WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 15, 542-555. Review Article ISSN 2277–7105

KINESIOLOGICAL AND MUSCULOSKELETAL ADAPTATIONS IN *VRIKSHASANA*: AN ANATOMICAL EXPLORATION OF SINGLE-LEG BALANCE

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Article Received on 29 June 2026,
Article Revised on 19 July 2026,
Article Published on 01 Aug. 2026,

https://doi.org/10.5281/zenodo.21675168

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How to cite this Article: [1]*Dr. Sreethu Sreekumar, [2]Dr. Kalpana Raje, [3]Dr. Syamlal S., [4]Dr. Sriparvathy R. (2026). Kinesiological and Musculoskeletal Adaptations In Vrikshasana: An Anatomical Exploration of Single-Leg Balance. World Journal of Pharmaceutical Research, 15(15), 542–55.
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ABSTRACT

Yoga, one of the six orthodox systems of Indian philosophy, employs a variety of (postures) *Asanas* to enhance physical, mental, and spiritual well-being. Among balancing postures, *Vrikshasana* (Tree Pose) is a classical standing *Asana* described in the *Gheranda Samhita* and later in *Hathayogic* texts. The posture symbolizes steadiness, stability, and balance, while promoting neuromuscular control and postural awareness. A major lacuna identified in existing yoga literature is the insufficient correlation between traditional descriptions of *Vrikshasana* and evidence-based anatomical understanding. Most classical texts describe the technique and benefits of the posture but provide limited insight into the underlying musculoskeletal, neurophysiological, and biomechanical mechanisms. The present study aims to provide a comprehensive anatomical exploration of *Vrikshasana* by examining the joint actions, muscular patterns, ligamentous support, postural biomechanics, breathing mechanics, benefits, contraindications, and common errors associated with the

posture. It also highlights the role of vestibular regulation and neuromuscular coordination in sustaining balance. A detailed anatomical understanding of the posture can contribute to safer practice, improved therapeutic utilization, and the development of evidence-based yoga education and research.

KEYWORDS: *Asana,* Anatomy, *Gheranda Samhita, Vrikshasana,* Yoga.

INTRODUCTION

The word Yoga is derived from the *Sanskrit* root *'yuj'* meaning to bind, join, attach and yoke to direct and concentrate one's attention on to use and apply. It also means union or communion. Among the diverse repertoire of *Asanas*, forward bending and balancing postures constitute essential categories that develop flexibility, strength, and proprioceptive awareness. Yoga is one of the six orthodox system of Indian philosophy. It was co-ordinated and systematized by Patanjali in his classical work – *The Yoga Sutras*.[5]

Word Meaning

The name *Vrikshasana* arises from the *Sanskrit* words *Vriksha* means tree and *Asana* means posture. It is a balancing *Asana*. The pose is called *Vrikshasana* as in this pose it gives true spirit of tree.[1] *"Vrikshasana"* was defined as one among the 32 most important *Asana* in *Gheranda Samhita* (dated around 1650 CE). The *Gheranda Samhita* is the most encyclopaedic of the three classic text about *Asana*. It says that there are 8,400,000 of *Asana* described by Shiva. The postures are as many in number as there are numbers of species of living creatures in this universe. Among them 84 are the best, and among these 84, 32 have been found useful for mankind in this world the 32 *Asana* are mentioned in *Gheranda Samhita.*[1]

Vrikshasana is described in classical yoga literature including the *Gheranda Samhita* and later *Hathayogic* compilations. The *Gheranda Samhita* explains the posture as standing on one leg while placing the opposite foot against the thigh and maintaining steadiness like a tree.

AIM AND OBJECTIVES

To explore the anatomy of *Vrikshasana* by correlating its classical yogic description with musculoskeletal, biomechanical and neurophysiological principles.

1. To review the classical description, significance and methodology of *Vrikshasana* as documented in traditional yogic literature.
2. To analyze the joint, muscles, ligaments and movements involved during the execution of *Vrikshasana*.

MATERIALS AND METHODS

Before performing *Vrikshasana*, the practitioner should prepare the musculoskeletal and neuromuscular systems to ensure optimal balance, stability and postural alignment.

