ISSN: 2320-7329
http://www.ayurlog.com
July-Sept: 2025 | Volume: 13th | Issue: 3rd

NATIONAL JOURNAL OF RESEARCH IN AYURVED SCIENCE

Article Received Date: 07/05/2025 Reviewed on Date: 17/07/2025 Accepted on: 25/07/2025

An Observational Study of *Viddha Lakshana* of *Sandhi Marma* w. s. r. to Knee Joint Injuries in Kabaddi Players

Neha Patankar*[1], Vinod Choudhari[2], Shilpa Varade[3]

*[1]Ph.D. Scholar, Department of Rachana Sharir, Tilak Ayurved Mahavidyalaya, Pune.
[2]Professor & HOD, Department of Rachana Sharir, Shri Ayurved Mahavidyalaya, Nagpur.
[3]Associate Professor, Department of Rachana Sharir, Shri Ayurved Mahavidyalaya, Nagpur.

***Corresponding author: Email Id: neha9hassan@gmail.com; Mob. No: 7756888129**

Abstract

Introduction: The largest and the most complicated joint in the body is the knee joint. Though it is a weight-bearing joint, structurally, this joint is weak. Therefore, various deformities, diseases, and injuries occur more at the knee joint. *Acharya* has mentioned *Janu Marma* as *Vaikalyakara Marma.* The nature of individual defence and group offence in Kabaddi makes the players more prone to knee injuries. **Methods:** An observational study was conducted among 43 *Kabbadi* players of Physical Education College and the Professional *Kabbadi* Association. Data was collected based on assessment parameters. **Results:** The swelling was more frequent in most subjects. There were very few subjects with old injuries. A significant pattern of Khanjata was seen by gender in the injured *Kabbadi* players. **Conclusion:** Injuries found in *Kabbadi* players relate to the *Viddha Lakshanas of Sandhi Marma (*here *vaikalyakara Janu marma)*.

Keywords: *Kabbadi* Players, *Khanjata,* Knee Joint, *Vaikalyakara Marma.*

Introduction

Background

The definition, site, signs and symptoms of *Marma* injury, etc, everything is described in the Samhita of Acharya Sushrut. There are a total of 107 Marmas as described in the Samhitas.[1][2][3] Acharya Charaka has considered the first six seats of *Prana* as marmas out of ten seats[4]. As *Marmas* are the vital energy points of the body, they should be protected from any kind of injury[5]. *Marma* is defined as an anatomically vulnerable area where muscles, arteries, veins, tendons, ligaments, bones, and joints congregate together to form a vital spot of life[6]. Any injury to the marma point/s can be lethal[7]. *Laghu Vagbhat* mentions about *marma in sharir sthana of ashtang hridaya, marma vibhagam shariram* [8]. Ergonomic injuries are overuse injuries caused by exposure to repetitive strain, prolonged awkward posture, exposure to abnormal temperature or vibration, or pressure over a particular body part at a workplace.[9]

Kabaddi is a traditional outdoor team game. This game requires a lot of energy and is very popular among the Indian masses for the excitement and thrill it generates through the encouragement and involvement of the spectators. [10]

In kabaddi injuries occur which is an occupational hazard. There are two teams. One raider from a team goes into the opposite arena, where the player is defended or stopped by the whole opposite team. Here the most inevitable type of injury happens to be of the Knee joint.[11] There is a need to identify the various risk factors that may be responsible for the incidence of knee injury.

Objectives

The primary objective is to study classical *Viddha Lakshana* of *Sandhi Marma* w.s.r. to knee joint injuries in kabaddi players assessed by Goniometer and X-ray.

Materials and Methods

Study Design: Observational Cross-sectional Study.

Study Setting

1. Observational work to be done at Physical Education College as well as Professional Kabaddi Association.
2. Dissection to be done to determine normal anatomical structures of *Janu Sandhi* in a cadaver in the department of *Rachana Sharir* of our institute.

Duration of study:

The study was carried out for 18 months after approval of the synopsis.

