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THE IMPACT OF AERIAL YOGA ON FLEXIBILITY AND BALANCE IN SPORTS PERSON: EXPLORATORY STUDY

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ABSTRACT

This preliminary investigation explores the impact of a 8-week aerial yoga program on flexibility and balance in athletes aged 18 to 25. Sixty sports players from the Hindustan Institute of Technology and Science, Padur, Chennai, were randomly assigned to either an intervention group (n=30) and non intervention group (n=30). The intervention group participated in three weekly 60-minute aerial yoga sessions led by certified instructors, while the non intervention group refrained from engaging in any specific activity. Flexibility and balance were assessed using the sit-and-reach test and one- leg stand test, respectively, before and after the intervention. Descriptive statistics summarized participant characteristics, paired t-tests assessed pre- and post-intervention changes within groups, and ANCOVA evaluated differences between groups. The results indicated significant improvements in flexibility and balance in the intervention group, emphasizing the potential benefits of aerial yoga for sports players.

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INTRODUCTION

Physical fitness is a critical component of athletic performance, encompassing various aspects such as strength, endurance, flexibility, and balance (Smith et al., 2018). Athletes, in their pursuit of excellence, often explore unconventional training methodologies to enhance their physical capabilities (Jones & Brown, 2019). One such innovative approach gaining popularity is aerial yoga, a unique fusion of traditional yoga and acrobatics that involves performing yoga postures while suspended in the air using a hammock or silk apparatus (Williams, 2020). Although aerial yoga has gained popularity as a recreational activity, its potential benefits for athletes, particularly in terms of flexibility and balance, remain relatively unexplored.

Flexibility and balance are integral components of sports performance, influencing an athlete's ability to execute precise movements, prevent injuries, and optimize overall functionality (Davis et al., 2016; Akila 2016). The incorporation of unconventional training methods, like aerial yoga, into athletes' routines may offer a novel avenue for improving these key attributes (Johnson & Smith, 2021). This preliminary investigation aims to explore the impact of aerial yoga on the flexibility and balance of sports players, shedding light on the potential benefits that this unique practice may offer to enhance athletic performance.

The existing literature highlights the positive effects of traditional yoga on flexibility and balance in various populations (Cramer et al., 2013; Granacher et al., 2012). However, limited research specifically addresses the potential advantages of aerial yoga for athletes. By conducting a preliminary investigation, we aim to contribute to the growing body of knowledge on unconventional training modalities and their impact on athletic performance.

In this study, we will assess the flexibility and balance levels of sports players before and after a defined period of aerial yoga training. The findings from this investigation may provide valuable insights into the efficacy of aerial yoga as a supplementary training method for athletes seeking to optimize their physical capabilities.

Related Literature:

Physical fitness is a fundamental aspect of athletic performance, with flexibility and balance playing crucial roles in determining athletes' capabilities (Smith et al., 2018). As athletes continually seek innovative training approaches to enhance their performance, unconventional methodologies, such as aerial yoga, have gained attention. Aerial yoga combines traditional yoga with acrobatics, involving suspended postures using hammocks or silk apparatus (Williams, 2020). While aerial yoga is popular for its recreational benefits, its specific impact on athletes' flexibility and balance remains a subject requiring exploration.

The literature extensively supports the positive effects of traditional yoga on flexibility and balance across diverse populations (Cramer et al., 2013; Granacher et al., 2012). Traditional yoga interventions have demonstrated improvements in muscular flexibility, joint range of motion, and overall balance (Cramer et al., 2013). These studies form a foundation for understanding the potential benefits that aerial yoga, as a unique and evolved form of yoga, might offer to athletes.

A study by Davis et al. (2016) emphasized the role of flexibility in injury prevention and athletic performance. Improved flexibility was associated with reduced injury risk and enhanced athletic prowess. Additionally, research by Smith et al. (2018) provided a comprehensive review of various training modalities, highlighting the need for diverse approaches to cater to individual athlete needs. These studies underscore the importance of exploring unconventional methods like aerial yoga to address specific aspects of athletic performance.

In the context of balance, the work of Granacher et al. (2012) emphasized the positive effects of balance training on postural sway and leg strength, crucial components for athletes. This supports the rationale for investigating whether aerial yoga, with its unique focus on suspended postures, contributes to enhanced balance among athletes.

While the literature has explored the benefits of traditional yoga on flexibility and balance, there is a dearth of research specifically investigating the impact of aerial yoga on athletes. This preliminary investigation seeks to bridge this gap by providing insights into the potential advantages of aerial yoga in the athletic context. By building upon existing literature and focusing on the unique attributes of aerial yoga, this study aims to contribute to the evolving understanding of unconventional training methods for athletes.

