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An Analysis of the Benefits of Yoga in Physical Education and its Impact on Sports Performance

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Abstract: *Yoga, an Indian spiritual practice, emphasises using the body to generate healthy ideas and actions. Additionally, yoga balances our physical and mental health. Due to a lack of information about yoga's effects in sports, sportsmen and women have practiced less yoga. Thus, this narrative review is for athletes, physical education students, instructors, yoga students, health professionals, and yoga enthusiasts. This study shows a close association between yoga and sports and discusses yoga's benefits in physical education and sports. All material in this post was found using "yoga", "physical education", "asana" and "sports" search phrases. Evidence supports certain yoga characteristics that improve athletic performance. All of the results in this review study emphasise the relevance of yoga in physical education and sports and call for particular consideration of the yoga system in health, physical, and sports education.*

Keywords: Yoga, Asana, Sports, Athletic Injuries.

I. INTRODUCTION

In the push-button age, physical activity is reduced for everyday tasks, resulting in decreased fitness and many ailments. To prevent health issues, humans must exercise regularly. Exercise is the simplest and greatest way to stay healthy. With modest use and exercise, all body parts will expand and become healthy. Neglect and inactivity delay growth, make it sicker, and age it faster.

Physical education improves performance and growth via physical exercises. Physical education aims to improve motor skills, fitness, knowledge, and attitude towards physical exercise. Thus, physical education is essential to health (Bailey, 2006).

A person who participates in sports is driven by both intrinsic and extrinsic motives. Sports are structured competitive activities that require physical effort or complicated abilities. Sports are growing more popular, and this tendency will definitely continue. Physical and sports are becoming international subjects because they promote global understanding and togetherness. Therefore, each nation's moral and social duty is to support sports and physical education (Mosler et al., 2022).

Yoga is a unique Indian method for self-awareness. One may control external and internal forces by vibrating and pulsing body, mind, and intellect. Yoga brings perfection, purity, and satisfaction. Man seeks happiness from birth to death, and several yoga approaches may suit the demands of different individuals. Holistic life requires intentional yoga practice to enjoy its advantages (Hayes & Timalsina, 2017).

While most research provide light on yoga and its advantages, there are few.

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additional information about yoga's role in PE and sports. This is because most research don't cover using yoga to reduce sports negative effects. This research compiled yoga and sports literature. The purpose of this research was to give extensive information on yoga, its advantages, and its role in reducing sports-related adverse effects.

Yoga systems and significance

The scriptures split yoga into Karma, Bhakthi, Janana, Hatha, Mantra, Yantra, Laya, Kundalini, Tantra, and Raja yoga. Following Karma yoga is completing your task without concern for oneself. Karma yoga aims to manage and release the ego (Pallathadka et al., 2022). Bhakti yoga is devotional or love yoga. Bhakti yoga seeks Rasa (essence), pure happiness achieved through devoted surrender to the almighty. Meditation, self-inquiry, and contemplation are used in

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janana yoga to discover truth (Hayes & Ti-malsina, 2017). Hatha yoga uses physical practices to channel and safeguard vital energy (Petrič et al., 2014). Mantra yoga involves reciting holy words, mindful breathing, and meditation to calm the mind, generate spiritual energy, and gain enlightenment (Vaidik et al., 2020). Yantra yoga uses seven-phase breathing and movement. Positioning at the core portion of each movement helps create deep, subtle breath retentions (Rathore et al., 2017). Laya and Kundalini yoga emphasise significant dharma accomplishments or the life objective of liberation from Karma. Raja yoga emphasises concentration and energy to govern mind and body (KR, 2019; Hayes & Timalsina, 2017). All yoga methods help practitioners in distinct ways (Roland et al., 2011).

Raja Yoga or Astanga Yoga

Raja yoga is the most powerful body-tuning method. Astanga yoga is Raja yoga. "Ashtanga" refers to Raja yoga's eight steps (Figure 01): Yama, Niyama, Asana, Pranayama, Pratyahara Samadhi, Dharana, and Dhyana (KR, 2019). The limbs are ordered hierarchically and lead to each other. Each limb must be learned before practicing the next. Players profit differently from each step (Y. Shar-ma et al., 2018).