Method of selection of study subjects

Inclusion criteria

1. Only healthy individuals who play professional and non-professional games of kabaddi.
2. Age-18-40 years
3. Gender-both
4. Knee injury caused while playing kabaddi

Exclusion criteria

1. Patients having injuries to the other joints are to be excluded.
2. Knee injuries that are not related to kabaddi are not to be included.
3. Patients with any systemic disorders.
4. Individuals having congenital deformities of particular joints.

Specification of Instruments

1. X-Ray
2. Goniometer
3. Measuring Tape

Study Population

There were 43 Kabaddi players with knee joint injuries from Physical Education College as well as the Professional Kabaddi Association.

Variables

Assessment Criteria

Complaints:

1. Pain
2 Swelling
3. Tenderness
4. Range of motion
5. Crepitus
6. Instability of Joint

Data Collection Tools

1. Case Record Form
2. X-Ray
3. Goniometer

Data Sources/ Measurement

Gradation is given in table no.18.

Study Size

The sample size is calculated by OpenEpi, Version 3, open-source calculator- SSCC.

Sample Size Estimation

The sample size was determined considering the prevalence of knee injuries as the main outcome [12]. $n=z^2pq/d^2$

$n=z^2p\ (1-q)/d^2$
$n= (1.64)^2.20(100-20)/10^2$
n=2.6896.20(80)/100
n=4303.36/100
n=43.0336
where, n= sample size
p=prevalence=20%

q=100-p
d=precision=10%
z value at 90%=1.645
n=43
The required sample size is (n=43)
Therefore 43 kabaddi players were included.

Statistical Methods

Data was coded and analyzed with the statistical software, STATA, version 10.1, 2011.

• Descriptive statistics included summary measures like Mean and Standard Deviation for quantitative variables while frequency and percentages were used to summarize qualitative (Categorical) variables

• Inferential statistics included Confidence Intervals and P-values generated from hypothesis testing procedures.

• Proportions of categorical outcomes were estimated as % and 95% Confidence Intervals. Similarly mean values for quantitative outcomes were estimated as mean and 95% Confidence Intervals.

Between-the-groups comparison of mean difference across 2 sub-groups (e.g. h/o exposure present versus absent) was evaluated with two independent samples (unpaired) t-test with equal variances.

• Chi-square test and Z test for difference in proportions were performed to compare differences in proportions in two or more sub-groups for qualitative/categorical symptoms (lakshanas).

• A P-value less than 0.05 was considered statistically significant for all the comparisons.

Observations and Discussion:

The statistical assessment is given in tabular form at the end of the manuscript.

Age:

A total 43 no. of subjects were included in the study, being 18-40 yrs of age as inclusion criteria, the range found in the above subjects was 18-27 yrs and the maximum no. of subjects found were in the age group of 20-24 yrs with 65.12%

Gender:

The distribution of the above subjects was seen in the ratio of 2:1(male: female). Male preponderance was seen with 29 subjects with 67.44%

BMI:

Overall BMI was found in the study subjects with a mean of 23.3 ± 1.4 & with a range of 21-27.

Site:

Right knee injuries were found to be 29(67.44%) and in the left knee 13(30.23%); with one (02.03%) of them showing a bilateral injury site.

Symptoms clinically assessed:

VAS Score (severity grade) seen in 27 subjects with 62.79% which is a moderate grade of pain.

On average mean and median seen are approximately 6.

Swelling is seen more frequently in 35 subjects with 81.40% followed by tenderness which is seen in 30 subjects with 69.77%.

The presence of previous injury was seen in 10 subjects among 43 with 23.26% with 95% CI.

Marmaviddha Lakshanas[13]

While overviewing the *Marmaviddha Lakshanas*, *vastushukarnivakirna* was observed in 39 (90.70%) patients followed by *parvashoph* in 34 (79.07%) patients. The other *lakshanas* like *balachestakshaya* in 12 (27.91%), *khanjata* in 8 (18.60%) followed by *kunhi* in 1 (2.33%) were found.

RESULT:

Focusing on the demographic profile and pattern of injured kabaddi players following results were seen:

• Among 6 *lakshana* only *Khanjata* showed a significant pattern by gender of the injured kabaddi player

• Except *Shosh*, all other 5 *lakshana* were more frequently manifested among male study subjects

• Among 6 *lakshana* only *Vastushukarmivakirna* showed a significant pattern by previous injury in the injured kabaddi players.

