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ORIGINAL

BIOFEEDBACK AND ITS EFFECTS ON PRECISION SHOOTING COMPETENCIES IN SWITZERLAND

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ABSTRACT

In light of Switzerland's long history of participating in shooting sports, this study examines the impact of biofeedback techniques on precision shooting abilities. Real-time physiological reaction monitoring and modulation by biofeedback may improve concentration, ease of mind, and stress reduction, all essential for precision shooting. For measuring, the research used SPSS software and generated results, including correlation coefficient analysis, test statistical analysis, chi-square analysis, and the control chart related to them. The effects of biofeedback on physiological reactions, attention, performance, stress management, and long-term skill learning are investigated. Examining these variables yields important information on how to best prepare and perform athletes. Given Switzerland's long history of precision shooting, it is important to comprehend how biofeedback might improve shooting techniques. The overall result found positive biofeedback and its effects on precision shooting competencies in Switzerland. Players, coaches, and sports psychologists will feel the worldwide benefits of this study as it advances the field of athlete performance optimization in shooting sports.

KEYWORDS: Biofeedback (BB), Precision Shooting Competencies (PSC), Switzerland (SS), Performance Optimization (PP)

1. INTRODUCTION

A phenomenon in which electronic monitoring of a body that is working automatically whose working is used for the training of a person so that control over that function can be achieved. The mind and body are involved in a technique to control body functions like heart rate, breathing patterns, and muscle responses. During the proceedings of biofeedback, a connection develops with electrical pads, which can prove helpful in gaining information

about the body(Bühlmayer, Birrer, Röthlin, Faude, & Donath, 2017; Kos & Umek, 2018). It is a technique through which we can train people, which can prove helpful in the improvement of their health by having control over certain processes of the body that appear involuntary in normal routines, like heart rate, blood pressure, muscle tension, and skin temperature. If anyone wants to do biofeedback at home, professional biofeedback equipment is required. To have guidance about therapy sessions, one should have an app on his smartphone. Using the biofeedback breathing technique, one can have a biofeedback collection technique at home without using the equipment. There are three phases involved in biofeedback training: 1) Initial Conceptualization, 2) Skills acquisition and rehearsal, and 3) transfer of treatment. In the mind-body technique of biofeedback, visual or auditory feedback is involved in teaching people to recognize the physical signs and symptoms of stress and anxiety, like increased heart rate, body temperature, and muscle tension(Lucero-Urresta, Buele, Córdova, & Varela-Aldás, 2021). For several years, this technique has been used for faecal incontinence because it is a non-invasive and easily feasible option for doing biofeedback therapy. Various publications support that biofeedback has been considered a first choice of treatment for forgetting faecal inforefaecalor years. These studies are based on a success rate of 70%. Depression is a very dangerous disease, and it has various types, but biofeedback training also proves effective for the treatment of certain types(Jun, Kim, & Choi, 2023).

One of them is treatment-resistant depression. The person who undergoes biofeedback can significantly improve symptoms in affected individuals. Anxiety has a strong connection with various physiological symptoms, which include muscle tension and issues while breathing. Biofeedback is used for the detection of anxiety and management. Biofeedback proves helpful in bringing changes in the body, like relaxing muscles, to help relieve pain and reduce tension(Marković, Dopsaj, Umek, Prebeg, & Kos, 2020). Biofeedback also enables someone to control heart rate and breathing. Biofeedback also provides new skills by which anyone can practice advanced methods of controlling body changes. Normally, the mechanism of biofeedback starts with the measurement of body parameters. Those parameters can be physiologic or biomechanical. These are transformed into visual, auditory, or hepatic signals. One of the common examples of biofeedback is urinary incontinence and bedwetting in children. An electrode is placed by proof near the anus of the child and on the leg(Siekańska, Bondár, di Fronso, Blecharz, & Bertollo, 2021). Pelvic floor exercises are taught to children by pelvic floor experts. Biofeedback is also known as a real-time physiological mirror. It was used for the first time in 1969 by using the concept of feedback, which was the first genetics use had been used d during the developmental concept of biofeedback instruments shows an effort to apply modern electronic technology in psychiatry. Three researchers who researched biofeedback are known as the fathers of biofeedback which include Neal Miller, John Basmajian, and Joe