Steps for performing *Vrikshasana*[2]

Step 01 – Initial Alignment and Postural Stabilization

Stand in an erect anatomical posture with the feet placed approximately 2 inches apart, maintaining equal weight distribution through both lower limbs. Activate the intrinsic foot muscles and engage the postural stabilizers of the ankle, knee, pelvis and vertebral column to establish balance.

Step 02 – Visual Fixation and Neuromotor Preparation

Fix the (gaze) *Drishti* on a stationary point anteriorly to facilitate neuromuscular coordination, vestibular stabilization and proprioceptive control mediated through the visual and cerebellar systems.

Step 03 – Positioning of the Non–Weight Bearing Limb

During exhalation, flex the right hip and knee joints. Laterally rotate and abduct the right hip using the Gluteus Medius, Gluteus Minimus, Piriformis, Obturator Internus and Sartorius muscles, then place the plantar surface of the right foot against the medial aspect of the left thigh. The calcaneus approximates the perineal region producing stabilization of the pelvic girdle.

Step 04 – Upper Limb Elevation and Axial Elongation

During inhalation, elevate both upper limbs superiorly through shoulder flexion and slight scapular upward rotation produced by the deltoid, serratus anterior, and trapezius muscles. Approximate the palms in *Namaskara Mudra* above the head, maintaining extension of the elbows and axial elongation of the vertebral column.

MISTAKES TO AVOID

A. Avoid resting the lifted foot directly on the patellar region (kneecap).
B. Avoid the posture in individuals with groin or adductor compartment injuries.
C. Avoid the practice in individuals suffering from lower-back disorders.
D. The posture should be practiced cautiously or avoided in cases of arthritis and vertigo. [3]
E. Should be avoided or cautiously practiced in Hyperextension of the standing knee.
F. Try not to hold the breath while performing *Asana*.

Step 05 – Maintaining of the Posture

Maintain the posture for 10–30 seconds with normal diaphragmatic breathing. Isometric contraction of the quadriceps femoris, hamstrings, gastrocnemius, soleus, erector spinae, and core stabilizing musculature helps preserve postural equilibrium and musculoskeletal alignment.

Step 06 – Controlled Return to Neutral Position

During exhalation, gradually lower the upper limbs through controlled shoulder adduction and extension. Release the right lower limb by extending the hip and knee joints and return to the neutral anatomical position.

Step 07 – Contralateral Repetition

Repeat the same sequence on the contralateral side to ensure symmetrical activation of the musculoskeletal and neuromotor systems.

BREATHING AWARENESS AND DURATION

With the arms held quietly in namaste, and the raised leg braced against the adductors of the standing leg, the attention and centre of gravity are drawn inward and downward. Compared to tree pose with arms elevated or *Utthita Hasta Padangusthasana* (the toe-hold posture), the upper body is freer to participate in respiratory movements in this pose.[3] In all the *Asanas*, breathing should be done through the nostrils only and not through the mouth. Do not restrain the breath while in the process of the *Asana* or while staying in it.[4]

Duration: 1-5 breaths[5]

Figure 1: Vrikshasana (Tree Pose).

