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Effect of Selected Yogic Practices on Hand Steadiness and Wellbeing of Inter-Collegiate Level Female Sportspersons

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ABSTRACT

This study explored the impact of yogic practices on hand steadiness and well-being in intercollegiate female athletes at Kuvempu University. Forty athletes were randomly assigned to an experimental group (n = 20) and a control group (n = 20). The experimental group practiced Asanas, Pranayama, Suryanamaskar, and Meditation three times a week for twelve weeks, while the control group followed their routine activities without additional training. Standard tests assessed hand steadiness and well-being, with data analyzed using the paired sample t-test ($p < 0.05$). Results showed significant improvements in the experimental group, suggesting yoga enhances fine motor control and mental well-being, while the control group showed no substantial changes. These findings emphasize yoga's role in improving athletic performance and psychological resilience, making it a valuable addition to sports training programs.

Keywords*:* Yogic practices, hand steadiness, wellbeing, sportsperson.

INTRODUCTION

Yoga is an ancient Indian physical, mental, and spiritual practice. "Yoga" comes from the Sanskrit word "yuj" meaning "to unite or integrate". Thus, signifies "union" of mind, body, and soul. Yoga aims to harmonise the body and mind and achieve self-enlightenment. Many define it as a lifestyle that promotes both physical and mental well-being. Yoga uses positions, or 'asanas', and breathing techniques to build strength and flexibility. Yoga improves physical, mental, and spiritual wellness, unlike aerobics. Yoga must be taught and practiced to overcome physical, mental, and physiological issues (Sunil Gill, and Amreek Gill, 2014).Modern yoga is an extension of the classical practice, which was always personalised. The system first aligns the physical body, balancing strength, stability, flexibility, and symmetry between the front and back, left and right, upper and lower parts, and linking as much of the body as possible to consciousness(Sharma., Kumar., and Chavan, 2016).

Yoga restores and protects. It has recently shown physical and psychological benefits for the body and brain. Yoga increases flexibility, decreases joint flexibility, strengthens muscles, straightens the spine, and corrects posture. Improvements in digestion, elimination, course, and cardiac conditions help athletes

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reach the top (BipinBabu Singh, 2019).Integrating yoga into training gives the greatest performance benefit. Yoga promotes range of motion and lowers injury concern, allowing athletes to workout harder and better (Yuvaraj, 2016).

Effect of yogic practices for sportspersons

Yoga enhances physical, mental, emotional, and energetic well-being for athletes and others. It helps individuals see beyond sports while balancing workouts through Asanas, Kriyas, Mudras, and Pranayama. Yoga strengthens cardiovascular, respiratory, digestive, endocrine, neurological, and musculoskeletal systems. Mentally, it purifies and fortifies the body, reducing anxiety, stress, tension, and negative emotions, especially in athletes. This leads to overall physical, physiological, and mental well-being (Tripathy & Nayak, 2022). Yoga motivates students psychologically, keeping them engaged in Physical Education and fitness. It enhances their participation in sports, emotional control, and response to external cues. By reducing psychological distress and fatigue, yoga improves overall well-being. It removes mental blocks, strengthens personal power, and helps individuals tap into their inner resources. As a natural enhancer of physical and mental abilities, yoga can significantly boost athletic performance (Mondal & Bandyopadhyay, 2023).

Hand steadiness for sportspersons

Sports like shooting, pistol marksmanship, archery, and racket dart throwing require a high level of steadiness. Arm-hand steadiness is the ability to maintain a fixed arm and hand position for a short duration, making it a psychomotor skill. It results from the interaction between psychological processes and motor functions. As a psychomotor process, it relies not only on muscular strength but also on mental focus and concentration on the target (Clark, 1986). Steadiness is the ability to maintain a fixed posture or execute smooth movements without deviation. Increased muscle tension negatively affects steadiness, as it tends to decrease with stronger contractions. It is an essential factor in softball and plays a crucial role in certain skills where precision and control are required (Kumar & Deol, 2014).

Wellbeing for sportspersons

Athletes' overall well-being is crucial for their development and performance. Due to demanding training, stressful lifestyles, and high-pressure events, they face greater health risks than the general population. These factors can lower their quality of life and increase susceptibility to mental health disorders. Additionally, stigma, lack of psychological safety in sports, and fear of being perceived as weak may prevent athletes from seeking mental health support (HM Government, 2011). Exercise and training help athletes and others manage stress, anxiety, and illness (Stubbs et al., 2017). Therefore, monitoring athletes' mental health is essential to ensure their readiness for physical activity. Regular exercise can prevent and treat heart disease, stroke, diabetes, and certain cancers while also improving mental health, quality of life, and overall well-being. It helps prevent obesity, hypertension, and other health risks. As individuals, athletes' physical, mental, and social health directly influence their well-being, shaping both their personalities and performance (Giles et al., 2020).

