



# ANALYTICAL STUDY ON FACTORS AFFECTING PSYCHOLOGY OF SHOOTERS

**Dr. Vikas Saxena**

H.O.D, Department of Physical Education, Rabindranath Tagore University, Bhopal

## ABSTRACT

Shooters may perform better when they have access to professional psychological support (PPS), PT, or positive connections with both their teammates and coaches. The purpose of this research was to identify the factors that shooters deemed most important. There were eight top-tier marksmen that were questioned. Using qualitative methods, we were able to identify the following groups: the significance of PT; the connection between anxiety and competition; the significance of mental preparation; the significance of PPS; the significance of stress during training; the psychological effects of injuries; and the influence of coaches. These findings suggest that mental elements may be crucially important for national-level rifle shooting performance, and that the top rifle shooters had elevated levels of the four investigated mental components. To this end, we looked at claims that certain psychological theories have influenced the conduct and interpretation of studies. Ten publications satisfied the requirements to be included in the analysis. The overall quality of the research was mediocre, with a few notable outliers. There was a dedicated methods part in just three of the research. Only two of the 10 studies included interviews with school shooters. Four research employed secondary data sources including school, hospital, and/or psychological assessments, whereas the remaining studies exclusively used tertiary data. A lack of psychological theory-based analysis hindered the development of applicable research methods. The use of psychological theories to draw conclusions from empirical data was not covered in any of the studies. We need more thorough studies and a deeper theoretical grasp of the psychological processes that contribute to school shootings.

42

**Keywords:** Teacher, shooting, Rifle shooter, Psychology,

## INTRODUCTION

Over the last several decades, the United States has seen at least one catastrophic school shooting, each time resulting in fatalities and widespread psychological damage. As many victims as possible are targeted in a shooting spree by one or more individuals. Our definition of a "active shooter scenario" is this. It's becoming more and more common to see mass shootings as normal for the United States. While researchers dig for answers on what causes mass shootings, the public seems content to accept media portrayals of mental illness, violent media, bullying, and despair as the clear-cut sole causes of such instances. If the muzzle of a rifle is tilted even 1/16 inch off the centerline, the bullet's impact will be off by more than 2 feet at 500 yards. The most unpredictable aspect, the shooter, may have a significant impact



on where a bullet falls. The weapon is moved by the user's breathing, pulse rate, and tired muscular spasms. The sights not being properly aligned, the shooter flinching or bucking in response to the report, or even just jerking the trigger may all cause significant movements of the weapon. Anxiety, which may raise heart and respiration rates, might further exacerbate the shooter's positional instability. The first step in mastering any new ability is to get acquainted with the fundamental principles and practices that underpin the endeavor. Students learn how to handle the rifle, align the sights, and utilize outcomes (i.e., where the bullet impacted) as feedback while also focusing on effective execution of the task processes, important perceptual signals, optimal shooting stance, and how to synchronize breathing and pulling the trigger. Verbal rehearsals (e.g., mentally or vocally rehearsing facts or fundamental processes, such as "squeeze—not pull—the trigger,") help students remember new information and procedures.

## LITERATURE REVIEW

**Sina Spancken et.al (2021)** Introductory Remarks Due to their distinct demands for precision and accuracy, the Olympic sports of air-rifle and small-bore shooting are exciting spectator events. Objective Our research set out to methodically identify and summarize factors that contribute to shooting performance, specifically with air rifles and tiny bores. Articles were included if they met three criteria: a) they had some kind of direct or indirect bearing on shooting performance; b) they made comparisons between shooters of various skill levels; and c) they were relevant to actual shooting (directly controllable through training). Once the overall quality of each item was determined, we isolated and summarized the most relevant information. Results In terms of overall quality, the 14 featured articles scored an average of 60 14% (range: 30-80%). There were a total of 268 athletes discussed in the articles (19% elite and 28% national level), 32% of whom were female. There were sixteen performance predictors studied, and they were grouped into anthropometric, technical-coordinative, physiological, and psychological factors. Rifle stability and body sway in air-rifle and small-bore shooting have been discovered to vary between elite and national-level competitors. Among the best shooters in the country, body sway made no difference to their shot totals in either sport. Conclusions A highly refined targeting method is required to earn a high shot score in air-rifle competition at the national level.

