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Impact of Yogic Pratices on Flexibility and Balance of College Athletes

Dr. Ramdas R. Jadhav
Director & Head,
Dept. of Physical Education & Sports, Rajarshi Shahu Arts, Commerce & Science College Pathri, Dist. Aurangabad (MS), India.
Email- ramdasrjadhav@gmail.com

Abstract
The aim of this study was to find out the impact of yogic practices on flexibility and balance of college athletics. The research population included sixty (60) male subjects between the age group of 18 to 28 years were selected as subject from Dept. of Physical Education, Rajarshi Shahu College of Arts, Commerce & Science Pathri, Dist. Aurangabad, Maharashtra, India. The subjects were purposively assigned into two groups: Group-A : Experimental Group (N=30) and Group-B : Control Group (N=30). All the subjects were informed about the objective and protocol of the present study. The subject from Group-A were subjected to 6 weeks yogic practices. The training consisted of variety of yogic asanas like Parsottanasana, Adho-Mukh-Svanasana, Utthita Parsva Konasana, Dhanurasana, Bhujangasana, Paschimottanasana, Sarvangasana, Halasana, Vrksasana, Utkatasana, Virbhadrasana. Sit and Reach (SR) test for flexibility and Stork Stand (SR) test for balance was used for measurement of independent variables. Descriptive analysis and independent 't' test were applied at 0.05 level of significant. The result revealed that the 6 weeks yogic practices brought about significant improvement in flexibility (t=8.06,) and balance (t=5.92) in Group-A as a compared with the Group-B. Findings concluded that regular practices may improve the college athlete's flexibility and balance.
Keywords: Yoga, flexibility, balance, athletes.

Introduction:

Today yoga is most popular in the world. It is recognized a one of the most important heritage of India. Traditionally it was said that lord shiva is beloved to be the inventor of yoga. Our ancestors spend a lot of time in practicing yoga for their good health and happiness. Yoga as a 5000 years old system of technologies and methodologies that provides a complete philosophy of living defines by Taylor M.J., (2000). It incorporates learning about the nature of life, reality, and the self. Yoga is an open-ended practice that assists in quieting the body, mind, and emotions. First developed in India, yoga is an ancient discipline that increases mental and physical control of the body to achieve a state of well-being (Singh V. et. al., 1990; Telles S. et. al., 1993; & Anand B. K., 1991). The word yoga is derived from the Sanskrit root "yug" that means, "to join together" (Murie C. A., 1998).

Yoga is all over world practiced for its benefits to body and mind. Yoga rectifiers is an decreasingly appreciated discipline, particularly in India where it's overseen by the Ministry of Health and Family Welfare's Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (Raphaelhager, 2009). Not figures studies have assessed the influence of integral yoga practices on cerebral and health variables, establishing multitudinous possible benefits. Regular practice of yoga has multitudinous health benefits (Wolff et. al., 2013; Pal et. al., 2011; McDermott et. al., 2014; Parikh et. al., 2014). Yoga also brings positive changes in physical performance and well-being if rehearsed regularly (Akhtar et al., 2013; Ross and Thomas, 2010) by improving to flexibility and balance (Boehde et al., 2005) as well as functions of cardiovascular also (Bera T.K. et. al., 1993). Yoga may have direct link to ameliorate the common rudiments of athletic performance (Harrelson G.L. & Swann E., 2003). Regular yoga practice rapidly enhanced flexibility as this process involves gentle muscle stretching, tissues connectivity around bones and joints (Woodyard C., 2011). Yoga also has profound effect on balance, muscular strength, abidance and collaboration because of its largely structural exertion and involvement (Carrico M., 1997).

Yoga is different from other typical forms of exercise training as it requires multi-structural involvement that gives a difficult task to the body in various different ways (Gulati R. & Sharma A., 2011; Kaminoff L. et. al., 2007). Proper positioning trough yoga enhances movement abilities and reduces movement limitation, thus improves body performing among college athletes. It also helps to maintain continuous and stable breathing throughout a series of asanas involving groups of muscle required under tension. Interacting the strained musculoskeletal system brings comprehensive changes to the whole body while performing those asanas (Coulter H., 2010).

Traditional exercise emphasizes on perfecting specific fitness for a given sports achievement (Bryant C.X. & Green D.J., 2006). On the other hand, regular yoga practice improves many specific fitness components (e.g. increase alignment, range of motion, and enhance muscle fibers recruitment) by increasing flexibility and reducing tension of muscle thus allows new movements to take place and help to move freely joints (Clark B. & Powers S., 2012). Therefore sport skill improves.

