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"Correlation Of Non Specific Low Back Pain And Lower Extremity Alignment Among Market Yard Workers In Sangali City."

[1]Prachi Shedage, [2]Dr. Drashti Shaha, [3]Dr. Aakanksha joshi
[1]Intern, [2]Professor, [3]Professor and Principal
[1]College of Physiotherapy, MMC, Wanless Hospital, Miraj,
[2]College of Physiotherapy, MMC, Wanless Hospital, Miraj,
[3]College of Physiotherapy, MMC, COP, WH, Miraj

INTRODUCTION

Low back pain is highly prevalent problem in worldwide.[1] Among population low back pain is a very common health problem. It may be experienced as aching, burning, stabbing, sharp or dull. With intensity ranging from mild to severe pain.[2] The prevalence of low back pain was found in the Indian population ranges from 6.2 % to 92%. Increased age, low educational status, obesity occupation and psychological factors this are the risk factors is contribute in this condition.[1]

Inactive work life, lifestyle, carrying heavy weight or things, driving for long hours or periods, obesity, having weak muscles, poor posture, pregnancy, depression may cause low back pain.[4] Working with poor posture, such as heavily bending forward with the trunk, maintaining a bent and twisted posture for an extended period of time, and performing repetitive trunk movements are all linked to low back discomfort. [2]

Non specific low back pain it is defined as pain not attributed to recognizable, known specific pathology [e.g infection, tumor, osteoporosis, ankylosing spondylosis, fracture, inflammatory process]. [2]

Non specific low back pain is according to definition the tension, soreness, or stiffness in lower back region, for which specific cause can not be identified. In joints, discs and connective tissues like several structures in the lower back region may contributed to the symptoms. Some patients with non specific low back pain may also feel pain . the diagnosis of non specific low back pain is made when confirmed pathologies or radicular syndromes are excluded. [1]

The relationship between lower extremity alignment and lower extremity injury risk remains poorly understood , perhaps because most authors have examined only individual or a select group of alignment variables. [6] The angle of torsion, quadriceps angle (Q angle), tibial torsion, navicular drop, anterior pelvic

tilt, this are the lower extremity alignment factors.[1] this factors are often implicated in both acute and chronic injuries of the lower extremity. Hence, these are commonly measures as part of a lower quarter screening. [1]

The changes in height of navicular bone when the foot moves from subtalar neutral non weight bearing to a relaxed weight bearing stance, is called navicular drop. Bodys navicular drop test is a valid predictor of navicular height in non weight bearing and weight bearing position to characterised the arches of foot. The structure and movement of arch of foot are important for a persons function of body and wellbeing.[3]

Maintaining the integrity of medial longitudinal arch the height of navicular bone is important. Navicular height measurement is commonly used to measure medial arch height.[3] The medial longitudinal arch plays an important role in shock absorber and energy transfer during walking. [3]

The lumbar lordosis is the anterior convexity of lumbar spine. In infants usually 12 to 18 months of age or when they start to stand the lumbar lordosis is begins to develop. The degree of lumbar lordosis curvature is affected by factors as sex, age, pathological condition and position . The pathological condition such as trauma, birth defects, inflammatory and degenerative disorders. [8]

Lumbosacral angle is also called sacro horizontal angle. This sacral angle is defined as the angle formed between superior margin of S1 and the horizontal line or angle formed between the superior surface of sacrum and horizontal plane.[11]

Development of any abnormalities in this lumbosacral curvature due to that severe back pain like symptoms are arises. There are various methods have been used for measures the lumbosacral angle using goniometer, radiography, flexible rulers, software method, spinal mouse, inclinometer. Etc.[11]

The Q angle is defined as the angle formed by a line form the anterior superior iliac spine to the patella center and a line form the patella center to the tibial tuberosity. Among these lower extremity alignment variables the quadricep angle has been frequently studied.[12]

As Q angle represents the direction of quadricep muscle force vector in the frontal plane when the excessive increase the Q angle the risk of knee injury remains unclear for ACL injury is a risk factor of the Q angle. It is also associated with patellofemoral pain syndrome.[12]

It has also suggested that the Q angle is a composite measure of pelvic position, hip rotation, tibial torsion, patella position and foot position. Due to excessive anterior pelvic tilt the Q angle is increase. Also the femoral anteversion and knee valgus and external tibial rotation the Q angle is increases.[12]

In the closed kinetic chain, alignment of the lower extremity can lead to development of low back pain. Studies have been conducted research the individual relationship between lumbosacral, hip and foot with low back pain or disability.[1]

NEED FOR STUDY

- Previous study was done to find out the prevalence of low back pain in vegetable vendors.
- So there are lack of literature suggesting corelation between non specific low back pain and lower extremity alignment among market yard workers.
- Manual workers have to perform repetitive activities for long period of time which leads to fatigue, pain, injuries, etc. As they have to adapt different awkward postures and perform repetitive motions and exertional activities for lifting heavy load are the risk factors for various injuries.
- Occupation specified study and area specified study are less in market yard workers so the need of the study.

AIM

- To assess the correlation of non specific low back pain and lower extremity alignment in market yard workers in sangli city.

OBJECTIVE

- To find out lumbosacral angle in non specific low back pain , market yard workers using surgimap softwere .
- To find out the angle of torsion of femur in non specific low back pain, market yard workers using craig's test.
- To find out the quadricep angle (Q angle) in non specific low back pain, market yard workers using goniometer.
- To find out the tibial torsion in non specific low back pain, market yard workers using goniometer.
- To find out navicular drop in non specific low back pain, market yard workers using white card and measuring tape.

HYPOTHESIS

- NULL HYPOTHESIS :

There will be no significant difference between correlation of non specific low back pain and lower extremity alignment among market yard workers.

- ALTERNATIVE HYPOTHESIS :

There will be significant difference between correlation of non specific low back pain and lower extremity alignment among market yard workers.

REVIEW OF LITERATURE

1. Shruti bagve, et al (2019):

The study was perform an array of risk factors contributes to non-specific low back pain. Apart from age, female gender, low educational status, obesity, occupation and psychological factors, postural variations (including variations in the lower extremity) play a significant role in predisposing an individual to low back pain.

In this study 12 males and 24 females with non specific low back pain were assessed for pain and disability using the oswestry disability index. For measurement of lower extremity alignment factors were recorded bilaterally.

The study concluded that there was an association of non-specific low back pain and disability index with lower extremity alignment fact.

2. Dr. Shrikant sunil sant, et al (2017)

The study shown that occurrance of low back pain is more in male venders compared to female. Also maximum vendors had problems in bending or stooping and very few participants experienced affected sleep.

The study concluded that the prevalence of low back pain in vendors is high. This study also concluded that prevalence of low back pain is more in males as compare to female vendors.