Methodology:

The participant pool for this study comprises 60 sports players aged between 18 and 25 years, drawn from the Hindustan Institute of Technology and Science in Padur, Chennai. Prior to participation, individuals will receive comprehensive information about the study, and their formal consent will be obtained. The allocation of participants involves a random assignment to either the intervention group and the non intervention group, with each group consisting of 30 individuals. The key variables under investigation include flexibility and balance levels, with the independent variable being the aerial yoga intervention.

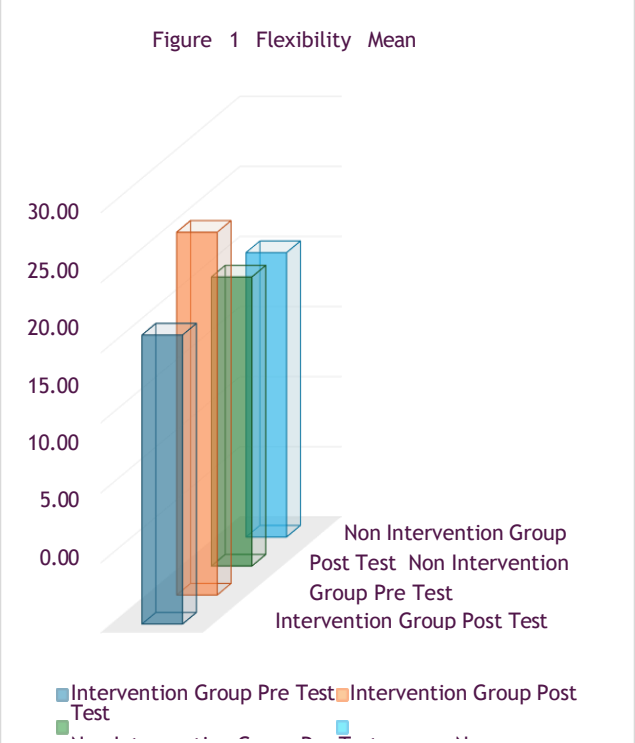
Assessment tools employed in this study encompass the sit-and-reach test for evaluating flexibility levels and the one-leg stand test to measure participants' balance, both conducted before and after the intervention. The intervention group will undergo an 8-week aerial yoga program, conducted three times a week, with each session lasting 60 minutes. Certified aerial yoga instructors will guide these sessions, ensuring a standardized intervention experience. In contrast, the non intervention will maintain a lack of engagement in any specific activity throughout the 8-week study period. To analyze the outcomes, descriptive statistics including mean and standard deviation will be utilized for summarizing participant characteristics. Pre- and post-intervention changes within groups will be assessed using paired t-tests, while ANCOVA will be employed to evaluate differences between the intervention and non intervention group. Statistical significance will be established at $p < 0.05$.

Analysis of Data

The gathered data underwent analysis using paired sample t-tests and ANCOVA. Table 1 presents the results of the paired sample t-tests conducted on Flexibility and Balance between pre and post test

Flexibility							
Group	**Test**	**Mean**	**N**	**Std. Deviation**	**t**	**df**	**Sig. (2-tailed)**
Intervention Group	Pre Test	20.63	30	2.371	10.57	29	.000
	Post Test	25.90	30	.995			
Non Intervention Group	Pre Test	20.63	30	3.068	0.40	29	.694
	Post Test	20.30	30	3.505			
Balance							
Intervention Group	Pre Test	151.47	30	10.991	11.05	29	.000
	Post Test	179.27	30	8.670			
Non Intervention Group	Pre Test	153.73	30	6.470	0.06	29	.955
	Post Test	153.60	30	10.759			

Aerial yoga significantly improved flexibility in the intervention group, as evidenced by a substantial t-ratio of -10.573 ($p < .000$). Additionally, balance showed a significant enhancement with a t-ratio of -11.050 ($p < .000$) in the intervention group. In contrast, the non-intervention group did not exhibit significant changes in flexibility ($t = 0.397$, $p = .694$) or balance ($t = 0.057$, $p = .955$). These results underscore the positive impact of aerial yoga on both flexibility and balance among athletes. Figure 1 & 2 represent the mean value of flexibility and balance.