Kamiya. Miller performed extensive behavioral research with animals and found that by applying certain conditions, anyone can be prepared in such a way that he can control his body (Muñoz, Pope, & Velez, 2019). The most important parameter of accuracy is precision shooting. A lot of practice is required, and time is needed to achieve the required level of shooting. Now, science and technology have improved to such an extent that they are vertically helpful in improving and developing training techniques. Accelerometer, Gyroscope, and pressure sensors are the sensors that are used in sports activities (Corrado et al., 2024). For example, hand ultrasound sensors are used in archery to analyze the stability of archers, representing a very reasonable connection between cost and accuracy. The collection was done using a 3D accelerometer for signal features, and certain activities like football, Nordic walking, and cycling were recognized. Some sensors are attached to the upper arm, which are called inertial sensors. These sensors play the role of preventer shoulder injuries in baseball and volleyball (Mullineaux, Underwood, Shapiro, & Hall, 2012). Players' performance can be optimal using sensor technology and advanced signal processing techniques. It also helps prevent injuries and saves training time and money. An augmented biofeedback system can accelerate motor learning and skill levels in precision shooting techniques. Hand movement can be measured using pistol-mounted kinematic sensors, the most important human factor and strongly influences on precision shooting. Two factors affect the accuracy of precision shooting.

The first one is the physical factors that can be controlled, such as pistol parameters, precision shooting distance, weather, etc. The second one is the human factors, including pistol grip, hand movement, aiming, and trigger pull. A machine learning model should be created to predict shooting accuracy and precision parameters based on measured hand movement signals and knowledge of the most common errors in precision shooting. On behalf of this model, an augmented feedback system has been developed that can provide coexisting and terminal feedback to users. The purpose was to understand the effects of training along with real-time biomechanical biofeedback about the technique and the working of rifle shooters. Shooters who are optimal in their performance are randomly assigned to biofeedback and control groups. Shooting is a type of competitive sport in which precise body control, strong mental focus, and accurate decision-making are required. The achievement of success in this sport is completely dependent on the ability to synchronize these points to trigger a shot for a projectile so that it can hit the center of a tiny target (J. Guo et al., 2020). Biofeedback is a technique that helps individuals control their physiological processes through real-time feedback. In the situation of a Precision shooting competition in Switzerland, biofeedback can be used to magnify shooting performance by training shooters to control their heart rate, muscle tension, and breathing patterns to improve accuracy and consistency. It is a technique that implies gaining control of self-regulation based on information or feedback from the athlete's body and mind. If we talk

about sports performance, biofeedback plays an important role in increasing athletes' abilities by providing real-time data on psychological processes such as heart rate variability, respiration rate, muscle tension, and brain waves. Using biofeedback, athletes can learn to willfully control and manage psychological variables, leading to improvement in performance, stress management, concentration, focus, energy levels, and overall well-being. The logical connection of biofeedback in supporting performance lies in its ability to help athletes improve their training, build their mental and physical fitness, enhance recovery from injuries, manage stress and anxiety, increase concentration, and clear their performance consistency. Using biofeedback techniques, athletes can modify their physiological responses, adjust their training loads effectively, and achieve peak performance levels. Biofeedback works as a valuable tool for athletes and coaches to monitor, analyze, and improve various angles of sports performance, eventually leading to enhanced athletic achievement and well-being.

2. Research Objective

The objective of this research was to understand the need for biofeedback for the optimal performance of shooters and enhance their precision, but the main focus is on the precision of shooters in Switzerland.

