Majalah Ilmiah Fisioterapi Indonesia
Indonesian Scientific Journal of Physiotherapy

Systematic Review
ISSN (Print): 2303-1921
ISSN (Online): 2722-0443
Volume 13, Number 3, Pages 460-466 (2025)
DOI: https://doi.org/10.24843/mifi.000000347

The Impact of Aggression on Athletic Performance: A Systematic Literature Review

Ni Luh Ayu Sasmitha[1*], Komang Sri Mirawati[2], Andi Maulana[3], Ni Kadek Ayu Suryani[4], Ni Made Swasti Wulanyani[5]

[1,2,3,4]Master's Program in Sports Physiology, Faculty of Medicine, Udayana University, Bali, Indonesia
[5]Department of Psychology, Faculty of Medicine, Udayana University, Bali, Indonesia

*Corresponding author:
E-mail: ayusasmitha15@gmail.com

Received 01 July 2025; Revised 06 July 2025; Accepted 08 July 2025; Published 01 September 2025.

Abstract

Introduction: Aggression in sports, whether as an emotional response or a strategic behavior, can impact athletic performance positively or negatively depending on context and the athlete's capacity for emotion regulation. Uncontrolled emotional aggression may disrupt concentration, impair teamwork, and elevate anxiety levels. Understanding aggression types, underlying mechanisms, and their performance effects is crucial for developing effective interventions.

Methods: A systematic literature review was conducted following PRISMA 2009 guidelines. Peer-reviewed studies published between 2020 and 2024 were retrieved from PubMed, Scopus, ScienceDirect, and Google Scholar. Inclusion criteria comprised empirical studies (quantitative or qualitative) examining the relationship between aggression and athletic performance in amateur or professional athletes, published in English or Indonesian. Five eligible studies were analyzed using narrative synthesis. The review protocol was not registered in PROSPERO.

Results: Findings indicate that aggression's impact on performance is context-dependent. Instrumental aggression, defined as goal-directed and regulated, may enhance performance in contact sports such as boxing or team-based competitions, where strategic aggression is functional. Conversely, unregulated emotional aggression is associated with performance decrements, particularly in non-contact sports requiring precision, focus, and emotional control. Intrinsic motivation demonstrated a more consistent and stronger association with performance outcomes than aggression.

Conclusion: Controlled aggression can be performance-enhancing in contact sports, while unregulated emotional aggression typically hinders performance, especially in precision-demanding sports. Integrating emotion regulation training and fostering intrinsic motivation into athlete development programs may optimize adaptive aggression. Limitations include the small number of studies and lack of formal methodological quality assessment.

Keywords

Aggression, Athletic Performance, Emotion Regulation, Intrinsic Motivation, Contact Sports

Introduction

Aggression is a significant psychological factor in sports that can influence athletic performance both individually and in team-based contexts. It is commonly defined as behavior intended to cause physical or verbal harm to others.[1] In the field of sport psychology, aggression is typically categorized into two main types: instrumental aggression, which is controlled and goal-directed (e.g., to win a match), and emotional aggression, which is impulsive and driven by anger.

While some argue that aggression may enhance athletic performance by increasing competitiveness, sport psychologists often contend that aggression, particularly when uncontrolled, is frequently linked to frustration and may hinder goal achievement.[2] Recent studies have shown that unregulated aggression tends to negatively impact athletic performance. Athletes with elevated levels of aggression are more likely to experience anxiety, reduced concentration, impaired teamwork, and an increased risk of conflict and injury.[1]

Athletic performance is influenced by a complex interplay of factors, including physical fitness, technical and tactical skills, and psychosocial elements.[4] Aggression does not occur in isolation but is shaped by numerous variables such as personality traits, social norms, sport type, and competition level. For example, Greitemeyer reported that dark personality traits, including psychopathy and Machiavellianism, are associated with heightened aggression in sports.[5] Similarly, Sofia and Cruz found that contact sports generally elicit higher levels of aggression compared to non-contact sports.[6]