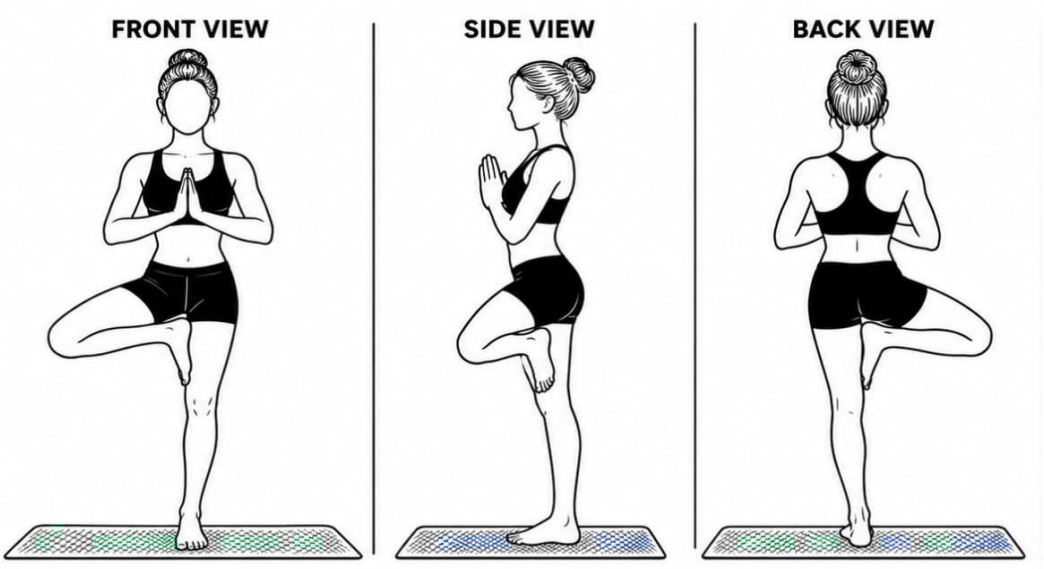

Figure 2: Vrikshasana (Front, Side & Back view).

CONTRAINDICATIONS

Vrikshasana should be practiced cautiously or avoided in the following conditions: – I have cross-referred it with this reference Dr. Somlata Jadoun | Dr. Sunil Kumaryadav "Anatomical Exploration of Vrikshasana" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 24566470, Volume-4 | Issue-6, October 2020,

pp.280, URL: www.ijtsrd.com/papers/ijtsrd33365.pdf

- **Arthritis Conditions**
- **Vestibular Disorders –** People experiencing vertigo, vestibular dysfunction, or balance disorders may find *Vrikshasana* difficult and unsafe. The posture requires efficient integration of the vestibular apparatus, proprioceptive receptors, cerebellar coordination, and visual fixation mechanisms to maintain postural equilibrium.
- **Obese Individuals –** Obese individuals may experience excessive biomechanical stress while performing *Vrikshasana* due to increased body mass and altered center of gravity. The additional load transmitted through the supporting lower limb increases compressive forces on the knee, hip, and ankle joints, particularly affecting the articular cartilage, menisci, and ligamentous stabilizers.
- **Knee Joint Disorders –** *Vrikshasana* should be avoided or modified in individuals with knee pathologies such as meniscal tears, ligament injuries, patellofemoral pain syndrome, osteoarthritis, or chronic knee instability.
- **Hip Injuries –** Individuals with hip injuries such as acetabular labral tears, adductor strain, hip impingement syndrome, bursitis, or gluteal tendinopathy should avoid performing *Vrikshasana* without supervision.

Vrikshasana should be avoided in individuals suffering from migraine, insomnia, hypotension, or hypertension, as the posture may influence cerebral blood circulation, vestibular equilibrium, and autonomic nervous system regulation. Individuals with hypertension may practice the posture with caution by avoiding bilateral overhead shoulder flexion, since prolonged elevation of the upper extremities may increase cardiovascular workload and arterial pressure.[6]

ADVANCED METHOD

I. Tree Pose with Arms Elevated

In the advanced *Vrikshasana* (Intermediate Asymmetrical Standing Balance Posture) with elevated arms, the body maintains a neutral spinal alignment while demanding significant postural stabilization through scapular upward rotation, elevation, and abduction, combined with glenohumeral abduction and external rotation, elbow extension, and forearm pronation. Stability of the standing limb is supported by activation of the piriformis, obturator internus, superior and inferior gemelli, adductor magnus, tibialis posterior, flexor hallucis longus, and flexor digitorum longus, which together maintain pelvic equilibrium and foot arch integrity.

Figure 3: Vrikshasana (Front View)

Figure 4: Vrikshasana (Back View)

The elevated upper limbs recruit the infraspinatus, teres minor, supraspinatus, deltoids, serratus anterior, upper trapezius, triceps, and anconeus to sustain shoulder girdle stability and arm extension, while the latissimus dorsi, teres major, and long head of the triceps undergo controlled lengthening. Excessive activation of the latissimus dorsi may restrict scapular elevation, promote anterior rib displacement, and contribute to subacromial impingement involving the supraspinatus tendon and long head of the biceps.