3. Umesh Adhikari, et al (2014)

The study was done because The purpose of this study was to find out the normalative values of navicular drop of Brody's Navicular drop test. And to correlate the effect of age, gender, BMI and foot length on navicular drop. 112 healthy subjects, 51 males and 61 females of age 20 years, height 1.6 m, weight 55 kg. and measurement of both feet were taken.

The study concluded that this study found that the overall normative median value for male and female showed a minimal difference of 1mm whereas the difference between male and female, right and left foot showed 2mm and 1mm respectively.

4. Mehmet caglayan, et al. (2014)

In the present study in which LSAs and BMI were assessed in patients with cronic low back pain , no significant differences where found in patients regarding LSAs and BMI.

The study concluded that changes in lumbosacral angles may cause low back pain. In increase in lumbosacral angle may be influential in increasing the risk of low back pain. Therefore, measurement of lumbosacral angle may guide the physician who is to make clinical decisions in examination of patients with low back pain.

5. Jennifer m. et al, (2009) :

The was perform To evaluate the effect of sex on 6 measures of lower extremity alignment and to report representative values of these measures from a sample of active adults and elite athletes.

The study concluded that, differences between men and women for 4 of the 6 lower extremity alignments that we measured. female group in our study demonstrated larger Q angles, genu recurvatum, anterior pelvic tilt, and femoral anteversion compared with the male group.

6. Ahn-Dung Nguyen, et al (2009)

The relationship between lower extremity alignment and lower extremity injury risk remains poorly understood, perhaps because most authors have examined only individual or a select group of alignment variables.

The study concluded that Factor analysis identified 3 distinct lower extremity alignment factors that describe the potential interactions among lower extremity. Relationships among lower extremity alignment variables identified a distinct valgus alignment factor characterized by the alignment of the pelvis and knees (pelvic tilt, quadriceps angle, and tibiofemoral angle), which was independent of a pronated alignment factor (genu recurvatum, navicular drop, and inward tibial torsion) and femoral anteversion.

MATERIALS

- Pen
- Consent form
- Data collection sheet
- Surgimap software
- Mobile camera
- Goniometer
- Two cards
- Measuring Tape
- Oswestry low back disability scale

1. 

2. 

3. 

4.  5. 

METHODOLOGY

- Study type : correlation study
- Study design : descriptive type
- Study setting : Market yard, Sangli
- Study duration : 6 months
- Outcome measure : Surgimap software, and goniometer, white card, oswestry low back disability scale
- Sample size : 130

INCLUSION CRITERIA

- Male participants
- Age: 25 to 55
- Working hours: 6 to 8 hours
- Working experience: more than 12 months
- Subjects willing to participate.

EXCLUSION CRITERIA

- Participants with spinal and lower limb deformities, surgery and injuries.
- Participants with known spinal disc prolapse and degenerative conditions.
- Participants with neurological conditions.
- Amputations.

OUTCOME MEASURES

1. Non- Specific Low Back Pain

- Oswestry Low Back Pain Disability Scale (OLBDS)

Intra-rater reliability：Cronbach's alpha: 0.71 to 0.87

2. LUMBOSACRAL ANGLE MEASURMENT

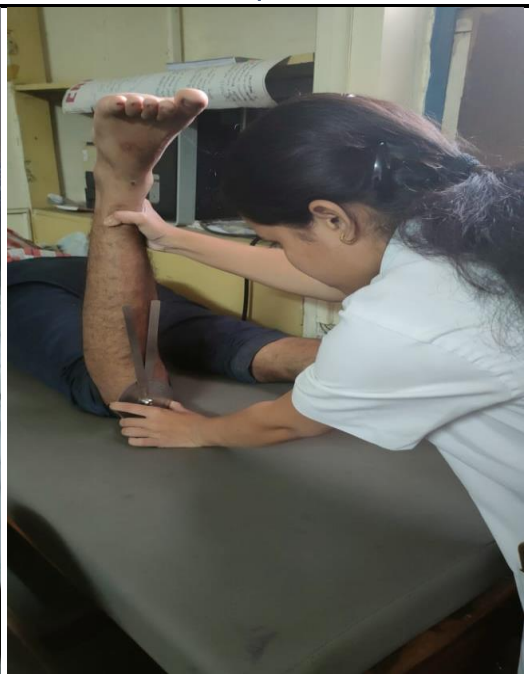
- Surgimap software:

Intra-rater reliability – 0.81 to 0.995

Inter-rater reliability – 0.83 to 0.992

Interpretation:

- Lumbar angle: the angle formed between the line connecting T12 to ASIS and the line connecting ASIS to greater trochanter.

3. CRAIG'S TEST: The angle of torsion of femur (TOA)

- The angle of torsion (AOT) of femur was measured with the subject in the prone position and with the knee at 90 degrees of flexion. The greater trochanter was palpated and the femur was moved passively into the internal rotation until the greater trochanter could be palpated at its most lateral position i.e, when it would be maximally prominent. AOT was measured as the acute angle formed by the tibia and an imaginary vertical line. This angle was measured in degrees using a goniometer.

4. Quadriceps angle (Q-angle):

- Quadriceps angle was measured in the standing position. Each subject was made to stand barefoot such that the toes were pointing straight forward. Care was taken to ensure that the subject's quadriceps muscles were relaxed. The anterior-superior iliac spine (ASIS) midpoint of the patella and the tibial tuberosity were marked with a skin marker. The two lines, one from the ASIS to the midpoint of the patella and the other from the midpoint of the patella to the tibial tuberosity were drawn. The angle thus created was measured in degrees using a goniometer.


5. Tibial Torsion:

- Tibial torsion was measured in the supine position such that the femoral condyles lie in the frontal plane (patella facing straight up). The apices of both malleoli were palpated and marked with a marker. A line was drawn on the heel which represented a line joining the two apices. A second line was drawn on the heel parallel to the floor(Figure 4b). The angle formed by the intersection of the two lines indicates the amount of lateral tibial torsion. This angle was measured in degrees using a goniometer.

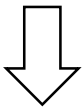
6. Navicular Drop:

- The navicular drop was measured as the difference in the height of the navicular tuberosity from the floor during sitting and standing. The initial measurement was taken in the sitting position with both feet on the floor, unweighted and in a subtalar neutral position. The navicular tuberosity was palpated and was marked using a marker. The unweighted navicular position is the distance from the point marked on the navicular tuberosity to the floor. This position was marked on the white card with the card kept perpendicular to the floor. The subject was then asked to stand and was instructed to keep equal weight on both feet and the measurement was repeated. This new position was marked on the white card. The navicular drop was measured as the distance between the two measurements and was measured with a measuring tape in millimeter.

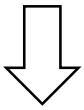
PROCEDURE

Ethical clearance will be obtained from institutional ethical committee.

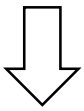
Permission will be taken from market yard manager/ owner to conduct the study



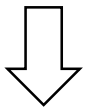
Screening will be done



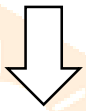
subject will be selected according to inclusion and exclusion criteria.