• According to Mean, SD: All 6 *lakshanas* did not show any significant patterns by age of the injured kabaddi players.

• Except *Shosh* and *Kunhi*, all other *lakshana* were more frequently manifested among 20-24-year-old study subjects

• All *lakshanas* did not show any significant patterns by BMI of the injured kabaddi players, Except *Kunhi*, all other 5 *lakshana* were more frequently manifested among overweight/obese study subjects.

• In kabaddi players, meniscus injuries were more common compared to football players in ACL deficient knees [14].

• With the recent gain in popularity of this sport, the number of kabaddi players suffering from ACL injury has also increased [15].

• To effectively decrease the level and incidence of sports-related injuries, preventive measures should be taken [16].

• Knee injuries, especially ACL tears cause financial burdens on athletes' families and the healthcare system and also waste their time[17].

Conclusion

Marmas are certain vital anatomical points on the body surface with specific applied anatomy.

Janu Marma is *Sandhi Marma*[18] and *Vaikalyakara Marma*[19]. Concerning *Sharir Sthana* of *Sushruta Samhita, Vaikalyakara Marmas* are *Somaguna Bhuyistha*[20], meaning they have characteristics like steadiness and coolness. Although injuries to this site are not life-threatening, they can produce deformity with structural and functional malformation. Marma is the meeting point of muscles, veins, ligaments, and bones. Trauma to the Marma destroys the *prana,* the vital life force[21].

• Sports injuries are diathesis, causing pain, and other symptoms at the site of injury. According to Ayurveda, *Vatadidosha*[22] (bodily humors) are destabilized due to injury.

• Trauma-related ailments within the similar facets described in Ayurveda can be correlated with sports injuries.

• The *Janu Marma*[23] described in the Samhitas can be traced 'around' the synovial and saddle variety of joints present in the lower limb (knee joint).

• The knee joint is most frequently involved in injuries in sports persons.

• The knee joint bears maximum body weight, it is an important joint and carries out different movements such as flexion, extension, and

medial and lateral rotation of the knee. Thus its vulnerability is understandable.

In the current study, it is seen that knee joint injury maximally involves the meniscus, ACL, and patella. Though the damage/injury of any anatomical structure that comes within the concept of *Janu Marma* hinders knee movement, injury to these three structures hampers knee activity at maximum level.

After analysis of statistical data and detailed discussion, it is concluded that,

• Focusing on the Ayurvedic concept - the *Viddha Lakshanas* of the Janusandhi Marma, *Vastushukanivakirna, Parvashoph, Balachestakshaya, Khanjata, and Kunhi* are present at different grades in different subjects. This is absolutely in correlation (though not serially), with the symptoms of injury to the knee joint like swelling, tenderness, instability of the joint, crepitus, loss of muscle power, and restricted movement, at different grades in different subjects.

Considering this major point it can be concluded that there is a strong possibility of application of the Ayurvedic concept of 'Marma Shaarir' in sports medicine. This will take this major Ayurvedic concept forward in a very applied form where we can recommend Ayurvedic solutions to sports injuries.

If we identify various knee injuries from the Ayurvedic perspective, we can offer treatment available in the Indian system of Medicine,i.e. Ayurveda. It will be a golden match with the fast-emerging international sport of Kabaddi, which also has Indian roots.

Declaration of patient consent

The patient's consent has been obtained. The patient has given his/her consent for his/her images and other clinical information to be reported in the journal to facilitate further research. The patients have been explained that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

None.

Conflicts of interest

It was undertaken that there was no 'Conflict of Interest' to establish the applicability of *Marma Sharir* in sports medicine.