Elevating the arms increases the center of gravity and enhances abdominal and thoracic stabilizing demands, thereby reducing diaphragmatic excursion and thoracic respiratory mobility; consequently, calm, shallow, and efficient breathing patterns are biomechanically most suitable for maintaining balance and postural control.[4]

Table 1: Anatomical Exploration.[7,8,9]

S.NO.	JOINT INVOLVED	MOVEMENTS	MUSCLES INVOLVED	LIGAMENTS INVOLVED
Region: FOOT & ANKLE				
1	Subtalar (Talocalcaneal) Joint	Inversion & Supination (weight-bearing foot)	Tibialis posterior, Tibialis anterior, Flexor hallucis longus, Flexor digitorum longus	Medial (deltoid) ligament (tibionavicular, tibiocalcaneal, anterior & posterior tibiotalar parts); Interosseous talocalcaneal ligament; Cervical ligament

2	Ankle (Talocrural) Joint	Plantarflexion (standing on one leg)	Gastrocnemius, Soleus (via calcaneal tendon); Tibialis posterior, Flexor hallucis longus, Flexor digitorum longus, Peroneus longus & brevis	Medial (deltoid) ligament; Anterior & posterior talofibular ligaments; Calcaneofibular ligament; Anterior & posterior tibiofibular ligaments (inferior syndesmosis)
3	Transverse Tarsal (Midtarsal) Joint	Adduction & inversion of forefoot	Tibialis posterior, Abductor hallucis	Long & short plantar ligaments; Plantar calcaneonavicular (spring) ligament; Bifurcate ligament (calcaneonavicular & calcaneocuboid parts)
4	1st Metatarsophalangeal Joint	Slight dorsiflexion (grip on ground when non-weight-bearing side)	Flexor hallucis brevis, Abductor hallucis, Adductor hallucis	Plantar plate (plantar ligament); Medial & lateral collateral ligaments; Deep transverse metatarsal ligament
Region: KNEE				
5	Tibiofemoral (Knee) Joint	Full extension with slight lateral rotation of tibia (screw-home mechanism)	Quadriceps femoris (rectus femoris, vastus medialis, lateralis, intermedius) via patellar ligament; Tensor fasciae latae (via iliotibial band)	Anterior cruciate ligament (ACL); Posterior cruciate ligament (PCL); Medial collateral ligament (tibial collateral); Lateral collateral ligament (fibular collateral); Oblique popliteal ligament; Arcuate popliteal ligament; Medial & lateral menisci (stabilising)
6	Patellofemoral Joint	Compression & superior glide in full extension	Quadriceps femoris (especially vastus medialis oblique for medial tracking)	Medial & lateral patellofemoral ligaments; Medial & lateral patellar retinacula; Patellar ligament (tendon)
Region: PELVIS				
7	Hip Joint	Flexion, abduction & external (lateral) rotation of raised limb; Extension & stabilisation of weight-bearing limb	Raised limb — Iliopsoas (flexion), Sartorius, Tensor fasciae latae; Piriformis, Obturator internus & externus, Gemelli superior & inferior, Quadratus	Iliofemoral ligament (Y-ligament of Bigelow) — resists extension & external rotation; Pubofemoral ligament — resists

			femoris (external rotation); Gluteus medius & minimus (abduction). Weight-bearing limb — Gluteus maximus (extension); Gluteus medius & minimus (pelvic stabilisation/Trendelenburg prevention)	abduction & external rotation; Ischiofemoral ligament — resists internal rotation & extension; Ligamentum teres (round ligament of femoral head); Transverse acetabular ligament; Acetabular labrum
8	Sacroiliac Joint	Stabilisation; minor nutation/counternutation during weight-bearing	Iliacus, Psoas major (indirect stabilisers); Multifidus, Erector spinae, Gluteus maximus (posterior tension band)	Anterior sacroiliac ligament; Posterior sacroiliac (short & long dorsal) ligaments; Interosseous sacroiliac ligament; Sacrospinous ligament; Sacrotuberous ligament; Iliolumbar ligament
Region: LUMBAR SPINE				
9	Lumbar Zygapophyseal (Facet) Joints & Intervertebral Discs (L1–L5)	Slight extension with lateral flexion to weight-bearing side (lateral trunk shift compensation); Core stabilisation	Erector spinae (iliocostalis, longissimus, spinalis); Multifidus; Quadratus lumborum (ipsilateral lateral flexion); Transversus abdominis, Internal & external obliques (core stabilisation)	Anterior longitudinal ligament; Posterior longitudinal ligament; Ligamentum flavum; Interspinous & supraspinous ligaments; Iliolumbar ligaments; Intertransverse ligaments; Facet joint capsular ligaments
Region: THORAX				
10	Thoracic Vertebral Joints (T1–T12)	Vertical axial extension; slight rotation for balance	Erector spinae (thoracic portions); Semispinalis thoracis; Multifidus; Rhomboids, Middle trapezius (scapular retraction for posture)	Anterior & posterior longitudinal ligaments; Ligamentum flavum (thoracic); Interspinous & supraspinous ligaments; Intertransverse ligaments; Costovertebral & costotransverse ligament complexes
Region: SHOULDER & UPPER LIMB				
11	Glenohumeral	Abduction ~90° with	Deltoid (middle fibres —	Superior, middle &

