

## Exploring the Impact of Yoga in the Training of Rifle, Pistol and Shotgun Shooting Players

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### Abstract:

This paper aims to discover alternate practices that are necessary for addressing physiological, psychological, and sociological elements that impact the performance of a shooting player during various competitions, in addition to their regular training program. This study also examines the potential advantages and effects that the practice of yoga may have on performance in the sport of shooting. A survey is conducted and the responses are analyzed using statistical methods. The results were compared and conclusions were drawn.

**Keywords:** Shooter, Yoga, training

### Introduction:

The potential impact of specialized training programmes on the enhancement of physical and physiological factors associated with gunshot accuracy among law enforcement agents was investigated through a survey. The results indicate that there exist notable correlations between specific physical and physiological factors and the effectiveness of pistol shooting. Nevertheless, conventional training methods tend to overlook the significance of psychological elements. Additionally, the study suggests that further research should emphasize on examining the impact of self-regulation and anxiety training programmes on the performance of shooting players, specifically in relation to reducing heart rate and anxiety levels (Kayihan, Ersöz, Özkan, & Koz, 2013). To effectively overcome these challenges, it is imperative to conduct an extensive investigation into other methodologies that can be incorporated into the training regimen of marksmen.

A study was conducted to investigate the potential impact of specialized training programmes on the enhancement of physical and physiological factors associated with gunshot accuracy among law enforcement agents (Williams, Steinberg, & Petronis, 2003). The results of the study indicated that there exist notable correlations between specific physical and physiological factors and the effectiveness of pistol shooting. Nevertheless, conventional training methods sometimes overlook the significance of psychological elements. Additionally, the study suggests that future research should focus on examining the impact of self-regulation and anxiety training programmes on the performance of shooting players, specifically in terms of reducing heart rate and anxiety levels (Kayihan, Ersöz, Özkan, & Koz, 2013). To effectively overcome these challenges, it is imperative to conduct an extensive investigation into other methodologies that can be incorporated into the training regimen of marksmen.

Yoga, a history spanning over three millennia, has gained recognition in the Western world as a comprehensive approach to health. It has been officially designated by the National Institutes of Health as a kind of Complementary and Alternative Medicine (CAM) (Williams, Steinberg, & Petronis, 2003). The term "yoga" originates from the Sanskrit term "yuj," denoting the concepts of union, yoke, joining, as well as directing and concentrating one's attention (Lasater, 1997). Consistent engagement in yoga

exercises fosters physical strength, endurance, and flexibility, while also facilitating the development of positive traits such as kindness, compassion, and enhanced self-control. Additionally, it cultivates a state of tranquility and overall well-being (Collins, 1998). Consistent engagement in practice also has significant results, including shifts in one's worldview, heightened self-consciousness, and an enhanced capacity to embrace life with vitality and authentic pleasure (Mehta, Mehta, & Mehta, 1995). The vigorous practice of yoga induces a physiological condition that is contrary to the flight-or-fight response to stress. The break in the stress response enables the achievement of a condition of balance and coherence between both the body and the mind (Arora & Bhattacharjee, 2008).

The initial exposition of yoga philosophy and practice can be attributed to Patanjali, who documented these teachings in the renowned treatise known as the Yoga Sutras. This text holds significant recognition as the definitive source on the subject of yoga (Lasater, 1997). In contemporary times, there exists a prevalent tendency to associate yoga solely with asana, the physical aspect of the practice. However, it is important to recognize that asana represents merely a single facet of the broader spectrum of techniques employed for individual healing. Within the extensive compilation of 196 sutras, a mere three sutras are dedicated to the subject of asana, while the remaining text delves into various other constituents of yoga. These encompass conscious breathing, Patanjali delineates an eightfold way to cultivate mindfulness and attain spiritual enlightenment in the Yoga Sutras, referred to as *ashtanga*, a term that translates to "eight limbs" (Lasater, 1997).

The eight limbs encompass a set of ethical principles that guide individuals in leading a purposeful and meaningful existence. These principles serve as a framework for moral conduct and self-discipline, emphasising the importance of both physical well-being and spiritual components of human nature. Various components of yoga, known as the eight limbs, can be practiced individually. However, it is important to note that within the context of yoga philosophy, the practice of physical postures and breathing exercises serves as a means to cultivate mental and physical readiness for the purpose of meditation and spiritual growth (Williams, Steinberg, & Petronis, 2003).

Numerous yogic disciplines have been derived from Patanjali's eight limbs. Each method employs its own approach to the prevention and treatment of diseases. The predominant elements of yoga that are commonly observed in the Western world include the physical postures and breathing techniques of Hatha yoga, as well as the practice of meditation (Collins, 1998). Hatha yoga is known to augment the physical body's capabilities by employing a sequence of bodily postures, movements (asanas), and breathing methods (pranayama). The breathing practices employed in Hatha yoga prioritize the deliberate extension of inhale, breath retention, and exhale. The act of harmonising the physical body, breath, and concentration while engaging in postures and motions serves to eliminate blockages in the body's energy pathways, leading to enhanced balance within the body's energy system.

