



Contents lists available at Journal Global Econedu

**Journal of Educational and Learning Studies**

ISSN: 2655-2760 (Print) ISSN: 2655-2779 (Electronic)

Journal homepage: <http://jurnal.globeconedu.org/index.php/jels>



## Psychological outcomes of martial arts and combat sports participation in youth: a systematic review

Juanda Putra<sup>\*1</sup>, Gemi Candra<sup>2</sup>

<sup>1</sup> Universitas Negeri Padang

<sup>2</sup> SD NEGERI 047/XI KOTO BARU

### Article Info

#### *Article history:*

Received Oct 15<sup>th</sup>, 2025

Revised Nov 20<sup>th</sup>, 2025

Accepted Des 26<sup>th</sup>, 2025

#### *Keyword:*

Martial arts,  
Combat sports,  
Adolescent mental health,  
Psychological resilience,  
Systematic literature review

### ABSTRACT

The psychological well-being of children, adolescents, and young individuals has declined substantially over the past decade, highlighting the need for accessible, low-stigma interventions in schools and community settings. Martial arts and combat sports may support youth mental health through structured physical activity, self-control, moral development, and social interaction. This systematic literature review aimed to synthesise evidence on the psychological effects of martial arts participation among young individuals. Following PRISMA 2020 guidelines, a systematic search of the Scopus database identified 454 records, with 18 studies ultimately included after screening and eligibility assessment. The included studies employed diverse designs, including randomised and quasi-experimental trials, cross-sectional surveys, qualitative studies, and comparative approaches across ten countries. Overall, the findings indicated positive effects on self-confidence and self-esteem, psychological resilience, emotional regulation, and reductions in aggression. However, outcomes varied according to program delivery, dosage, pedagogy, instructor relationships, and program philosophy. The review highlights martial arts as a potentially valuable component of integrated physical, psychological, and social approaches to youth mental health, while emphasising the need for larger, adequately powered studies using standardised psychological outcome measures.



© 2025 The Authors. Published by Global Econedu.

This is an open access article under the CC BY-NC-SA license  
(<https://creativecommons.org/licenses/by-nc-sa/4.0>)

### *Corresponding Author:*

Juanda Putra,  
Universitas Negeri Padang  
Email: [juandaputra@fik.unp.ac.id](mailto:juandaputra@fik.unp.ac.id)

## Introduction

Mental health has become one of the defining public-health challenges of the twenty-first century, and its onset is concentrated in the developmental window of childhood and adolescence. Global estimates indicate that the majority of lifetime mental disorders emerge before early adulthood, a period characterised by rapid neurobiological, emotional, and social change. Physical activity is now widely recognised as a modifiable determinant of positive mental health among young people, with structured leisure-time activity associated with improved mood, self-concept, and stress regulation (Lenze et al., 2025; Wang et al., 2021; Du et al., 2022). Within this landscape, sport-based interventions have attracted growing attention because they reach populations that formal clinical services often fail to engage (Rose-Clarke et al., 2023). Understanding which forms of physical activity most effectively support youth mental health is therefore an urgent scientific and policy priority.

Among the many available activities, martial arts and combat sports occupy a distinctive position because they integrate vigorous physical training with explicit ethical, attentional, and self-regulatory instruction. Disciplines such as judo, taekwondo, karate, boxing, Muay Thai, and the traditional Chinese arts are practised by millions of young people worldwide and are frequently embedded in schools, community projects, and social-inclusion programs (Alif et al., 2024; Ciaccioni et al., 2024). Proponents argue that the ritualised structure, graded progression, and mentor relationships intrinsic to these practices cultivate discipline, patience, and emotional control (Willhite & Becht-Buss, 2025; Kolodeznikova et al., 2021). Yet martial arts also carry cultural associations with aggression and injury, generating a longstanding debate about whether they attenuate or amplify externalising behaviour in the young (Xu et al., 2022).