References

1. Charak Samhita, Siddhisthan, TrimarmiyaSiddhi, 9/3. Available from: https://niimh.nic.in/ebooks/ecaraka/?mod=adhi
2. Charak Samhita, Chikitsasthan, TrimarmiyaChikitsa, 26/3. Available from: https://niimh.nic.in/ebooks/ecaraka/?mod=adhi
3. Sushruta Samhita, Sharirsthan,Pratekmarmanirdeshsharira m, 6/2.Available from: https://niimh.nic.in/ebooks/esushruta/?mod=adhi
4. Charak Samhita, Sharirsthan, Sharirsankhyashariram, 7/9. Available from: https://niimh.nic.in/ebooks/ecaraka/?mod=adhi
5. Lahange MS, et al. Anthropometric Dimensions of Marma(vital area) present in Human body with special reference to its Clinico- surgical importance in the present scenario. J Nat Ayurvedic Med 2018,2(7):000153
6. Ashtang Hridaya, Sharirsthan, Marmavibhagshariroadhyay, 4/38. Available from:

https://vedotpatti.in/samhita/Vag/ehrudayam/?mod=read

7. Sushruta Samhita, Sharirsthan,Pratekmarmanirdeshsharira m, 6/16.Available from: https://niimh.nic.in/ebooks/esushruta/?mod=adhi
8. Ashtang Hridaya, Sharirsthan, Marmavibhagshariroadhyay, 4/
9. https://www.safeopedia.com/definition/6681/ergonomic-injury
10. R.John, M.S.Dhillon et.al. Epidemiological profile of Sports-related knee injuries in northern India: An Observational study at a tertiary care center, J. Clin. Ortho p Trauma 2016 Jul-Sep; 7(3):207-11
11. V Subhadra Devi.Inderbir Singh's Textbook of Anatomy. Edition - Seventh.Jaypee Brothers Medical Publishers;2019.
12. R.John, M.S.Dhillon et.al. Epidemiological profile of Sports-related knee injuries in northern India: An Observational study at a tertiary care centre; J. Clin. Ortho p Trauma.2016 Jul-Sep; 7(3):207-11.
13. Sushruta Samhita, Sharirsthan,Pratekmarmanirdeshsharira m, 6/47-51.Available from: https://niimh.nic.in/ebooks/esushruta/?mod=adhi
14. Gupta R, Kapoor A, David Masih G. Prevalence of concomitant knee injuries associated with anterior cruciate ligament tear in kabaddi and football players. J Clin Orthop Trauma. 2020 Oct;11(Suppl 5):S784-S788. doi: 10.1016/j.jcot.2020.05.037. Epub 2020 Jun 6. PMID: 32999556; PMCID: PMC7503079.
15. Gupta R, Kapoor A, David Masih G. Prevalence of concomitant knee injuries associated with anterior cruciate ligament tear in kabaddi and football players. J Clin Orthop Trauma. 2020 Oct;11(Suppl 5):S784-S788. doi: 10.1016/j.jcot.2020.05.037. Epub 2020 Jun 6. PMID: 32999556; PMCID: PMC7503079.
16. Mandelbaum B.R., Silvers H.J., Watanabe D.S. Effectiveness of a neuromuscular and proprioceptive training program in preventing anterior cruciate ligament injuries in female athletes. Am J Sports Med. 2005;33:1003–1010. [PubMed] [Google Scholar].
17. John R, Dhillon MS, Syam K, Prabhakar S, Behera P, Singh H. Epidemiological profile of sports-related knee injuries in northern India: An observational study at a tertiary care center. J Clin Orthop Trauma. 2016 Jul-Sep;7(3):207-11. doi: 10.1016/j.jcot.2016.02.003. Epub 2016 Feb 28. PMID: 27489418; PMCID: PMC4949405.
18. Conclusion Sushruta Samhita, Sharirsthan,Pratekmarmanirdeshsharira m, 6/7.Available from: https://niimh.nic.in/ebooks/esushruta/?mod=adhi
19. Sushruta Samhita, Sharirsthan,Pratekmarmanirdeshsharira m, 6/12.Available from: https://niimh.nic.in/ebooks/esushruta/?mod=adhi
20. Sushruta Samhita, Sharirsthan,Pratekmarmanirdeshsharira m, 6/17.Available from: https://niimh.nic.in/ebooks/esushruta/?mod=adhi