While there are other kinds of Hatha yoga, the predominant approach employed in the studies covered in this manuscript was the Iyengar style of yoga. The Iyengar technique of Hatha yoga is founded upon the teachings of B.K.S. Iyengar, a prominent yoga master (Williams, Steinberg, & Petronis, 2003). Iyengar yoga prioritizes the practice of standing postures as a means to cultivate physical strength, stability, endurance, focus, and proper alignment of the body. Props are employed in order to enhance the process of learning and to modify yoga postures, while teaching is provided on utilizing yoga to alleviate different conditions and sources of stress.

Several sports clubs across the globe have adopted this ancient practice originating from India as an innovative training method for a considerable duration. Yoga possesses preventative and therapeutic qualities, demonstrating its capacity to provide physical and mental advantages to the human body and mind. Yoga exhibits a unique distinction from alternative forms of physical activity by facilitating movement in the body while minimizing the occurrence of strain and imbalances. Hence, this practice serves as an optimal supplement to various training modalities and confers a significant edge to any athletic endeavour. The shooting sport can also be credited in a similar manner.

A comparative analysis was undertaken to assess the motor and sensory (visual) capabilities of community home girls who received yoga training, in contrast to community home girls who were trained in physical exercise, as well as girls who remained at home. The study employed four different tests to measure various aspects of participants' physical and cognitive abilities. These tests included hand grip strength, which served as an indicator of muscle power.

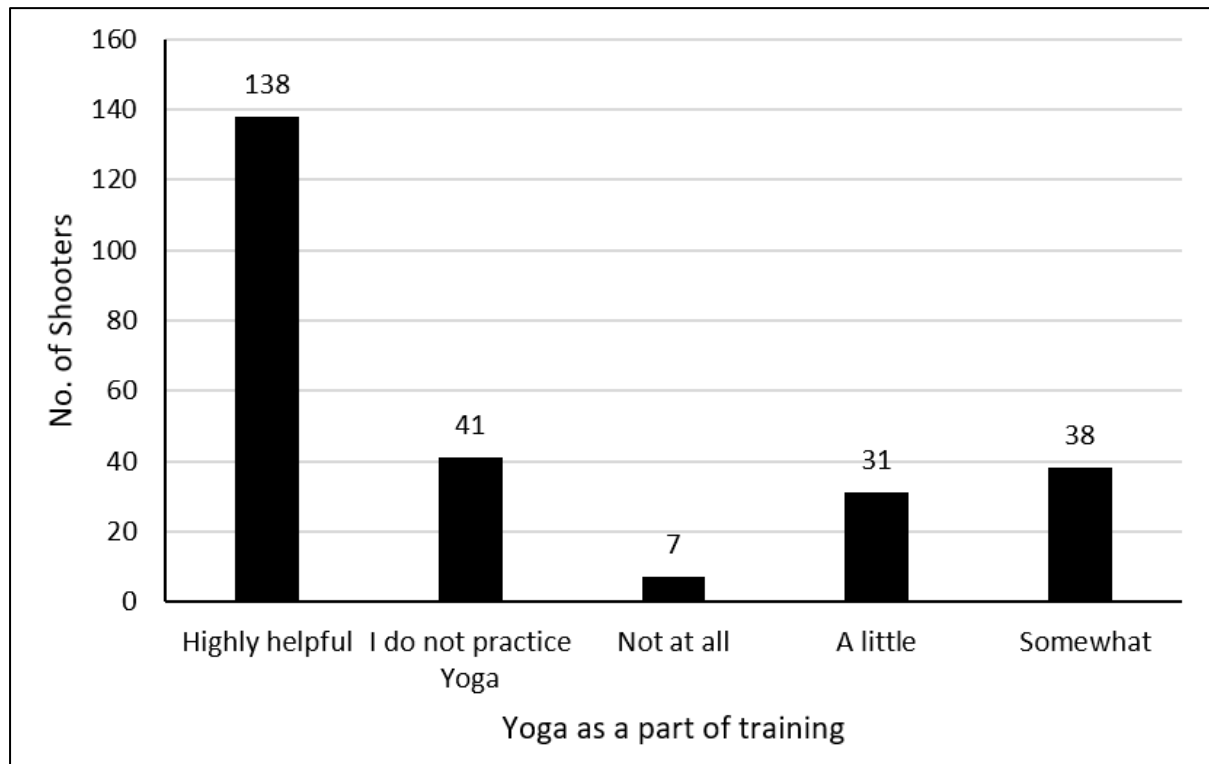
Another study posited that the elevated stress levels reported by those residing in communal homes resulted in a decrease in sensory perception due to alterations occurring at both the peripheral and cerebral levels. Yoga practice partially alters this effect. In contrast, the community home group had lower levels of muscle power, while no significant differences were observed in terms of fine motor skill. The practice of yoga has been observed to potentially enhance hand grip strength, potentially through a reduction in energy expenditure. The findings of a study indicate that the implementation of yogic practices leads to improvements in muscular strength and body flexibility, as well as enhancements in respiratory and cardiovascular function.