	(Shoulder) Joint	external rotation, hands in Namaste (prayer) position at chest	abduction); Supraspinatus (initiation of abduction); Infraspinatus & teres minor (external rotation); Subscapularis (stabilisation); Serratus anterior & Trapezius (scapular rotation)	inferior glenohumeral ligaments; Coracohumeral ligament; Transverse humeral ligament; Coracoacromial ligament (arch); Acromioclavicular ligament; Glenoid labrum
12	Elbow (Humeroulnar & Humeroradial) Joints	Flexion ~90° (prayer position at chest)	Biceps brachii, Brachialis, Brachioradialis	Medial (ulnar) collateral ligament complex; Lateral (radial) collateral ligament complex; Annular ligament; Quadrate ligament
13	Wrist (Radiocarpal) & Intercarpal Joints	Slight extension & neutral position in prayer	Extensor carpi radialis longus & brevis, Extensor carpi ulnaris (wrist extension/stabilisation)	Palmar radiocarpal ligament; Dorsal radiocarpal ligament; Ulnar & radial collateral ligaments; Intercarpal ligaments (dorsal, palmar, interosseous); Palmar ulnocarpal ligament
Region: CERVICAL SPINE & HEAD				
14	Cervical Vertebral Joints (C1–C7) incl. Atlanto-occipital & Atlantoaxial Joints	Neutral extension; head held erect (drishti — focused gaze)	Sternocleidomastoid (bilateral stabilisation); Splenius capitis & cervicis; Semispinalis capitis; Longus colli & longus capitis (deep cervical flexors for chin tuck)	Anterior & posterior atlanto-occipital membranes; Apical & alar ligaments; Cruciform (cruciate) ligament of atlas; Transverse ligament of atlas; Anterior & posterior longitudinal ligaments (cervical); Ligamentum nuchae; Ligamentum flavum (cervical); Interspinous ligaments