Kostorz and Sas-Nowosielski observed that athletes practicing traditional martial arts such as aikido and karate demonstrated lower levels of aggression than those participating in combat sports like boxing and wrestling. This finding highlights the role of sport-specific values and philosophies in shaping how aggression is expressed.[7]

The relationship between aggression and athletic performance is not necessarily linear or uniformly positive. A study conducted in Pakistan by Bibi et al. found that aggression did not significantly contribute to enhanced performance, whereas motivation had a more substantial effect.[8] Likewise, Qureshi et al. reported that aggression among female volleyball players could impair performance, particularly under emotional pressure during competition.[9] Marwat et al. noted that although well-regulated aggression may increase courage and focus, uncontrolled aggression generally impairs performance.[10]

As competitive pressures in modern sports continue to intensify, it becomes increasingly important to understand the dual nature of aggression and its impact on athletic performance. While controlled and goal-oriented aggression may enhance competitiveness—especially in contact sports—emotional and unregulated aggression can disrupt focus, undermine team cohesion, and elevate injury risk. Moreover, competitive stress can act as a trigger for aggressive responses, potentially compromising both physical performance and mental well-being.

Therefore, effective management of aggression is essential to optimize performance and promote a healthy, sportsmanlike atmosphere. Aggressive tendencies also vary by sport type, gender, and cultural background, underscoring the importance of personalized and context-sensitive approaches to athlete training and development.

Although numerous studies have explored the association between aggression and athletic performance, findings remain inconsistent due to variability in sport contexts, individual characteristics, and competitive environments. To date, however, no comprehensive systematic synthesis has thoroughly examined how different forms of aggression influence performance across a broad range of sports disciplines.

In light of these discrepancies, this systematic review aims to synthesize and clarify the relationship between aggression and athletic performance more comprehensively. The objective is to critically examine literature that evaluates the effects of both controlled (instrumental) and uncontrolled (emotional) aggression on performance outcomes—whether individual or team-based—across various sports, using observational or experimental studies published since 2020 and without requiring an explicit comparator.

Methods

This study adopted a systematic literature review design, following the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The objective was to synthesize empirical evidence on the influence of aggression on athletic performance, drawing from peer-reviewed articles published since 2020. A comprehensive online literature search was conducted in May 2025 using four internationally recognized databases: PubMed, ScienceDirect, Scopus, and Google Scholar. Only articles published from 2020 onward, written in English or Indonesian, and appearing in peer-reviewed journals were included.

The search strategy utilized the following keywords: ("aggression"[Title/Abstract] OR "agresi"[Title/Abstract]) AND ("sport performance"[Title/Abstract] OR "performa olahraga"[Title/Abstract] OR "athlete"[Title/Abstract]). The unit of analysis was the article itself, rather than individual study participants. Only full-text articles presenting verifiable empirical data were considered eligible. This review was not registered in any protocol registry, such as PROSPERO.

The inclusion criteria were as follows: (1) articles published in 2020 or later, (2) studies explicitly examining psychological or behavioral aggression in relation to athletic performance, (3) research designs categorized as quantitative, qualitative, or empirical reviews, (4) articles written in English or Indonesian, and (5) full-text availability. Studies were excluded if they did not directly explore the relationship between aggression and performance, were not available in full-text, or were published prior to 2020.

The PICOS framework was applied to structure the eligibility criteria: Participants (P) were athletes from various sports disciplines; Intervention or Exposure (I) was aggression, including verbal, physical, emotional, or instrumental forms; Comparison (C) was not explicitly defined; Outcome (O) was athletic performance; and Study Design (S) included quantitative, qualitative, and empirical review methodologies.