3. Literature review

Researchers claim that the mindfulness approach is a training strategy used to improve the mental well-being of athletes. mindfulness sports training enhances athletes' psychological health. Athletes who are trained through mindfulness intervention perform better in their relevant sport than athletes who receive simple sports training (Bühlmayer et al., 2017). studies reveal that the neurofeedback training program achieves athlete-optimized performance in the sports field. under this program, athletes are trained to manage their sport-related stress. The target shooting athletes are trained fully through the NFT program This program develops cognitive skills in shooting athletes and makes them more skilled in their sports (Corrado et al., 2024). studies reveal that the performance of shooters of air rifles depends upon certain variables. these variables include static as well as dynamic balance. the performance of shooter athletes depends on gender as well as on the shooting competition level (ERTÜRK, İbrahim, & BAYRAKDAROĞLU, 2023). studies explain that proving shooters with precision shooting skills is achieved through a precision shooting program. in this program, police officers and shooter athletes are trained to use the rifle efficiently. Athletes are provided with stick training sessions to obtain high accuracy in shooting sports. using the augmented feedback system in precision shooting programs reduces the training time and cost (J. Guo et al., 2020). also, using wearable sensors in the sports field improves the sport-playing ability of athletes. wearable sensors detect every

athlete's movement and determine his skill level in a particular sport. to estimate the skill level of basketball players, single inertial sensors are used in the sports field (X. Guo, Brown, Chan, Chan, & Cheung, 2023). Studies predict that various games have been developed to help people avoid frustration and stress. these mood changer games track the facial expressions to determine the type of emotion a player is experiencing. the games are developed using an algorithmic system that is based on different difficulty levels depending on the emotional condition of the player (Halbhuber et al., 2019). studies suggest that psychological training programs improve athletes' psychological health.

The athletes of rapid-fire pistols are provided with psychological skill training to overcome the difficulties they face during the sports training session (Jun et al., 2023). studies show that psychological processes are determined using the biofeedback system. The biofeedback approach provides information about an athlete's psychological health and body movements. In the sports rehabilitation process, the use of the biofeedback approach is of significant importance (Kos, Umek, Kos, & Umek, 2018). studies show that precision training is provided mostly in outdoor places. The shooters getting trained in shooting range are provided with an environment where they can use weapons without any restrictions. in most training environments, the use of augmented reality technology is made to enhance the athlete's learning experience (Lucero-Urresta et al., 2021). Scholars suggest that an athlete's shooting ability is dependent on two factors. The first factor is his hand grip; the firmer the hand grip, the better the athlete can shoot. The second factor is weapon kinetics, which changes during shot passes. Kinetic sensors are used in training environments to assess shooter athlete hand grip and kinetic movement, kinetic sensors are used. These kinetic sensors are efficient in determining the shooting performance of athlete (Marković et al., 2020). studies reveal that the skill development process accelerates with the help of biofeedback. for getting information regarding the kinetics of the lower limb, the use of a biofeedback tool is made. The biofeedback technique is used for altering the kinetics variables. This alternation of variables is useful in developing complex skills (Mulloy, Irwin, & Mullineaux, 2021) For providing athletes with cognitive skills training, the use of virtual reality is made in training sessions. Most of the military training programs are carried out by using VR in training programs .for improving the concentration of military officers during target shooting they are provided training using VR technology (Muñoz et al., 2019). Studies suggest that dart sports players are provided with advanced motor skills training in the quiet mind training program. The QMT program trains the athlete to enhance their motor skills. The QMT program efficiently suppresses the alpha power of athletes and improves the athlete skill acquisition process (Norouzi et al., 2021). Studies explain that the biofeedback tool acts as a therapeutic tool for overcoming athletes' mental health-related problems. The training programs provided to athletes of different sports are made efficient using the biofeedback approach. The biofeedback approach

works on the principle of deep learning. Deep learning algorithms help control the process associated with the biofeedback approach (Palacios-Venegas, 2023). Studies predict that the biofeedback approach is the most widely used in a large number of fields including sports and medicine. The new approach related to biofeedback is the neurofeedback approach. Neurofeedback-based sports training is provided to professional athletes to improve their performing capability. The physical health of athletes getting trained through neurofeedback improves (Rydzik et al., 2023). Studies explain that feedback on athlete performance affects their psychological health. Positive feedback from a coach on an athlete's game playing skills improves the athlete's perception of the coach (Sánchez, García, Carcedo, & Soto, 2022). Studies suggest that technological advancement has advanced the sports field. New and modernized sports technologies have been widely used for recording athlete game-playing skills. Coaching programs using VR are provided to athletes to better manage athlete game performing skills. advanced sports technologies allow athletes to show improvement in sports in short periods. a lot of techniques have been used in the sports field to improve athletes' performance.