21. Ashtang Sangraha, Sharirsthan, Marmavibhag, 7/49.Available from: https://vedotpatti.in/samhita/Vag/esangraha/?mod=read
22. Ashtang Hridaya, Sharirsthan, Marmavibhagshariroadhyay, 4/ 64,65
23. *Sushrut samhia sharirsthan,* Pratekmarmanirdeshshariram6/13
24. Sushruta Samhita, Part 1, Chaukhambha Sanskrit Sansthan, Varanasi, Sharirsthan, Chapter 6, Verse 8, Page number-68
25. Tripathi B., AshtangHridaya, Chaukhamba Sanskrit Pratishthan, Delhi, Reprint 2017, Sharirsthan, Chapter 4, Verse 37, Page number-394
26. Shastri K.A., Sushruta Samhita, Part 1, Chaukhambha Sanskrit Sansthan, Varanasi, Reprint 2017, Sharirsthan, Chapter 6, Verse 3, Page number-67.

Tables

Table 1: Age distribution of study subjects

Age group (years)	Study subjects	
	No.	%
<20	**5**	**11.63**
20-24	**28**	**65.12**
25 & above	**10**	**23.26**
Total	**43**	**100.00**
Mean ± SD	**22.21±2.5 years**	
Range	**18 - 27 years**	

Table 2: Gender distribution of study subjects

Gender	Study Subjects	
	No.	**%**
Male	**29**	**67.44**
Femle	**14**	**32.56**
Total	**43**	**100.00**

Table 3. Summary of Anthropometry measures in study subjects

Anthropometry	Mean ± SD	Range
Height (cm)	**162±2.5**	**157.5-165.1**
Weight (kg)	**62.9±4.6**	**52-70**
BMI (kg/m²)	**23.3 ± 1.4**	**21-27**

Table 4: BMI Range in study subjects

BMI	Frequency	%
Underweight less 18.5	0	0
Normal 18.5-22.9	21	48.84
Overweight 23-24.9	20	46.51
Obese more than 25	2	4.65

Table 5: Duration of playing since (yrs) in study subject

Duration (years)	Frequency	%
1-5 yrs	34	79.06
6-10 yrs	9	20.93

Table 6: Duration of practice (hours) in study subjects

Duration (hours)	Frequency	%
Less than 3	20	46.51
More than 3	23	53.49

Table 7: Distribution of study subjects according to characteristics of knee joint injuries in study subject

Characteristics of injury	**Study subjects (n=43)**	
	No.	**%**
Presence of previous injury	**10**	**23.26 (95% CI 11.8%-38.6%)**
Site of injury **Left** **Right** **Bilateral**	 **13** **29** **1**	 **30.23%** **67.44%** **2.03%**
Mean duration of Previous injury	**16.6±15.1 months (Range 1-48)**	

Table No. 8: Previous injuries wise distribution of study subjects

Injuries	**Frequency**	**%**
Yes	**33**	**76.75**
No	**10**	**23.25**

Table No.9: Distribution of study subjects according to nature of knee joint injuries in study subjects

Nature of Injury	Frequency	Percentage
Sprain	18	41.86
Muscle injury	08	18.60
ACL injury	04	9.30
Bursitis	03	6.98
Patella dislocation	03	6.98
Effusion	02	4.65
Strain	01	2.33
Twist	04	9.30

Table No. 10: Cause of Injury wise distribution of study subjects

Cause	**Frequency**	**%**
Raider	**26**	**60.47**
Defender	**17**	**39.53**

Table No. 11: Pain severity (by VAS score) among study subjects after injury

VAS Score (Severity Grade)	**Study subjects**	
	No.	**%**
1-3 (Mild)	**2**	**4.66**
2-6 (Moderate)	**27**	**62.79**
7-10	**14**	**32.55**
Total	**43**	**100.00**
Mean ± SD	**5.93 ± 1.47**	
Median (Range)	**6 (2-10)**	

Table No 12: Distribution of various symptoms after injuries in study subjects

Symptoms After knee - joint injury	**Study subjects (n=43)**	
	No.	**%**
Swelling	35	81.40
Tenderness	30	69.77
Crepitus	4	9.30
Instability of joints	10	23.26
Total	**18**	**100.00**