The article selection process followed the four stages of the PRISMA flow diagram: identification, screening, eligibility, and inclusion. During the identification stage, 1,360 articles were retrieved. In the screening phase, articles were filtered based on publication year, topic relevance (aggression and athletic performance), and full-text availability, yielding eight potentially relevant studies. After the removal of three duplicates, eight articles proceeded to the eligibility stage. These were subjected to detailed abstract and full-text review to verify whether they examined specific forms of aggression (verbal, physical, emotional, or instrumental) in relation to sports performance. Ultimately, five articles met all inclusion criteria and were retained for final analysis.

Data extraction was performed independently by two reviewers. Any discrepancies were resolved through discussion and consensus. Extracted data included article title, authors, year of publication, research design, characteristics of study participants, type of aggression assessed, performance indicators, and main findings. These data were then compiled into a synthesis table to facilitate pattern identification and cross-study comparison.

Due to the methodological heterogeneity of the included studies and the variability in measurement tools, a narrative synthesis approach was employed. Statistical analyses such as risk ratios or mean differences were not applied. The synthesis focused on identifying patterns in the relationship between aggression and athletic performance, determining which types of aggression exerted the greatest influence, assessing the use of psychological interventions, and deriving practical implications for aggression management in competitive sports contexts.

This review did not conduct a formal risk of bias assessment for individual studies. Additionally, inter-study biases, such as publication bias or selective reporting, were not systematically evaluated due to the limited number of included articles. Subgroup analyses or meta-regression were not performed, given the small sample size and methodological diversity across the included studies.

Results

This systematic review analyzed five eligible studies that examined the relationship between aggression and athletic performance. The findings revealed diverse outcomes, shaped by sport type, gender, and psychological factors (Table 1). Overall, aggression was not consistently linked with enhanced performance. Some studies reported no significant effects, while others indicated that functional aggression could support competitive outcomes under specific conditions.

Table 1. Summary of Included Studies

No	Title & Author(s)	Year	Study Design	Sport Type	Sample	Aggression Focus	Relationship with Performance	Key Findings
1	A Comparative Analysis of Aggression among Male and Female Athletes (Naheed et al.)	2025	Quantitative, survey, independent t-test	Volleyball	200 male and female athletes (15–21 years), Pakistan	Physical, verbal aggression, anger, hostility	Gender-based comparison	No significant differences ($p > 0.05$); similar aggression levels across genders
2	Effects of Aggression and Motivation on the Sports Performance of Athletes (Bibi et al.)	2023	Quantitative, survey, logistic regression	Various sports (unspecified)	300 young athletes (16–22 years)	Emotional aggression and motivation	Impact on performance	Aggression not significant ($p = 0.907$); motivation significant ($p = 0.001$); focus recommended on motivation
3	Aggression Dimensions Among Athletes Practising Martial Arts and Combat Sports (Kostorz and Sas-Nowosielski)	2021	Quantitative, BPAQ, parametric analysis	Martial arts and combat sports	219 male and female athletes	Physical/verbal aggression, anger, hostility	Comparison by sport and gender	Martial arts athletes less aggressive than combat sport athletes; women < men; training experience not significant
4	Impact of Aggression on Sports Performance of Volleyball Female Players (Qureshi et al.)	2020	Descriptive, survey, linear regression	Volleyball	52 female athletes (16–22 years)	Total aggression score	Association with performance	Significant correlation ($r = 0.587$, $p < 0.05$); $R^2 = 0.483$; functional aggression may improve performance
5	Effects of Aggression and Violence in Sports, Its Effects on Sports Performance (Marwat et al.)	2022	Narrative review, theoretical analysis	Multiple sports	Not specified	Aggression and violence in sport	Ethical and social implications	Uncontrolled aggression reduces sportsmanship, increases injury risk, and harms the sport's image; recommends ethical education and strong officiating

Naheed et al. explored gender-based differences in aggression among male and female volleyball athletes.[11] Their results indicated no statistically significant differences in physical aggression, verbal aggression, anger, or hostility between genders ($p > 0.05$), suggesting that gender may not be a key determinant of aggression in this context.

