



## ASSESSMENT OF QUADRATUS LUMBORUM MUSCLE STRENGTH ON PROFESSIONALS SITTING WITH LEGS CROSSED ON CHAIR

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### ABSTRACT

**Aim:** To test the quadratus lumborum muscle strength on professionals sitting with legs crossed on chair.

**Need Of Study:** If an individual habitually adopts such postures then part of the body will deviate from proper alignment and deformation will be aggravated to compensate for the unstable state causing problems in the musculoskeletal system. Sitting for a long time causes continuous contraction or tightening of the quadratus lumborum muscle which can lead to stretch weakness of the muscle. Constant contraction can lead to muscle fatigue and also lead to its stiffness and pain<sup>(15)</sup> thereby giving a reason to assess the strength of the quadratus lumborum muscle. Therefore the purpose of this study is to check its effect on quadratus lumborum muscle.

**Design:** Observational.

**Procedure:** The study was approved by the relevant Research and Ethical Committee. Eligible subjects were approached during their free time. All the subjects were explained about the test and informed written consent was taken from all the included subjects. All the subjects were screened for the inclusion and exclusion criteria. A demonstration of the test was given first on a firm surface and subjects allowed to practise once. The subjects were then informed about holding the position to grade them accordingly. The test was then performed and documented.

**Result:** The study is not statistically significant but is clinically significant. 36% of the population had grade 5 strength, 29% had grade 4 strength, 21% had grade 3 strength and 14% had grade 2 strength. Also, 52% population belonged to 20 to 25 age group, 45% belonged to 26 to 30 age group and 3% belonged to 31 to 35 age group.

**Conclusion:** The study concludes that majority of the professional people who sit with their legs crossed on chair had the quadratus lumborum muscle strength of grade 5.

**KEYWORDS :** Quadratus Lumborum, Strength, Sitting, Legs crossed on chair

### INTRODUCTION

Currently, people spend more time sitting than standing due to the development of science and technology. Dependence on automobiles even for travelling short distances, and long periods spent working on computers contribute to today's sedentary lifestyles. As the daily time spent in sitting postures increases it is common to find people sitting with their legs crossed. Although the reasons why people sit with the legs crossed have not been clearly identified, several studies have proposed that it is because it gives stability to the lower extremities when sitting postures are maintained for an extended time or for aesthetic reason. For example, when a person is wearing a short skirt. When you sit with neutral posture, your trunk weight is evenly distributed between your ischial tuberosities. However when you sit cross legged the weight resting on your pelvis is confined to just one of the bones. This rotates your lower spine – a twist your body will compensate for, by automatically creating another curve in your back. This places a strain on your pelvis and lower back, stretches the muscles on one side, and ultimately results in abnormal joint mechanics.<sup>(1)</sup> The cross legged sitting caused abdominal muscle activity to significantly decrease. It can be interpreted as physiologically valuable, because it decreases fatigue by decreasing oblique activity. Also, hip flexion and hip adduction in cross legged sitting contribute to the stability of sacroiliac joints.<sup>(14)</sup> They induce trunk asymmetry by causing different oblique muscle activity on the left and right sides, and, in those with limited range of motion of the hip joint, can increase the moment of rotating the pelvis.<sup>(15)</sup>

Functions-

- lateral flexion of the vertebral column with ipsilateral contraction
- extension of lumbar vertebral column with bilateral contraction
- elevation of the ilium bone with ipsilateral contraction
- flexion of the 12<sup>th</sup> rib during forced expiration and assisting the diaphragm in inhalation.<sup>(2)</sup>

### METHODOLY

- STUDY TYPE- Observational
- SAMPLING- Purposive Sampling
- POPULATION- Young adults (18-35 years)
- SAMPLE SIZE- 100 subjects
- LOCATION- PCMC

### OUTCOME MEASURE-

Dynamic Horizontal Side Support (Side Bridge) Test.