Among them, the neurofeedback technology is the most advanced one. neurofeedback technology provides detail information regarding athlete performance in particular sports. by assessing athlete movement the feedback technology provides detailed data about athlete physical fitness. (Schack, Junior, & Essig, 2020). moreover, psychological skill training programs are advanced with modern technology to ensure that athletes develop proper skills through the training program (Siekanińska et al., 2021). scholars suggest that high precision is required in shooting sports for training high performance in this sports. the performance of female air pistol shooters depends upon various variables. these variables include psychological and anthropometric factors (Sobhani et al., 2022). Studies explain that biomechanical feedback effectively improves the performance of athletes playing different sports. Real-time biomechanical feedback has an immune application in the field of sports. The motor skills are taught to the sports students using the real-time biomechanical approach. various wearable biomechanical feedback devices have been developed using advanced technology to optimize the performance of sports athletes (Zhang, Shan, Wang, Wan, & Li, 2019).

4. Methodology

The research describes Biofeedback and Its Effects on Precision Shooting Competencies in Switzerland. The research is based on primary data analysis for measuring the effect between them. For measuring, the research study used SPSS software and generated result included correlation, test statistic and coefficient analysis between them. the biofeedback is considering as independent variable the precision shooting competencies is dependent variable.

4.1 Precision Shooting Competition in Switzerland

Precision shooting holds significant importance in Switzerland, where a strong gun culture and tradition of sharpshooters are deeply implanted. The Swiss emphasize responsible gun ownership and promote Precision shooting as a popular form of relaxation. With a rich history of shooting events, Switzerland showcases a commitment to maintaining high standards of sharpshooting skills among its citizens. This dedication to Precision shooting reflects the Swiss value of individual responsibility, safety, and expertise in handling guns, contributing to a culture that combines a passion for firearms with safety. Precision shooting is a significant sport very much embedded in the country's culture in Switzerland.

The Swiss have a long tradition of sharpshooting, with shooting competitions occurring for centuries. Precision shooting competitions in Switzerland are highly valued, focusing on accuracy, consistency, and discipline. Precision shooting competitions often involve shooting at various distances and targets, testing the shooters' ability to maintain precision under different conditions. The sport requires not only technical skill but also mental focus and control. Swiss shooters are known for their dedication to training and the high standards they set for themselves in competitions. Precision shooting competencies in Switzerland reflect a blend of tradition, skill, and passion for the sport, making it a significant part of the country's Sporting identity.

4.2 Integration of Biofeedback in Precision Shooting

Bio-feedback postulates can be applied to Precision shooting in Switzerland by using real-time data on physiological processes to intensify sharpshooting skills. Swiss shooters can adjust their focus, control their breathing, and maintain optimal physical and mental states during shooting sessions by putting together biofeedback systems that provide information on factors like heart rate variability, muscle tension, and breathing patterns. This instant feedback allows shooters to refine their techniques, reduce errors, and improve performance consistency. The integration of biofeedback techniques in precision shooting training can lead to accelerated learning, fewer poorly performed shots, and enhanced shooting accuracy among Swiss shooters, contributing to the country's strong culture and tradition of sharp shooting excellence. Biofeedback is like having a direct line of communication with your body. It involves using technology to monitor and provide real-time feedback on physiological processes that are usually reflexive.