A substantial body of primary research has accumulated across psychology, education, and sports science documenting the psychosocial correlates and effects of martial arts participation. Experimental and quasi-experimental studies have examined resilience, self-esteem, and aggression following structured programs (Moore et al., 2021; Harwood-Gross et al., 2021; García-Aguilar et al., 2023), while observational work has mapped the well-being profiles of young athletes competing in combat disciplines (Tozetto et al., 2025; Lage et al., 2021). Parallel lines of inquiry have investigated life-skills transfer, coach mentorship, and moral development within martial-arts pedagogy (Bae et al., 2021; Shen et al., 2023; Massey & Whitley, 2024; Kim et al., 2021). Collectively, these studies suggest a broadly favourable psychological signal, but they differ substantially in design, population, and outcome measurement.

Recent methodological and conceptual advances have sharpened the field. Investigators have begun to test mechanistic pathways using mediation and moderation models, implicating self-control, meaning in life, and psychological resilience as intermediary processes linking practice to mental health (Xu et al., 2025; Yang & Wang, 2025a). Others have introduced technologically augmented formats, including virtual-reality boxing and mobile-delivered mindfulness for combat athletes, extending martial-arts principles into digital and remote contexts (Cioffi & Lubetzky, 2023; Lee et al., 2024). Adapted and inclusive programs for children with disabilities and their families further illustrate the versatility of these interventions (Lee et al., 2025; Garcia et al., 2024; Morales et al., 2021). This diversification signals a maturing field but also compounds the difficulty of drawing integrated conclusions.

Despite this expansion, a critical gap persists in the cumulative synthesis of evidence specific to young populations. Existing reviews are often narrative in scope, confined to a single discipline, or focused on physical rather than psychological outcomes, leaving the mental-health signal dispersed and inconsistently appraised (Bailey et al., 2025; de Borja et al., 2025; Liu & Guo, 2024). Few syntheses have systematically catalogued which mental-health indicators are most frequently affected, in what direction, and with what degree of methodological confidence. Consequently, practitioners lack a consolidated, evidence-graded account on which to base program design, and researchers lack a clear map of where the evidence is strongest and where it remains thin.

A second gap is theoretical and methodological. The literature is dominated by heterogeneous designs, small samples, short intervention windows, and inconsistent psychometric instrumentation, which constrains comparability and cumulative inference (Mei et al., 2024). Mechanistic accounts remain underdeveloped, and the moderating roles of modality, dose, setting, and instructor quality are seldom examined jointly. Moreover, much of the evidence originates from cross-sectional designs that cannot establish causality, while the small number of controlled trials rarely incorporates long-term follow-up. Without a structured appraisal that foregrounds these limitations, the field risks overstating the strength of an otherwise promising evidence base (Zhou et al., 2025; Dong et al., 2025; Santana et al., 2024).

Addressing these gaps is timely and necessary. The convergence of a worsening youth mental-health crisis, constrained clinical capacity, and the global accessibility of martial-arts provision creates a compelling rationale for a rigorous, PRISMA-compliant synthesis dedicated to psychological outcomes in the young. Such a synthesis can clarify the magnitude and consistency of effects, identify the program characteristics associated with benefit, and delineate a defensible research agenda. Accordingly, this review interrogates the contemporary Scopus-indexed evidence base to consolidate what is known, expose what is uncertain, and guide both practice and future scholarship. The review is organised around three research questions:

**RQ1:** How does participation in martial arts and combat sports training influence the mental health and psychological outcomes of children, adolescents, and young people according to the existing evidence?

**RQ2:** Which mental-health indicators (e.g., anxiety, depression, stress, self-esteem, resilience, aggression, and psychological well-being) are most frequently reported to change following martial-arts participation, and in what direction?

**RQ3:** Which martial-arts modalities and program characteristics (type, duration, frequency, setting, and pedagogical approach) appear most effective in enhancing youth mental health in the available literature?