Bibi et al. assessed the effects of aggression and motivation on the performance of young athletes.[8] While motivation demonstrated a significant influence on performance ($p = 0.001$), aggression did not ($p = 0.907$). These findings underscore the importance of prioritizing motivation over aggression control in athlete development strategies.

Kostorz and Sas-Nowosielski conducted a comparative analysis between martial arts and combat sports athletes.[7] Their study revealed that martial arts practitioners exhibited lower levels of aggression than combat sports athletes. Additionally, female athletes reported lower aggression levels than males, and training experience was not significantly associated with aggression levels.

In contrast, Qureshi et al. reported a significant positive relationship between aggression and performance among female volleyball players.[9] The correlation coefficient was $r = 0.587$ ($p < 0.05$), and the regression analysis indicated $R^2 = 0.483$, meaning that approximately 48.3% of performance variance could be explained by aggression. These results suggest that when appropriately managed, functional aggression may enhance performance, particularly under emotionally intense competitive conditions.

Marwat et al. provided a theoretical review examining the social and ethical dimensions of aggression and violence in sport.[10] The authors emphasized that uncontrolled aggression undermines sportsmanship, increases the risk of injury, and tarnishes the public image of sports. They recommended promoting ethical education, responsible media coverage, and strong officiating to mitigate these negative effects.

Three additional articles were excluded at the final stage of selection because they did not explicitly examine the relationship between aggression and performance, or they addressed aggression in a broader social context without incorporating performance-related variables.

In summary, the reviewed evidence suggests that aggression does not universally enhance athletic performance. Its impact appears to be highly context-dependent, influenced by sport type, aggression form (functional vs. emotional), and individual athlete characteristics.

Discussion

This discussion addresses the central question of this systematic review: how does aggression influence athletic performance, and how do sport type, form of aggression, and individual athlete characteristics moderate this relationship? The findings are interpreted through the lenses of emotion regulation theory and the social-cognitive theory of aggression, both of which posit that aggression can be either functional or dysfunctional depending on how emotional responses are managed in competitive contexts.

Aggression in sports is a multifaceted phenomenon shaped by the nature of the sport, athlete personality traits, forms of aggression (instrumental vs emotional), and the athlete's ability to regulate emotions. Previous studies and meta-analyses suggest that instrumental aggression—which is goal-directed and regulated—can enhance performance, particularly in contact sports such as martial arts or team competitions, where it may serve as a legitimate competitive strategy.[12] In contrast, unmanaged emotional aggression often disrupts mental stability, concentration, and emotional control, negatively affecting performance in precision-based disciplines such as gymnastics, archery, or badminton.[13–15]

Evidence suggests that well-regulated aggression can improve performance in physical contact sports. Athletes are frequently more motivated when aggression is instrumental and directed toward achieving competitive goals. In such contexts, aggression may contribute to greater endurance, courage, and emotional resilience. For example, martial artists have been shown to exhibit lower levels of aggression than combat sport athletes such as boxers or wrestlers, potentially due to the philosophical principles underlying martial arts practice.[16] In contrast, sports like boxing often incorporate aggression as a strategic component to secure victory.[17]

Controlled aggression may also help athletes enhance focus and resilience. In sports like boxing, where mental toughness is critical, aggression may improve reaction time and facilitate strategic decision-making. However, the role of coaches and sport psychologists is essential in ensuring that aggression remains functional and does not escalate into destructive behaviors that increase anxiety or the risk of injury.

In contact sports, aggression is frequently perceived as a legitimate component of performance. Maharani and Nurcahyo found that athletes in contact sports tend to exhibit higher levels of aggression, viewing it as a tool for achieving competitive success.[18] Similarly, Manalu et al. emphasized that high-stakes disciplines such as wrestling and boxing often foster aggression as a survival mechanism and a winning strategy.[19] Nonetheless, as Marwat et al. have demonstrated, unregulated aggression can undermine performance, increase injury risk, and erode sportsmanship.[10]

Meta-analytic studies indicate that short-term interventions involving non-contact sports (less than six months) are more effective in reducing aggression among children and adolescents than longer-duration programs.[20–21] Yang et al. further noted that non-contact sports more effectively reduce aggressive behavior in youth compared to contact sports.[22]

In non-contact sports such as badminton, table tennis, and archery, poorly regulated aggression can disrupt psychological composure and impair performance.[21],[24] Excessive emotional aggression can elevate anxiety levels, reduce concentration, and result in technical execution errors—all of which are detrimental to athletic outcomes.