By receiving this feedback individual can learn to control processes consciously. When it comes to precision shooting biofeedback can be a game changer. Using bio-feedback devices, shooters can monitor their physiological responses while practicing shooting. For example, a shooter can track their

heart rate with where the ability to measure the level of stress or use electromyography (EMG) to measure muscle tension. This information can help shooters identify patterns and understand how their bodies react during a shooting session.

4.3 Effects of Biofeedback on Precision Shooting Competencies

The effect of biofeedback on precision shooting competencies in Switzerland has been extreme. Training with real-time biomechanical biofeedback has shown remarkable improvement in technique and performance among shooters. In a study where shooters were randomly assigned to bio-feedback and control groups, the bio-feedback group received individualized real-time hearable feedback on postural and barrel stabilities. Results revealed the technique of reducing postural and barrel stabilities toward triggering, leading to meaningful improvement in performance measures.

Additionally, post-training assessments demonstrated that the bio-feedback group exhibited greater long-term retention of refined shooting skills. This suggests that biofeedback can contribute to sustained precision, making it a valuable tool for both competitive and recreational shooters. The application of biofeedback techniques has revealed enhanced learning, reduced poorly performed shots, and improved shooting precision among Swiss shooters. By incorporating real-time bio-feedback applications into the training discipline, shooters can filter their techniques, optimize their stability, and enhance their overall shooting performance.

These advancements in sharp shooting skills highlight the effectiveness of biofeedback in elevating precision shooting competencies in Switzerland, aligning with the country's strong tradition of marksmanship excellence. Biofeedback has shown significant effects on precision shooting competencies. Studies have shown that biofeedback training, particularly heart rate Vari ability biofeedback, can enhance various aspects of performance in sports like shooting. Research has indicated that biofeedback training can improve concentration, response time, heart rate variability, respiration rate, and shooting performance in athletes.

It helps stressed athletes gain control over their physiological and psychological responses, leading to maximizing their performance. biofeedback aids in improving Motor skills, enhancing sports performance, and developing cognitive and motor tasks. the use of biofeedback, including neurofeedback and EEG training, has been linked to improved attention, and shooting performance in Elite shooters and athletes across different sports disciplines.

Table 1

		CORRELATIONS					
		BIOFEEDB ACK 1	BIOFEEDBA CK 2	BIOFEEDBA CK 3	PRECISION SHOOTING COMPETENCIES 1	PRECISION SHOOTING COMPETENCIES 2	PRECISION SHOOTING COMPETENCIES 3
BIOFEEDBACK 1	Pearson Correlation	1	.019	-.338*	.179	.144	.435**
	Sig. (2-tailed)		.898	.016	.215	.320	.002
	N	50	50	50	50	50	50
BIOFEEDBACK 2	Pearson Correlation	.019	1	-.036	.191	.166	-.165
	Sig. (2-tailed)	.898		.803	.185	.249	.251
	N	50	50	50	50	50	50
BIOFEEDBACK 3	Pearson Correlation	-.338*	-.036	1	-.317*	-.169	-.203
	Sig. (2-tailed)	.016	.803		.025	.242	.158
	N	50	50	50	50	50	50
PRECISION SHOOTING COMPETENCIE S 1	Pearson Correlation	.179	.191	-.317*	1	.386**	.267
	Sig. (2-tailed)	.215	.185	.025		.006	.061
	N	50	50	50	50	50	50
PRECISION SHOOTING COMPETENCIE S 2	Pearson Correlation	.144	.166	-.169	.386**	1	.016
	Sig. (2-tailed)	.320	.249	.242	.006		.912
	N	50	50	50	50	50	50
PRECISION SHOOTING COMPETENCIE S 3	Pearson Correlation	.435**	-.165	-.203	.267	.016	1
	Sig. (2-tailed)	.002	.251	.158	.061	.912	
	N	50	50	50	50	50	50

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

The above result describes that correlation coefficient analysis result represent that Biofeedback and Its Effects on Precision Shooting Competencies in Switzerland. Correlation coefficient shows Pearson correlation rate, significant values and number of dependent and independent observations. The Precision shooting competencies 1,2, and 3 these are all consider as dependent its shows correlation rates are 0.144, 0.166, -0.169, 0.386 shows a 38% correlation between them. its significant values is 32%, 24%, 6%, 16% significantly level between them.