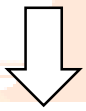
Written consent will be taken



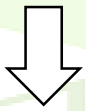
Participants will be explained about the study in their vernacular language.



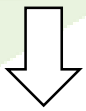
Lumbosacral angle will be asses using surgimap softwere



Craigs test, Q-angle, Tibial torsion, will be asses using goniometer



Data will be analysed



Results

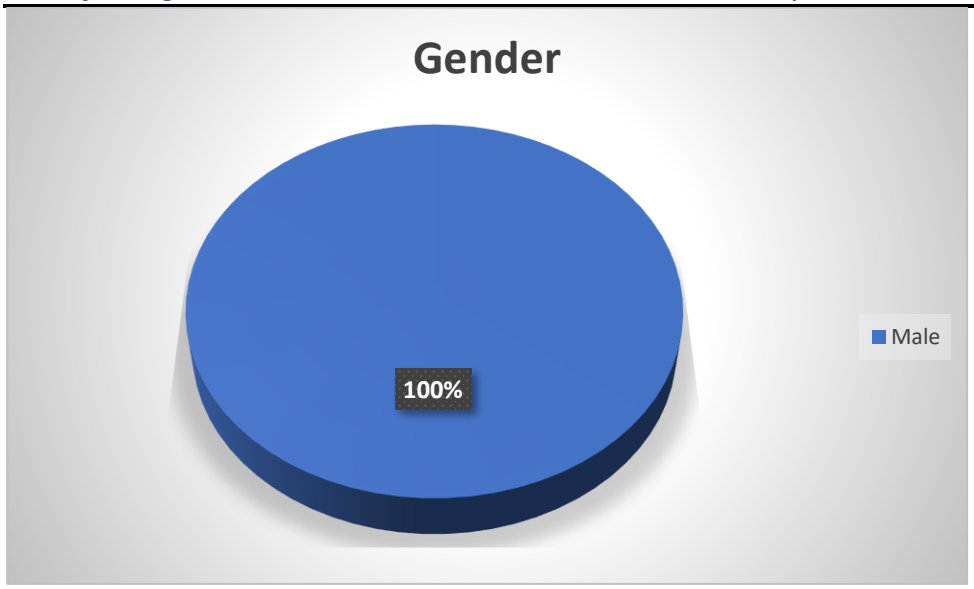
STATISTICAL ANALYSIS

- Statistical analysis will be done using Karl Person correlation analysis test.

RESULT

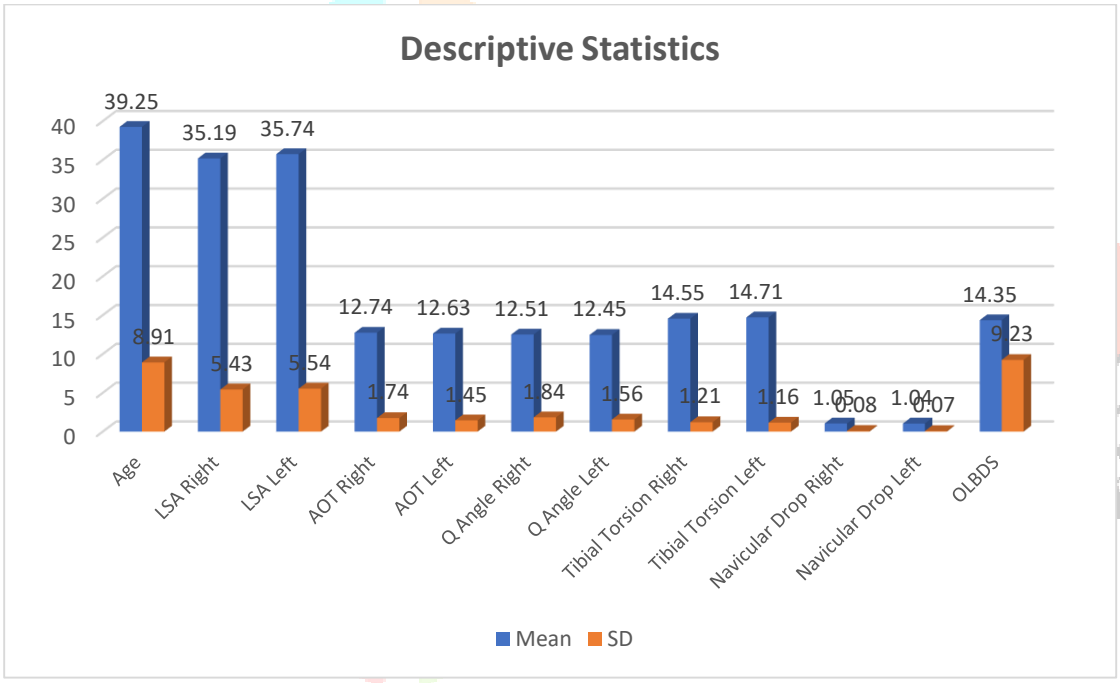
Statistical analysis was done using Karl Person correlation analysis test. For this study 130 male participant were assessed. Their low back pain was assessed using oswestry low back pain disability scale, lumbosacral angle using surgimap software, angle of torsion, Q angle, Tibial torsion, was assessed using goniometer and navicular drop measured using two cards.

Gender	Frequency	Percent
Male	129	100


Gender
100%
Male

Descriptive Statistics

Variable	Minimum	Maximum	Mean	SD
Age	25.00	55.00	39.25	8.91
LSA Right	27.00	45.00	35.19	5.43
LSA Left	27.00	46.00	35.74	5.54
AOT Right	10.00	15.00	12.74	1.74
AOT Left	10.00	15.00	12.63	1.45
Q Angle Right	8.00	15.00	12.51	1.84
Q Angle Left	9.00	15.00	12.45	1.56
Tibial Torsion Right	13.00	17.00	14.55	1.21
Tibial Torsion Left	13.00	18.00	14.71	1.16
Navicular Drop Right	1.00	1.30	1.05	0.08
Navicular Drop Left	1.00	1.30	1.04	0.07
OLBDS	0.00	33.00	14.35	9.23