Psychosocial factors also mediate the relationship between aggression and performance. Traits associated with the "dark triad"—psychopathy, Machiavellianism, and narcissism—are significantly correlated with heightened aggression in competitive contexts.[23] Marsha and Wijaya found that, under competitive pressure, aggression in female athletes was positively associated with performance, suggesting that aggression can play an adaptive role if well managed.[24] Aggression may also harm team dynamics, particularly in non-contact team sports. For example, in volleyball, interpersonal conflict stemming from aggression can disrupt team cohesion and negatively affect match outcomes.[26]

From an emotion regulation perspective, an athlete's capacity to identify, interpret, and regulate emotional responses under pressure plays a central role in managing aggression.[27] Stanković et al. found that poorly managed stress exacerbates aggressive behavior and diminishes performance. Accordingly, emotion regulation strategies—such as biofeedback, progressive muscle relaxation (PMR), and mindfulness—are highly recommended for athletes in high-stress environments.[28–30]

These techniques can be further supported by cognitive approaches, including Cognitive Behavioral Therapy (CBT), which helps athletes reframe irrational beliefs that fuel aggression. CBT enhances emotional control and facilitates the transformation of aggression into constructive competitive energy.

Recent studies also highlight the role of implicit aggression—subconscious or less overt forms of aggression—in martial arts performance. When managed adaptively, implicit aggression may enhance focus and strategic intent.[33],[34] This finding underscores the need to consider subconscious psychological processes in the design of athletic training programs.

Educational and sport-based emotional interventions, such as judo instruction, have also been shown to reduce verbal aggression and improve emotional intelligence among adolescents.[35] Harwood-Gross et al. concluded that martial arts may function as therapeutic modalities for managing aggression in children and adolescents.[36]

From a theoretical perspective, these findings contribute to a deeper understanding of how aggression control and emotion regulation affect not only competitive performance, but also mental readiness, team collaboration, and decision-making. Practically, they advocate for transdisciplinary, psychophysiological approaches to athlete development. Physiotherapists, as key members of the multidisciplinary sports team, can contribute significantly to

aggression and stress management through relaxation training, biofeedback interventions, and education on physiological signals of aggression.

Overall, the findings—supported by both meta-analyses and intervention studies—demonstrate that adaptively managed aggression is critical, especially in contact sports. In contrast, emotional aggression consistently impairs performance in non-contact sports, as indicated by cross-sectional and experimental studies. These insights are of practical value to coaches, sport psychologists, and physiotherapists in designing holistic athlete training and development programs.

Nevertheless, this review is subject to several limitations. At the study level, most of the included studies used cross-sectional designs, limiting the ability to draw causal inferences between aggression and performance. At the outcome level, there was considerable variation in the instruments used to measure aggression, ranging from self-report questionnaires to implicit assessment tools. This methodological heterogeneity limited comparability and introduced potential inconsistencies in interpretation.

At the review level, the diversity of sport types, participant characteristics, and measurement techniques reduced the generalizability of the findings. Additionally, the potential for publication bias must be acknowledged, as most studies were conducted in specific sports or high-income countries, possibly limiting the relevance of the findings to broader or underrepresented athletic populations. Moreover, the reliance on self-report instruments in several studies may have introduced perceptual bias, affecting the objectivity of the data.

In practical terms, this review underscores the importance of integrating aggression management—particularly emotion and stress regulation—into comprehensive training programs. Coaches, psychologists, and physiotherapists should work collaboratively to develop tailored interventions aligned with the demands of the sport and the psychological profiles of athletes.

