SYSTEMATIC LITERATURE REVIEW: RESEARCH ON SELF-TALK, IMAGERY TRAINING, COMPETITIVE AXIETY OF ATHLETES USING VOS VIEWERS ON GOOGLE SCHOLAR DATABASE IN 2017-2024

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ABSTRACT

Self-talk, imagery training, and competitive anxiety training are psychological approaches in sport that aim to help athletes manage competitive anxiety through positive internal dialogue (self-talk), mental visualization of optimal performance (imagery training), and specific techniques to reduce emotional distress during competition (competitive anxiety training), thus supporting improved focus and overall athlete performance. This research uses a descriptive quantitative method with a bibliometrics approach. Research data used for journals or scientific articles with a range of years 2017-2024 sourced from the Scopus database and google schooler. The search for scientific articles was carried out using the Publish or Perish application with the keywords "Self-talk, imagery training, and competitive anxiety training" in the article title, category, abstract, keywords. The development map of the scientific publication model of Self-talk, imagery training, and competitive anxiety training was analyzed using the VOSViewer application. From the search results using the Publish or Perish application, with the maximum number of searches used, namely 1000 articles, there are 202 article publications in accordance with the keywords entered, then by filtering the type using article there are 59 papers written in the form of articles. Based on the results and discussion, it can be concluded that there has been an increase and decrease every year. Research on Self-talk, imagery training, and competitive anxiety training has increased and decreased every year, where the highest percentage of article decreases occurred in 2024, namely 0% of research conducted. This shows that the topic of Self-talk, imagery training, and competitive anxiety training needs to continue to be studied, given the importance of reducing the level of competitive anxiety of athletes to be able to improve athlete performance.words.

Keywords:self-talk, imagery training, competitive axiety atlet, vos viewers, bibliometrics

1. INTRODUCTION

Indonesian sports have developed quite rapidly, as seen from the achievements of the Indonesian state in several world championship events. The development, progress and success in achieving sporting achievements can be seen from the portrait of the journey of elite athletes in obtaining medals (gold, silver and bronze) during various multi or single events. Pencak silat, as one of the sports that has become Indonesia's cultural identity, has made a significant contribution to these achievements. In various international events, such as the SEA Games, Asian Games, and Pencak Silat World Championships, Indonesian athletes have successfully demonstrated their superiority by winning gold, silver, and bronze medals. This success not only reflects the technical abilities of the athletes, but also shows how the nation's cultural heritage can synergize with the spirit of modern sports competition to make Indonesia proud on the world stage.

Currently, the development of pencak silat in Indonesia is very rapid. This can be seen from the achievements made in various international multi-events, where pencak silat consistently contributes gold medals in every event. Pencak silat has

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also become the overall champion in the world championships in the last two years. In the world of modern sports, the demands and expectations of athletes are increasing. Athletes are not only required to have optimal physical strength, but also tough mental resilience to deal with intense competition as well as pressure from coaches, fans, and themselves (Weinberg & Gould, 2023). However, there is a challenge when the aspects that determine an athlete's victory in a match are not only physical, but also psychological factors that play an important role in success in each round (Winarko, 2023). One of the individual factors consistently found to influence athlete performance is competitive state anxiety. Several studies (Wafa Simaulfar & Jannah, 2023: Irawan 2021) reveal that many Pencak Silat athletes face anxiety problems, both during training and during competition, where this makes their performance not optimal. Competitive anxiety refers to thoughts that arise as a result of feelings of stress, which are largely caused by perceptions of the importance of the situation and uncertainty regarding the outcome (Apriyanto & Wardoyo, 2018). athletes. However, anxiety does not always have a negative impact. Within certain limits, feelings of anxiety are still needed so that athletes can perform optimally. Anxiety within normal limits acts as a warning system that provides a danger sign, so that athletes are better prepared for the upcoming situation (Apriyanto & Wardoyo, 2018). The important thing is to keep anxiety levels under control, not eliminate them completely. Without anxiety, athletes tend to feel no challenge in the tasks they face.