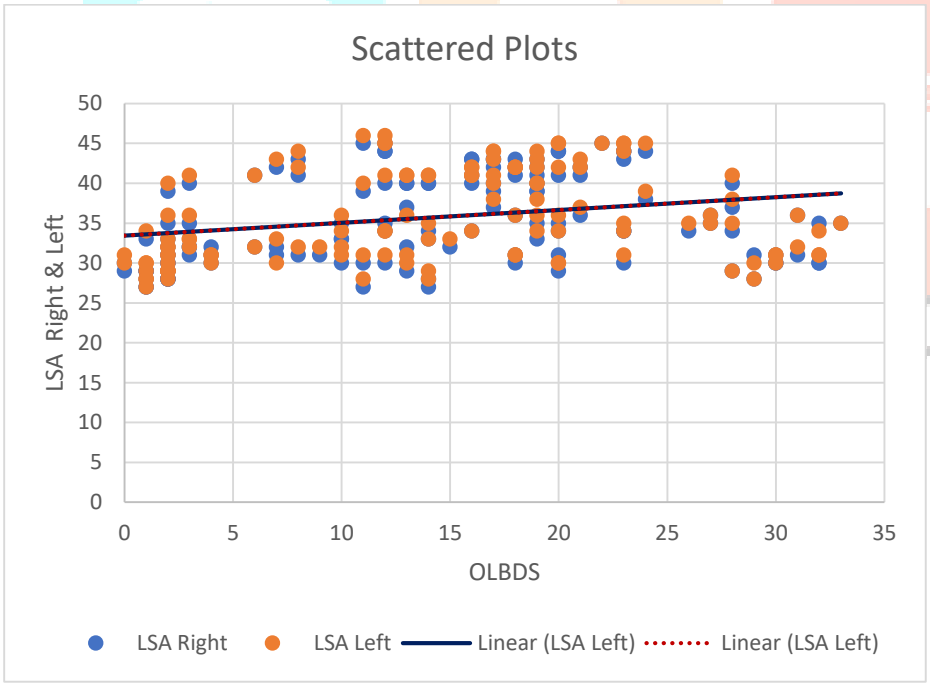


Karl Pearson Correlation Analysis

Variable X	Variable Y	r-value	p-value	Result
OLBDS	LSA Right	-0.810	0.001*	Significant at 5% Non-Linear association
	LSA Left	-0.808	0.001*	Significant at 5% Non-Linear association

Correlation coefficient r-value for OLBDS and LSA Right test has been recorded as -0.810 which is statistically significant at 5% level with non-linear association. It means both the variables are moving in the opposite directions at the time association with each other. It is also called as indirect relationship between the variables

Correlation coefficient r-value for OLBDS and LSA Left test has been recorded as -0.808 which is statistically significant at 5% level with non-linear association. It means both the variables are moving in the opposite directions at the time association with each other. It is also called as indirect relationship between the variables.

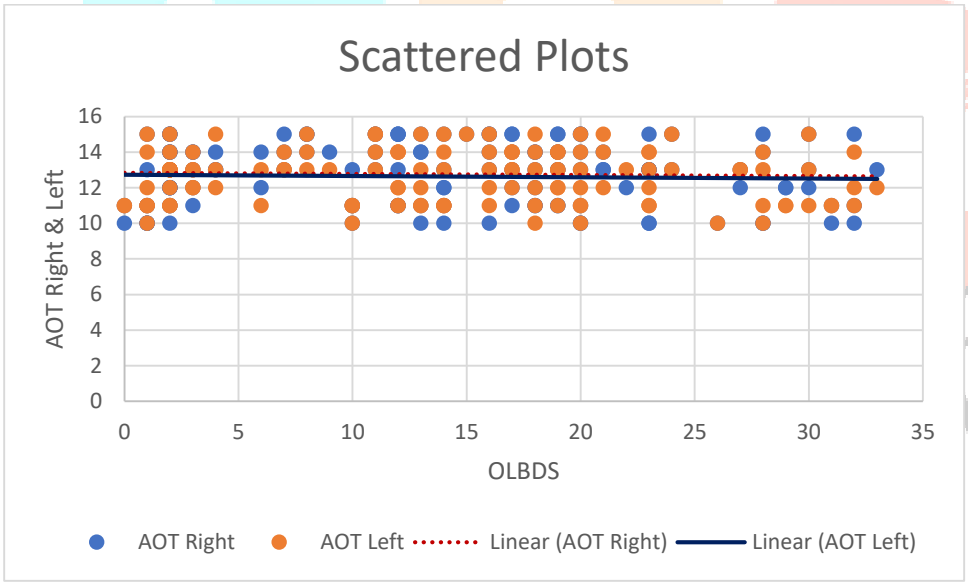


Karl Pearson Correlation Analysis

Variable X	Variable Y	r-value	p-value	Result
OLBDS	AOT Right	-0.030	0.736	Non-Significant at 5% Non-Linear association
	AOT Left	-0.039	0.663	Non-Significant at 5% Non-Linear association

Correlation coefficient r-value for OLBDS and AOT Right test has been recorded as -0.030 which is statistically non-significant at 5% level with non-linear association. It means both the variables are moving in the opposite directions at the time association with each other. It is also called as indirect relationship between the variables

Correlation coefficient r-value for OLBDS and AOT Left test has been recorded as -0.039 which is statistically non-significant at 5% level with non-linear association. It means both the variables are moving in the opposite directions at the time association with each other. It is also called as indirect relationship between the variables.

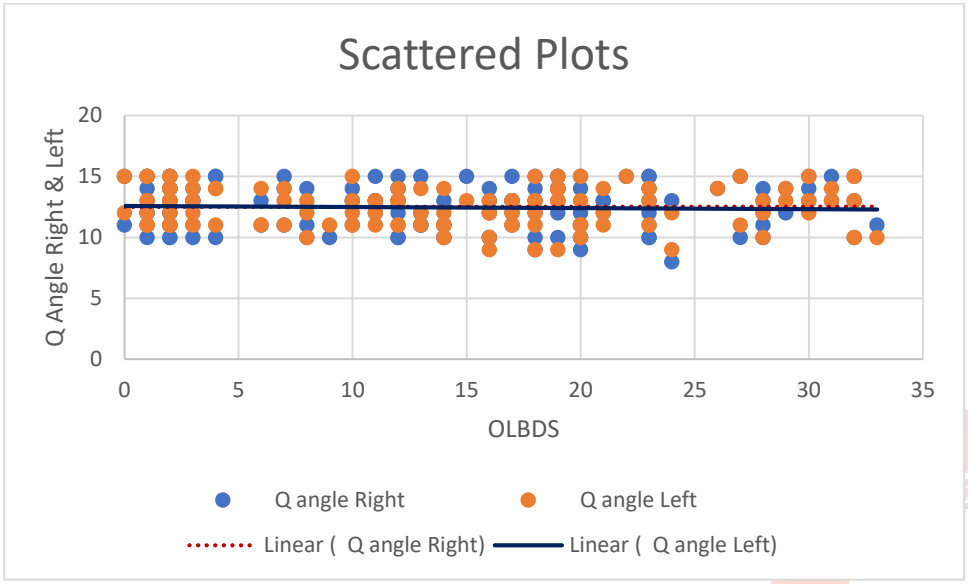


Karl Pearson Correlation Analysis

Variable X	Variable Y	r-value	p-value	Result
OLBDS	Q Angle Right	0.003	0.975	Non-Significant at 5% Linear association
	Q Angle Left	-0.054	0.543	Non-Significant at 5% Non-Linear association

Correlation coefficient r-value for OLBDS and Q Angle Right test has been recorded as -0.003 which is statistically insignificant at 5% level with non-linear association. It means both the variables are moving in the opposite directions at the time association with each other. It is also called as inverse relationship between the variables

Correlation coefficient r-value for OLBDS and Q Angle Left test has been recorded as -0.054 which is statistically insignificant at 5% level with non-linear association. It means both the variables are moving in the opposite directions at the time association with each other. It is also called as inverse relationship between the variables.