43

**Rebecca G. Cowan et.al (2020)** Shootings that kill many people in one incident are becoming more prevalent in modern culture. Despite this rise in incidence, studies on mass violence have lagged behind owing to a lack of government funding. Due to the heated discussion regarding the relationship between mental health and mass shootings, counselors and other mental health professionals are at the forefront of this problem. The goal of this piece is to raise awareness of the reasons for the paucity of study, to analyze what is known from the little scientific literature, and to explain the gaps in our understanding that remain unfilled. Considerations for promoting constructive social change and advocating for these changes are also included.

**Brian Van Brunt et.al (2019)** There is a widespread belief that those with mental illness are more likely to commit acts of extreme violence, such as mass shootings. The authors dissect this presumption and give a thorough literature assessment of the ways in which mental health difficulties contribute to criminality and violence. As is the case with many other risk factors for violence, having a mental health diagnosis is not a prerequisite for experiencing these behaviors. Targeted violence risk factors will be examined in relation to a variety of factors, such as the unpredictability of bipolar illness and schizophrenia, the stress caused by mental health problems reducing emotional stability, and previous inpatient admissions for



suicide attempts. After examining the current research, we will discuss potential methods for reducing risk.

**Meher Sharma (2018)** It's important to question the prevalent narrative that serial killers are always white men, monsters with odd appearances, and victims of childhood sexual or physical abuse who murder sadistically for sexual enjoyment because they can't control themselves. (Yaksic, 2015) (Beasley, 2004). Researchers seeking information on this phenomenon, as advocated by Leyton (1996) and Skrapec (2001), would do well to have an open mind. It's also hard to generalize about what motivates serial murderers since each individual's motivations may be different depending on his or her background and experiences (Y aksic, 2015). The purpose of this research was to examine and contrast thorough and descriptive descriptions of the lives of three serial murderers (Gary Ridgway, Ted Bundy, and Richard Ramirez) without making any assumptions or speculations about what could have caused them to become killers. The grounded theory approach was used for this study. The literature produced on each serial murderer have been mined for the bulk of the information. It was determined that these elements have a role: Trauma, stress, power dynamics, a lack of social support, poor self-esteem, exposure to sexually violent and sadistic media, American culture, peer pressure, Satanism, dysfunctional family dynamics, and delayed brain development are all factors.

44

**Kathryn Farr et.al (2018)** This study investigates whether or not teenage boys' lack of healthy masculinity contributes to their tendency to commit acts of violence at school. The argument that the young perpetrators of these massacres had their enactment of traditional normative masculinity, prominent in U.S. culture and especially important in boys' achievement of insider status in middle and high school, discredited is discussed; the boys' perception of the rejection they received from their peers as unjustified anger leads them to escalate their own violent gendered practice, culminating in the massacre. Factors linked to school shooters in the research literature are examined for ways in which they are gendered and reflect the social performances of the shooters at school, using data from a sample of all identifiable adolescent rampage school shooters in the United States from 1995 through 2015 (31 shooters, 29 shootings) who met the definitional criteria. Personal issues of school shooters reported in past study that may lead to the gendered failures of the boys and to the rampage were also investigated. The findings confirm the hypothesis presented above, as well as the presence of distinct groups defined by the nature of the individuals' difficulties. These categories also varied in the frequency and severity of insider masculinity-related actions, such as the preparation for and the actual shooting. Interventions to reduce teenage rampage school shootings are proposed based on the results of this research.

## METHODS

Because no personally identifying information would be collected from participants, no ethical committee was consulted in advance of this study. However, the study was executed in a way that is consistent with the Helsinki declaration and, to the extent practicable, the ethical guidelines of the Norwegian Centre for Research Data (NSD). Each participant signed a written statement of permission (Appendix A) after being briefed on the study's rationale and methods. Participants' involvement was entirely voluntary, and they were free to discontinue participation in the research at any moment.

It would seem that this sample is indeed typical of the whole. Individuals' ages ranged from 16 to 61 (standard deviation (SD) = 12.29), with a mean of 34.67. Statistics describing the sample are shown in table 1.