Flexibility is the one of factors of health related physical fitness. Flexibility can be defined as a property of the musculoskeletal system, which determines the range of stir that's attainable without joints injury. Flexibility implies 'freedom to move' and it is the ability to engage a part of the body in a wide range of purposeful movements at the speed required (Alter M.J., 2004). The term flexibility in this context means the elasticity of soft tissues that cross or surround joints (muscles, tendons, fascia, articular capsule, ligaments, nerves, blood vessels, skin) and is absolutely necessary for painless movement of the body (Kinser C. et. al., 2007). Flexibility exercises should be performed by every age groups like children, adolescents, adults and the elderly also. World Health Organization recommends taking part in muscle-strengthening activities that involve the major muscle groups on two or more days a week (WHO, 2010).

Balance is one of the important fitness components which not only play a vital role for the sports person but also for sedentary people. It is ability to sustain the body center of gravity over its base of support. Static and dynamic balance these are two types of balance. Static balance is the capability to maintain the neuromuscular system in a static condition for an effective response or to control it in a specific effective position while dynamic balance is the capability to maintain the stir in neuromuscular system. Both the types of balance are equally important according to the nature of activity. The main role plays dynamic balance more important role for the sedentary people then static balance. Static balance was to perform a task while maintaining a stable position (Ricotti L., 2011).

Therefore, the main intention of this paper was to investigate the impact of yogic practices on flexibility and balance of college athletics. Thus, through an improvement of flexibility and balance performance should increase by yogic practices.

Review Of Literature:

Literature related to the present study has been presented as follows-

Jay Polsgrove M. et. al., (2016) conducted a study on impact of 10 weeks of yoga practice on flexibility and balance of college athletes. They're reported that the findings for independent variables like flexibility and balance measures as well as whole body measures illustrate the significant positive changes due to the participation in daily yoga practices in the yoga group as well as the significant differences between yoga and non-yoga groups.

Shah Noman Md. Iftekher et. al., (2017) studied on effects of yoga on flexibility and balance of athletes. Total 20 athletes participated in present study. In each group 10 participants (10 in yoga group and 10 in non-yoga group). They are also reported that significant improvement was observed in the yoga group for flexibility and balance then the non-yoga group. They were concluded that the daily yoga practices may improve the flexibility and balance of athletics also. Dr. Suresh C. & Pravin Raj R., (2021) conducted study on impact of yogic practices on flexibility in college students. Total 60 students participated in the present study. They were significantly found that the yogic practices enhanced physical fitness variables such as flexibility in college students also. Similar result also found by Mr. Selvakumar K. et. al., (2019) on influence of yogic practice on flexibility among college students. Another study done by Dr. Amandeep Singh, (2019) on the effect of selected yogic practices on flexibility and agility of soccer players of Punjabi University, Patiala. The researcher has taken 50 soccer players belonging to Punjabi University Patiyala and divided in two equal groups. Findings of this study suggested that the practice of eight week yoga programmed showed significant improvement in flexibility level. Dr. Rajkumar P. Malipatil, (2018) studied the effect of asana on physical fitness variables among government residential school students. He was concluded that regular yogasana practices have improvement to flexibility.

Petric M. et. al., (2014) conducted a study on the impact of hatha yoga practice on flexibility. They were concluded that the enhancement of flexibility is one of the most egregious and snappily achieved impacts of regular hatha yoga practice. The results of this study indicated that the daily yoga practice has a significantly effect on flexibility in young women. Similar result also found by Gurpreet Makker, (2013) on effect of selected asanas on the flexibility of Ranji level wicket keepers in cricket.

Materials And Methods:

Subject -

Sample of the study consisted of *sixty* (60) male subjects between the age group of 18 to 28 years were selected as subject from Dept. of Physical Education, Rajarshi Shahu College of Arts, Commerce &science Pathri, Dist. Aurangabad, Maharashtra, India. The subjects were purposively assigned into two groups: Group-A : Experimental Group (N=30) and Group-B : Control Group (N=30). All the subjects were informed about the objective and protocol of the present study. The subject from Group-A were subjected to 6 weeks yogic practices.