Procedure- side lying with legs straight and ask the patient to lift the

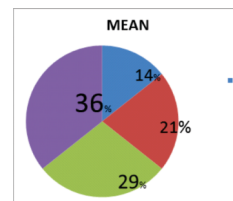
knees and pelvis off the examining table with the feet as the base so the whole body is straight. As an isometric test the grading will be as follows,

- Normal(5)- able to lift pelvis off examining table and hold spine straight (10 to 20 seconds hold)
- Good(4)- able to lift pelvis off examining table but has difficulty holding spine straight (5 to 10 seconds hold)
- Fair(3)- able to lift pelvis off examining table and cannot hold spine straight (less than 5 second hold)
- Poor(2)- unable to lift pelvis off examining table.

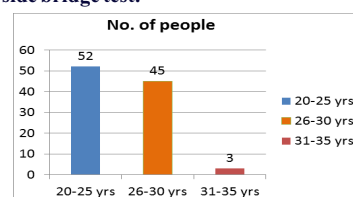
### PROCEDURE

The study was approved by the relevant Research and Ethical Committee. Eligible subjects were approached during their free time. All the subjects were explained about the test and informed written consent was taken from all the included subjects. All the subjects were screened for the inclusion and exclusion criteria. A demonstration of the test was given first on a firm surface and subjects allowed to practise once. The subjects were then informed about holding the position to grade them accordingly. The test was then performed and documented.

### DATA ANALYSIS AND INTERPRETATION



Graph 1 shows the grading of the quadratus lumborum muscle done using side bridge test.



Graph 2 shows the sorting of people according to their age groups.

## DISCUSSION

People who sit cross leg for longer durations are more prone to develop postural instability and musculoskeletal problems. When you sit cross legged the quadratus lumborum muscle shortens causing an imbalance between your left and right side. The muscle inhibits the space between the bottom rib, the pelvis, and the transverse process of the first four lumbar vertebrae, also it is best known as the "hip hiker" muscle. This hiking in turn causes your iliopsoas to engage, your pelvis to rotate, and ultimately creates ligament laxity (over stretching of the ligament), Once again resulting in abnormal joint mechanics and spinal misalignments. This study was done to check the strength of the quadratus lumborum muscle in cross leg sitting on chair using side bridge test. The sample size included all females ranging from 18 to 35 years of age.

As these people require to sit for longer durations it is necessary that the strength of both the sides of quadratus lumborum muscle is maintained. The function of quadratus lumborum muscle is lateral flexion of vertebral column with ipsilateral contraction, there are chances of weakness of the side which is always below the other leg and hence there was need to assess the strength of the leg below, which turned out that there is no considerable weakness associated with the quadratus lumborum of the below leg. A decrease in strength or incorrect posture during this can cause low back pain or other musculoskeletal problems. Thus, through our observational study we aimed at documenting the strength of the people who sit cross leg for 2 or more hours and found out that majority of the subjects had grade 5 strength, i.e. good muscle strength for their age. Also, out of the total sample population of 100, 52% belonged to the age group of 20 to 25 years, 45% belonged to 26 to 30 years and 3% belonged to 31 to 35 years. In our study we found that, when assessed the subjects for quadratus lumborum muscle strength using side bridge test 14% had grade 2, 21% had grade 3, 29% had grade 4 and 36% had grade 5. Also, the 36% population who had grade 5 could possibly belong to the 20-25 years age group which comprised of majority with 52% population. And their good strength could probably be because of their lesser age and lesser work experience years. While, the 3% population who had grade 2 strength could have possibly belonged to the age group of 31-35 years which could be because of their increased age or parturition reasons. Thus, through our observational study we aimed at documenting the strength of the people who sit cross leg for 2 or more hours and found out that majority of the subjects which comprised 36% had grade 5 strength, which is good muscle strength for their age.

## CONCLUSION

This study concludes that majority of the people who sit with their legs crossed on chair had the quadratus lumborum muscle strength of grade 5.

## LIMITATIONS OF THE STUDY

Only Quadratus Lumborum muscle was assessed.  
Only strength component was assessed.  
Males were not included.

## RECOMMENDATION AND FUTURE SCOPE OF THE STUDY

The strength of quadratus lumborum muscle and other muscles should be maintained to improve the working ability and reduce the chances of postural and other musculoskeletal disorders. Also, these individuals should be explained about the importance of maintaining an optimal level of strength while performing their work. Therefore, future studies can be conducted to identify the correlation between unstable postures commonly adopted in daily life and musculoskeletal diseases.

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