These findings reinforce the need for integrated approaches that combine physical conditioning, psychological development, and emotional education. Future research should incorporate longitudinal designs to explore the long-term effects of aggression on performance and include qualitative methods to capture athletes' lived experiences of aggression and emotional control across diverse cultural settings.

Conclusion

The findings of this review highlight the complex impact of aggression on athletic performance, which varies depending on the type of aggression (instrumental vs emotional), the nature of the sport (contact vs non-contact), and the athlete's ability to regulate emotions. Instrumental and controlled aggression has been shown to enhance performance, particularly in contact sports such as martial arts or team games, where aggression is often part of a legitimate competitive strategy. In contrast, unmanaged emotional aggression tends to hinder performance, especially in non-contact sports that require high levels of concentration, mental composure, and precision.

Compared to aggression, intrinsic motivation has consistently emerged as a more reliable factor in promoting optimal athletic performance. This supports prior literature suggesting that aggression is neither the sole nor primary driver of athletic success. Instead, aggression must be managed adaptively to support motivation and mental readiness. These findings align with meta-analytic and experimental studies indicating that while controlled aggression may play a positive role in contact sports, it is generally maladaptive in non-contact sports.

From a practical standpoint, this review underscores the importance of emotional regulation and stress management training in athlete development programs. Coaches and sport psychologists are advised to incorporate emotional regulation strategies such as progressive muscle relaxation, mindfulness, and cognitive training into athlete development protocols to foster adaptive and functional forms of aggression suited to the demands of both contact and non-contact sports.

Future research should further explore the influence of aggression in relation to cultural context, gender differences, and the role of implicit aggression in competitive performance. Longitudinal and qualitative studies are also recommended to deepen understanding of the long-term effects of aggression management strategies on athletic performance across diverse sports disciplines.

Author Contribution

Ni Luh Ayu Sasmitha: conceptualization, systematic review design, literature search, data extraction, manuscript drafting.
Komang Sri Mirawati: data analysis, narrative synthesis, manuscript editing.
Andi Maulana: methodological guidance, interpretation of results, manuscript review.
Ni Kadek Ayu Suryani: validation of data, supervision, critical revision of manuscript.
Ni Made Swasti Wulanyani: psychological expertise, interpretation of findings, manuscript review.
All authors have read and approved the final version of the manuscript.

Acknowledgments

The authors would like to thank the Faculty of Medicine, Udayana University, and the Physiotherapy Study Program for their support in conducting this systematic review. We also appreciate the contribution of all authors of the studies included in this review for providing valuable data and insights.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to this study.

Funding Sources

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethics Statement

This study is a systematic literature review of previously published research and did not involve direct participation of human subjects; therefore, formal ethical approval was not required. All included studies were conducted in accordance with the respective institutional ethical standards.