Procedure -

The Group-A (experimental group) and Group-B (control group) were comprised of college athletes. During the period of yoga sessions for 6 weeks, only members of experimental group have participated the regularly yoga practices. The yoga practice sessions was scheduled at 6:30 a.m. to 7:30 a.m. on Monday to Saturday weekly working days. The experimental group was assigned to asanas such as Pyramid Pose (Parsottanasana), Downward Facing Dog Pose (Adho-

Mukh-Svanasana), Extended Side Angle Pose (Utthita Parsva Konasana), Bow Posture (Dhanurasana), Cobra (Bhujangasana), Intense Dorsal Stretch Posture (Paschimottanasana), Supported Shoulder Stand (Sarvangasana),Plow Pose (Halasana),Tree Pose (Vrksasana), Chair Pose (Utkatasana),Warrior Poses (Virbhadrasana). Measures of flexibility and balance were taken immediately before and shortly after the six week yoga sessions.

Measuring Tools -

Assessments for each group were completed separately. One day before the initiation of first yoga session, the measurements were taken with the same testing protocol from both experimental and control groups. Similarly, at the end of 6 weeks yoga practices one day after, the testing protocol was repeated with the experimental and control group of college athletes. The measurements of flexibility were determined by Sit and Reach (SR) Test developed by Baechle T., (2008), while a test of balance was conducted with a Stroke Stand (SS) Test was developed by Coulson M. & Archer D., (2011).

Data Analysis -

The collected data in present study were analyzed by statistic program version 25.0 of the Statistical Package for Social Science (SPSS) software. Descriptive Statistic (Mean and Standard Deviation) and Independent 't' test was applied to comparison between experimental and control groups. The significance level of was set as 0.05 levels ($p<0.05$).

Results:

The findings with regards to the present study have been presented in Table No. 1. Further in Fig. No. 1 the graphical representation is presented.

Table No. 1. Analytic statistics between control and experimental group on Flexibility.

Variables	**Group**	**N**	**Mean**		**SD**		**DF**	**'t'-value**
			Pre-test	Post-test	Pre-test	Post-test		
Flexibility	Control	30	16.43	17.50	1.04	1.23	29	0.67
	Experimental	30	16.20	18.66	1.27	1.02		**8.06**

*Significant on 0.05 level of confidence

Table No. 1.indicates the results of control group and experimental group with regards the variable flexibility. The descriptive statistics shows the Mean and SD value of flexibility of pre-test and post-test of control group was 16.43±1.04 and 17.50±1.23 respectively, whereas the Mean and SD value of flexibility of pre-test and post-test of experimental group was 16.20±1.27 and 18.66±1.02. The 't' value of control group was 2.67 and for experimental group it was 8.06. The 't' value is 8.06 which is more than tabulated value. It means there was significant difference between control and experimental group with regards to their flexibility.

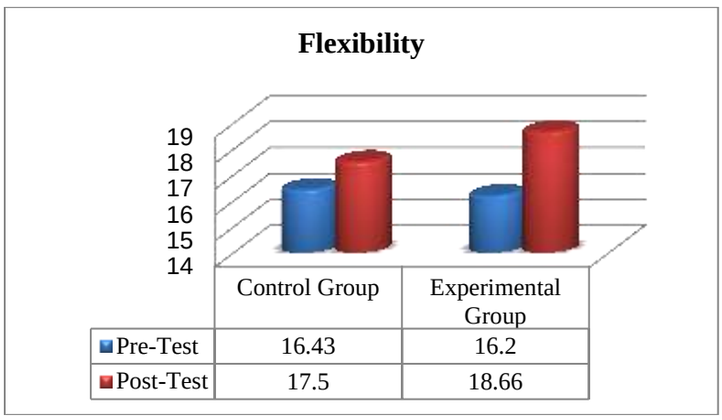

Fig. No.1 – Graphical representation in flexibility between control and experimental group for flexibility.

The findings with regards to the present study have been presented in Table No. 2. Further in Fig. No. 2 the graphical representation is presented.

Table No. 2. Analytic statistics between experimental and control groups for balance.

Variables	**Group**	**N**	**Mean**		**SD**		**DF**	**'t'-value**
			Pre-test	Post-test	Pre-test	Post-test		
Balance	Control	30	32.90	33.16	3.55	3.73	29	0.31
	Experimental	30	33.93	38.76	3.09	3.28		**5.92**

*Significant on 0.05 level of confidence

Table No. 2.indicates the results of control group and experimental group with regards the variable balance. The descriptive statistics shows the Mean and SD value of balance of pre-test and post-test of control group was 32.90±3.55 and 33.16±3.73 respectively, whereas the Mean and SD value of balance of pre-test and post-test of experimental group was 33.93±3.09 and 38.76±3.28. The 't' value of control group was 0.31 and for experimental group it was 5.92. The 't' value is 5.92 which is more than tabulated value. It means there was significant difference between control and experimental group with regards to their balance.