5. Applications

A technique called biofeedback is used to track how the body reacts to different stimuli, usually with the intention of improving performance or encouraging self-regulation. Biofeedback can be used in precision shooting to assist shooters in becoming more focused, relaxed, and in control of their physiological reactions, such as heart rate and muscular tension. Precision shooting has a long history in Switzerland, where shooting activities are ingrained in the national identity. Athletes and coaches alike are interested in any technique that might enhance shooting abilities since precision and accuracy are crucial in shooting contests. Switzerland's precision shooting abilities would likely be the subject of research on the following important areas:

1. **Physiological Response:** Researching how biofeedback methods affect breathing patterns, muscular tenseness, and heart rate variability—physiological reactions that are pertinent to shooting. Through instantaneous input on these characteristics, shooters can acquire the ability to control their physiological condition for maximum efficiency.

2. **Focus and Attention:** Analyzing how biofeedback affects concentration and attentional focus when doing shooting activities. Shooters who receive biofeedback training may become more aware and have better control over their distractions, which will increase their accuracy and consistency.

3. **Tension Management:** Examining how biofeedback might help shooters regulate their tension and feel less anxious. Shooters may be better able to handle the strain of competition and do their best work under difficult circumstances if they learn to control their physiological reactions.

4. **Performance Enhancement:** Evaluating how biofeedback training affects shooting performance parameters including accuracy, precision, and consistency overall. Research can look at differences in performance before and after biofeedback intervention or compare the performance of shooters who receive biofeedback training to those who do not.

5. **Long-term Skill Acquisition:** Investigating if biofeedback training can help precision shooters acquire and retain long-term skills. One avenue for

research might be to see whether the increases in shooting competencies that are made after biofeedback training are long-lasting.

Table 2

MODEL	COEFFICIENTS			T	SIG.
	UNSTANDARDIZED COEFFICIENTS		STANDARDIZED COEFFICIENTS		
	B	Std. Error	Beta		
1 (Constant)	1.457	.408		3.567	.001
Biofeedback 1	.071	.131	.079	.544	.589
Biofeedback 2	.178	.137	.179	1.306	.198
Biofeedback 3	-.256	.131	-.284	-1.953	.057

a. Dependent Variable: Precision Shooting Competencies 1

The result represents that coefficient analysis results describe the unstandardized and standardized coefficient values of beta and standard error. The result also describes the t statistic and the significant value of an independent variable. Biofeedback 1 is the main independent variable result describes that the beta value is 0.071, the standard error value is 0.131, the t statistic rate is 0.544, showing a positive t value, and the significant value is 0.589, its present 58% a significant level with precision shooting competencies. The biofeedback 2 and 3 both are considering as independent variables according to the result its beta values related to unstandardized coefficient is 0.178, -0.256 the standard error rates is 0.137 and 0.131 respectively. According to the result, its t statistic value is 1.306 and -1.953 the significant value is 0.198 and 0.057, showing that there are 19% and 5% significant values between them.

Table 3

	TEST STATISTICS					
	BIOFE EDBA CK 1	BIOFEED BACK 2	BIOFEEDB ACK 3	PRECISION SHOOTING COMPETEN CIES 1	PRECISION SHOOTING COMPETEN CIES 2	PRECISION SHOOTING COMPETEN CIES 3
CHI-SQUARE	14.920 ^a	19.480 ^a	14.920 ^a	23.680 ^a	17.080 ^a	1.280 ^b
DF	2	2	2	2	2	1
ASYM P. SIG.	.001	.000	.001	.000	.000	.258

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 16.7.

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 25.0.

The above results show that test statistic analysis results demonstrate that the chi-square values of independent and dependent variables also present a significant rate. The biofeedback 1,2 and 3 shows that 14.920, 19.480 and 14.920 present positive chi-square rates between them. The precision shooting competencies 1,2 and 3 present chi-square values of 23.680, 17.080 and 1.280 respectively.