References

1. Newman TJ, Magier E, Kimiecik C, Burns M. The relationship between youth sport participation and aggressive and violent behaviors: A scoping review of the literature. J Soc Social Work Res. 2021 Jun 1;12(2):249–68.
2. Khan A, Ullah H, Iftikhar S. Gender differences and aggression: a comparative study of young and adult athletes. J Soc Res Dev. 2021 Jun 30;2(1):49–53.
3. Fortier K, Parent S, Lessard G. Child maltreatment in sport: smashing the wall of silence: a narrative review of physical, sexual, psychological abuses and neglect. Br J Sports Med. 2020 Jan 1;54(1):4.
4. Kumar S, Devi G. Sports performance and mental health of athletes. Sports Sci Health Adv. 2023 Jul 30;1(1):46–9.
5. Greitemeyer T. The dark side of sports: personality, values, and athletic aggression. Acta Psychol (Amst). 2022 Mar 1;223:103500.
6. Sofia R, Cruz JFA. Unveiling anger and aggression in sports: the effects of type of sport, competitive category and success level. Rev Psicol Deporte. 2017;26(2):21–8.
7. Kostorz K, Sas-Nowosielski K. Aggression dimensions among athletes practising martial arts and combat sports. Front Psychol. 2021 Jul 9;12:696943.
8. Bibi Z, Mustafa G, Anwar H, Mehreen S. Effects of aggression and motivation on the sports performance of athletes. Qlantic J Soc Sci Hum. 2023 Dec 30;4(4):220–9.
9. Qureshi BA, Jabeen A. Impact of aggression on the sports performance of volleyball female players (a case study of district Sargodha). Webology. 2020;17(2):1067–73.
10. Khan Marwat M, Mehmood K. Aggression and violence in sports, its effects on sports performance. J Soc Sci Hum. 2020;18(1):1–7.
11. Naheed I, Farah H, Hussain A, Akthar S. A comparative analysis of aggression among male and female athletes and its impact on sports performance in volleyball at college level. Res Consort Arch. 2025;3(1):442–51.
12. Predoiu R, Piotrowski A, Stan EA, Ciolacu MV, Bitang A, Croitoru D, et al. Explicit and indirect, latency-based measure of aggression in striking combat sports. Front Psychol. 2024;15:11348045.
13. Haslinda A, Tetteng B, Nur Hidayat Nurdin M. Kematangan emosi dan perilaku agresi pada remaja. PESHUM: J Pendidik Sos dan Humaniora. 2022;1(5):547–53.
14. Giles GE, Horner CA, Anderson E, Elliott GM, Brunyé TT. When anger motivates: approach states selectively influence running performance. Front Psychol. 2020 Aug 5;11:1791.
15. Janelle C, Fawver B, Beatty G, Tenenbaum G, Eklund R. Emotion and sport performance. In: Tenenbaum G, Eklund RC, editors. Handbook of sport psychology. 4th ed. New York: Wiley; 2020. p. 254–98.
16. Pradana D, Yulisatria G, Suhariyanti M, Hikmah N, Helmi B. Mengupas agresivitas atlet remaja olahraga bela diri: psikologi dan dampaknya. J Ilm STOK Bina Guna Medan. 2025;13(1):133–41.
17. Mahardika GP, Sitompul SR, Santi AUP, Saleh M, Burhana M, Sidiq S. Sosialisasi dampak kerusakan yang ditimbulkan steroid untuk fitnes mania. J Bina Pengabdian Masy. 2024;4(2):328–38.
18. Maharani NPSA, Nurcahyo FA. Regulasi emosi pada atlet: sebuah studi literatur. Bajra: J Keolahragaan. 2024;3(2):46–58.
19. Manalu N, Saragih M, Turnip D, Sinabutar P, Sirumapea F, Sirait A, et al. Pengaruh doping terhadap performa atlet dan dampak dalam dunia olahraga. J Ilm Psikol Kesehat. 2025;1(4):365–7.
20. Stansfield R. Teen involvement in sports and risky behaviour: a cross-national and gendered analysis. Br J Criminol. 2017 Jan 1;57(1):172–93.
21. Méndez I, Ruiz-Esteban C, Ortega E. Impact of the physical activity on bullying. Front Psychol. 2019;10:1730.
22. Yang Y, Zhu H, Chu K, Zheng Y, Zhu F. Effects of sports intervention on aggression in children and adolescents: a systematic review and meta-analysis. PeerJ. 2023 Jun 13;11:e15275.
23. Maharani NPSSA, Nurcahyo FA. Regulasi emosi pada atlet: sebuah studi literatur. Bajra: Jurnal Keolahragaan. 2024;3(2):46–58.
24. Ratih GRPHG, Herdinata P, Saparwati MSSM, Aprianti NIANI. Sport hypnosis: ego state dalam mereduksi anxiety atlet Tae Kwon Do (studi kasus pada atlet Ppopd Tae Kwon Do Kota Salatiga). Jurnal Inovasi Penelitian. 2022;2(12):3995–4004.
25. Marsha A, Wijaya FJM. Analisis tingkat kecemasan berlatih di masa pandemi covid-19 pada atlet Rugby Kalimantan Timur. Jurnal Prestasi Olahraga. 2021;4(5):113–118.
26. Pasa WN, Bahar A, Mayasari NR, Dini CY, Pratama SA, Wahjuni ES. Hubungan asupan zat besi dan kadar hemoglobin dengan VO2max atlet basket dan voli wanita Unesa. Jurnal Gizi Kerja dan Produktivitas. 2024;5(1):174–184.
27. Wijaya OGM, Meiliana M, Lestari YN. Pentingnya pengetahuan gizi untuk asupan makan yang optimal pada atlet sepak bola. Nutrizione: Nutrition Research and Development Journal. 2021;1(2):22–33.
28. Kostorz K, Sas-Nowosielski K. Aggression dimensions among athletes practising martial arts and combat sports. Front Psychol. 2021;12:696943.
29. Stanković N, Todorović D, Milošević N, Mitrović M, Stojiljković N. Aggressiveness in judokas and team athletes: predictive value of personality traits, emotional intelligence and self-efficacy. Front Psychol. 2022;12:824123.
30. Lafuente JC, Zubiaur M, Gutiérrez-García C. Effects of martial arts and combat sports training on anger and aggression: a systematic review. Aggress Viol Behav. 2021;58:101611.
31. Daignault I, Deslauriers-Varin N, Parent S. Profiles of teenage athletes' exposure to violence in sport: an analysis of their sport practice, athletic behaviors, and mental health. J Interpers Violence. 2023;38(11–12):7754–7779.
32. Olajedo EM. Relaxation techniques on athletes' performance in sports: an overview. J Capital Dev Behav Sci. 2021;9(2):44–63.