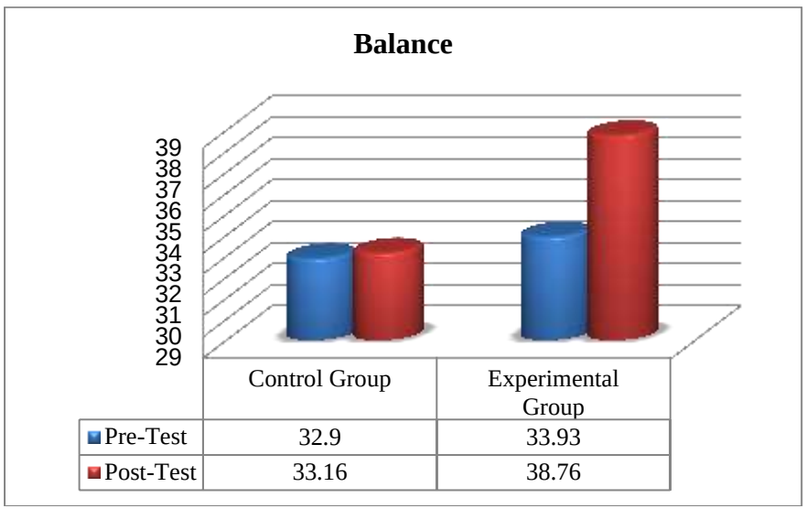

Fig. No.2 – Graphical representation in flexibility between control and experimental group for balance.

Discussions:

Flexibility and balance are important factors of fitness of any sportsmen which plays an important part on their performance. In this particular study, our main focus was to determine if yoga has any additional effect on the flexibility and balance of college athletes. Only experimental (yoga) group was given yoga practices. Evidence have shown that flexibility training and yoga increases the range of stir of joints (McHugh M.P. & Cosgrave C.H., 2010; Amin D.J. Goodman M., 2014) compared to those who are untrained. In these findings, it shows that the regular yoga training significantly increases the measures of flexibility. On the contrary, the control (non-yoga) group did not show any improvement in flexibility measures. Moreover, yoga group participants also had higher flexibility than the non-yoga group also. Thus, the 6 weeks of yoga practicing did help to improve flexibility. Regular yoga practice supposed to increase the balance (Zech et. al., 2010; Boehde et. al., 2005). This study finds similarity with other studies too. In a study conducted among college athletes for about 6 weeks of yoga session in similar setting. Significant enhancement were seen in both flexibility and balance among those participant who were belong to yoga group, but non-yoga group didn't show any changes in their performance after the tests performed for dimension (Polsgrove et. al., 2015). This substantiation also supports to these finding. Yoga can enhance the independent variables like flexibility and balance of college athletes also.

The result of the study also supported by the previous study conducted by Jay Polsgrove M. et. al., (2023) on impact of 10-weeks of yoga practice on flexibility and balance of college athletes. They were reported that regular yoga practice may increase the flexibility and balance on college athletics. The finding of Mr. Selvakumar K. et. al., (2019) also reported that there was found significant difference on the criterion variable. There were found difference between experimental (yoga) groups on flexibility when compared to control (non-yoga) group due to yogic practice. Similar results were found in previous work carried out by Petric et. al., (2014) to determine the impact of hatha yoga practices on flexibility. He was reported that a regular practice of yoga has a significant effect on body flexibility, which is particularly obvious in measurement of the increase of the flexibility of skeletal muscles.

Another study conducted among shooting trainee athletes revealed that regular yoga training may improve the flexibility and balance of shooting athletes even within short period of time, can also improve the athletic performances that demands high flexibility and balance (Shah Noman et. al., 2017).

Based on the above related literatures and consultations with numerous others the researcher definitely arrived at the conclusion that the trainee athletes who took the part in the yoga practices session had enhanced flexibility and balance than the other group also. Yoga also has psychological benefits which have not been studied in our study but this is also an important aspect to be added in future research.

Conclusions:

Based on the findings, we can conclude that taking part in yoga session has helped to improve flexibility and balance among college athletes. Thus, yoga may support to enhance to performance of athletes by increasing specific fitness components. Further studies to evaluate the impact of yoga including large sample size with different age groups, others sport departments, other components of fitness and measurement tools, psychological aspects and more time may help to create more strong evidence. Hence, we can recommend that yoga professional could be included with the team to conduct yoga session on a regular basis to enhance performance of athletes and players also. Trainers and coaches could also be trained on yoga poses so that they can conduct yoga session with their trainee athletes along with the other regular training.

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