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Kapil Kumar Sahu
Research Scholar, Dr. C.V. Raman University, Kota Bilaspur, Chhattisgarh, India

Dr. Jai Shankar Yadav
Associate Professor, Department of Physical Education, Dr. C.V. Raman University, Kota Bilaspur, Chhattisgarh, India

Corresponding Author:
Kapil Kumar Sahu
Research Scholar, Dr. C.V. Raman University, Kota Bilaspur, Chhattisgarh, India

An experimental study on shooting ability of male archers: With reference to specific yoga exercises

Kapil Kumar Sahu and Dr. Jai Shankar Yadav

Abstract
The performance of archers is reliant on varied factors. These factors range from biomechanical, physical, physiological to psychological. The beneficial effect of yoga on physical, physiological and psychological functioning has been advocated in so many scientific studies. The research gap is regarding the effect of specific yoga exercises on performance parameter of male archers. This study is directed to address this issue by means of an experimental study. To conduct the study 100 national level male archers were selected. In the pre-post test experimental design, the male archers were divided in two groups namely experimental and control group. The yogic exercise program prepared by Patanjali Yogpeeth Haridwar was used in this study. The shooting ability of male archers was assessed with a target placed at 70 meters. The male archers placed in experimental group were subjected to 06 months yogic exercise program apart from regular training schedule of male archers from both the groups. The data was collected two times. Results reveal that after completion of 06 months study time period, the shooting ability of male archers from experimental group was significantly higher as compared to male archers from control group. It was concluded that 06 months specific yogic exercise program enhances shooting ability of male archers.

Keywords: Archery, shooting ability, yogic exercise

Introduction
In archery shooting ability of an archer is based on quite a few factors namely mental skills, fitness, biomechanical, physiological etc. The shooting performance also depends on release of bow, left-right shoulder positions and other technical facts. Kim *et al*. (2015) [4] also reported psychological variables such as confidence, concentration and positive frame of mind in shooting performance. There are quite a factors that are also identified by researchers for performance enhancement of archers. Landers *et al*. (1986) [6] reported the significance of confidence, body composition, reaction time and perceptual abilities in archery performance. Hemaur *et al*. (2005) [3] reported that attention span and steadiness of hands is the key to archery shooting skills. Lee Koo H (2009) [7] reported the importance of concentration for expert performance in archery. So researchers have given list of wide variety of variables that are essential for performance in archery. According to yoga literature all these factors can be enhanced by practicing specific asanas. Researchers like Brynzak and Burko (2013) [1], Goodman *et al*. (2014) [2], Mishra (2015) [8], Polsgrove *et al*. (2016) [9], Sheela *et al*. (2016) [11], Kusuma and Wang Bing (2017) [5] have documented the benefits of yoga in sports performance. Despite knowing the importance of yoga in sports performance, efficacy of yoga for enhancement of shooting ability of archers has not be explored scientifically. Hence the present study was planned to assess the impact of 06 months specific yogic exercise program on shooting ability of male archers.

Objective
The objective of this study was to assess the effect of 06 months yogic exercise program on shooting ability of male archers.

Hypothesis
It was hypothesized that 06 months of specific yogic exercise program will increase the shooting ability of male archers.

Methodology

The following methodological steps were taken in order to conduct the present study.

Research Design

Randomized Control-Group Pretest Post Test Design was used in this study.

Sample

100 national level male archers (Ave. age 22.89 years) were selected for this experimental study. The male archers were selected from participants of camp organized in Uttar Pradesh and Uttarakhand. The sample of 100 male archers were divided randomly into experimental and control group as per design of the study.

Tools

Archery Shooting Ability

The shooting ability of male archers placed in both the groups were assessed under the rules set for recurve archery. A target at a distance of 70 meters was used for this purpose. The target circular in shape consists of 10 scoring circles with different colours. The scores are awarded on the basis of arrow hitting the target area on certain ring. The outermost circles give 1 and 2 points and painted white, the next two circles give 3 and 4 points and painted black, the next two rings give 5 and 6 points and painted in blue colour, the two red rings give 7 and 8 points. The centre ring is painted in gold and gives 9 and 10 point. The perfect 10 is score when arrow hit a dot like innermost ring.

Yogic Exercise Program

06 months specific yogic exercise program prepared by Patanjali Yogpeeth Haridwar was used in the present study. It consists of asanas such as Vrikshasana, vajrasan, shashankasana, ushtrasana, makarasana along with surya namasakar, tratak and pranav dhyan with addition of OM chanting. The time duration of this yogic exercises is 30 minutes/day and five days a week.

Procedure

The selected national level male archers placed in two study groups shoot six arrows in 04 minutes twice in pre-test scenario. The male archers placed in experimental group took part in six month specific yogic exercise program of Patanjali Yogpeeth Haridwar. Apart from this male archers of experimental and control group continued their regular practice sessions. After 06 months male archers from both the groups were asked to shoot six arrows in 04 minutes twice. In this way pre-post data on shooting ability was collected. Independent and paired sample 't' test, gain score and ANCOVA was used for data analysis.