FIGURE 1. Eight Limbs of Ashtanga Yoga

Yama

Yama is a universal moral law. General discipline (social attitude) and body, mental, and voice control. For the finest sportsmanship, players should know five Yama (Ross & Thomas, 2010).

Yama:

Violence-free Ahimsa Satya's truthfulness Asetya—non-stealing
Brahmcharya is faithful Greedless

Niyama

Niyama is self-purification via discipline or propriety. Niyama—devotion to an unlimited power—is the way of life. It promotes reuniting with God and giving him everything. Players should observe the five Niyama principles to preserve discipline with opponents, teammates, physical education instructors, coaches, authorities, family, and society (Y. Sharma et al., 2018). These Yamas and Niyamas emotionally and physically prepare the body for asana.

Niyamas:

Saucha=cleanliness Satisfaction Tapas—self-control Studying alone Surrendering to the divine and great power

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Asana

Asana is the third of eight yoga limbs. Physical education and sports are linked to it (Ross & Thom-a, 2010). It is the oldest self-development science for physical, mental, and spiritual control. Asana may be done by all sexes, ages, and professions (Jose & Shailesh, 2021). Creative physical education teachers, coaches, and players may use asana for many objectives in sports and physical education (Cowen & Adams, 2005).

Asana is used in physical education and sports to promote a healthy body and self-control and mental stability (Ross & Thomas, 2010). Players must have a healthy body and mind to succeed. Asana helps players synchronise their body and mind (Bal & Kaur, 2009; Chatterjee & Mondal, 2014). Figure 02 depicts yoga asanas.

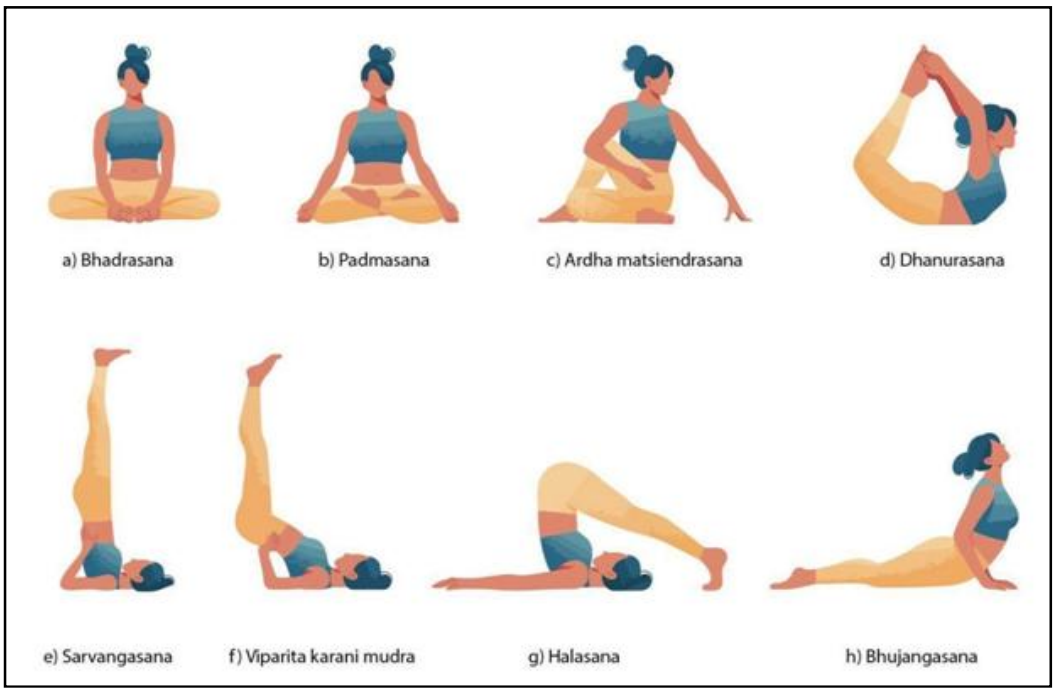

FIGURE 2. Yoga Asanas

Pranayama may improve performance (Taneja, 2014).

Pranayama—breath control—has three phases: Puraka (inhalation), Kumbhaka (retention), and Recha-ka. These are best done early morning or late evening. Pranayama used the diaphragm to move air into the lowest and biggest lungs (Sengupta, 2012). Pran-ayama improves respiratory efficiency, lung vital capacity, heart rate, and training to tolerate mild hypoxia, which can stimulate the myocardium to increase its vascularization at high altitudes. Practicing Pranayama regularly benefits players in several sports (Telles & Naveen, 2008). It benefits aerobic athletes.