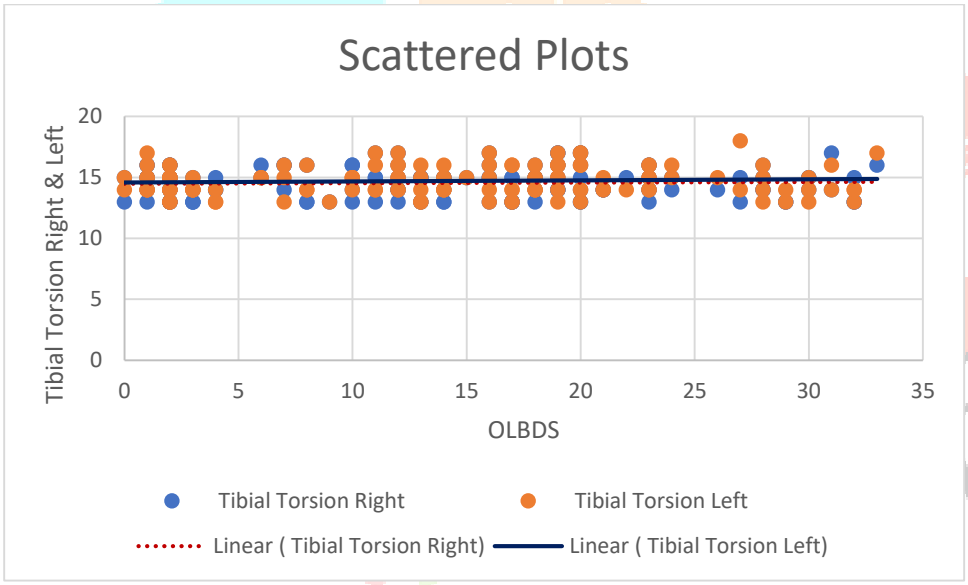


Karl Pearson Correlation Analysis

Variable X	Variable Y	r-value	p-value	Result
OLBDS	Tibial Torsion Right	0.146	0.098	Non-Significant at 5% Linear association
	Tibial Torsion Left	0.167	0.057	Non-Significant at 5% Linear association

Correlation coefficient r-value for OLBDS and Tibial Torsion Right test has been recorded as 0.146 which is statistically significant at 5% level with linear association. It means both the variables are moving in the same directions at the time association with each other. It is also called as direct relationship between the variables

Correlation coefficient r-value for OLBDS and Tibial Torsion Left test has been recorded as 0.167 which is statistically significant at 5% level with linear association. It means both the variables are moving in the same directions at the time association with each other. It is also called as direct relationship between the variables.

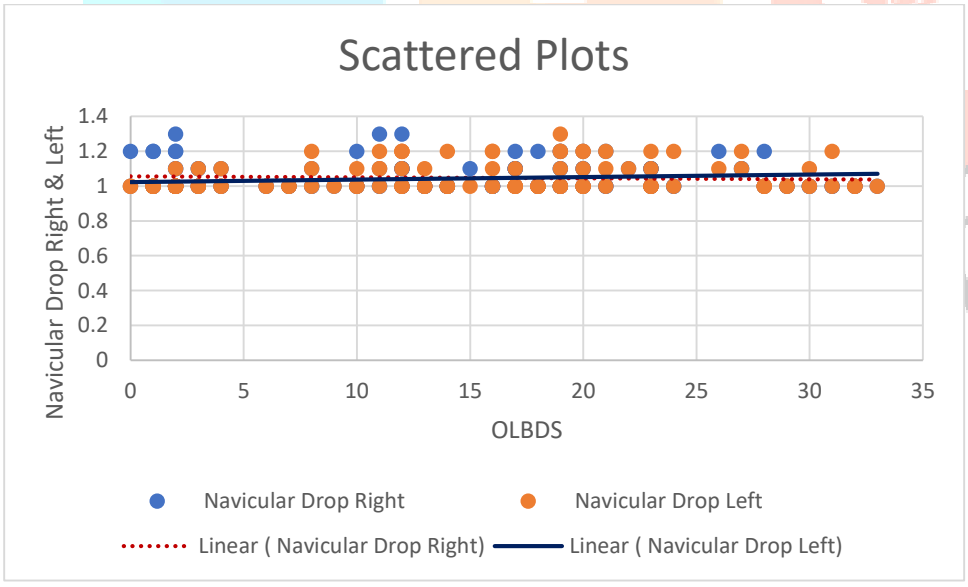


Karl Pearson Correlation Analysis

Variable X	Variable Y	r-value	p-value	Result
OLBDS	Navicular Drop Right	-0.063	0.476	Non-Significant at 5% Non-Linear association
	Navicular Drop Left	0.186	0.034*	Significant at 5% Linear association

Correlation coefficient r-value for OLBDS and Navicular Drop Right test has been recorded as -0.063 which is statistically insignificant at 5% level with non-linear association. It means both the variables are moving in the opposite directions at the time association with each other. It is also called as indirect relationship between the variables

Correlation coefficient r-value for OLBDS and Navicular Drop Left test has been recorded as 0.186 which is statistically significant at 5% level with linear association. It means both the variables are moving in the same directions at the time association with each other. It is also called as direct relationship between the variables.



Karl Pearson Correlation Analysis

Variable X	Variable Y	r-value	p-value	Result
OLBDS	Age	0.565	0.001*	Significant at 5% Linear association
	LSA Right	-0.810	0.001*	Significant at 5% Non-Linear association
	LSA Left	-0.808	0.001*	Significant at 5% Non-Linear association

	AOT Right	-0.030	0.736	Non-Significant at 5% Non-Linear association
	AOT Left	-0.039	0.663	Non-Significant at 5% Non-Linear association
	Q Angle Right	0.003	0.975	Non-Significant at 5% Linear association
	Q Angle Left	-0.054	0.543	Non-Significant at 5% Non-Linear association
	Tibial Torsion Right	0.146	0.098	Non-Significant at 5% Linear association
	Tibial Torsion Left	0.167	0.057	Non-Significant at 5% Linear association
	Navicular Drop Right	-0.063	0.476	Non-Significant at 5% Non-Linear association
	Navicular Drop Left	0.186	0.034*	Significant at 5% Linear association

DISCUSSION

The result of present study demonstrate that, the positive relation was found only in left side navicular drop, other there was no association between nonspecific low back pain and lower extremity alignment in market yard workers.

Worldwide the non specific low back pain affects people of all ages but it doesn't have known pathoanatomical cause. Joint , discs and connective tissue like several structure in the lower back region may contribute to the symptoms. Normal curvature degree of lumbar region plays an important role in carrying body weight. Biomechanical changes in the vertebral column case tension in ligaments and muscle and leads to low back pain, also the changes in lumbar lordosis may result in low back pain and cause poor posture.