33. Greydanus DE, Ergun-Longmire B, Cabral MD, Patel DR, Dickson CA. Psychosocial aspects of sports medicine in pediatric athletes: current concepts in the 21st century. Dis Mon. 2023;69(8):101482.
34. Abdelkefi I, Jarraya S. The effectiveness of progressive muscle-relaxation techniques in improving affective well-being among female athletes during menstruation: a randomized controlled study. The Sport Psychologist. 2024;1(aop):1–11.
35. Muhammad H. Gender differences and aggression: a comparative study of college and university sport players. PUTAJ – Humanities and Social Sciences. 2019;26(2):1–13.
36. Khan A, Ullah H, Iftikhar S. Gender differences and aggression: a comparative study of young and adult athletes. J Soc Res Dev. 2021;2(1):49–53.
37. Predoiu R, Makarowski R, Görner K, Predoiu A, Boe O, Ciolacu M, et al. Aggression in martial arts coaches and sports performance with the COVID-19 pandemic in the background – a dual processing analysis. Arch Budo. 2022;18:23–36.
38. Ortiz-Franco M, Zurita-Ortega F, Melguizo-Ibáñez E, González-Valero G, Lindell-Postigo D, Ubago-Jiménez JL. Violent behaviour and emotional intelligence in physical education: the effects of an intervention programme. Eur J Investig Health Psychol Educ. 2024;14(7):1881–1889.
39. Harwood-Gross A, Lambez B, Feldman R, Zagoory-Sharon O, Rassovsky Y. The effect of martial arts training on cognitive and psychological functions in at-risk youths. Front Pediatr. 2021;9:1–10.
40. Vega J, Cabello R, Megías Robles A, Gómez-Leal R, Fernández-Berrocal P. Emotional intelligence and aggressive behaviors in adolescents: a systematic review and meta-analysis. Trauma Violence Abuse. 2021;23:1524838021991296.
41. Pop RM, Grosu E, Zadic A. A systematic review of goal setting interventions to improve sports performance. Stud Univ Babes-Bolyai Educ Art Gymn. 2021;66:35–50.