Pratyahara

Re-straining sense organs from worldly items is pratyahara (Ross & Thomas, 2010). It involves willpower and sensory suppression. Sanskrit gave us "Pratyharya". Two Sanskrit terms are included: "Prati" (meaning "to withdraw") and "Ahara" (meaning "food"). "Food" refers to any external stimuli humans consume mentally (Himashree et al., 2016). To elaborate, "Ahara" may be everything individuals put into their bodies and minds physically and emotionally. This helps athletes manage their senses, increasing fitness and health.

Dharana

Dharana is object focus. The last stage of Samadhi meditation begins. Dharana focuses a person's attention on one thing (KR, 2019). Sports failure results from distractions during training and performance. Archery, shooting, chess, etc. demand greater focus. Football, hockey, and handball goalkeepers need more focus than field players (Y. Sharma et al., 2018).

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Dhyana

Dhyana involves total focus on the object of attention. The best mental and physical tonic is meditation. It leads to intuitive understanding, outward joy, and mental peace. Regular meditation helps athletes calm their mind and body, improving psychological stability (Mastun et al., 2020; L. Sharma, 2015).

Samadhi

Samadhi is yoga's peak. Genuine conversation and tranquilly. The complete quiet of the mind that permits one to unite with the cosmos is samadhi (KR, 2019). Yoga is about calming the mind and transcending the senses through body and mind purification. The last and most crucial level of yoga is not suitable for athletes.

General importance of yoga

Yoga has physical, physiological, biochemical, and psychological advantages (Büssing et al., 2012). Yoga offers physical advantages, particularly via asana training and proper posture (Petrič et al., 2014; Y. Sharma et al., 2018). Physical fitness may be achieved by strengthening strength and lower back, hamstring, and shoulder flexibility (Tracy & Hart, 2013). This promotes overall health and strengthens weak body parts (Ross & Thomas, 2010; L. Sharma, 2015).

Yogic advantages from pranayama are mostly physiological. Slowly adapting receptors stretch lung tissues during deep breathing (Zaccaro et al., 2018). This boosts respiratory and cardiovascular efficiency, lung capacity, and oxygen intake (Cooper, 2003). Therefore, blood pressure and pulse rate were automatically regulated. It also boosts vitality. Pranayama boosts immunity and neuromuscular coordination (V. Sharma et al., 2013; Telles & Naveen, 2008).

Yoga lowers total cholesterol, low-density lipoprotein, triglycerides, and blood urea (Himashree et al., 2016). Yoga also improves respiration, which raises VO2 max and blood haemoglobin. Yoga also reduces stress and boosts endorphins and gamma aminobutyric acids. These compounds boost mood and decrease anxiety (Y. Sharma et al., 2018).

Yoga improves mental concentration, attention, self-control, self-acculturation, psychological stability, social skills, including relationships with parents and peers, and reduces anxiety, aggression, depression, inattention, and social stress.

Importance of yoga for sports and innate side effects of sports

Sports allow the globe to bond, alter values, and strengthen relationships. Sports activities are good for human interaction. Most individuals do sports for fun and health (Chen & Sun, 2017). Games have also become a procession. Competitive sports vary greatly from leisure sports. Competitive sports need extensive, intense training. Additionally, athletes want to win. Competitive sports often cause injury (Finch & Staines, 2017). Most sports employ one body component, which causes asymmetry and abuse of limbs, causing players physical and emotional stress (Bailey, 2006). As sports become more professional, athletes experience stress. Athletes' minds and bodies benefit from yoga (Ross & Thomas, 2010). Professional athletes should know that yoga helps them reach and sustain peak physical and mental strength (Banerjee et al., 2007; Sahu & Yadav, 2020).