The result describes that the significant value of overall statistics is 0.000, 0.001 and 0.258, showing 100%, 1% and 25% significance levels between them. Furthermore, the high chi-square values associated with biofeedback measures suggest a strong dependence within those variables. This implies that fluctuations in one biofeedback component are likely to impact the others. Additional investigation could focus on identifying the key drivers of this interconnectedness.

Table 4

BAYESIAN ESTIMATES OF COEFFICIENTS						
PARAMETER	POSTERIOR			95% CREDIBLE INTERVAL		
	MODE	MEAN	VARIANCE	LOWER BOUND	UPPER BOUND	
BIOFEEDBACK 1 = STRONGLY AGREE	1.400	1.400	.013	1.173	1.627	
BIOFEEDBACK 1 = AGREE	1.381	1.381	.016	1.133	1.629	
BIOFEEDBACK 1 = NEUTRAL	2.000	2.000	.083	1.433	2.567	

a. Dependent Variable: Precision Shooting Competencies 1

b. Model: Biofeedback 1

c. Assume standard reference priors.

The result represents that Bayesian estimates of coefficients analysis of each parameter result represent that mode level, posterior mean value, variance rate, and 95% credible interval related to lower bound and upper bound. The biofeedback 1 =strongly agree result shows that the model rate is 1.400, the mean value is 1.4000, the variance rate is 0.013, the lower bound is 1.173 and the upper bound is 1.627, respectively.

Similarly, the biofeedback 1= agree parameter presents a value of 1.381, with a lower rate of 1.133 and an upper bound of 1.629, respectively. The last parameter is biofeedback 1 =neutral; it presents 1.433 and 2.567 credible intervals between them. according to the result its dependent variable is precision shooting competencies between them.

