



**RESEARCH PAPER**

**Effect of Stretching Exercises on Flexibility of Male Athletes of Punjab University**

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**ABSTRACT**

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This study investigated that the effects of stretching exercise on the flexibility of male athletes. A sample size of (N=30) selected through simple random sampling method from population. The intervention group comprised of (N=20) subjects. The population of the study was male athletes of Punjab University Lahore. A control group of (N=10) also maintained for comparison. The selected subjects were undertaking pre and post exercises of sit and reach test performed for checking the effect of stretching exercises on the flexibility of male athletes. After the 6 weeks training sessions the post-test conducted for the measurements of flexibility of the same athletes. The subjects followed for 4 months after the completion of research to check the recurrence and resulted that intervention group has less injury. The study is very beneficial for male athletes as their tough and tight schedule and found less time for recovery and relaxation. Stretching of any kind helped sportspersons to ease their brain and body within a short duration.

**Introduction**

A precise definition of flexibility is "Ability of a joint to move with maximum range of motion". Flexibility is specific to individual joints, person to person and it also depend on exercises as well(Reese *et al.*, 2016). One of the key fitness components is flexibility and considered among major components of physical fitness. Stretching related to physical fitness; it boosts blood flow and helps to perform better in workouts and competitions for athletes. During exercise muscles repeatedly contract and relax by performing functions at different joint (Dabbaghet *al.*, 2018). Stretching exercises largely used, as the training or competition warm-up routine executed to prepare the musculoskeletal system before any sport performance (Yamak *et al.*, 2018), due to stretching muscles extended and relax as it

maximizes muscle engagement for the next workout (Abolhasani, 2018). There are further some types of stretching exercise like Static, Dynamic, Ballistic and Proprioceptive Neuromuscular facilitation (PNF stretching) etc (Hesselet *et al.*, 2017). In warm up we mostly use dynamic stretching exercises because it is easy to perform, but many studies suggest that this form of stretching during warm up has undesirable effects on performance (Strength, Power and Speed etc) (Jan & Yaday, 2017) and mechanism involve in this form of performance decline is to involve both mechanical and neurophysiological changes (Tsolakis *et al.*, 2010). So, in many studies researchers suggest that it's safe to use dynamic stretching routine before training or competition and it has a positive effect on performance because it increases core body temperature, stimulates nervous system and increases post-activation potentiation (Frederick & Frederick, 2017; Flynn *et al.*, 2018). Stretching also improves the blood flow throughout the body or toward the muscles involved in performing activities (Wicket *et al.*, 2014). Stretching on regular basis not only enhanced the performance but pooled the blood circulation efficiently along with nutrients throughout the body and assisted to remove the harmful waste (metabolites) from the body, which eventually accelerate recovery time (Baxter *et al.*, 2017). Thus, range of motion elevated with stretching, which enabled athletes to perform more dynamic tasks and boosts the techniques in sport-specific areas (Reese and Bandy, 2016). No matter whatever the athletes exercise background was, stretching is a universal weapon that can boost athletic development, and one that many elite athletes have adapted into their daily workout arrangements (Bernhart, 2013). Flexibility can improve with the correct technique of stretching, neuromuscular, coordination which also diminish feelings of stiffness along with reduction in delay onset muscle soreness (DOMS). Other potential pros of stretching boosted athletic performance with confidence and reducing of risk or muscle tears (Norris, 2015). Isolated stretching has a big importance in sports era, comprised of hamstrings muscles, hip flexors, quadriceps, calves and chest muscles (Singh, 2018). Proper technique of stretching will help to improve overall performance resulted in the lift of blood flow and decrease stiffness, in turn decline the risk of injury (McAtee, 2013). Flexibility boosts through stretching exercises is one of the basic tenets of physical fitness (Napoli, 2016). Stretching is the process of placing particular parts of the body into a position that will lengthen the muscles and their associated soft tissue (Baxter *et al.*, 2017). The athletes have normal routine to make a habit of stretching before and after sessions, in addition correct exercises in order reduce risk of injury and increase performance (McHugh *et al.*, 2010). Stretching keeps the muscles flexible, strong, and healthy, and we need that flexibility to maintain a range of motion in the joints, the muscles reduce range of motion and become less elastic (Baxter *et al.*, 2017). The athletes, who did not perform any sort of flexibility and stretching exercises, have risk of joint pain, strains, and muscle damage (Shah & Bhalara, 2012).