Importance of Yoga for Athletes – Running

Long-distance runners often overtrain without realising it. Running irritates the lungs and heart, upsets the stomach organs, and cramps the blood flow (Bramble & Lieberman, 2004). As athletes age, their endurance ability declines. Yoga softens hard-working hamstrings from jogging (Cowen & Adams, 2005). Marathon runners benefit from Sitali Pranayama's heat-removal (Telles et al., 2020). Asanas like Supta Virasana and Urvottanasana safeguard the heart, lungs, and abdominal organs with back and forward bends and twisting. These poses also improve reproductive organ core muscles (Cowen & Adams, 2005). Bridge poses, shoulder stands, and restorative postures stimulate the primary reproductive glands, which generate hormones (Chatterjee & Mondal, 2014).

Importance of Yoga for Athletes in disciplines that include jumping

One-legged leaps are performed. Asymmetries develop from frequent body side usage. One side opens the groyne muscles and strains the hip joints (McClanahan, 2002). Asanas that open the groyne, such as Upavishta Konasana, Samakonasana, Buddha Konasana, and Supta Padangusthasana, may help jumpers avoid imbalances (Solakoğlu et al., 2021). Hanumanasana optimises triple and long jumpers' muscles. Pole vaulters exercise both sides for weight bearing using balancing asana (Jose & Shailesh, 2021). Kasyapasana and Vasishtasana work the sides and latissimus dorsi (Rathore et al., 2017).

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Importance of Yoga for Athletes in disciplines that include throwing

Most throwing activities are one-arm events. Overused and underutilised muscles produce issues (McCLANAHAN, 2002). The palm of one hand is always folded while throwing the discus, while the other is not used. The shot-put throw one-sided impact might endure for years after the sport ends. Right-sided spine rotation (excluding lefthanders) is a prevalent issue. Overstraining facet joints produces uneven wear and scholastic deformation (Russell et al., 2012). Twisting and lateral bends in yoga may decrease spinal strain and promote even usage (Holtzman & Beggs, 2013).

Importance of Yoga for Archery

Archers strain one eye, shoulder, and brain side more than the other (Sahu & Yadav, 2020). Archers acquire trapezius nodules with time. Use symmetrical eyes in standing positions to help the archer improve both orbital muscles and ocular concentration (Jose & Shailesh, 2021). Handstand, elbow stand, balance poses, unilateral balancing poses like Vasisthasana, and dog poses done both ways with fingers on the wall and in the opposite direction help balance the body, including the hands, and reduce visual discomfort (Telles et al., 2006). The inattentive archer might benefit from meditative Pranayama and Nadi suddhi (Sahu & Yadav, 2020).

Importance of Yoga for Shooting

Both archery and shooting strain the eyes. Forward bends with the bandage on the eyes and Shanmukhi mudra and asanas reduce eye strain (Telles et al., 2006). In the shooting game, balance and flexibility necessitate long-term gun control without bouncing. Yoga improves balance and flexibility (Cowen & Adams, 2005). It also strengthens and refines connective tissues (Iftekher et al., 2017; Bühlmayer, 2017).

Importance of Yoga for Boxing

Allowing two people to play a sport that involves striking one other and risking damage is unreasonable. Crowding hands close to the body hinders breathing and extending hand and torso muscles. For the spine, back bends beat forward bends. Handstand, Urdhva dhanurasana, elbow balancing, dog position, and wall ropes to protect the spine are beneficial asanas for extending the frontal torso (Telles et al., 2006). Uttanasana, sitting forward bends, dog position, head-stand, shoulder stand, Viparita, and asanas are very useful for soothing the mind, brain, and senses stimulated by the incessant hammering (Banerjee et al., 2007).

Importance of Yoga for Wrestling

Ancient wrestling isn't that physically or mentally demanding. Wrestlers have diverse styles, but they all need to be big and heavy (Yamauchi et al., 2004). Pushing the opponent out of the ring is sumo wrestling's mildest form. Sumo wrestlers, who are obese, suffer hypertension, diabetes, and early spine, hip, ankle, and knee degeneration (Mouzan et al., 2010). An inactive, overweight wrestler rapidly ruins his physique after retiring. Wrestlers typically adjust their diet to lose weight for a category, which slows their metabolism. Standing asana protects hips and knees. Asana opens the groyne and aligns and supplies blood (Shaw & Kaytaz, 2021; Le-huha et al., 2021).