5.1 Control Chart

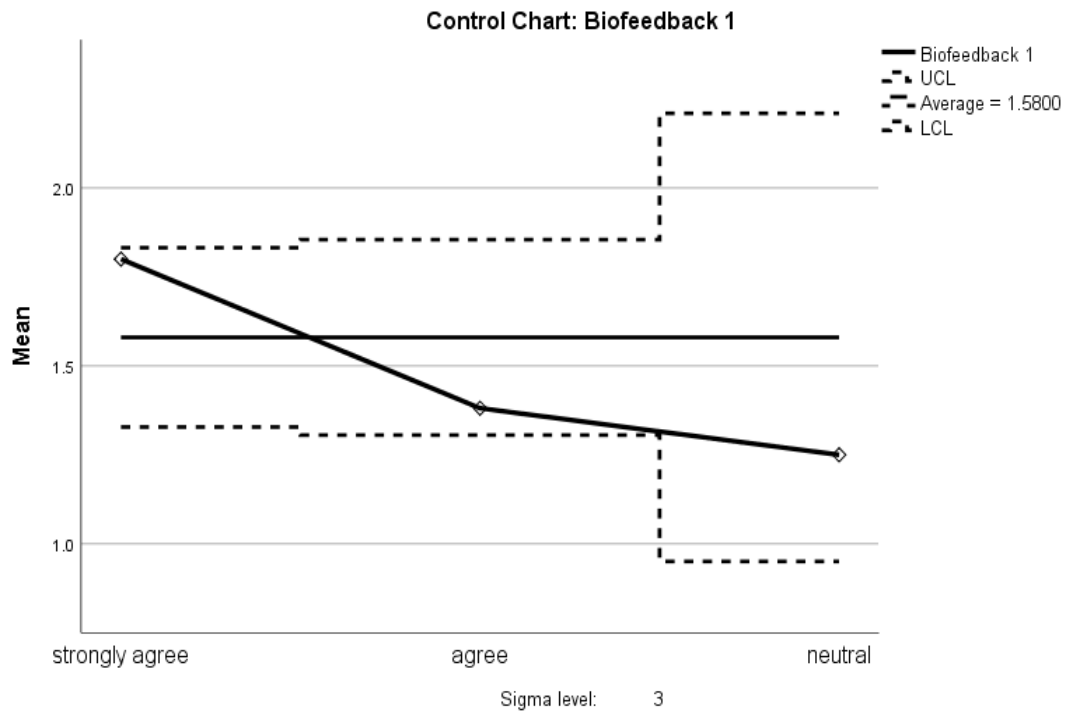


Figure 1

The graph presents a control chart between biofeedback and precision shooting competencies for measuring Biofeedback and Its Effects on Precision Shooting Competencies in Switzerland. The graph's vertical side shows mean values: 1.0, 1.5, and 2.0. The horizontal side presents a strongly agree, agree, and neutral level between them. The graph shows a control level related to precision shooting competencies and biofeedback.

Table 5

TOTAL VARIANCE EXPLAINED							
COMPONENT	INITIAL EIGENVALUES			EXTRACTION SUMS OF SQUARED LOADINGS			
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	2.010	33.506	33.506	2.010	33.506	33.506	
2	1.331	22.180	55.686	1.331	22.180	55.686	
3	.827	13.779	69.465				
4	.751	12.519	81.984				
5	.673	11.212	93.196				
6	.408	6.804	100.000				

Extraction Method: Principal Component Analysis.

The above result represents that total values and initial eigenvalues

included that % of variance cumulative % and that extraction sums of squared values related to the % of variance and % of cumulative of each component. The result shows total values are 2.010, 1.331, 0.827, 0.751, 0.673, 0.408. All of them show positive rates of variance. The % of variance rates of each component are 33.506, 22.180, 13.779, 12.519, 11.212, also that 6.804 shows positive variance rates. The % of variance is 33.506 and 22.180, respectively the cumulative % present is 33.506 and 55.686, respectively.

6. Conclusion

Considering the impact of biofeedback on Precision shooting competencies in Switzerland, it can be concluded that integrating biofeedback techniques into training can significantly enhance a shooter's performance. Using biofeedback to monitor and regulate physiological responses, Swiss shooters can improve their focus, reduce stress, and increase shooting accuracy and consistency. This approach helps shooters optimize their mind connection and contributes to the rich tradition of shooting in Switzerland by posting a culture of continuous improvement and excellence in precision shooting. In general, studies on biofeedback and its impact on Swiss precision shooting skills would be extremely beneficial to the fields of sports psychology and athlete performance enhancement. The research measures the Biofeedback and Its Effects on Precision Shooting Competencies in Switzerland. For this purpose, I used SPSS software and generated results including correlation coefficient, test statistic, chi-square and coefficient analysis results. Research also presented a control chart between them. Coaches and athletes may maximize performance results in competitive shooting sports by implementing more effective training regimens by knowing how to use biofeedback to improve shooting abilities.

In conclusion, there is a great deal of potential for improving athlete performance in shooting sports in Switzerland's investigation of biofeedback techniques in the context of precision shooting abilities. Biofeedback is a potent tool that helps shooters hone their abilities and perform more consistently and accurately because it gives them real-time feedback on physiological reactions, including heart rate, tense muscles, and attentional concentration. Important insights into the processes underpinning ideal shooting performance can be obtained by doing research on the impact of biofeedback on physiological responses, attention and focus, stress management, performance enhancement, and long-term skill learning. Overall research concluded that positive and significant effect between them. These discoveries can guide the creation of customized training plans that use biofeedback methods to maximize athlete readiness and performance in competitive shooting. Given Switzerland's long history and strong ties to the sport of precision shooting, it is especially pertinent to look at the possibilities of biofeedback in this setting. Swiss shooters may improve their performance, sharpen their abilities, and

maintain their well-deserved reputation in the precision shooting community by utilizing the advantages of biofeedback training. To summarize, the research conducted in Switzerland on the impact of biofeedback on precision shooting skills presents a promising prospect for furthering our comprehension of athlete performance optimization in shooting sports. This could have global ramifications for sports psychologists, coaches, and athletes.

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