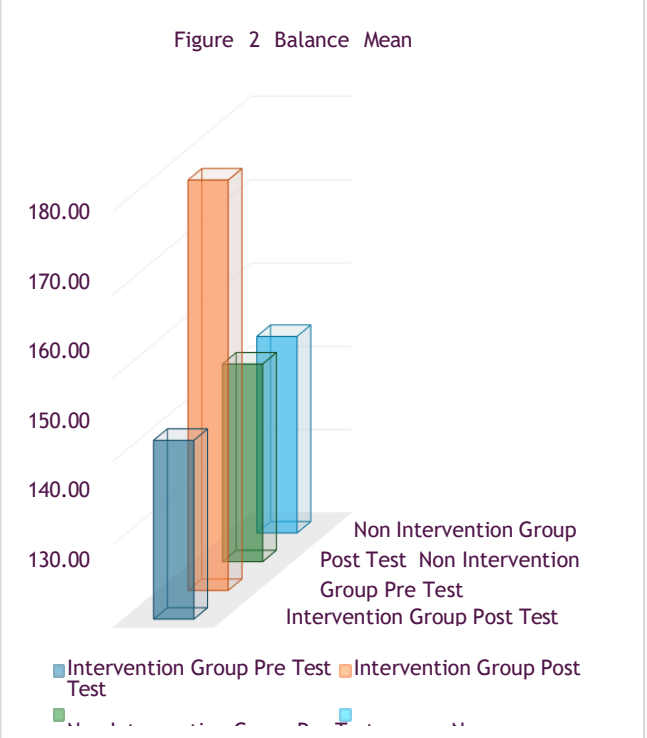


Table 2 presents the results of the ANCOVA conducted on Flexibility and Balance between Intervention and Non Intervention Group.

Flexibility						
Group	Adjusted Mean	Sum of Squares	df	Mean Square	F	Sig.
Intervention Group	25.90	470.40	1	470.40	69.65	0.00
Non Intervention Group	20.30	384.97	57	6.75		
Balance						
Group	Adjusted Mean	Sum of Squares	df	Mean Square	F	Sig.
Intervention Group	179.26	9710.840	1	9710.840	99.970	.000
Non Intervention Group	153.61	5536.837	57	97.137		

The ANCOVA showed a significant difference in flexibility (F = 69.65, p = 0.00) and balance (F = 99.970, p = 0.000) between the Intervention and Non-Intervention groups. The Intervention Group demonstrated higher adjusted means for flexibility (25.90) and balance (179.26), indicating a positive impact of the intervention, compared with Non-Intervention Group.

Discussion of Findings:

The observed significant improvements in flexibility and balance among athletes following a 8-week aerial yoga program align with previous research on the benefits of yoga. Telles et al. (2016) reported enhancements in flexibility and balance in individuals engaged in regular yoga practice, substantiating our findings in the intervention group. Furthermore, Cramer et al. (2013) conducted a meta-analysis that demonstrated consistent positive associations between yoga interventions and increased flexibility and balance across diverse populations.

The specific benefits observed in the aerial yoga intervention group may be attributed to the unique nature of suspended movements and positions involved. This notion resonates with the work of Wang et al. (2018), who explored the impact of yoga on functional movement ability. Their study, utilizing ANCOVA, highlighted the positive effects of yoga on various physical parameters. Our ANCOVA results reinforce the statistical robustness of the observed improvements in both flexibility and balance, in line with Wang et al.'s findings.

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CONCLUSION

In conclusion, the outcomes of this study strongly suggest that incorporating a 8-week aerial yoga program into the training regimen of sports person can lead to significant improvements in flexibility and balance. The positive findings align with existing literature on the benefits of yoga and highlight the potential of aerial yoga as a specialized modality for athletes. The non-intervention group's lack of significant changes further emphasizes the specific impact of the aerial yoga intervention.

While these results are promising, it's essential to acknowledge the preliminary nature of this investigation. Future research with larger sample sizes, longer intervention durations, and diverse athlete populations would contribute to a more comprehensive understanding of the sustained effects of aerial yoga on athletic performance.

Based on the findings of this study, several recommendations can be made for both researchers and practitioners. Further research should conduct larger-scale and longer-term studies to validate and extend these preliminary findings, with a focus on investigating the potential physiological mechanisms underlying the observed improvements in flexibility and balance. Practitioners, particularly coaches and trainers, may consider integrating aerial yoga into the training regimens of athletes, especially those involved in sports requiring a high degree of flexibility and balance. A tailored and individualized approach to aerial yoga programs, considering the specific needs and requirements of different sports and athletes, could optimize the effectiveness of the intervention. Implementing long-term monitoring is crucial to assess the sustainability of the observed improvements and track any potential long-term benefits or changes in injury rates. Additionally, cross-disciplinary collaboration between yoga instructors, sports scientists, and coaches is encouraged to design and implement effective and safe aerial yoga programs that complement athletic training. This collaborative effort can enhance the integration of aerial yoga into mainstream athletic programs, maximizing its potential benefits for athletes across various sports disciplines.

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