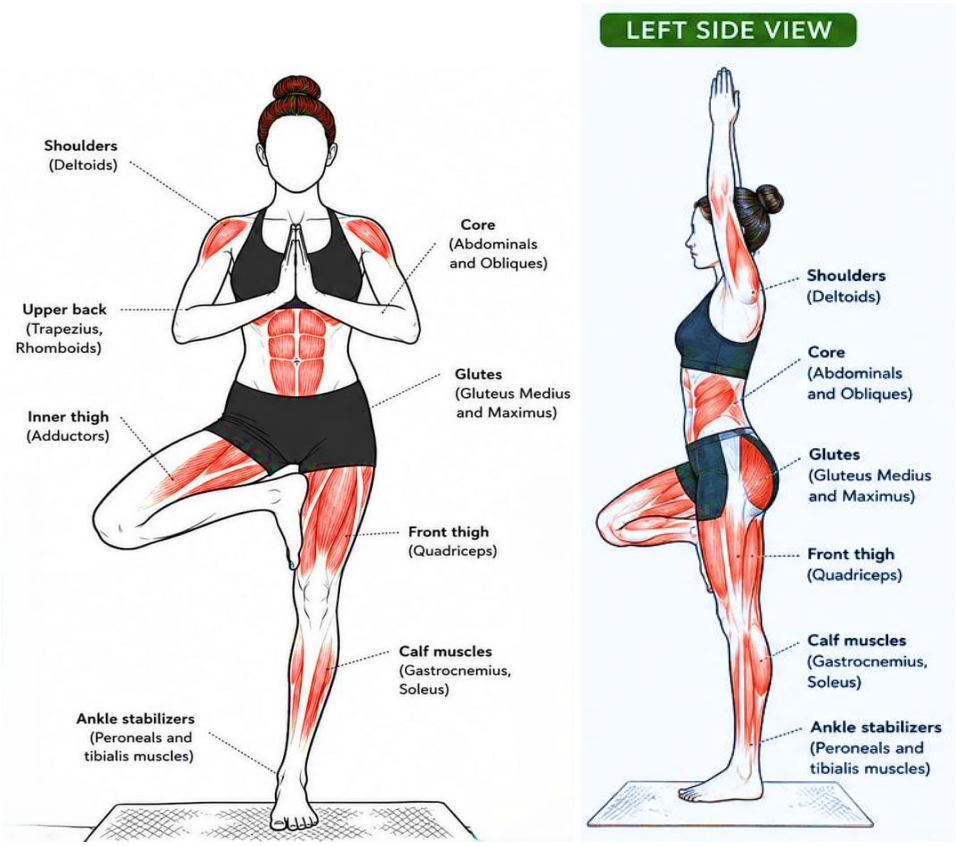

Figure 5: Muscle Involved.

HEALTH BENEFITS

A. Improves Body Balance.

B. Strengthens the Muscles of the Legs and Feet.

C. Enhances Flexibility of the Groin and Medial Thigh Musculature.

D. Helps to improve –

- Neuro-muscular coordination
- Balance
- Endurance
- Alertness and Concentration.[3]

DISCUSSION

Vrikshasana (Tree Pose) is a unilateral weight-bearing balance posture that integrates musculoskeletal stability, neuromuscular coordination, proprioceptive regulation, and postural control. The biomechanical and physiological adaptations observed during the posture provide a scientific basis for its traditionally described benefits.

The primary therapeutic effect of *Vrikshasana* is the enhancement of postural equilibrium.

During single-leg stance, the body's center of gravity is shifted over a reduced base of support, creating continuous postural challenges. To maintain stability, sensory input from the visual system, vestibular apparatus, and proprioceptive receptors located in muscles, tendons, ligaments, and joint capsules is integrated by the cerebellum and central nervous system. Increased activation of the gluteus medius, gluteus minimus, transversus abdominis, multifidus, tibialis posterior, and intrinsic foot muscles help stabilize the pelvis and lower extremity. Repeated practice improves sensorimotor integration, dynamic balance control, and postural reflex efficiency, thereby enhancing overall body balance and reducing the risk of falls.

Vrikshasana requires sustained isometric contraction of multiple muscle groups in the weight-bearing limb. The quadriceps femoris maintains knee extension, while the gastrocnemius and soleus stabilize the ankle joint. The gluteus medius and minimus prevent contralateral pelvic drop and maintain frontal-plane stability. Simultaneously, the tibialis posterior, flexor hallucis longus, flexor digitorum longus, and intrinsic foot muscles support the medial longitudinal arch and improve foot stability. Continuous muscular engagement against gravitational forces enhances neuromuscular recruitment, muscular endurance, and lower-limb strength without excessive joint loading, making the posture beneficial for improving functional stability and locomotor efficiency.

The elevated limb in *Vrikshasana* assumes a position of hip abduction, external rotation, and flexion. This movement pattern produces a controlled stretch of the hip adductor compartment, particularly the adductor longus, adductor brevis, adductor magnus, gracilis, and pectineus muscles. The stretch also influences the surrounding fascial structures of the medial thigh and inguinal region. Regular practice promotes increased extensibility of musculotendinous units, reduces soft-tissue stiffness, and improves hip joint mobility. Enhanced flexibility of the adductor complex contributes to improved pelvic mechanics, better lower-limb alignment, and reduced susceptibility to groin strains and movement restrictions.