Lower extremity alignment has been proposed as a risk factors for acute and chronic lower extremity injury, patellofemoral syndrome, stress fracture etc.

The presence study consist of 130 participants with a mean age of 39.25 years. All subjects have 35% of moderate low back pain, 27% people have mild low back pain, 14% people have severe low back pain, 24% people have normal low back pain are occurs according to oswestry low back disability scale.

Pain showed 5% significant and non linear association with right and left lumbosacral angle (P value: 0.001 on both side). Statistically the relation in between angle of torsion right and left side (P value: 0.736 and 0.663), Q angle left side (P value: 0.543) and navicular drop at right side (P value: 476) are not significant. Pain showed non significant and linear association with right and left tibial torsion (P value: 0.098 and 0.167) also in right side Q angle (P value: 0.975) pain showed non significant and linear association. But pain showed 5% significant with linear association with left side navicular drop (r-value 0.186, p-value 0.034).

Shruti Bagawe, et. al. (2019) found that there was an association of non specific low back pain and disability index with lower extremity alignment factors . In this study there are 36 subjects are included in this study, (12 males and 24 females). With non specific low back pain were assessed with the oswestry low back pain disability scale and the lower extremity factors like pelvic angle measured with inclinometer and the other factors like angle of torsion, tibial torsion, Q angle measured with goniometer and navicular drop is measured with two cards. This study concluded that an association of non specific low back pain and disability index with lower extremity alignment factors.

Another study done by **L. M. Jonck et. al. (1964)** found weight carrying leads to reduction of lumbar lordosis. This only limited to the lower lumbar region. Due to that at S1 level there is slightly decrease the downward sliding force and at other hand due to disc compression there is an increase in the downward sliding force at the upper surface of L5. In that present study included 77 bantu men employed by flourmill with age varied from 23 to 45 years. Also the period of they carried load on the head ranged from 3 week to 21 years. The lumbosacral angle was measured with radiographs the findings that the lumbosacral angles increases in the labours class who carry heavy loads.

Dr. Shrikant Sunil Sant, et. al. (2017) found that prevalence of low back pain in vendors are high. In this study 30 workers are included. This study was carried out in loni village. The 20 to 75 years age group are

included the low back pain was measured using the back pain functional scale questionnaire. Maximum vendors had problems in bending or stooping and very few people experienced affected sleep. This study concluded that prevalence of low back pain is heigh in male participants as compare to female participants.

Another study done by **Mehmet caglayan , et. al. (2014)** in this present study 117 patient are taken 61 females and 56 males. Found that the changes in lumbosacral angle may cause low back pain. In increase in lumbosacral angle may be increase the risk of low back pain. The measurement of lumbosacral angle guid the physician who is to make clinical decisions in examination of patients with low back pain.

Another study done by **Ndubuisi O. C. Onyemaechi (2009)** found that overweight and obesity were associated with increase in lumbar angle. In this present study 315 subjects are included there were 141 males and 159 females. The lumbosacral angle measured using the radiographs, and transparent goniometer included.

Anh-Dung Nguyen et. al. (2009) In this study 102 male and 116 females are taken. The relationship between lower extremity alignment and lower extremity injury risk remains understood in this study, perhaps cause of most other have examined only individual or a select group of alignment variables. This study concluded that relationship among lower extremity alignment variables identified a distinct valgus alignment factors characterised by a alignment of pelvis and knee (Pelvic tilt, Q angle, tibiofemoral angles). Was independent on pronated alignment factors and femoral anteversion.

Jennifer M. Medina, et. al (2009) the was perform to evaluate the effect of sex on 6 measures of lower extremity alignment like navicular drop , tibial varum, q angle, genu recurvatum, anterior pelvic tilt, femoral anteversion measure with help of goniometer, and pelvic tilt with help of leg length discrepancy instrument. In this study taken 118 healthy adults (57 males and 61 females). This study concluded that difference between male and females for 4 of the six lower extremity alignment that measured. Female group is larger q angle, genu recurvatum, anterior pelvic tilt and femoral anteversion compare with male group.

Umesh Adhikari, et. al. (2014) The purpose of this study was to find out the normative values of navicular drop test. 112 healthy subjects 51 males and 61 females, of age 19 to 22 years. The study concluded that overall normative median values for male and females showed minimal difference of 1 mm where the difference between male and female, right and left foot showed 2 mm and 1 mm respectively.

CONCLUSION

This study concluded that the positive relation was found only in left side navicular drop, other there was no association between nonspecific low back pain and lower extremity alignment in market yard workers.

LIMITATIONS AND SUGGESTIONS

Limitations

1) The study can be done on larger population.
2) The present study did not have a control group.

Suggestion

1) The same study can be perform on different age group.
2) Study can be done in other population.
3) Study can be done on compare male and female.
4)

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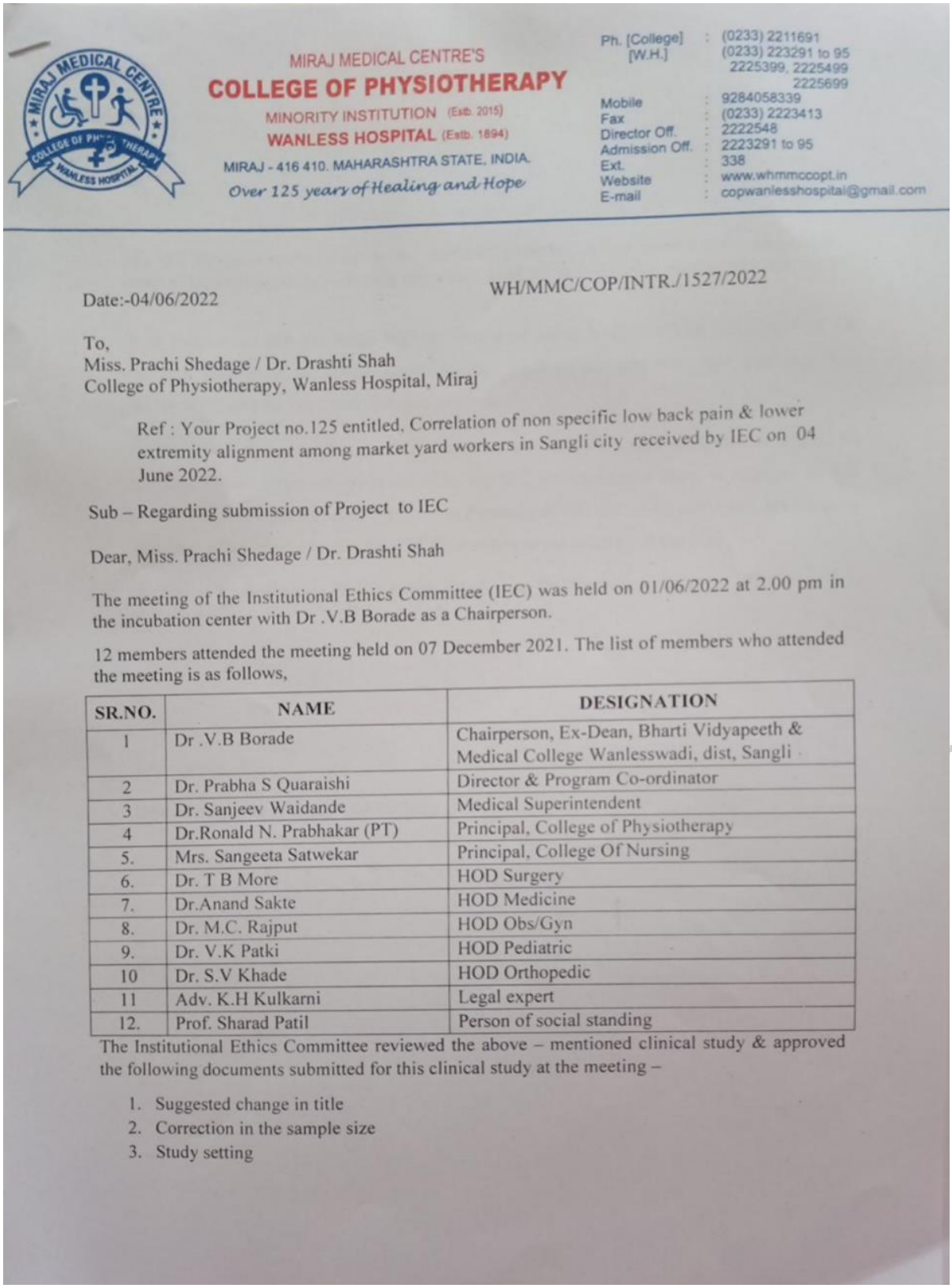
Annexure I