To achieve great achievements, there are several things that athletes must master. Physical condition is not the only support for the athlete's best performance. Psychological aspects are very important for the best performance of pencak silat athletes, this determines the victory [Rusdiyanto, 2019]. Achievement in sports depends on various factors that support each other. As mentioned by Tangkudung & Puspitorini (2012), the best achievements can be achieved when athlete coaching is focused on several key aspects, including physical condition, technical skills, tactical skills, athlete personality, and mental skills. The purpose of mental training is to assist athletes in controlling their thoughts, emotions, and behaviors more effectively as they perform in sporting competitions. Modern athletes are not only trained to master technical skills, but also taught to develop a resilient winning mentality through various psychological techniques (Weinberg & Gould, 2018).

From previous research, self-talk is one of the mental skills that can overcome anxiety. Self-talk is one of the mental training strategies often used by athletes to control emotions, increase motivation, and optimize performance in sports (Van Raalte & Vincent, 2017; Wafa Silmaufar & Jannah, 2023; Winarko, Phidal & Hastaning Sakti, 2023). In individual sports such as tennis, the use of self-talk can help athletes cope with emotional distress and improve performance consistency (Van Raalte et al., 2016). Serena Williams, one of the most famous tennis athletes, is known to often use self-talk to manage stress and maintain focus on the next point, especially after making a mistake (Weinberg & Gould, 20018). This proves that self-talk not only serves to maintain mental stability, but also helps athletes quickly recover from failures or mistakes during the game. In this context, self-talk plays an important role as a tool to help manage athletes' mental state. Therefore, good mental preparation is very important for a pencak silat athlete to be able to overcome distractions, such as anxiety, which can affect performance during competition.

There are several mental skills techniques that can be used to improve athlete performance and overcome anxiety. According to Hidayat, et.all (2023) self-talk strategies can be used alone or combined with other psychological skills training strategies. In addition to self-talk, in recent years imagery has also been studied to reduce anxiety in athletes (Indahwati, & Ristanto, 2016) Imagery can also be used to improve performance levels, focus, confidence, motivation, arousal regulation, relaxation, and enhance skill development (Warfield & Braun, 2023). In recent years, the combination of self-talk with imagery has been used to overcome anxiety in athletes in several sports (Fitria, 2018; Isar, Mohd Rashid & Aziz, 2022; Hidayat,

Yudiana, Hambali, Sultoni, Umit, & Singnoy, 2023). Although there is still little research in this regard, given the increasing level of competition in the global sports world, psychological strategies such as self-talk and imagery and their relationship with competitive anxiety are becoming increasingly important. Modern athletes are not only required to master technical skills, but are also trained to develop a winning mentality through various psychological approaches (Weinberg & Gould, 2007). The purpose of this study is to analyze the development of research on self talk and imagery training in overcoming competitive anxiety athletes so that athlete performance is more optimal. Therefore, research on this subject is very relevant and crucial to understand how mental aspects can provide a competitive advantage for athletes.

2. RESEARCH METODOLOGY

Illustration The method in this research is descriptive quantitative with a bibliometric approach, where data search is assisted by Publish or Perish software, while VosViewers to analyze it. Bibliometrics helps in studying and identifying patterns of material use and analyzing the development of a particular literature, especially for authorship, publication and use (Reitz, 2004). By using a bibliometric approach, an overview of journal quality, journal maturity, journal productivity and so on will be obtained regarding articles in journals (Saleh & Sumarni, 2016). The sample in this study was taken from the Scopus database as the source data for the last few years, namely the 2017-2024 period. In this case, using the publish or perish application with the keywords self talk, imagery and competitive anxiety athlete accessed on January 8, 2025, 200 research articles were found from google scholar and 2 research articles from scopus. Then then look for the relationship of imagery training with competitive anxiety athlete. The selection process of articles from both Scopus and Google scholar databases was systematic to ensure that only relevant and quality articles were included in the analysis. Each article from the initial search was manually evaluated by reviewing its abstract. This step was taken to ensure that the articles selected were appropriate to the topic and purpose of the study. In this way, the results of the analysis are expected to provide an accurate picture of the development of this topic in the context of sport.