By synthesising 18 recent studies within a transparent and reproducible framework, this review contributes a consolidated, methodologically appraised evidence map that advances a biopsychosocial understanding of martial arts as accessible youth mental-health interventions and equips educators, coaches, and clinicians with actionable, evidence-informed guidance.

## Method

This study adopted a systematic literature review (SLR) design, a rigorous and replicable method for locating, appraising, and synthesising the available evidence on a defined question. The SLR approach was selected because it minimises selection and reporting bias relative to narrative reviews and produces transparent, auditable conclusions suitable for guiding practice and policy (Tranfield et al., 2003; Liberati et al., 2009). Reporting and conduct followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement, which specifies standards for search documentation, study selection, and flow reporting (Page et al., 2021). The review was structured to answer three research questions concerning the direction, indicators, and program correlates of martial-arts effects on youth mental health, and each methodological decision was documented to support reproducibility.

Prior to constructing the search string, the research questions were decomposed using the PICO framework (Population, Intervention/Interest, Comparison, Outcome) to ensure the systematic identification of key search concepts:

Population (P): children, adolescents, and young people, including youth athletes;

Intervention/Interest (I): participation in or training in martial arts and combat sports (e.g., judo, taekwondo, karate, boxing, Muay Thai, and traditional Chinese arts);

Comparison (C): non-practitioners, alternative activities, or pre-intervention baseline (where applicable);

Outcome (O): mental-health and psychological outcomes, including self-esteem, resilience, anxiety, depression, stress, aggression, and psychological well-being.

Each PICO element was translated into a cluster of keywords and synonyms, which were then combined into a single Boolean search string applied to the title, abstract, and keyword fields.

### Boolean search string:

TITLE-ABS-KEY ( ( "martial art\*" OR "combat sport\*" OR judo OR taekwondo OR karate OR boxing OR "muay thai" OR wushu OR "tai chi" ) AND ( "mental health" OR psychological\* OR resilien\* OR self-esteem OR anxiety OR depression OR stress OR aggress\* OR well-being ) AND ( adolescen\* OR youth OR "young people" OR child\* OR "young adult\*" ) )

Wildcard and truncation operators were applied to capture morphological variants (e.g., child\* retrieved child, children, and childhood; psychological\* retrieved psychological and psychologically). The field code TITLE-ABS-KEY restricted retrieval to titles, abstracts, and author keywords, balancing sensitivity and precision. Limiters were applied for document type (article and review), language (English), and publication window (2021–2025) to focus the synthesis on contemporary, peer-reviewed evidence. The string was piloted iteratively; an initial version returned an unwieldy volume of tangential orthopaedic and physiological records, prompting the addition of the mental-health concept cluster to improve specificity. The PICO framework here served solely to structure the search and is distinct from the quality-appraisal procedure in Section 3.6.

Scopus was used as the primary bibliographic database owing to its broad multidisciplinary coverage of peer-reviewed sport science, psychology, education, and health literature, and its structured metadata suitable for systematic retrieval. The search was executed on 24 August 2026, and all identified records were exported in a structured bibliographic format for screening. No supplementary databases were searched; this single-database strategy is acknowledged as a limitation in Section 5.5 and was adopted to ensure a homogeneous, high-quality metadata base for reproducible selection.

Eligibility was defined a priori across six dimensions. Studies were included only if they satisfied all inclusion criteria and breached none of the exclusion criteria, as summarised in Table 1.