**Table 1**

**Descriptive statistics statistics for the sample (N), Minimum (Min), Maximum (Max), Means(M) and Standard deviation (SD).**

<b>Variable</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>M</b>	<b>SD</b>
Age (years)	49	16	61	34.67	12.29

## **Design**

This study used a correlational research methodology to inquire into the extent to which psychological variables are connected to performance among the top shooters in Norway and whether or not these characteristics might explain any of the diversity in performances. Evidence of a relationship between two or more variables may be provided by a correlational design (Field, 2016). Noting that this data does not prove cause and effect is essential. Nonetheless, it can provide light on the link between the investigated factors. No artificial manipulation of data is included in correlational studies; instead, researchers just observe the world as it really is. Furthermore, a regression analysis was used since it follows logically from a correlational analysis.

## **Statistical Analysis**

Each construct was subjected to a correlation analysis to show how the various psychological variables were linked to the shooters' overall and individual rifle shooting results. Finally, a multiple regression analysis was carried out in order to determine whether psychological variables were able to substantially predict the rifle shooting performances. Depending on where they land in the overall standings and how they do in their respective events. Statistical analysis was performed using SPSS 26.0.0.0.

45

Following the completion of the correlation analysis, the findings were implemented by further investigating the bivariate correlation between psychological components from the indices and rifle shooting performance using the Pearson coefficient  $r$ . The covariance between two quantitative variables is described by Pearson's correlation coefficient (Field, 2016). Cohen (1992) states that an  $r$ -value below .10 indicates a negligible impact or a weak correlation, while an  $r$ -value between .30 and .50 indicates a moderate effect or a fair degree of connection. As a last step, a multiple regression was performed.

## **Data Analysis**

Nvivo v.10 software (QSR International, Burlington, MA 01803, USA) was used to assess de transcriptions and the frequencies of each associated concept. Two researchers independently categorized the verbal reports. Experts (interviewees) conducted cross-triangulation, which was then reviewed by a single referee who settled any disagreements that arose among the experts. In doing so, we had to eliminate one of the categories (from eight to seven). When the categories were set, the ideas, terms, and phrases were ranked within each group and quantified.



## RESULT

The following hypotheses were developed to examine the impact of mental preparation on rifle shooting accuracy: Among the top rifle shooters in Norway, (1) there are statistically significant relationships between psychological factor scores and results. (2) The influence of mental variables may account for a significant portion of the variation in rifle shooting performance. Thus, it was decided that the research would benefit from a bivariate correlation analysis and a stepwise multiple regression analysis.

Table 1 provides a summary of the components and their internal consistency (Cronbach's alpha), and table 2 displays the Pearson's product-moment correlations between the outcomes of the rifle shooting and the scores from the questionnaires of psychological factors in rifle shooting.

**Table 2**

### **Descriptive statistics of psychological factors for performance in rifle shooting**

<b>Factor</b>	<b>Valid N</b>	<b>Cronbach's <math>\alpha</math></b>	<b>Min</b>	<b>Max</b>	<b>M</b>	<b>SD</b>
Passion	49	.82	3	5	4.18	.54
Grit	49	.63	2.63	4.50	3.81	.47
Self-Efficacy	49	.84	42	76	63.57	7.5
Flow	49	.92	88	169	133.27	17.7

46

## Correlational analysis

### **Psychological factors and overall ranking summer season 2019**

According to the results of the correlation study, there are statistically significant relationships between total summer 2019 ranking and the characteristics of passion ( $r = -.244$ ,  $p = .046$ ), self-efficacy ( $r = -.325$ ,  $p = .011$ ), and flow ( $r = -.297$ ,  $p = .019$ ). 2019 summer season total rankings have no meaningful relationship to tenacity ( $p > .05$ ).

### **Psychological factors and Oslo Open placement**

The following psychological variables were shown to have statistically significant associations with performance in the Oslo Open: grit ( $r = -.259$ ,  $p = -.036$ ), passion ( $r = -.296$ ,  $p = -.019$ ), self-efficacy ( $r = -.305$ ,  $p = -.016$ ), and flow ( $r = -.52$ ,  $p = -.000$ ).

The correlation analyses also found that there were moderate to high correlations between the different factors.