Importance of Yoga for Weightlifting

Weightlifting exerts significant stresses on the body. The lungs, heart, and abdomen are constantly stressed by additional weight. Overloading strains the cervical spine, causing persistent low back discomfort (Al-Abbad & Muaidi, 2016). Weightlifters' toughened muscles benefit greatly from twisting postures (Cowen & Ad-ams, 2005). Resting the posterior muscles of the spine in passive backbends reduces back strain (Keogh & Winwood, 2016). For-ward bends enhance blood flow to the posterior spinal muscles, which are usually limited during weightlifting (Ernst, 2016). Upavistha and Baddha konasana relieve squat-pressured pelvic organs (Hemmerich et al., 2019). Ujjayi pranayama calms the mind, heart, lungs, and senses (Sahu & Yadav, 2020). As the elevator finishes, the weightlifter must execute Kumbhaka. This restricts the diaphragm and hinders circulation. Pranayama's protracted exhale relieves this tension (Holtzman & Beggs, 2013; Lynn & Basso, 2023).

Importance of Yoga for Gymnastics

Gymnastics is one of the most elegant and fashionable sports. Gymnastics is interrupted by extension movements. This loosens ligaments and muscles (Kerr et al., 2015). Lower lumbar muscle sprains and spine injuries are prevalent (Kruse & Lemmen, 2009). Gymnastics requires much practice due of its complexity. Yoga aligns and balances all cells (Jose & Shailesh, 2021). Backbends help the body and mind endure mental depression (Bal & Kaur, 2009). Yoga teaches right position geometry to avoid injuries (V. Sharma et al., 2013). Pranayama reduces mental and sensory stress.

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Importance of Yoga for Swimming

Swimming uses the upper and lower extremities symmetrically. This eliminates field sports' damage. Buoyancy relieves lower back discomfort, making swimming easy (Smith et al., 2006). Nutritional deficiencies result from weight maintenance (Hoogenboom et al., 2009). The glandular system may change temperature when the swimmer goes from land to water. Swimmers spend more time in water, thus their muscles develop used to G force stimuli, which may impact their ability to resist physiological stress and strain on land (Kline et al., 2007). Some ground exercises should be done daily to avoid this. This non-stressful workout should aid recovery. Handstands, dog posture, back bends, elbow balance, and correct arm stretch reduce tension (Jose & Shailesh, 2021). Inversions reduce eye, sinus, ear, and leg fatigue. A backbend helps the body sweat off heat (Keogh & Winwood, 2016). Upavishta and Baddha konasana induce restricted groynes (Bal & Kaur, 2009). Pranayama helps coordinate inhalation and exhalation, which is necessary when the upper respiratory organs enter and exit water (Chat-terjee & Mondal, 2014). It also helps clear nasal secretions and lower and upper respiratory tracts. Kumbha-ka boosts water sports endurance (Ross & Thomas, 2010; Telles & Naveen, 2008).

Importance of Yoga for Rowing

Rowers are always bending forward. Body components affected include the spine, groyne, and hands. Frequent flexion forces may prematurely deteriorate the spine and bow the dorsal spine (Thornton et al., 2016). Constant pressure makes buttock bones sensitive. Spinal muscles may degenerate prematurely and arms can be overused asymmetrically (Hosea & Hannafin, 2012). Knees must be extended. The position strains breathing and circulation (Kohli et al., 2019). Elbow balancing, handstand, and backbends improve arm extension and blood flow (Tran et al., 2001). Oarsmen's spinal muscles and lower limbs benefit from standing postures (Jose & Shailesh, 2021). Inversions cool the brain, which is continually contracted, whereas Baddha and Upavishta konasana tighten the groyne and increase blood circulation (Bhavanani, 2013). Pranayama boosts endurance and reduces sensory stress. Yoga has benefits for rowers (Das & Yoga, 2022).

Importance of Yoga for Football

More semi-lunar cartilage tears occur in this game than any other. The knee rotates outward while weight bearing, making yoga activities optimal. All standing yoga postures strengthen realign, massage cartilages, and increase weight bearing (Liu et al., 2021). Padmasana and Virasa-na, which massage the joints, should be done everyday before and after the game to help the player.