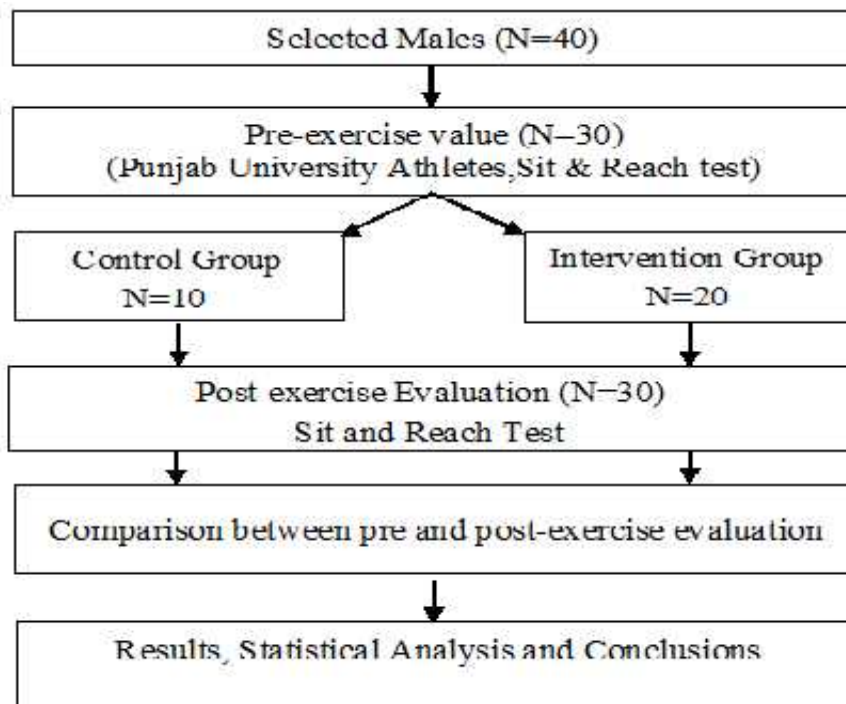
## Hypothesis

The study hypothesized that how the athlete improves their focus on stretching exercise routine after they know effects of different stretching exercises on flexibility and performance.

## Material and Methods

The study comprised of male athletes of Punjab University (N=30). The average range of age was between the ages of (18 to 23)years and had not sustained a lower extremity injury within the past six months. Simple random sampling technique operated and experimental design along with pre& post-exercise evaluation used for this study. Pre and post exercise evaluation design exploited by developmental researchers to determine the consequence of intervention on sample. The design was considered by two attributes, one attribute was the use of a single group of participants (a one-group design). This feature denotes that all participants were part of a single condition that means all participants are given the same treatments and assessments. The other attribute was a straight ordering that requires the evaluation of a dependent variable before and after the treatment executed (pre and post-exercise evaluation). Within pre and post-exercise evaluation research, effects of a treatment were determined by calculating the difference between the first assessments of the dependent variable.