Yoga has the ability to enhance the strength of deep connective tissue, hence reducing the likelihood of sustaining injuries. Regular practice of this activity promotes enhanced general body flexibility, leading to an increased range of motion and improved mobility. The practice significantly improves an individual's physical equilibrium by cultivating their bodily proprioception, which in turn enables them to maintain balance throughout various movements. This heightened awareness of their body's central position allows athletes to effectively counteract or preempt falls, while simultaneously augmenting their agility and manoeuvring capabilities. The substance effectively alleviates pre-competition anxiety and stress.

Additionally, it aids in the regulation and control of emotions that have the potential to impair focus, concentration, and judgement. The training programme facilitates the athlete's ability to enter and maintain a focused mental state (Sharma, 2015). Therefore, yoga will be prioritized as the initial practice to explore the potential for supplementary training in addition to the normal regimen of shooters, with the aim of enhancing their performance.

#### **Method and Methodology:**

A Survey was conducted on 255 Shotgun, Rifle and Pistol shooting players across India. The survey aimed at identifying physiological, psychological and sociological factors that are affecting the performance of a shooting player. The responses for the question, *whether the shooter is practicing yoga, if so, how helpful it is?* were depicted in Fig. 1.



**Fig. 1 Impact of Yoga as a part of training of the shooters**

It is found that out of 255 shooters, 138 responded that yoga is highly helpful while 38 said that it is marginally helpful whereas 31 felt that it is slightly helpful. 7 shooters replied that it is not at all helpful but 41 have not practiced yoga.

To investigate the impact of yoga in overcoming physiological, psychological and sociological factors that are affecting the performance of a shooting player in various events another survey was conducted. In this survey, the sample size 40 was chosen among the 41 shooters who have not been practicing yoga. Another sample of 40 were chosen randomly from the shooters who have been practicing yoga. A questionnaire was prepared carefully to give equal importance to each of the identified factors.

#### **Analysis:**

The collected data of the responses from the survey is tabulated and the qualitative responses were converted to quantitative responses using rubrics on the scale of 1-4. One-way ANOVA is used to compare the responses of the shooters who practiced yoga with the shooters who have not practiced yoga, factor wise. The following hypothesis were considered:

Null Hypothesis,  $H_0 =$  There is no significant difference between the groups ( $p \geq 0.05$ )

Alternate Hypothesis,  $H_1 =$  There is a significant difference between the groups ( $p \leq 0.05$ )

The corresponding values are incorporated in Table 1.

Table 1. Results of One-way ANOVA test on the identified factors

Physiological Factors	SS	df	MS	F	P-value	F crit
Postural stability	4.51	1	4.5125	10.6740	0.0016164870	3.963472
Strength, flexibility and physical fitness	9.80	1	9.8000	14.7710	0.0002460530	3.963472
Hand Grip Strength	9.80	1	9.8000	20.6874	0.0000195310	3.963472
Quiet Eye	4.51	1	4.5125	11.2903	0.0012082150	3.963472
Aiming point trajectory	6.05	1	6.0500	10.8483	0.0014882800	3.963472
Respiratory Function	7.20	1	7.2000	12.5357	0.0006769740	3.963472
Resting Heart Rate	13.61	1	13.6125	17.9127	0.0000625560	3.963472
Maximal oxygen consumption	6.61	1	6.6125	10.1982	0.0020281650	3.963472
<b>Psychological Factors</b>						
Motivation	28.80	1	28.8000	34.8820	0.0000000870	3.963472
Concentration	12.01	1	12.0125	26.7899	0.0000017190	3.963472
Attention	9.80	1	9.8000	19.1100	0.0000376690	3.963472
Self-confidence	4.51	1	4.5125	7.2610	0.0086264200	3.963472
Reaction Time	18.05	1	18.0500	32.7800	0.0000001840	3.963472
Mind power	31.25	1	31.2500	48.0769	0.0000000010	3.963472
Anxiety	39.20	1	39.2000	55.0423	0.0000000001	3.963472

It is clearly seen from the table that the p-values for all the factors mentioned above are  $\leq 0.05$  and hence rejects the null hypothesis. Thus, it can be stated that practicing yoga has a significant effect on the performance of the physiological, psychological and sociological factors that are affecting the performance of a shooting player. However, the sociological factors are different for each shooter and hence should be dealt with proper one to one counselling. Therefore, a further research is required to evaluate sociological factors scientifically.

### Conclusion:

Regular training of shooting players largely neglects the role of psychological factors. Advanced studies were required to investigate the effects of self-regulation and anxiety training programs which can be useful for decreasing heart rate and anxiety level on their performance. Alternative practices are identified to address physiological, psychological and sociological factors that are affecting the performance of a shooting player in various events alongside regular training. The benefits and impact yoga in sports in particular to shooting sport were investigated. A survey was conducted and the responses are analyzed using statistical methods. The results are compared and conclusions were drawn. Yoga found to have a substantial impact on the performance of shooting players.

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