Tabl e No 13:
Distribution of study subjects according to classical *Viddha Lakshana* of *Sandhi Marma*

Viddha lakshana	Study subjects (n=43)		
	No.	%	95% CI
Vastushukarnivakirna	39	90.70	77.8-97.4%
Kunhi	1	2.33	0-12.3%
Khanjata	8	18.60	8.4-33.4%
Balachestakshaya	12	27.91	15.3-43.7%
Shosh	0	0.00	-
Parvashof	34	79.07	64-90%

Table No.14: Distribution of study subjects according to classical *Viddha Lakshana* of *Sandhi Marma* in various age groups

Age groups in years			
Lakshana	**Less than 20**	**20 - 24**	**25 & above**
Vastushukarnivakirna	4	25	10
Kunhi	**0**	**0**	**1**
Khanjata	**0**	**5**	**3**
Balachestakshaya	**1**	**9**	**2**
Shosh	**0**	**0**	**0**
Parvashof	**5**	**21**	**8**

Table No15: Pattern of each *lakshana* by the presence of the previous injury

Viddha lakshana	Previous injury		
	Yes (n=10)	No (n=33)	P value
Vastushukarnivakirna Present	7(70%)	32(76.2%)	0.010
Absent	3(30%)	1(23.8%)	significant
Kunhi Present Absent	0(0%) 10(100%)	1(3%) 32(97%)	0.578 Not significant
Khanjata Present Absent	3(30%) 7(70%)	5(15.1%) 38(84.9%)	0.290 Not significant

Balachestakshaya Present Absent	3(30%) 7(70%)	9(22.3%) 24(77.7%)	0.866 Not significant
Shosh	0(0%) 0(0%)	10(23.3%) 33(76.7%)	-
Parvashof	8(80%) 2(20%)	26(78.8%) 7(21.2%)	0.934 Not significant

Table No 16: Distribution of classical *Viddha Lakshana* of *Sandhi Marma* according to the gender

Lakshanas	Male	Female
Vastushukarnivakirna	27	12
Kunhi	1	0
Khanjata	8	0
Balachestakshaya	9	3
Shosh	0	0
Parvashof	24	10

Table No 17: Frequency of *Lakshana* among overweight/ obese study subjects

Viddha lakshana	**Overweight/ Obese(%)**	**Normal (%)**
Vastushukarnivakirna	69.2	30.8
Kunhi	0	100
Khanjata	50	50
Balachestakshaya	66.7	33.3
Shosh	69.8	30.2
Parvashof	67.7	32.3

Table no.18: Gradation

	Nil	**Mild**	**Moderate**	**Severe**
Pain	No Pain	Occasional can be managed without drugs	Frequent, can be managed with painkiller	Persistent and unmanageable even with drugs
Swelling	No Swelling	Joint swelling which may not be apparent on casual inspection but should be	Joints swelling casually on observation	Markedly abnormal swelling

		recognizable		
Tenderness	No Tenderness	Tender but bearable	Tender and winced	Tender, winced and withdraw
Range of Motion	No restriction, Full ROM, muscle activation against resistance	Mild restriction while twisting, Forward and backward bending, ROM slightly decreased against resistance	Moderate restriction, slightly twisting, forward and backward bending, ROM decreased slight movement	Severe restriction, unable to move, ROM about on resistance

			against resistance	
Crepitus	No Crepitus	Palpable Crepitus through $1/3^{rd}$ of the ROM	Palpable Crepitus through $1/3^{rd}$ - $2/3^{rd}$ of the ROM	Palpable Crepitus through greater than $2/3^{rd}$ of the ROM
Instability of Joints	No Instability	Instability appreciable by the patient but cannot be elicited on clinical examination	Instability can be elicited on clinical examination	Complete and distinct instability

Conflict of Interest: None *Source of funding:* Nil

Cite this article:

An Observational Study of Viddha Lakshana of Sandhi Marma w.s.r. to Knee Joint Injuries in Kabaddi Players

Neha Patankar, Vinod Choudhari, Shilpa Varade

Ayurlog: National Journal of Research in Ayurved Science- 2025; (13) (03): 01- 12