**Table 1.** Inclusion and Exclusion Criteria

| Criterion     | Inclusion                       | Exclusion                                                                   |
|---------------|---------------------------------|-----------------------------------------------------------------------------|
| Language      | Published in English            | Non-English publications                                                    |
| Document type | Peer-reviewed article or review | Conference paper, book chapter, editorial, erratum, note, or retracted item |

| Criterion             | Inclusion                                               | Exclusion                                                                            |
|-----------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------|
| Publication period    | 2021–2025                                               | Published before 2021                                                                |
| Population            | Children, adolescents, or young people / youth athletes | Exclusively adult populations without youth data                                     |
| Intervention/Interest | Martial arts or combat sports participation or training | Sport unrelated to martial arts / combat sports                                      |
| Outcome               | Reports a mental-health or psychological outcome        | No psychological outcome (e.g., purely biomechanical, orthopaedic, or physiological) |
| Accessibility         | Full text available                                     | Full text not retrievable                                                            |

Study selection proceeded through sequential stages consistent with PRISMA 2020. Following the removal of duplicate records, the remaining records were screened at the title and abstract level against the eligibility criteria. Records that clearly fell outside the population, intervention, or outcome scope were excluded at this stage. The full texts of potentially eligible reports were then sought and assessed against the complete criteria set. At each stage, screening decisions and exclusion reasons were recorded to construct the flow diagram. Where eligibility was uncertain, records were retained for full-text assessment to minimise premature exclusion, and disagreements were resolved through discussion and re-examination of the source metadata against the pre-specified criteria.

Quality appraisal was conducted independently of the PICO-based search formulation. Each included primary study was appraised using the Mixed Methods Appraisal Tool (MMAT), version 2018, which is well suited to the heterogeneous designs anticipated in this body of literature, spanning qualitative, quantitative randomised, quantitative non-randomised, quantitative descriptive, and mixed-methods studies (Hong et al., 2018). For each study, the design category was first classified from the reported methodology; the corresponding five-item MMAT checklist was then applied, with each item rated Yes, Can't tell/Partial, or No. Included systematic and narrative reviews were appraised for methodological transparency using an equivalent critical-appraisal logic and are reported separately, with this substitution noted explicitly.

Scoring scheme. Yes = 1; Can't tell/Partial = 0.5; No = 0. Studies meeting at least three of five criteria ( $\geq 60\%$ ) were regarded as higher methodological confidence. Consistent with MMAT developer guidance, no study was excluded on the basis of its quality score alone; lower-scoring studies were retained but weighted accordingly in synthesis and considered in the sensitivity discussion (Section 5.4).

**Table 2.** Quality Assessment Summary (MMAT 2018)

| Author(s), Year              | Study Design            | Q1 | Q2 | Q3 | Q4 | Q5 | Score | Category |
|------------------------------|-------------------------|----|----|----|----|----|-------|----------|
| Bailey et al. (2025)         | Narrative review*       | Y  | Y  | P  | Y  | P  | 4.0   | High     |
| Moore et al. (2021)          | Quant. randomised (RCT) | Y  | Y  | Y  | Y  | Y  | 5.0   | High     |
| Harwood-Gross et al. (2021)  | Quant. non-randomised   | Y  | Y  | Y  | P  | Y  | 4.5   | High     |
| Saraiva et al. (2024)        | Quant. non-randomised   | Y  | Y  | Y  | Y  | P  | 4.5   | High     |
| Efek & Eryigit (2022)        | Quant. non-randomised   | Y  | Y  | P  | Y  | P  | 4.0   | High     |
| Xu et al. (2025)             | Quant. descriptive      | Y  | Y  | Y  | Y  | Y  | 5.0   | High     |
| Yang & Wang (2025a)          | Quant. descriptive      | Y  | Y  | Y  | Y  | P  | 4.5   | High     |
| Lee et al. (2025)            | Systematic review*      | Y  | Y  | Y  | Y  | Y  | 5.0   | High     |
| Tozetto et al. (2025)        | Quant. descriptive      | Y  | Y  | Y  | P  | Y  | 4.5   | High     |
| Lage et al. (2021)           | Quant. descriptive      | Y  | P  | Y  | P  | Y  | 4.0   | High     |
| García-Aguilar et al. (2023) | Quant. non-randomised   | Y  | P  | Y  | P  | P  | 3.5   | Medium   |
| Nukulkij et al. (2025)       | Qualitative             | Y  | Y  | Y  | Y  | Y  | 5.0   | High     |
| Junla et al. (2023)          | Quant. non-randomised   | Y  | P  | P  | P  | Y  | 3.5   | Medium   |
| Garcia et al. (2024)         | Quant. non-randomised   | Y  | P  | Y  | P  | Y  | 4.0   | High     |
| Cioffi & Lubetzky (2023)     | Quant. randomised (RCT) | Y  | Y  | P  | Y  | P  | 4.0   | High     |
| Ryan et al. (2025)           | Qualitative             | Y  | Y  | Y  | Y  | Y  | 5.0   | High     |
| Xu et al. (2022)             | Quant. descriptive      | Y  | Y  | Y  | Y  | Y  | 5.0   | High     |
| Mei et al. (2024)            | Systematic review*      | Y  | Y  | Y  | Y  | Y  | 5.0   | High     |

