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## Effects of selected Asana's on back extension of female students

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### Abstract

Back extension is an exercise which works the lower back, upper back, and specifically the erector spine. The purpose of the study was to determine the effects of selected asanas on back extension of female students. 120 female students of 18-19 years were randomly selected from Government Post Graduate colleges Berinag, Uttarakhand. They were randomly assigned to either an experimental (n=60) or control (n=60) groups. Only experimental group was participated on 30 minutes of training session, which was 8 week and 3 day per week training program. Before and after the training program data were collected. The data were analysed by 't' test to determine the difference between initial and final mean and level of significant was fixed at 0.05. Descriptive statistics i.e. Mean, Standard Deviation (SD) and t-test were used as statistical technique for the present study. After statistical analysis, finding show significantly effects on Back Extension of female Students of Uttarakhand.

**Keywords:** Physical fitness, lower back, upper back, endurance, female

### Introduction

In this mechanical era, every person are suffering from obesity, lack of flexibility and endurance, fat storage around the waist, indigestion and illness during the work and playing sports and doing any type of activities, they all feel back pain and fatigue on back during the work. These problems can be reduced by performing 20 to 30 minutes regular asanas (yogasanas) by an individual. Yogasanas improves physical fitness performances [1]. It has been reported that yogic exercises are capable of remarkable feats to improve endurance [2, 3]. Our ancient literature shows that our culture involved practicing that asanas very often, Most of the asanas are practiced since very beginning of human civilization. Modern scientific studies on the issue of mechanism of yogic techniques suggest that the control over the body can be achieved through passive concentration and efforts. These dimensions perform in all the mental, physical and emotional performances [4]. These asanas play vital role to balance the rhythm of neuromuscular tonic impulse and they improved the optimum muscular tone [5]. Asanas are also performed as physical exercise where they are sometimes referred to as "yoga postures" or "yoga positions" [6]. Many asanas are performed just for the health purposes. Yogasanas are known for better health if, they included with physical exercises. Through the yogasanas one puts the body mind and soul together those are not often practiced in modern exercise and everyday life [7]. Endurance of trunk muscles is necessary to optimal health, earlier it is taken for granted until the first episode of lower back pain occurs, an episode said to happen to 80% of the U.S. population at some time in their lives<sup>8</sup>. Trunk muscles are physiological postural muscles which are active for long period of time which low level of activity. These can be assessed mechanically by timing of an individual during postures or specific movements without an external load.

Back extension (Figure No.1) known as hyperextension or back lift is an exercise which works the lower back, upper back as well as specially the erector spine and the mid. This exercise targeted the lower back muscles, upper back muscles and mostly the erector spine. Back lifts or hyperextension is a pulling isolation exercise and good abdominal exercises. All sports training needs general and specific physiological preparations. This is true many yogic techniques can be used in sports preparation and techniques as well as increase sports performances. In sports, the role of warming up and cooling down, regeneration and

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compensation of muscle imbalances, activation or deactivation of the muscles are most important factors to tone the whole body. Many studies shows the yogic exercises can be more beneficial for that. The top level of activity of the multifidus during back extension as well as to the fact that the multifidus muscle is responsible for counteracting force in the sagittal plane, whereas the force contributed from the iliocostalis lumborum muscle are more likely in the frontal plane<sup>9</sup>. In sports like weightlifting and in all other power games, the muscles most commonly injured by pull and strains are the back, shoulder, hamstrings and calf muscles. Athletes competing in power sports should be regular practice of hyperextension. If normally once taken this opportunity in routine life will be fit for long time without back pain and fatigue. Bhowmik *et al.* also found that the significant effects of various yogic interventions strategies on back strength <sup>[9]</sup>.

**Bhujangasana:** In this asana, the body resembles the shape of a hooded snake. The effect of this asanas is to tone of spinal region as well as expended the chest <sup>[11]</sup>.

**Shalabhasana:** In this asana, the body resembles a locust. The effect of this asanas is strengthening the muscles of lower back <sup>[12]</sup>.

**Dhanurasana:** In this posture the body resembles a bow with its string attached to it. The trunk and the thighs represent the bow. The effect of this asana is brings back elasticity to the spine, tones the abdomen and as well as back <sup>[13]</sup>.

**Halasana:** In this asana, the body resembles the shape of a plough. As plough makes the hard ground soft, in this asana the veins are stretched which reduces the stiffness of the body.

**Ushtrasana:** In this asana, the body resembles a camel. The effect of this asanas is tone of back <sup>[12]</sup>.

**Matsyasana:** In this asanas, the body resembles the shape of a fish.

**Chakrasana:** In this position, the body resembles looks like a wheel. This is a strong back-bending yoga asana.

**Naukasana:** In this asanas, the body resembles looks like a boat. This pose can be performed both lie on your back (Supine position) as well as stomach (Prone position).

**Kandharasana:** It is an advanced inverted forward bend and resting posture that requires a great deal of flexibility in the hips, legs and back.

**Sarvangasana:** The term comes from the Sanskrit *sarva*, meaning "all," *anga*, meaning "limb," and *asana*, meaning "pose" or "posture." The neck and back gain strength

All these asanas are effective to improve power of back, endurance of back, and strengthen the back muscles as well as tone the whole back.



Fig 1: (Back Extension)

**Statement of the Problem**

The purpose of the study was to investigate the effects of selected asana’s on back extension of female students of Government Post Graduate College Berinag, district Pithoragarh Uttarakhand. It is hypothesized to check the endurance of back lift performance.