**Table 3**

### **Correlations (person) between the rifle shooting performances/ results, and scores from the psychological factors (rifle shooters on a national level, N=49)**



Indexes	1	2	3	4	5	6
1. Overall ranking	1	.479**	-.244*	-.159	-.325*	-.297*
2. Result Oslo Open		1	-.296*	-.259*	-.305*	-.520**
3. Passion			1	.384**	.467**	.442**
4. Grit				1	.407**	.432**
5. Self-Efficacy					1	.631**
6. Flow						1

The current study's findings on physical training for shooters were organized into seven distinct groups. Two of the eight shooters also had zero prior experience with physical training. While three athletes out of every eight have never been regular PT practitioners, the other three athletes all engage in PT on a regular basis and have access to expert psychological support.

### Importance of PT

Athletes 1 and 8 didn't take part in PT, but the rest of the group unanimously agreed on how crucial it was. Except for athlete 1, all other shooters echoed the idea that PT aids in taming and managing anxiety. This viewpoint is reinforced by its prevalence in the interview (see Table 4).

I had to invest a lot of energy into learning how to relax and quiet my anxiousness at first, but it was well worth it in the end. Your anxiety about competing may be much reduced. That's why I think physical training is crucial. (Athlete 2)

**Table 4. Concepts and words most repeated by the athletes interviewed in the psychological area**

Category	Ideas/Concepts/Words	Sh 1	Sh 2	Sh 3	Sh 4	Sh 5	Sh 6	Sh 7	Sh 8	Total
PT	Importance psychological training	3	8	4	3	7	8	5	8	46
	Improve Results	5	1	3	3	4	1	5	1	23
RAAP	Anxiety	8	18	14	4	15	15	8	7	89
	heartrate/heart speeds up/high	1	1	1		2			1	6
	heart rate									
	Nervousness/muscle tension	11	8	1	11	1		16	2	50



	Competitive experience	6	6	1		2	1	4	1	21
	Breath	0	6	1	2	2	1	13		25
	Visualization	0	0	4		7	8	3		22
	Music	3	2	2	7	3	3	1		21
PCMP	Read	0	0	0	1	0		0		1
	Psychological training/psychology	10	11	12	13	16	15	13	10	100
	Concentration/Meditation/Mental	27	0	3	7	2	16	5	16	76
PPS	Psychological support/psychologist	1	5	4	5	6	11	14		46
	Pressure and stress placed by the coach	6	11	4	1	2	2	4	2	32
SDT	Sloppy/more relaxation					1		1		2
	Injury/Pain	7	3	9	5	1	15	6	4	50
PEI	Difficult/tired//reaction/decrease training/fatigue					5	2	6		13
	Influence/confidence/relationship/ calm down	1	1	2	7	3	1	2	1	17
	Reward/praise/congratulate						5			5
CIOA	speak/comment/words	1	6	3					2	12
	Coach	4	15	6	8	19	17	10	3	82





## RELATIONSHIP BETWEEN ANXIETY AND PERFORMANCE

### Competition Anxiety Levels

A little pre-match jitters are useful for Athletes 2, 3, 4, 5, and 7. Although these anxiety states are not formally assessed, they keep athletes on high alert and help them to better prepare for competition. The number of times interviewees brought up this idea indicates its significance (see Table 4).

The degree to which it helps or hurts depends on how you deal with your feelings. You may look at me and see the polar opposite. It's not a problem for me when I'm competing, and I usually perform at the same high level that I do when I'm training. When it comes to competition, I even manage to beat myself. Athlete No. 4

Athlete 1 on the other hand, said she never gets stressed before contests, while Athletes 6 and 8 said they felt it hurt their performance:

- My focus throughout the tournament is on technical management, rather than on the outcome. Soon, it appears, there will be little worry and no anxiety at all. (Athlete 1)

### Physiological Changes Related to Anxiety

Throughout their athletic careers, all shooters reported experiencing some physiological changes (i.e., "somatic anxiety") related to competition, including an elevated heart rate, discomfort (burning/cold/tightness), restlessness, nervousness, and agitation, muscle tension, tremors, and shortness of breath (see Table 4). On the other hand, they learned to control their fears via competition and/or physical therapy and cognitive behavioral therapy.

Unease has settled over me. My pulse rate used to be so high before contests that my knees would shake as I walked to the starting line. (Athlete 5)

### Pre-Competitive and Competitive Mental Preparation

All seven athletes surveyed said they employ some kind of mental preparation, such as breathing exercises, visualization, or listening to music, before competitions and throughout their performances. Athletes 1, 2, 4, and 7 are often more reserved on competition day and the day prior. Athlete 1 isn't the only one who watches films before bed; Athlete 7 does it, too. (Check out Row 4 of the Table.)

