wrist flexion and extension for control group were 1.14 and 0.33 were lesser than required table value 2.09. It was found statistically not significant for the degree of freedom 1, and 14 at 0.05 level of confidence.

The mean values of pretest and posttest of wrist flexion, extension, ulna deviation and radial deviation of badminton players. The mean values of pre and posttest of wrist flexion, extension, ulna deviation and radial deviation for control group were 11.69 and 16.17 were greater than required table value 2.09. It was found statistically significant for the degree of freedom 1, and 19 at 0.05 level of confidence.



Graph Represented in Osteokinematics Variables

3. DISCUSSION AND FINDINGS

The current study experimented the influence of resistance training on selected osteokinematics variables of badminton plyers. The result of this study specified that the resistance training improves the osteokinematics variables such as Wrist Flexion, Extension, ulna deviation and radial deviation. The findings of the current study had parallel with the findings of the investigations mentioned in this study **Farinatti *et al.,* (2014)** the practice of hatha yoga was more operational in improving flexibility. **Leite *et al.,* (2017)** Changed resistance levels indicate improved flexibility for some joints of young people, even though resistance training only increases flexibility. **Lim (2016)** Merging vibration resistance training with thermotherapy and electrotherapy is very effective in improving wrist extension strength, ROM, elbow function, QQL in tennis elbow patients. **Ana Paula (2016)** the invention shows that strength training with elastic resistance increases during contraction at the greatest angle of torque and hip flexibility of a classical ballet dancer. **Saravanan(2010)** evaluated the twelve weeks of sports specific lower body plyometric taming and upper body strength training, sports specific upper body plyometric taining and lower body strength training, sports specific plyometric training md strength training and combination of sports specific plyometric training, stnaqgfti training with skill movement training significantly improved the range of motion variables of shoulder elevation through abduction, thoracolumbar trunk rotation and ankle planter flexion. **Boon (1979)**

it's concluded that the few motions showed significant differences. **Pinto (2012)** It was determined that the result was improved in both full and partial resistance training, but that the fullness would lead to greater strength. **Jung-Hyun choi (2016)** the result was an increase in flexibility and joint operating range.

The results of the current study indicate that the resistance training is effective method to improve flexion, extension, ulna and radial deviation of badminton players. The inconsistency between the results and the results of previous studies might be attributed to a number of reasons, such as the training experience level of the subjects, the training programme, the intensity used and the duration of the training programme.

4. CONCLUSIONS

Eight weeks of resistance training produced significant improvements in the flexion, extension, of badminton players.

Resistance training is an appropriate training protocol to bring out desirable changes over osteokinematics variables for badminton players.

5. RECOMMENDATIONS

The following recommendations have been made based *n the results of the present study.

1. The combination of sports specific resistance training, with skill movement training is the appropriate training method for improving the range of motion, physical, physiological, psychological and performance related variables.

2. Similar study may also be conducted for different age group

3. Similar study may also be conducted for particular game and sports at various levels of participation.

4. Studies of similar nature may also be conducted by changing the dependent variables.

5. Similar study may be conducted using various training methods like concurrent training, contrast training and skill based training by employing more experimental groups,

REFERENCE

Ana paula, Magda Amabile Biazus Carpeggiani, Anderson, Francesca Chaida and Monica de Oliverira (2016) **Rev Bras Educ Fis Esports**. Volume 30 issue 4: pp. 903-11.

Berryman Reese, William d. bandy. and Nancy Berryman Reese, (2002) **Joint Range of motion and Muscle Length Testing**, W.B.Sounders Company A. Harcourt Health Sciences Company ISBN 0-7216-8942-6 pg.no:63-92.

FarinattiPT, Rubini EC, Silva EB and Vanfraechem JH (2014) **Flexbility of the elderly after one year practice of yoga and calisthenics** International Journal of Yoga Therapy 24: pp. 71-71 10.3233/WOR-2009-0877.

Hazel M. Clarkson (2013) **Musculoskeletal Assessment Joint Motion and Muscle Testing, Lippincott Williams & Wilkins**, ISBN 978-1-60913-816-5 pg.no: 4.

Jong hun lim and Won seob shin (2016) **Effects of vibration resistance ecercise on strength, range of motion, function pain andquality of life in persons with tennis elbow**, Physical therapy Rehabilition Science Volume 5 Issue 4: pp. 163-169.

Jung-Hyun choi, Kyung-Tae yoo, Ho-Jung an Wan-sukchoi Ja-pungkoo, Jae-ic Kim, nyeon-Jun Kim (2016) **The effects of taping, stretching, and joint exercise** Vol. 28, No. 5 pg 1665–1668,

K.Murugavel and E. Balaji (2014) **Effects of Resistance Training and Detraining Programme on Upper Body Strength and Leg Explosive Power of University Men Handball Players**, International Interdisciplinary Research Journal, Volume 4 Issue 5 Pages 216-223.

Nandagopal D and Murugavel K (2019) **Impact of resistance training on physical fitness variables of school level men soccer players**, Bharathiar National Journal of Physical Education and Exercise Sciences ISSN-0976-3678 vol. 10, no (2) pg. 12-17

Ronei s. Pinto, Naiara Gomes regis Radaelli, cintia e. Botton, Lee E. Brown, and martim bottaro (2012) **effect of range of motion n muscle strength and thicknessjournalof strength and conditioning research** national strength and conditioning association 26(8)/ pp. 2140–2145.

Saravanan Elumalai (2019) **Impact of upper body plyometric training with and without skill movement training on Cricket ball throwing ability of male Cricketers**. Journal of Information and Computational Science. Volume 9 Issue 8 – 2019 pg no 918-927. DOI: 10.12733.JICS.2019.V9I7.535569.0996.

Saravanan Elumalai and Kannan G (2019) **Short Term Effects of Kettle Bell and Swiss Ball Training on Badminton Serving Ability. Journal of Information and Computational Science.** Volume 9 Issue 11 – 2019 pg no 1744-1753. DOI: 10.123.JICS.2019.V9I11.535569.11198.

A Sreemathi and K Murugavel (2017). **Comparative effect of two different frequency of plyometric training on explosive power parameters of college women players**. International Journal of Physiology, Nutrition and Physical Education; 2(2): pp. 72-76.

Saravanan, E and Pushparajan (2010) **A Effects of various sports specific training methods on range of motion physical physiological psychological and performance related variables of male cricketers.** Shodhganga@INFLIBNET, http://hdl.handle.net/10603/101323.

Tamilselvan G and Rajkumar M (2019) **Effect of Game Specific Training on Selected Physical and Physiological Variables among College Men Kabaddi Players**, BHARATHIAR NATIONAL JOURNAL OF PHYSICAL EDUCATION AND EXERCISE SCIENCES ISSN-0976-3678 2019, Vol.10, No (2) Pg.1-6

Thalita B. Leite, Pablo B. Costa, Richard D. Letite, Jefferson S. Novaes, Steven j Fleck and Roberto simao (2017) **Effects of different number of sets of resistance training on flexibility**, International Journal of Exercise science 10,3: pp. 354-364.

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