3. RESULTS AND DISCUSSION

In From the search results using the Publish or Perish application, with the maximum number of searches used, namely 1000 articles, there are 202 published articles from Google Scholar and Scopus according to the keywords entered "Self-talk, imagery training, and competitive anxiety athlete", then by filtering the type using articles there are 58 papers written in the form of articles.

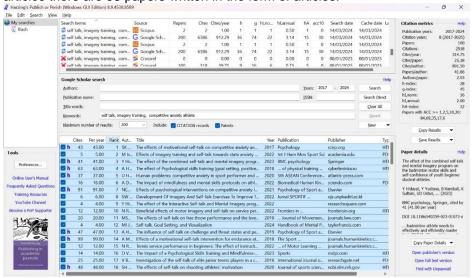


Figure 1. Publish Or Perish Search Result Display

Research on Self-talk, imagery training, and competitive anxiety athletes in the period 2017-2024 in the scopus and google scholar databases has fluctuated every year. In 2021 there were 7% who examined Self-talk, imagery training, and competitive anxiety as the smallest amount of data in 2024, namely 0%. In 2017 and 2022 as the highest number of publications regarding Self-talk, imagery training, and competitive anxiety athletes as many as 10 articles or 17% of the total data.

Table 1. Percentage of Number of Publications

Year of Publication	Number of Articles	Percentage
2017	10	17%
2018	9	16%
2019	8	14%
2020	7	12%
2021	5	7%
2022	10	17%
2023	9	16%
2024	0	0

Research on Self-talk, imagery training, and competitive anxiety athletes has increased and decreased every year, where the highest percentage of article decreases occurred in 2024, namely 0% of research conducted. This shows that the topic of Self-talk, imagery training, and competitive anxiety athlete needs to continue to be studied, given the importance of reducing the level of competitive anxiety athlete to be able to improve athlete performance. Especially in martial arts sports such as pencak silat.

No	Cites	Authors	Title	Year	Publication
1	128	H Kristjánsdóttir, AV Erlingsdóttir, G Sveinsson,	Psychological skills, mental toughness and anxiety in elite handball players	2018	Personality and Individual Differences Volume 134, 1 November 2018, Pages 125-130
2	83	A McCormick, C Meijen,	Effects of a motivational self-talk intervention for endurance athletes completing an ultramarathon	2018	The Sport Psychologist
3	78	JE Hagan, D Pollmann, T Schack	Elite athletes' in-event competitive anxiety responses and psychological skills usage under differing conditions	2017	Frontiers in psychology
4	78	A Hatzigeorgiadis, E Galanis	Self Talk Effectiveness and Attention	2017	Current opinion in psychology Elsevier

No	Cites	Authors	Title	Year	Publication
5	53	RG Cowden	On the mental toughness of self- aware athletes: Evidence from competitive tennis players	2017	South African Journal of Science
6	47	JL Van Raalte, A Vincent	Self-talk in sport and performance	2017	Oxford research encyclopedia of Psychology
7	40	SK Georgakaki, E Karakasidou	The effects of motivational self-talk on competitive anxiety and self- compassion: A brief training program among competitive swimmers	2017	Psychology
8	37	A Hase, J Hood, LJ Moore, P Freeman	The influence of self-talk on challenge and threat states and performance	2019	Psychology of Sport and Exercise
9	33	PA Davis, H Gustafsson, N Callow,	Written emotional disclosure can promote athletes' mental health and performance readiness during the COVID-19 pandemic	2020	Frontiers in Psychology
10	29	J Fritsch, D Jekauc, P Elsborg, AT Latinjak,	Self-talk and emotions in tennis players during competitive matches	2022	Journal of Applied Sport Psychology