ETHICAL CLEARANCE



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Admission Off. : 2223291 to 95
Ext. : 338
Website : www.whmmccopt.in
E-mail : copwanlesshospital@gmail.com

Date:-04/06/2022 WH/MMC/COP/INTR./1527/2022

To,
Miss. Prachi Shedage / Dr. Drashti Shah
College of Physiotherapy, Wanless Hospital, Miraj

Ref : Your Project no.125 entitled, Correlation of non specific low back pain & lower extremity alignment among market yard workers in Sangli city received by IEC on 04 June 2022.

Sub – Regarding submission of Project to IEC

Dear, Miss. Prachi Shedage / Dr. Drashti Shah

The meeting of the Institutional Ethics Committee (IEC) was held on 01/06/2022 at 2.00 pm in the incubation center with Dr .V.B Borade as a Chairperson.

12 members attended the meeting held on 07 December 2021. The list of members who attended the meeting is as follows,

SR.NO.	NAME	DESIGNATION
1	Dr .V.B Borade	Chairperson, Ex-Dean, Bharti Vidyapeeth & Medical College Wanlesswadi, dist, Sangli
2	Dr. Prabha S Quaraishi	Director & Program Co-ordinator
3	Dr. Sanjeev Waidande	Medical Superintendent
4	Dr.Ronald N. Prabhakar (PT)	Principal, College of Physiotherapy
5.	Mrs. Sangeeta Satwekar	Principal, College Of Nursing
6.	Dr. T B More	HOD Surgery
7.	Dr.Anand Sakte	HOD Medicine
8.	Dr. M.C. Rajput	HOD Obs/Gyn
9.	Dr. V.K Patki	HOD Pediatric
10	Dr. S.V Khade	HOD Orthopedic
11	Adv. K.H Kulkarni	Legal expert
12.	Prof. Sharad Patil	Person of social standing

The Institutional Ethics Committee reviewed the above – mentioned clinical study & approved the following documents submitted for this clinical study at the meeting –

1. Suggested change in title
2. Correction in the sample size
3. Study setting

The IEC hereby approves the proposal entitled Correlation of non specific low back pain & lower extremity alignment among market yard workers in sangli city. received by IEC on 04 June 2022.

It is understood that the study will be conducted under your direction, in a total of 130 research participant at Miraj- Sangli Market Yard as per the submitted protocol. This approval is valid for the entire duration of the study.

No deviations from, or changes of the protocol and informed consent document should be initiated without prior written approval by the IEC any deviations from, or changes of the protocol to eliminate immediate hazards to the trial subjects and about any new information's that may affect adversely the safety of the subjects or the conduct of the trial.

A copy of the final report should be submitted to the IEC for review.

Chairperson , IEC

Date of Approval of Study - 04/06/2022

APPENDIX II

INFORMED CONSENT FORM

Participant's Name :

Age :

Gender :

Address :

Title of the project :

The details of the study have been provided to me in writing and explained to me in my own language. I confirmed that I have understood the above study and have the opportunity to ask question. I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving any reasons. By doing so I am aware that my medical care or legal rights will not be affected. I agree that the data or results obtained from this study can be used only for scientific purpose(s). I fully agree to participate in the above study.

Signature of the participant:_____

Signature of the investigator:_____

Date :

Place:

APPENDIX III

DATA COLLECTION SHEET

Name of participants :

Age:

Gender:

Occupation:

Address:

AGE	OLBDS	LSA		AOT		Q ANGLE		TT		NAVICULAR DROP	
		RT	LT	RT	LT	RT	LT	RT	LT	RT	LT

Signature of participants -

Signature of investigator -

Date : Place:

			LSA(in degree)		AOT (in degree)	
			right	left	right	left
1	50	Male	20	21	12	12
2	40	Male	10	11	10	11
3	37	Male	13	14	12	11
4	44	Male	20	21	15	14
5	40	Male	10	11	10	11
6	50	Male	19	20	13	13
7	45	Male	17	18	10	11
8	49	Male	20	21	15	15
9	36	Male	14	15	13	13
10	50	Male	21	22	11	12
11	38	Male	15	16	15	14
12	40	Male	15	16	13	13
13	50	Male	21	22	15	14
14	37	Male	12	13	12	11
15	36	Male	14	15	10	10
16	48	Male	19	20	11	13
17	36	Male	15	16	10	10
18	42	Male	19	20	10	11
19	45	Male	21	22	11	11
20	48	Male	21	22	15	14
21	53	Male	22	23	15	15
22	36	Male	14	15	10	11

Q angle(in degree)		Tibial Torsion (in degree)		Navicular Drop(cm)		0LBDS
right	left	right	left	right	left	
15	15	15	14	1.2	1	18
15	15	13	13	1	1	32
14	13	14	13	1	1.1	30
14	13	13	14	1	1	8
15	13	14	14	1	1.2	31
15	14	16	16	1	1	19
15	14	15	15	1	1.1	13
15	13	15	15	1.1	1	15
15	15	15	15	1.1	1.2	27
10	9	16	15	1.2	1.3	19
14	13	16	15	1	1	28
15	15	15	14	1	1	30
11	11	13	14	1.1	1	17
14	14	13	13	1	1	29
13	12	14	13		1	28
12	11	13	13	1.2	1	17
14	14	14	15	1.2	1.1	26
11	11	16	15	1	1.1	10
11	12	15	14	1	1.2	14