Note. Y = Yes (1.0); P = Can't tell/Partial (0.5); N = No (0). Q1–Q5 = the five MMAT criteria for the relevant design category. \*Reviews were appraised with an equivalent transparency-based checklist and reported for completeness. Reference: Hong et al. (2018).

A standardised extraction template was applied to each included study to capture author(s), publication year, country of study, study design, sample characteristics, martial-arts modality and program parameters (type, duration, frequency, and setting), the mental-health outcomes assessed and their measurement instruments, and the principal findings. Extraction was performed directly from the source records and full texts, and extracted fields were cross-checked against the bibliographic metadata to preserve data integrity. Only information

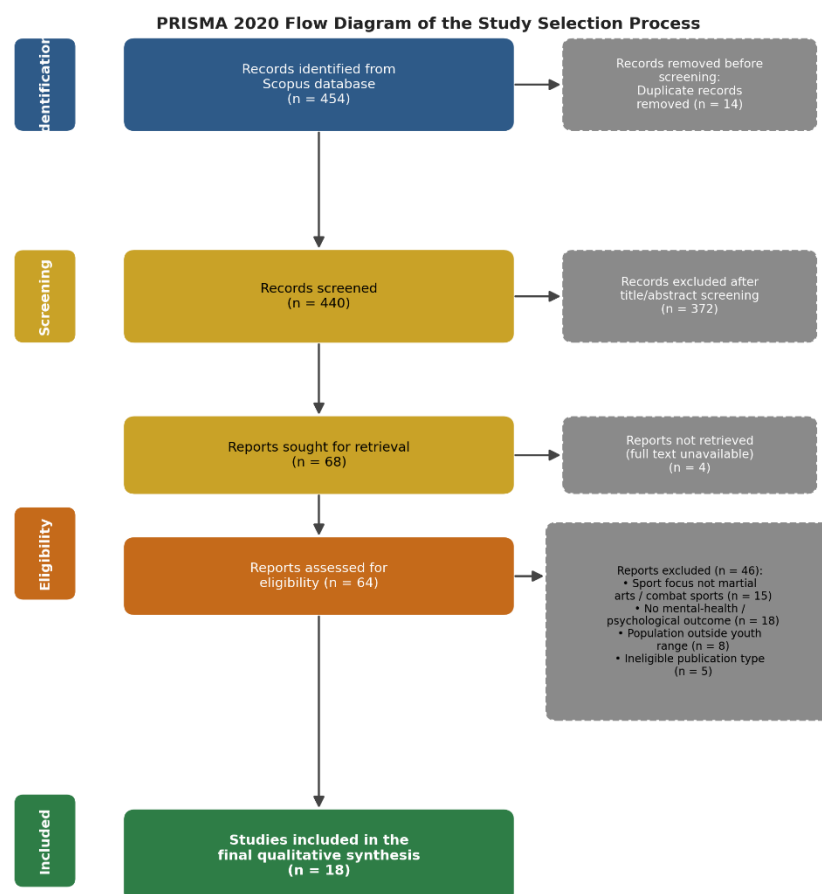
reported by the primary sources was recorded; where a field was not reported, it was marked as not available rather than inferred.