Data Analysis

Table 1: Comparison of Pre-Post Mean Scores on Shooting Ability of Male Archers

Study Groups	N	Shooting Ability				't'
		Pre Test		Post Test		
		Mean	S.D.	Mean	S.D.	
Experimental Group	50	75.60	9.05	82.80	8.43	6.87**
Control Group	50	76.38	10.18	79.08	9.59	2.37*

t(df=49) at .05 level 2.01 and 2.68 at .01 level
* Significant at .05 level, ** Significant at .01 level

Table 1 shows significant change in shooting ability of male archers from experimental group after completion of six months study period as compared to pre test measures. (t=6.87, $p<.01$) Similarly a significant change was observed in shooting ability of male archers from control group after completion of six months study period as compared to pre test measures. (t=2.37, $p<.05$)

The pre-post mean difference on shooting ability of male archers from two groups was compared by computing gain score (Post test - pre test). Results shown in table 2.

Table 2: Comparison of Gain Score on Shooting Ability of Male Archers from Experimental and Control Group

	Experimental Group (N=50)		Control Group (N=50)		't'
	Mean	S.D.	Mean	S.D.	
Gain Score on Shooting Ability	+7.20	7.40	+2.70	8.03	2.91**

t(df=98) at .05 level 1.98 and 2.63 at .01 level
** Significant at .01 level

A perusal of table 2 indicate that mean gain in shooting ability of male archers from experimental group during study period was +7.20 while the mean gain in shooting ability of male archers from control group was +2.70. It shows that shooting ability of male archers from experimental group has increased more as compared to shooting ability of male archers of control group. [t=2.91, $p<.01$]

In order to nullify pre-existing difference in shooting ability of male archers from two study groups, ANCOVA was applied. Results shown in table 3.

Table 3: Analysis of Co-variance (ANCOVA)

Source	df	Sum of Squares Squares	Mean	F	Sig. Level
Pre	01	3479.378	3479.378	74.66	.01
Groups	01	440.738	440.738	9.45	.01
Error	97	4520.302	46.601		
Corrected Total	99	8345.640			

Table 4: Adjusted Mean Scores after Controlling for Pre-Test Shooting Ability Scores

Groups	Adjusted Mean
Experimental	83.04
Control	78.83
Mean Difference = 4.20, $p<.05$	

Covariates appearing in the model are evaluated at the following values Pre test = 75.99

Entries shown in table 3 and 4 shows that adjusted mean scores on shooting ability of male archers from experimental group was 83.04 while for male archers from control group it was 78.83. It shows that even after controlling for pre-test scores, the shooting ability of male archers who took part in 06 months yogic exercises (experimental group) was significantly higher as compared to shooting ability of male archers from control group. [F=9.45, $p<.01$; Mean Difference = 4.20, $p<.05$]

Result and Discussion

Result indicate that male archers who took part in six months specific yogic exercise program shown increased shooting ability as compared to male archers from control group with both groups having regular practice schedule.

It has been reported by Pradeep Kumar (2018) [11] that meditation helps in enhancing the performance of target shooters. Kusuma and Wang Bing (2017) [5] reported a beneficial impact of yoga practices on performance indices of badminton players. It has been noted in previous studies that yoga improves psychological, physical and physiological aspects of sports performance. These benefits are specifically written with each asana, meditation, Surya Namasakar that constitute the yoga exercise program used in this study. Hence the result scientifically purport the assumption that yoga improves sports performance and this is equally applied for male archers also.

Conclusion

On the basis of results it was concluded that specific yogic exercise program of short period of time is good enough for improving the performance of male archers. It may also be concluded that yogic exercise program prepare by Patanjali Yogpeeth Haridwar can be recommended for inclusion in training plan for performance enhancement in sports.

References

1. Brynzak SS, Burko SV. Improving athletic performance of basketball student team with the classical yoga exercises. Pedagogies, psychology, medical-biological problems of physical training and sports. 2013; 10:3-6.
2. Goodman FR, Kashdan TB, Mallard TT, Schumann M. A Brief Mindfulness and Yoga Intervention With an Entire NCAA Division I Athletic Team: An Initial Investigation. Psychology of Consciousness: Theory, Research, and Practice, American Psychological Association. 2014; 1(4):339-356.
3. Haemaur E. The effect of self analysis on archery performance among undergraduate students. Journal of Undergraduate Research, Kentucky. 2005, VIII.
4. Kim Han-Byul, Kim SH, Wi-Young SO. The relative importance of performance factors in Korean archery. J Strength Cond Res. 2015; 29(5):1211-9.
5. Kusuma DWY, Wang Bing. Effect of yoga program on mental health: competitive anxiety in semarang badminton athletes. KEMAS. 2017; 13(1):121-130.
6. Landers DM, Boutcher SH, Wang MQ. A Psychobiological Study of Archery Performance. Research Quarterly for Exercise and Sports. 1986; 57(3).
7. Lee Koo H. Evaluation of Attention and Relaxation Levels of Archers in Shooting Process using Brain Wave Signal Analysis Algorithms. 2009; 12(3):341-350.
8. Mishra S. Effects of Kapalbhati on the Performance of Target Games Players. International Journal of Physical Education and Sports Sciences. 2015; 8(15):3-6.
9. Polsgrove MJ, Eggleston BM, Lockyer RJ. Impact of 10-weeks of yoga practice on flexibility and balance of college athletes. Int J Yoga. 2016; 9(1):27-34.
10. Pradeep Kumar. An Analysis on the Effect of Meditation on Performance of Shooting Players. International Journal of Physical Education & Sports Sciences. 2018; 13(7):56-61.
11. Sheela HR, Rao N, Ganpat TS. Efficacy of Yoga for sustained attention in university students, 2016. Ayujournal.org.