			LSA(in degree)		AOT (in degree)	
Sr No	Age	Gender	right	left	right	left

23	30	Male	33	34	11	12
24	41	Male	17	18	15	15
25	50	Male	21	22	14	15
26	41	Male	18	19	13	13
27	46	Male	19	20	14	13
28	29	Male	32	33	10	11
29	30	Male	34	35	12	13
30	33	Male	32	32	14	14
31	44	Male	19	20	14	13
32	50	Male	21	22	15	15
33	54	Male	23	24	15	14
34	26	Male	29	30	11	11
35	28	Male	27	28	10	10
36	30	Male	33	34	12	13
37	26	Male	30	31	13	14
38	55	Male	18	19	15	15
39	42	Male	19	20	14	13
40	27	Male	29	29	15	14
41	35	Male	40	41	13	13
42	55	Male	18	19	10	11
43	55	Male	18	19	12	13
44	44	Male	20	21	11	11
45	38	Male	14	15	14	13
46	40	Male	10	11	11	11
47	36	Male	13	14	12	13
48	40	Male	10	11	11	12
49	45	Male	22	23	14	15
50	48	Male	19	20	10	10

Q angle(in degree)		Tibial Torsion (in degree)		Navicular Drop(cm)		0LBDS
right	left	right	left	right	left	
13	14	15	16	1	1	19
11	11	13	14	1	1	1
10	11	16	17	1.1	1	23
11	11	16	16	1	1	7
10	11	15	14	1	1	18
11	11	16	15	1	1	6
13	12	15	15	1.1	1	17
11	10	16	17	1	1	33
12	12	13	13	1	1	2
10	11	16	15	1	1	2
15	15	14	15	1.2	1	1
10	11	15	14	1	1	3
12	11	14	15	1.1	1.1	11
14	13	15	16	1	1	2
13	13	15	16	1	1	12
12	12	16	17	1	1	16
12	13	14	15	1	1	1
15	14	14	13	1	1.1	4
10	11	13	13	1.1	1.1	2
13	12	15	15	1	1	30
12	11	15	15	1	1	2
14	13	15	14	1	1	2
10	11	15	14	1	1	4
11	11	14	16	1	1	14
14	13	17	16	1.1	1.2	12
11	12	13	14	1.1	1.1	3
10	10	15	14	1	1	32
11	11	16	16	1	1	2
10	11	14	15	1.3	1.2	12
10	10	15	15	1	1	14

			LSA(in degree)		AOT (in degree)	
Sr No	Age	Gender	right	left	right	left

81	50	Male	22	23	14	13
82	44	Male	20	21	15	12
83	43	Male	17	18	13	12
84	45	Male	18	19	12	11
85	50	Male	20	21	11	11
86	45	Male	20	21	10	11
87	42	Male	17	18	14	13
88	48	Male	19	20	12	12
89	45	Male	22	23	11	11
90	41	Male	19	20	13	14
91	38	Male	16	17	12	11
92	42	Male	17	18	11	10
93	49	Male	21	22	11	10
94	50	Male	22	23	13	12
95	50	Male	22	23	15	14
96	45	Male	22	23	15	15
97	28	Male	27	28	11	11
98	26	Male	29	30	10	12
99	41	Male	20	21	14	13
100	50	Male	22	23	15	14
101	42	Male	21	22	14	13
102	35	Male	35	36	13	12
103	30	Male	32	33	12	11
104	41	Male	19	20	14	13
105	44	Male	20	21	13	11
106	49	Male	20	21	13	12
107	44	Male	20	21	15	14
108	48	Male	21	22	15	14
109	44	Male	20	21	11	11
110	27	Male	28	29	10	11
111	29	Male	29	29	10	11
112	43	Male	22	23	11	11
113	34	Male	33	33	12	13
114	51	Male	20	21	13	14
115	47	Male	21	22	14	15

Q angle(in degree)		Tibial Torsion (in degree)		Navicular Drop(cm)		0LBDS
right	left	right	left	right	left	
12	13	17	16	1.1	1.1	19
11	12	16	17	1	1	13
10	11	14	15	1	1	12
10	11	13	14	1	1	14
10	11	16	17	1	1	20
11	11	13	14	1	1	14
11	12	13	13	1	1	13
13	12	13	14	1.1	1	17
14	13	14	15	1.1	1.1	12
13	13	15	16	1	1.1	11
12	13	13	14	1	1	29
13	12	15	14	1	1	10
13	12	14	15	1	1	18
14	13	17	16	1.1	1.1	20
15	14	16	17	1.1	1.2	19
15	13	17	17	1.3	1.2	11
13	13	14	15	1	1	2
12	12	13	14	1	1	1
11	12	13	14	1.1	1.2	8
14	15	17	16	1.2	1.2	19
14	14	16	15	1	1	7
13	15	14	15	1	1	3
13	13	13	14	1	1	2
13	14	15	15	1	1	6
14	15	14	15	1	1	10
14	13	14	15	1	1	19
15	14	16	17	1.1	1.2	12
15	13	15	16	1.1	1.1	17
11	11	15	14	1	1	13
11	12	13	14	1	1	0
10	11	14	15	1	1	1
12	13	14	14	1	1	12
13	14	13	14	1	1	3
15	14	16	15	1.1	1.1	23
13	14	14	14	1	1.1	21

Sr No	Age	Gender	LSA(in degree)		AOT (in degree)	
			right	left	right	left

116	45	Male	22	23	12	13
117	48	Male	19	20	13	14
118	50	Male	21	22	14	14
119	47	Male	21	22	13	13
120	46	Male	19	20	13	12
121	49	Male	21	22	14	13
122	55	Male	19	20	13	13
123	50	Male	23	24	15	14
124	52	Male	21	22	13	14
125	55	Male	22	23	13	13
126	51	Male	21	22	10	11
127	53	Male	22	23	13	12
128	49	Male	19	20	11	11
129	54	Male	23	24	10	11
130	52	Male	21	22	13	14

Q angle(in degree)		Tibial Torsion (in degree)		Navicular Drop(cm)		0LBDS
right	left	right	left	right	left	
13	14	15	15	1	1	14
14	13	16	16	1	1	18
14	14	14	14	1	1	19
13	13	15	16	1	1	17
13	13	15	15	1	1	16
12	11	14	13	1	1	20
13	12	14	15	1	1	24
15	15	16	17	1.1	1.2	20
12	11	14	15	1.2	1.2	21
13	14	17	18	1	1	23
10	11	13	14	1	1	20
13	12	14	14	1	1	21
12	13	13	14	1	1	18
12	13	15	16	1	1	23
12	11	14	15	1.1	1.1	21