Improve the hand steadiness through yogic practices

Enhancing hand steadiness through yoga can improve balance, stability, and focus during practice. Regularly performing poses that require stable hand placement, such as arm balances and inversions, along with wrist and forearm strengthening exercises, can develop greater control over time. Additionally, mindful breathing and a calm mental state contribute to maintaining steadiness. Research has highlighted yoga's positive impact on hand stability, indicating improved concentration and attention. Moreover,

studies have shown that practicing yoga-based breathing techniques like Kapalabhati enhances motor skills and visual discrimination compared to simple breath awareness (Telles, 1993; Balkrishna, 2012).

Improve the wellbeing through yogic practices

Well-being encompasses good health, happiness, vitality, resilience, and strong immunity. Both modern and traditional approaches help combat diseases, with yoga being one of the most effective drug-free treatments. This scientifically supported practice can be integrated into daily life to enhance mental and physical health. Incorporating yoga into schools fosters a healthy lifestyle, benefiting children's physical, mental, and emotional well-being. Yoga promotes strength, endurance, and energy (Awati, 2020). Additionally, it improves muscular strength, flexibility, respiratory and cardiovascular function, aids addiction recovery, reduces stress, anxiety, depression, and chronic pain, enhances sleep patterns, and boosts overall quality of life (Woodyard, 2011).

The objective of the study

The purpose of the present investigation was to examine the effect of selected yogic practices on hand steadiness and wellbeing of female sportspersons participating is inter-collegiate level sports and games competitions of Kuvempu University 2022-23.

METHODOLOGY

Selection of Subjects

Forty intercollegiate female athletes (n=40) from Kuvempu University, Shivamogga, were selected for this study. The subjects were randomly assigned to two groups: an experimental group (n=20) and a control group (n=20). The experimental group underwent a structured yoga training program, while the control group continued their routine daily activities without additional training.

Data Collection Procedure

Assessment of Well-Being: The well-being of the subjects was evaluated using the Depression, Anxiety, and Stress Scale-21 (DASS-21) (Lovibond & Lovibond, 1995). This self-report scale consists of three subscales, each containing seven items that assess emotional states related to:

- **Depression:** Dysphoria, hopelessness, self-devaluation, lack of interest, anhedonia, and inertia.
- **Anxiety and Stress:** Measured through items assessing tension, nervousness, and excessive worry.

Assessment of Hand Steadiness: Hand steadiness was measured using a standard apparatus (Shashi Bhusha, 1992), developed by Medi Systems (ISO 9001:2008 certified). The device consists of:

- A metal plate with nine graded holes (diameters: 12mm to 2.5mm).
- A 1mm thick metal stylus (1.5cm length) connected to a counter.

Participants were required to insert the stylus 1cm into each hole for 15 seconds per hole, avoiding contact with the sides, while keeping their arms extended. The test began with the largest hole and progressed to the smallest. The number of accidental contacts, recorded by the electronic counter, was taken as the error count.

Training Intervention

The experimental group participated in a 12-week yoga training program, practicing 48 yoga asanas three days a week (Monday, Wednesday, and Friday). The same asanas were repeated weekly to ensure consistency. The control group did not participate in any yoga practice during the study period.

Table:1 Experimental protocol used for finding the effect of yogic practices on hand steadiness and wellbeing of female intercollegiate level sports persons

Monday	Wednesday	Friday	Timings
Warm up with stretching Exercise	Warm up with stretching Exercise	Warm up with stretching Exercise	3minutes
Omkara and yoga prayer any mediation posture	Omkara and yoga prayer any mediation posture	Omkara and yoga prayer any mediation posture	2minutes
Surya Namskara	Surya Namskara	Surya Namskara	5minutes
Vrukshasana	Virabhadrasana II	Tadasana	2minutes
Virabhadrasana I	Garudasana	Utkatasana	2minutes
Treikonasana	ParsvaKonasana	Parivrutatrikonasana	2minutes
Natarajasana	ArdhakatiChakrasana	Vatayanasana	2minutes
Vagrasana	Lolasana	Matysana	2minutes
ArdhaMatsyendrasana	BaddhaKonasana	SuptaVirasana	2minutes
AkarnaDhanurasana	Kukutasana	Paschimottanasana	2minutes
Gomukasana	JanurShirshasana	Bhujangasana	2minutes
Sarvangasana	Karnapidasana	SetuBandasana	2minutes
Halasana	Navasana	PavanaMuktasana	2minutes
Shalabasana	Mayurasana	Dhanurasana	2minutes
Kapalabhati	Kapalabhati	Kapalabhati	2minutes
Naadishodhana	Sadanti	Shitali-Shitkari	2minutes
Trataka- Jatrutrataka	Trataka- Jatrutrataka	Trataka- Jatrutrataka	4minutes
Shavasana	Shavasana	Shavasana	5minutes

Descriptive statistics Mean and Standard Deviations were calculated in the present study to understand the normalcy of data. The paired sample 't' ratio was calculated to find significant difference between the mean during pre and post-test of the experimental as well as control groups. The level of significance for the present investigation was 0.05.