To complement the narrative synthesis, descriptive bibliometric summaries were derived from the metadata of the included corpus, comprising the temporal distribution of publications, the geographic distribution by country of study, and a thematic clustering of the dominant psychological constructs addressed. These descriptive analyses were used to characterise the shape and concentration of the evidence base rather than to draw inferential conclusions, and they are presented in Figures 2 through 4.

Given the methodological heterogeneity of the included studies, a thematic synthesis approach was adopted (Thomas & Harden, 2008). Findings were first coded inductively from each study's results, then grouped into descriptive themes reflecting recurrent psychological constructs, and finally organised into analytical themes aligned with the three research questions. The synthesis emphasised convergence and divergence across studies, the direction and consistency of reported effects, and the influence of modality, dose, and pedagogy. Because a meta-analysis was precluded by the diversity of designs, outcomes, and instruments, effect directions and, where reported, effect sizes were narratively integrated.

The review was conducted and reported in accordance with the PRISMA 2020 checklist and flow-diagram requirements (Page et al., 2021). The selection process is documented numerically and visually in the flow diagram (Figure 1), and all reported counts are internally consistent across the Methods, the flow diagram, and the Results. Screening decisions, exclusion reasons, and extracted data were retained to support transparency and reproducibility.

Figure 1 presents the PRISMA 2020 flow diagram documenting the identification, screening, eligibility, and inclusion phases of the review. The search identified 454 records from Scopus. After 14 duplicate records were removed, 440 records were screened at the title and abstract level, of which 372 were excluded as clearly irrelevant to the population, intervention, or outcome scope. Of the 68 reports sought for retrieval, 4 could not be obtained in full text, leaving 64 reports assessed for eligibility. A further 46 reports were excluded with documented reasons, resulting in 18 studies included in the final qualitative synthesis.



**Figure 1.** PRISMA 2020 Flow Diagram of the Study Selection Process

## Results and Discussions

The database search yielded 454 records from Scopus. Removal of 14 duplicates left 440 records for title and abstract screening, at which stage 372 records were excluded for evident irrelevance to the population, intervention, or outcome of interest. Of the 68 reports sought for full-text retrieval, 4 were unobtainable, and 64 underwent full eligibility assessment. A further 46 reports were excluded with documented reasons: 15 because the sport focus was not martial arts or combat sports, 18 because no mental-health or psychological outcome was reported, 8 because the population fell outside the child-to-young-adult range, and 5 because the publication type was ineligible. The final synthesis comprised 18 studies. These counts are consistent with the flow diagram in Figure 1.

The 18 included studies were published between 2021 and 2025 and spanned ten national contexts, with Brazil and China contributing the largest shares, followed by Thailand and the United States. The corpus combined three systematic or narrative reviews with fifteen primary studies, the latter encompassing randomised and quasi-experimental trials, cross-sectional surveys with mediation modelling, and qualitative inquiries. Martial-arts modalities included judo, taekwondo, karate, boxing, Muay Thai, and Taichi Chuan, delivered in schools, competitive clubs, community gyms, and social-inclusion projects. Table 3 summarises the characteristics and principal findings of each study, and Table 4 classifies the studies by design, theme, modality, and outcome.