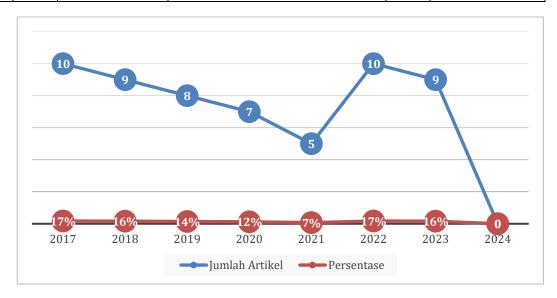


Figure 2. Graph of Number of Researches Examined

Table 2 contains the 10 studies with the most citations in the period 2017-2024, Table 2 shows that H Kristjánsdóttir, AV Erlingsdóttir, G Sveinsson, are the authors who have the highest number of citations, with a total of 128 citations, the article written by M. De Rond entitled Psychological skills, mental toughness and anxiety in elite handball players published in the journal Personality and Individual Differences Volume 134, November 1, 2018, Pages 125-130. For an explanation of articles

ranked 2 to 10, which were published in the 2018-2024 timeframe, can be seen in table 2 below.

Table 2. Research based on number of citations

The publication development map using the keywords Self-Talk, Imagery Training, and Competitive Anxiety Athlete in the VOSViewers application has several clusters of discussion items which can be seen in the following table.

Table 3. Table of Number of Clusters

Clusters	Items
Cluster 1(Red)	cognitive anxiety, collective sports, elite performance, gymnastic, heart rate variability, intercollegiate athlete, keyword:mental imagery, motivational, performance, physiological state, pew-performance, psycho-education, self-efficacy, shooting, somatic anxiety, sports achievement, thoughts during competitions, visualization
Cluster 2 (Green)	Athlete, athlete performance, brain quotient, martial arts, meta- analysis, perceive performance, psychological skills training, rapid-fire pistol athlete, rugby, sports sciences, sports, team sports, youth sport.
Cluster 3 (Dark Blue)	Attention, concentration, dual-theory, emotion, extraversion, mood, neuroticism, organic self talk, psychological intervention, running, self-talk mechanism, sport competition, strategic self talk.
Cluster 4 (Yellow)	Competitive performance, efficiency, elite athlete, emotion, motor imagery, narrative inquiry, parenting, qualitative research, self talk, service, service speed, tennis, thematic analysis
Cluster 5 (Purple)	Athletes, emotion regulation, injury anxiety, incelenmesi, mental training, psychological sport, psychological training, sport, thoughts, time perspective, valence
Cluster 6 (Gray)	Acceptance, anxiety, basketball shooting performance, coping strategy, equestrian, experience, futsal, intervention, interventions, mindfulness, mixed methods, psychological.
Cluster 7 (Light blue)	Applied sport psychology, athletic achievements, competitive anxiety, guided imagery, imagery ability, irrational beliefs, layered stimulus response training, perceived control, physical self-efficiency, psychological preparation, rebt, student-athletes.
Cluster 8 (Pink)	complementary approaches, definitions, meditation, mental skills, open-beginninged methods, performance enhancement, presuppositions, psychological assessment, questionnaire, sport psychology, systematic review, talent identification
Cluster 9 (Light Green)	Athletes, physiology, sports, automaticity, mental toughness, peak performance, positivity, relaxation, relaxation for health, toughness (personality trait)
Cluster 10 (Light Yellow)	Archery performance, cardiovascular responses, dart-throwing, demand resource evaluations, imagery, instructional self-talk, motivational self-talk, powerlifting, self talk, state anxiety
Cluster 11 (Light Purple)	Competition, imagery, individual sport, performance strategies, practice, routine, spinal cord injuries, sport performance, team sport
Cluster 12 (Dark Gray)	Badminton motor skill,mental imagery, motor learning, novice tennis player, psychological strategy, serve
Cluster 13 (Dark Blue)	Brazilian jiu jitsu, salivary cortisol, self confidence, sports combat, sports psychology.
Cluster 14 (Dark Red)	Culture, frequency, interpretation, psychological skill, training.
Cluster 15 (Dark Green)	Esports, gamers, imagery intervention, pst

Cluster 16 (Light Yellow)	College athlete, dispositional anxiety, recreational screen time, situational anxiety
Cluster 17 (Light Purple)	Gender, skill, sport type