Importance of Yoga for Hockey

Hockey strains the knees, shoulders, and spine most. Hockey players must always bend one direction while tackling. With one arm extended and the other flexed, the spine is twisted to one side. Strained dominant shoul-der (Barboza et al., 2018). Forearms and inner biceps are worked. Asymmetry is employed with legs, emphasising the back knee (Cowen & Adams, 2005). Low back discomfort, knee wear, and cervical muscular tension are long-term concerns (Barboza et al., 2018). Following the ball exhausts the mind and senses. Dog stance corrects spinal muscle imbalance best (Govinda-raj et al., 2016). Virasana and Padmasana relieve tired knees (Kohli et al., 2019). Synchrony in hand and shoulder posture supports backbends like Viparita dandasana and Urdhva dhanurasana (Tran et al., 2001). Supine pranayama and band forward bends calm the mind and eyes (Bühlmayer et al., 2017).

The Batsman

Right-handed hitters must continually sway their spine and gaze left. Every left hip and shoulder projects the same manner. The left collarbone is hollowed out and the right shoulder is always lower. Like the inner ankle, the inner knee bears greater weight. Forward bends cool the body after extensive sun exposure (De Zavala et al., 2017). The batter gets energy from backbends to play for hours (Mohanty et al., 2019).

The Bowler

Forward bends keep the body cool after extensive sun exposure (De Zavala et al., 2017). Backbends offer bowlers energy, so they can play for hours. A nodule forms when the non-dominant shoulder trapezius muscle is constantly tensed. Rotations such standing Marichyasana and Bharadwaj asana relieve neck pain (Li et al., 2019). Extending the neck on the rope, gripping the bar behind the back, and doing back bends relieves neck and shoulder pain. Backbends give fast bowlers endurance (Cowen & Adams, 2005). Ultimately, ardha halasana helps recover (Fishman, 2021).

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The Wicket Keeper

A wicketkeeper must crouch and rise multiple times daily. Due to constant neck flexion and extension, spinal, groyne, low back, and cervical discomfort might result (Mount et al., 2014). The goalie must constantly watch the ball, which overuses perception. Rotations and lateral standing postures reduce back strain (Solakoğlu et al., 2021). Baddha, Upavishta, and Supta Baddha konasana relieve groyne tension. Ardha halasa-na and forward bends relax. Shan-mukhi mudra reduces visual and mental fatigue (Holtzman & Beggs, 2013).

The Fielder

Fielders have less posture difficulties. Sunlight, salt, and fluid loss decrease energy. Supta virasana and Passive inversions effectively reduce tiredness (Muñoz-Vergara et al., 2022).

Importance of Yoga for Tennis

Tennis players overuse their serving arm. A thicker forearm and underuse of the opposite arm characterise the dominant hand. Players misuse their wrists and medial elbows while top spinning the ball (Marcora, 2009). The other upper arm and forearm muscles are best for single-handed backhanded strokes. Tennis causes elbow, shoulder, and knee discomfort (Pluim et al., 2006). Asana-like handstands, dog posture, particularly the upward dog, and balancing poses relieve shoulder and elbow discomfort (Evans, 2013). Vitrita karani and Sputa virasana help the neuro-endocrine system relax and heal (Govindaraj et al., 2016). Asanas like Supta and Hasta padangusthasana keep achilles and hamstrings elastic (Luo & Xu, 2023). Padmasana and Virasana protect knees (Kohli et al., 2019). Sports endurance improves with pranayama (Mohanty et al., 2019).

Importance for netball

Netball demands powerful legs to move rapidly. Players need strength and flexibility. Defensively, passing and shooting demand upper body strength, balance, and coordination (Cowen & Adams, 2005). Netball includes bumping and jostling yet is non-contact. Risk-stepping, shifting, and rapid turning are game rules. Therefore, injuries are likely. Netball injuries include ankle, muscular, finger, and knee sprains (Joseph et al., 2019). Tree posture has been shown to improve ankle strength and balance (Solakoğ-lu et al., 2021). Uktasana prevents knee sprains. Support strengthens the knee, hamstrings, quadriceps, abdominals, and lower body (Zhu et al., 2021). Ekapadasana improves balance and coordination, and Pranayama helps players last longer (Tekur et al., 2012).

II. CONCLUSION

The current research found that yoga may enhance physical, physiological, biochemical, and psychological health outcomes. This review supports the premise that yoga affects sports performance, side effects, and people in general. Yoga may also improve athletic performance by regulating the mind, training the body, and focusing. Yoga helps maintain health in all sports and life.

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