**Table 3.** Summary of Included Studies

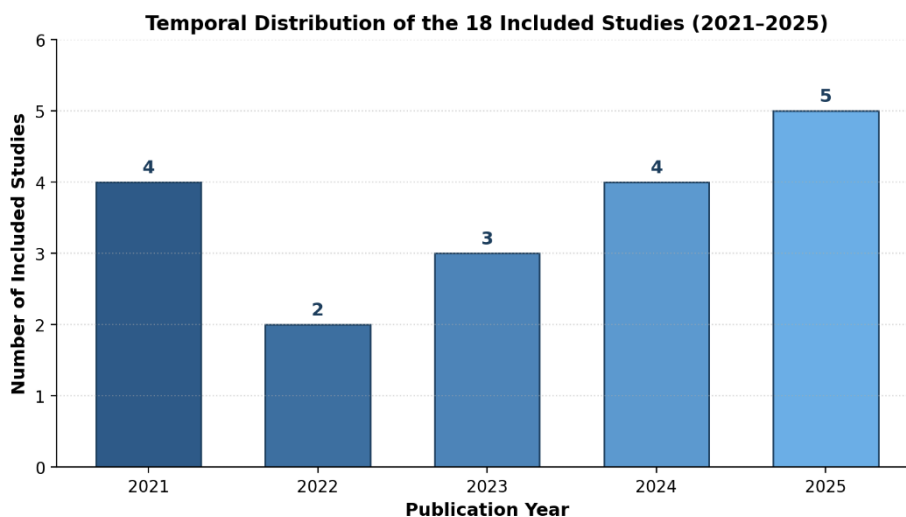
| Title                                                                                                                               | Author(s)                                                        | Year | Country                | Method                                    | Key Findings                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|------|------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Martial Arts for Young People? A Review of the Benefits and Outcomes of Children's and Adolescents' Participation in Martial Arts   | Bailey, Sweeney, Sweeney, Huihui & Samsudin                      | 2025 | Multinational (review) | Narrative review                          | Martial arts participation was associated with improved self-esteem, emotional regulation, and reduced aggression alongside physical gains; the instructor's role was pivotal to realising positive outcomes.               |
| Well-being warriors: A randomized controlled trial examining the effects of martial arts training on secondary students' resilience | Moore, Woodcock & Dudley                                         | 2021 | Australia              | Randomised controlled trial               | A 10-week school-based martial-arts intervention significantly improved resilience relative to controls (n=283, ages 12–14); gains were strongest immediately post-intervention and partly attenuated at 12-week follow-up. |
| The Effect of Martial Arts Training on Cognitive and Psychological Functions in At-Risk Youths                                      | Harwood-Gross, Lambez, Feldman, Zagoory-Sharon & Rassovsky       | 2021 | Israel                 | Quasi-experimental (pre-post, comparison) | Six months of martial-arts training in at-risk boys improved inhibition, shifting, and processing speed; oxytocin reactivity predicted reduced aggression and cortisol reactivity predicted increased self-esteem.          |
| Effects of Muay Thai Practice on Self-Esteem, Body Perception, and Quality of Life in Adolescents with Overweight/Obesity           | Saraiva, Henn, Tebar, Dos Santos, Antunes, Ferrari & Christofaro | 2024 | Brazil                 | Controlled intervention (16 weeks)        | Sixteen weeks of Muay Thai increased the prevalence of healthy self-esteem and body-image satisfaction and improved the pain domain of quality of life in adolescents with overweight/obesity.                              |