## Flow Chart



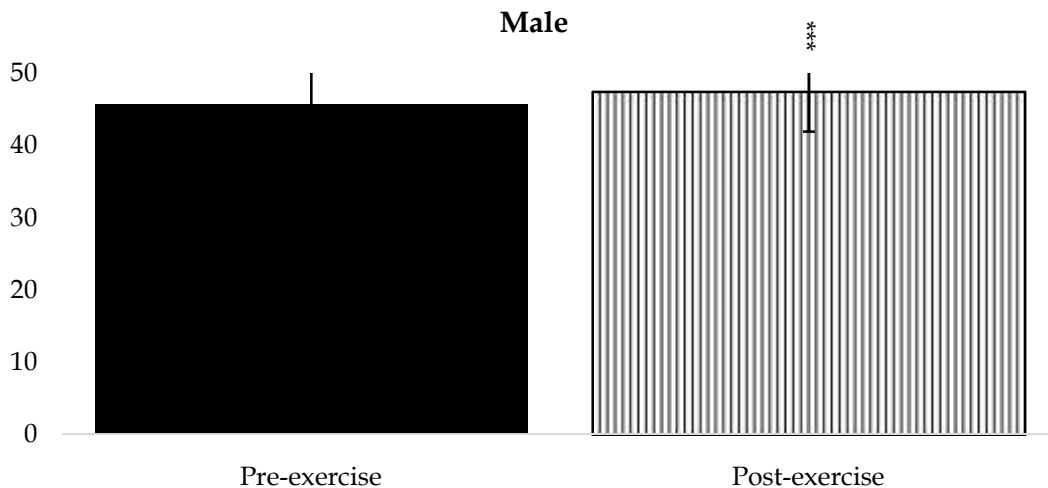


Figure 1. Shows research design flow chart of the activity

All subjects were volunteers and simple random selection method used for sampling. The independent variable was stretching exercises and dependent variable was Flexibility. The Punjab University athletes participated in this research and a samplerandom sampling procedure used to select the subjects. In addition, the study was within subject's design in which each subject served as their own control. The limitations of this study were that the results can only for the male athletes.

**Table 1**  
Pre and Post-exercise evaluation observed through paired sample t-test along with difference, percentage t-value and p-value

Participants	Pre-exercise	Post-exercise	Diff (%)	t value	p value	Cohens D
Male	45.8 ± 5.4	47.5 ± 5.5	1.7 (3.7)	-18.9	*** 0.000	3.55

\*\*\*p<0.001 highly significant

### Research Tool

The testing instruments used in this study for flexibility (Sit and Reach Test) measurement. The sit and reach test is one of the simplest test of flexibility which helps to measure the extensibility of the hamstrings, lower back and shoulder muscles and was described by Wells and Dillon in 1952, It is probably the most used flexibility test and has a an easier procedure for administer which requires minimal skills training for its application, perform on a large scale of population size in shorter period of time. A box with height, length, and width was 30cm (12 inches) and the top of board with 22.86 cm (9 inches) lounged towards the feet place and a meter ruler used for the flexibility measurements. The flexibility measured in the inches and then converted to centimeters. The test was conducted in the Ground of Department of Sports Science & Physical Education, University of the Punjab

Lahore. The athletes performed this test on the Grass. Athletes were in proper kit at the time of test and their shoes were removed. Electronic Weight Machine was used to measure the weight of the subjects and heights were measured by measuring tape attached on wall along with age were asked from the subject.

### **Discussion**

The main purpose of the study was exploring, effects of stretching exercises on flexibility on male athletes of university level as it was also reported by McHugh *et al.*, 2010, Shah *et al.*, 2012, McAtee, 2013, Jan & Yadav, Singh, 2018, & Pamboris, 2018. This study was limited to male athletes of Punjab University Lahore. Main research question was formulated in the relation to the objective of the study, which was to identify the effects of stretching exercises on flexibility on male athletes of university level.

### **Conclusion**

It is concluded that the Major objective of the study was elaborating the effect of stretching exercise on the flexibility of male athletes. After careful treatment of the subjects and analysis of the pre-test and post-test measurements of flexibility of the male athletes, researcher concluded that the flexibility of male athletes improves after the training sessions of stretching exercises of 6 weeks. Results reveal that stretching exercises helps to improve flexibility and if properly and carefully use in warm up and cool down session it can improve performance and can enhance recovery period. Results also reveal that the flexibility of the player can be improved by different types of training such as dynamic stretching, PNF stretching, ballistic stretching. At the end researcher concluded that athletes should perform stretching exercises on regular bases in warm up and cool down session to enhance their flexibility and performance. Flexibility is beneficial and key component that assists to reduce the risk of injury and improve athletic performance.

### **Recommendations**

The study highly recommended that full body stretching is an essential part of the sports performance. It's not only helped in increase range of motion and reduction in injuries by absorbing external forces reaction to shoulders in upper body and pelvic region in lower body respectively. It also helped in decrease the recurrence rate.

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