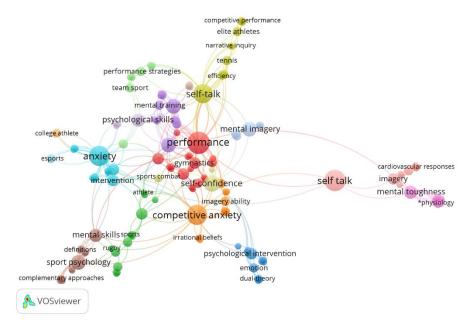


Figure 3. Visualization Self-Talk, Imagery Training, Dan Competitive Anxiety

From this figure it can be explained that the development of publications using the keywords self talk, imagery training and competitive anxiety has 17 clusters, of which Cluster 1 has a red color with a focus on discussion of performance, Cluster 2 has a green color with a focus on discussion of psychology, Cluster 3 has a blue color with a focus on discussion of psychological intervention, Cluster 4 which has a yellow color with a focus on self talk, and Cluster 5 has a purple color with a focus on psychological skills, Cluster 6 has a gray color with a focus on anxiety, Cluster 7 has a light blue color with a focus on competitive anxiety, Cluster 8 which has a pink color with a focus on sport psychology, Cluster 9 has a Light Green color with a focus on mental toughness, Cluster 10 has a Light Yellow color with a focus on imagery, Cluster 11 has a Light Purple color with a focus on individual sport, Cluster 12 has a Dark Gray color with a focus on mental imagery, Cluster 13 has a Dark Blue color with a focus on sports combat, Cluster 14 has a Dark Red color with a discussion focus on training, Cluster 15 has a Light Blue color with a discussion focus on competitive anxiety, Cluster 16 which has a Light Yellow color with a discussion focus on dispositional anxiety, Cluster 17 has a Light purple color with a discussion focus on sport type.

The trend of publications using keywords Self-Talk, Imagery Training, and Competitive Anxiety Athlete always changes every year which can be seen in the following table:

Table 4. Keyword density ranking

No	Keywords.
1	Self-Talk
2	Imagery Training
3	Competitive Anxiety Athlete

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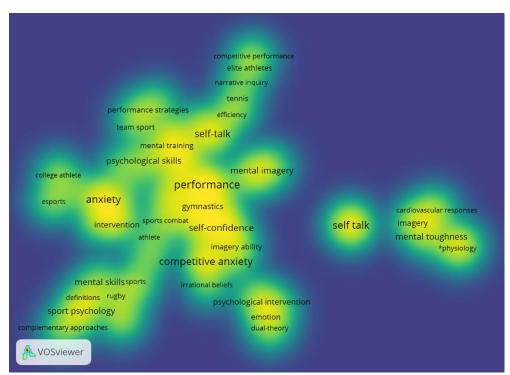


Figure 4. Density Visualization Self-Talk, Imagery Training, Dan Competitive Anxiety Athlete

From this figure, it can be explained that the use of the most keywords is the keyword performance, where the next words with a slightly thicker density are the keywords anxiety, mental imagery, psychological intervention and self talk, apart from these three keywords have the same density.

Arduino Uno sent to the server Arduino master central control of all existing programs.

4. CONCLUSION

Based on the results and discussion, it can be concluded that research on self-talk, imagery training, and competitive anxiety athletes has increased and decreased every year, where the highest percentage of article decreases occurred in 2024, namely 0% of research conducted. This shows that the topic of Self-talk, imagery training, and competitive anxiety athlete needs to continue to be studied, given the importance of reducing the level of competitive anxiety athletes to be able to improve athlete performance. Especially in martial arts sports such as pencak silat. In 2018, H Kristjánsdóttir, AV Erlingsdóttir, G Sveinsson, were the authors who had the highest number of citations, with a total of 128 citations, an article written by M. De Rond entitled Psychological skills, mental toughness and anxiety in elite handball players published in the journal Personality and Individual Differences. Based on bibliometric analysis using VOSViewers, data clusters on keywords Self-Talk, Imagery Training, and Competitive Anxiety Trainin are divided into 17 clusters, where keywords that are often used or become different trends every year.

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