Yes, I think you're right; it's all in the mind's eye. I believe it's crucial to take a few deep breaths before a big game or competition to help calm our racing hearts and queasy stomachs. Competitor 3

Athlete No. 5 likes to chat it up with the rest of the squad, while No. 8 is more focused on winning (see Table 4):

While listening to music might help you relax or concentrate, I find that chatting to someone is more enjoyable. Speaking is one of my favorite activities. (Athlete 5)





## CONCLUSION

The results of this investigation suggest that mental preparation is crucial for national-level success in rifle shooting. So, it's reasonable to infer that the many psychological characteristics present in athletes are what set apart the winners from the losers, as proposed by Krane and Williams (2015). When it comes to simulating the stress of competition, coaches play a crucial role for top shooters, whose performance suffers when they try to practice on their own. A coach's credibility, ability to instill trust, and encouragement of a positive rapport are all essential qualities. The top shooters who were hurt do not seem to have been mentally or otherwise influenced by their pain or injury. Federations and national institutions responsible for shooting should include athletes' psychological support, incorporating it as a training component, to the degree that technical, economic, and organizational capabilities allow. This is so that the performance of shooters may be promoted and improved.

## REFERENCE

1. Cowan, R. G., & Cole, R. F. (2020). Understudied and underfunded: Potential causes of mass shootings and implications for counseling research. *Journal of Social Change*, 12, 124–133. <https://doi.org/10.5590/JOSC.2020.1.1.10>
2. Spancken, Sina & Steingrebe, Hannah & Stein, Thorsten. (2021). Factors that influence performance in Olympic air-rifle and small-bore shooting: A systematic review. *PLOS ONE*. 16. e0247353. 10.1371/journal.pone.0247353.
3. Meher Sharma “The Development of Serial KiUers: A Grounded Theory Study”2018.
4. Farr, K. Adolescent Rampage School Shootings: Responses to Failing Masculinity Performances by Already-Troubled Boys. *Gend. Issues* **35**, 73–97 (2018). <https://doi.org/10.1007/s12147-017-9203-z>
5. Brian Van Brunt et.al “Debunking the Myths: Mental Illness and Mass Shootings” <https://doi.org/10.1089/vio.2018.0016>
6. Taylor, M. A. (2018). A comprehensive study of mass murder precipitants and motivations of offenders. *International Journal of Offender Therapy & Comparative Criminology*, 62(2), 427-449.
7. Stuart, H. (2006). Media portrayal of mental illness and its treatments. *CNS Drugs*, 20(2), 99– 106.
8. Stangor, C. (2009). The study of stereotyping, prejudice, and discrimination within social psychology. In T. D. Nelson (Ed.). *Handbook of prejudice, stereotyping and discrimination* (pp. 1–22). Psychology Press.
9. Link, B. G., Phelan, J. C., Bresnahan, M., Stueve, A., & Pescosolido, B. A. (1999). Public conceptions of mental illness: Labels, causes, dangerousness, and social distance. *American Journal of Public Health*, 89(9), 1328-1333.
10. Lewis, J. S. (2018). The Relationship between Gun Control Strictness and Mass Murder in the United States: A National Study 2009-2015. *International Social Science Review*, 94(2), 1–23.



11. Blair, J. P. & Schweit, K. W. *A study of active shooter incidents in the United States between 2000 and 2013*. Federal Bureau of Investigation, U.S. Department of Justice (2014).
12. Federal Bureau of Investigation. Active Shooter Incidents in the United States from 2000–2018. (2018). Available at: <https://www.fbi.gov/about/partnerships/office-of-partner-engagement/active-shooter-incidents-graphics>.
13. Kobes, M., Helsloot, I., de Vries, B. & Post, J. G. Building safety and human behaviour in fire: A literature review. *Fire Saf. J.* **45**, 1–11 (2010).
14. Haghani, M. Optimising crowd evacuations: Mathematical, architectural and behavioural approaches. *Saf. Sci.* **128**, 104745 (2020).
15. Jonson, C. L., Moon, M. M. & Hendry, J. A. One size does not fit all: Traditional lockdown versus multioption responses to school shootings. *J. Sch. Violence* **19**, 154–166 (2020).