Maintaining *Vrikshasana* requires precise synchronization between sensory feedback mechanisms and motor responses. Continuous adjustments in muscle activation occur through reflex pathways involving muscle spindles, Golgi tendon organs, and mechanoreceptors. The central nervous system processes proprioceptive and vestibular information and coordinates the activity of stabilizing muscles to maintain equilibrium. This

repetitive neuromuscular interaction enhances motor control, reaction time, movement precision, and intermuscular coordination. Consequently, the posture improves functional movement patterns and overall neuromotor efficiency.

Sustained maintenance of the posture involves prolonged isometric contraction of the postural muscles, including the erector spinae, quadriceps, gluteal muscles, calf musculature, and deep core stabilizers. Such static muscular activity improves oxidative capacity, local muscular endurance, and resistance to fatigue. Over time, enhanced endurance of these stabilizing muscles contributes to improved postural maintenance during daily activities and prolonged standing tasks.

The requirement to maintain a fixed *Drishti* (gaze) and stable posture promotes heightened attentional focus and cognitive engagement. Concentration on a single visual point reduces unnecessary sensory distractions and facilitates cortical regulation of motor output. Simultaneously, controlled diaphragmatic breathing influences autonomic nervous system activity by enhancing parasympathetic tone and reducing sympathetic overactivity. This neurophysiological interaction improves mental clarity, attentional control, and cognitive alertness while fostering a calm and focused mental state.

CONCLUSION

Yoga represents the union of body, mind, and consciousness, while *Asanas* serve as the practical means to achieve this integration. Through systematic practice, *Asanas* cultivate strength, flexibility, balance, and awareness, embodying the fundamental objective of Yoga as described by Patanjali as, harmonious union and self-realization. *Vrikshasana* (Tree Pose) represents a classical yogic balancing posture that integrates the fundamental principles of stability, alignment, concentration, and neuromuscular control. As an important standing *Asana* described in the *Gheranda Samhita*, it demonstrates how traditional yogic practices can be interpreted through modern anatomical and biomechanical perspectives. The posture requires coordinated activation of the musculoskeletal system, involving the foot and ankle stabilizers, knee extensors, hip abductors and external rotators, core musculature, spinal stabilizers, and shoulder girdle muscles. Furthermore, the focused *Drishti* (gaze) and controlled breathing patterns facilitate concentration, body awareness, and efficient neuromotor regulation. Thus, *Vrikshasana* serves not only as a balancing exercise but also as a comprehensive neuromusculoskeletal training posture.

REFERENCES

1. Dr. Somlata Jadoun | Dr. Sunil Kumaryadav "Anatomical Exploration of Vrikshasana" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 24566470, October 2020; 4(6): 279-281. URL: www.ijtsrd.com/papers/ijtsrd33365.pdf
2. Ministry of AYUSH, Government of India, International Day of Yoga: Common Yoga Protocol, 4th revised ed. New Delhi: Morarji Desai National Institute of Yoga, 2019; 15,16.
3. Kaminoff L. Yoga Anatomy. Asana analysis by Amy Mathews; illustrated by Sharon Elllis. Campaign (IL): Human Kinetics, 2007; Chapter 4: 47.
4. Iyengar BKS. The Illustrated Light on Yoga: Yoga Dipika. New Delhi: HarperCollins Publishers India; 2005. Part 2, 39.
5. Oren Gk. Anatomy of Fitness: Yoga: the trainer's inside guide to your workout. Heatherton (VIC): Hinkler Books, 2016; 59.
6. https://www.artofliving.org/us-en/yoga/yoga-poses/tree-pose-vrikshasana
7. Chaurasia BD. Human Anatomy: Regional and Applied Dissection and Clinical. Volume 1: Upper Limb and Thorax. 10th ed. New Delhi: CBS Publishers & Distributors, 2024.
8. Chaurasia BD. Human Anatomy: Regional and Applied Dissection and Clinical. Volume 2: Lower Limb, Abdomen and Pelvis. 10th ed. New Delhi: CBS Publishers & Distributors, 2024.
9. Chaurasia BD. Human Anatomy: Regional and Applied Dissection and Clinical. Volume 3: Head and Neck. 10th ed. New Delhi: CBS Publishers & Distributors, 2024.