**Methodology**

120 female students of 18 to 19 years were randomly selected as subjects from Government Post Graduate College Berinag, district Pithoragarh Uttarakhand. The subjects were divided into two groups, 60 students were randomly selected for experimental group and remaining 60 students were selected for control group. The experimental group went through 8 week training program which included 3 day per week activity program; period of training session was 30 minutes. Training session started from assembly, warm up, main part (asana’s and back extension), lead up activity, cooling down and dismissal. Control group was given no training of an experimental period of 8 week. They were tested to collect the data on selected asana’s of yoga (Figure No. 2). Based on the results of the study it was observed that the back extension produced a significant development on the selected asanas.











SN	Asanas		SN	Asanas	
1	Bhujangasana		6	Halasana	
2	Chakrasana		7	Dhanurasana	
3	Naukasana		8	Matshyasana	
4	Kandharasana		9	Salabhasana	
5	Sarvangasana		10	Ustrasana	

Fig 2

**Statistical Analysis**

The data was analysed by computing descriptive statistics. The t-test was also employed to find out the effects of selected asana’s on back extension of female students at significance level of 0.05. Data was collected two times, one before training and one after training programme of both

groups.

**Analysis, Result and Discussion**

**Back Extension**

**Control Group**

**Table 1:** Paired Samples Statistics

		Mean	N	S.D	S. E. Mean
Pair 1	Pre Back Extension	1.837	60	0.87	0.11
	Post Back Extension	1.831	60	1.15	0.14

**Table 2:** Paired t-test Statistics

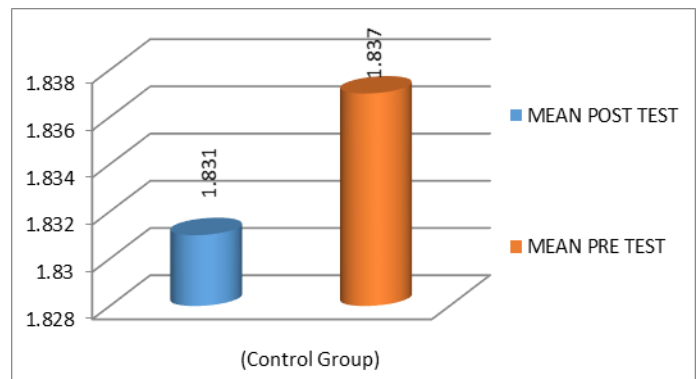
		Paired Differences					t	df	Sig.(2-tailed)
		Mean	S.D	S.E Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Back Extension Post Back Extension	0.006	1.26	0.16	-0.32	0.33	0.04	59	0.96

Significant level =0.05(59)

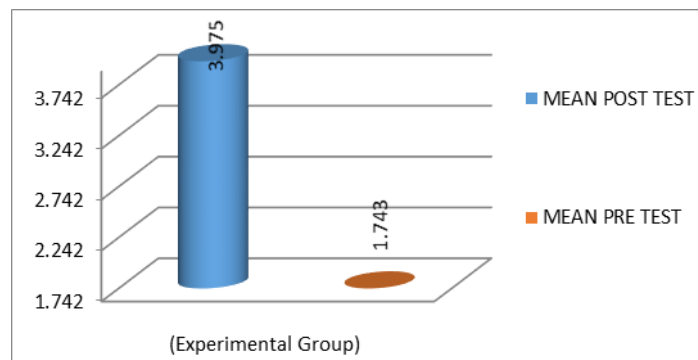
**Interpretation of Findings**

The following interpretation can be made on the basis of the results shown in the above output:

1. The values of the mean, standard deviation and standard error of the mean for the data on Back Extension in the pre- and post-testing are shown in the Table 1. These values can be used for further analysis.
2. It can be seen from Table 2 that the value of t-statistic is 0.04. This t-value is insignificant as the p-value is 0.96 which is higher than 0.05.
3. Figure no-3 also shows the insignificant effect on Back Extension of female Students.



**Fig 3:** Graph Showing the Mean Difference in Back Extension Before and After the Training Program of Control Group



**Fig 4:** Graph Showing the Mean Difference in Back Extension Before and After the Training Program of Experimental Group

**Experimental Group**

**Table 3:** Paired Samples Statistics

		Mean	N	S.D	S. E. Mean
Pair 1	Pre Back Extension	1.743	60	1.116	0.144
	Post Back Extension	3.975	60	1.539	0.198

**Table 4:** Paired t-test Statistics

		Paired Differences					t	Df	Sig.(2-tailed)
		Mean	S.D	S.E Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Back Extension Post Back Extension	2.23	0.79	0.10	2.02	2.43	21.69	59	0.00

Significant level =0.05(59)

### Interpretation of Findings

The following interpretation can be made on the basis of the results shown in the above output:

1. The values of the mean, standard deviation and standard error of the mean for the data on Back Extension in the pre- and post-testing are shown in the Table 3. These values can be used for further analysis.
2. It can be seen from Table 4 that the value of t-statistic is 21.61. This t-value is significant as the p-value is 0.00 which is less than 0.05.
3. Figure no-3 also shows the significant effect of selected Asana's on Back Extension of female Students. After training programme post mean difference is too longer than pre mean difference. So, the training programme was very effective.
4. Figure no-4 also shows the significant effect on Back Extension of female Students.

### Conclusion

According to the results of the training programme it can be concluded that, the significant effect was found out through the selected Asana's on Back Extension of female Students, these asanas can be beneficial to increase the strength, power and endurance of lower back, upper back, and the erector spinae, and the test battery was also helpful to rehabilitate lower back injury, upper back injury, and spinal injury, as well as sportsmen and non-sportsmen. This training programme was also shown to improve measured endurance characteristics of the trunk muscles of females, but diversity intervention programs over few months' time appear to be the almost successful to improve physical fitness challenges of individuals.

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