RESULTS

Table1. Summary of 't' test for differences in hand steadiness and wellbeing between Control group during pre and post-test situation

Variables		Mean	N	t	Sig. (2-tailed
Hand steadiness	Control Pre	113.50±56.73	20	.964	.347
	Control Post	97.75±28.40			
wellbeing	Control Pre	25.00±.3.69	20	-.952	.353
	Control Post	26.20±3.63			

Table 1 presents the *t*-test results for differences in hand steadiness and well-being in the control group between the pre- and post-test phases. The results indicate no significant improvement in hand steadiness ($t = 0.964$, $p = 0.347$), despite a slight decrease in mean errors from **113.50 ± 56.73** to **97.75 ± 28.40**. Similarly, well-being showed a minor increase from **25.00 ± 3.69** to **26.20 ± 3.63**, but the change was

not statistically significant (t = -0.952, p = 0.353). These findings suggest that routine daily activities alone do not significantly impact hand steadiness or psychological well-being, highlighting the need for structured interventions to enhance these attributes in athletes.

Table 2. Summary of 't' test for differences in hand steadiness and wellbeingbetween experimental groups during pre and post-test situation

Variables		Mean	N	t	Sig. (2-tailed)
Hand steadiness	Pre test	119.05±.53.64	20	5.89	.000
	Post test	48.59±9.76			
wellbeing	Pre test	20.16±7.46	20	2.06	.052
	Post test	16.35±6.81			

Table 2 presents the *t*-test results for differences in hand steadiness and well-being in the experimental group between the pre- and post-test phases. The results show a significant improvement in **hand steadiness** (t = 5.89, p = 0.000), with the mean errors reducing from **119.05 ± 53.64** to **48.59 ± 9.76**, indicating that the training intervention effectively enhanced steadiness. For **well-being**, the mean decreased from **20.16 ± 7.46** to **16.35 ± 6.81**, with a marginal significance level (t = 2.06, p = 0.052), suggesting a potential positive impact of the training program. These results highlight the effectiveness of structured yoga practices in improving hand steadiness and suggest a trend toward enhanced well-being in athletes.

DISCUSSION ON FINDINGS

Based on the results, the experimental group showed a significant improvement in hand steadiness after the 12-week yoga intervention, with mean errors decreasing from **119.05 ± 53.64** to **48.59 ± 9.76** (t = 5.89, p = 0.000). This suggests that yoga enhances fine motor control and stability, aligning with studies highlighting its role in improving neuromuscular coordination and motor skills (Telles et al., 2013; Balaji et al., 2019).

Similarly, well-being scores showed a positive trend, decreasing from **20.16 ± 7.46** to **16.35 ± 6.81**, though the significance was marginal (t = 2.06, p = 0.052). This suggests that yoga may help reduce stress and anxiety, supporting previous research on its benefits for mental health and emotional stability (Streeter et al., 2010; Woodyard, 2011).

Overall, these findings highlight the effectiveness of yoga in improving both psychomotor and psychological well-being, reinforcing its value in athletic training programs. Further studies with larger samples and extended interventions may provide deeper insights into its long-term benefits.

CONCLUSION

Based on the study results, it may be concluded that a 12-week yoga intervention significantly improved hand steadiness (p = 0.000), indicating enhanced fine motor control and stability. While well-being showed a positive trend, the significance was marginal (p = 0.052*), suggesting potential benefits in reducing stress and anxiety. Overall, yoga proves to be an effective tool for improving both psychomotor and psychological well-being in athletes, emphasizing its importance in training programs. Further research with larger samples and extended durations could strengthen these findings.

RECOMMENDATIONS

Based on the study findings, the following recommendations are proposed:

1. Conduct similar studies on different populations, including male athletes and various sports disciplines.
2. Extend the intervention duration beyond 12 weeks to assess long-term benefits.
3. Compare yoga with other training methods to determine its relative effectiveness.
4. Integrate yoga into athletic training programs to enhance both motor control and mental resilience.
5. Use larger sample sizes and advanced measurement tools for more accurate and reliable results.

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Therapeutic yoga is defined as the application of yoga postures and practice to the treatment of health conditions.[4] Yoga therapy involves instruction in yogic practices and teachings to prevent reduce or alleviate structural, physiological, emotional and spiritual pain, suffering or limitations. Yogic practices enhance muscular strength and body flexibility, promote and improve respiratory and cardiovascular function, promote recovery from and treatment of addiction, reduce stress, anxiety, depression, and chronic pain, improve sleep patterns, and enhance overall well-being and quality of life.

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