| Title                                                                                                                                                               | Author(s)                                                   | Year  | Country                | Method                                   | Key Findings                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------|------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The effect of the 12-week judo physical activity program on the self-esteem of secondary school students during the COVID-19 period                                 | Efek & Eryigit                                              | 2022  | Turkey                 | Experimental (pre-post, control)         | A 12-week judo program significantly increased secondary-school students' self-esteem in the experimental group, with no significant change in the control group during the COVID-19 period.                        |
| Exploring the impact of traditional Chinese martial arts and other martial arts on adolescent aggression: a comparative analysis of underlying mechanisms           | Xu, Li, Rao & Wang                                          | 2025  | China                  | Cross-sectional (mediation)              | Among 847 adolescent practitioners, higher training level predicted lower aggression, mediated chiefly by self-control and by a self-control→depression pathway; traditional and other martial arts did not differ. |
| The influence and mechanism of Taichi Chuan on improving mental health in adolescents: The chained mediating effect of meaning in life and psychological resilience | Yang & Wang                                                 | 2025a | China                  | Cross-sectional, two studies (mediation) | Across two samples (n=722), Taichi Chuan positively affected adolescents' mental health, operating through a chained mediation of meaning in life and psychological resilience.                                     |
| Olympic combat sports and mental health in children and adolescents with disability: a systematic review of controlled trials                                       | Lee, Guidotti, Capranica, Pesce, Benzing, Hauck & Ciaccioni | 2025  | Multinational (review) | Systematic review of controlled trials   | Across 12 controlled trials (n=436), Olympic combat sports improved social-emotional functioning and executive function in youth with disability, with occasional gains in self-esteem and stress regulation.       |
| Mental well-being in young Taekwondo athletes: psychological-related parameters, associated factors and cluster analysis                                            | Tozetto, Kons, Bussato, Felix, Ishibashi & Milistetd        | 2025  | Brazil                 | Cross-sectional observational            | Among 149 Taekwondo athletes, coach-athlete relationship quality and enjoyment sources explained 44.9% of mental-well-being variance; three well-being clusters (low, moderate, high) were identified.              |
| Analysis of the behavioural and emotional profile of adolescent judo practitioners                                                                                  | Lage, Miyazaki, Nagamine, Verardi, da Rocha & Silveiras     | 2021  | Brazil                 | Cross-sectional descriptive              | Among adolescent judo practitioners, 34.4% scored in the clinical range for emotional/behavioural problems; internalising symptoms were more frequent in girls and externalising problems in boys.                  |
| Boxing as an educational resource with adolescents at risk of social exclusion                                                                                      | García-Aguilar, Beltrán-Carrillo, García & Sánchez-Sánchez  | 2023  | Spain                  | Quasi-experimental                       | A 9-week boxing program grounded in the Teaching Personal and Social Responsibility model increased intrinsic motivation without increasing violence or aggression in at-risk adolescents.                          |

| Title                                                                                                                                            | Author(s)                                                     | Year | Country                | Method                                  | Key Findings                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------|------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chanting and Meditation: The Journey of Thai Youth Taekwondo Athletes and Their Perceived Effects                                                | Nukulki, Kittisrivoranan & Trakulkasemsuk                     | 2025 | Thailand               | Qualitative (narrative inquiry)         | Youth Taekwondo athletes experienced chanting and meditation as practical tools for emotional balance, focus, and resilience, easing competitive nervousness and supporting self-discipline.                                                                                                                                                                     |
| Effects of Online Sport Counseling in Adolescent Taekwondo Athletes: Real Match After the COVID-19 Pandemic                                      | Junla, Mitranun, Sittiprapaporn & Yotanyamaneewong            | 2023 | Thailand               | Controlled trial (n=16)                 | An 8-week online counseling program significantly lowered diastolic blood pressure and heart rate before competition but did not improve cognitive reappraisal in adolescent Taekwondo athletes.                                                                                                                                                                 |
| The physical and psychosocial benefits of a family judo program for parents of children with Autism Spectrum Disorder: A pilot study             | Garcia, Hahs-Vaughn, Murray, Perry, Brazendale, Rice & Fukuda | 2024 | United States          | Pre-post single group                   | A 14-week family judo program reduced parental stress and increased physical activity in parents of children with ASD; 78% reported at least one psychosocial or physical benefit.                                                                                                                                                                               |
| BOXVR Versus Guided YouTube Boxing for Stress, Anxiety, and Cognitive Performance in Adolescents: A Pilot Randomized Controlled Trial            | Cioffi & Lubetzky                                             | 2023 | United States          | Pilot randomised controlled trial       | A 3-week virtual-reality boxing program significantly reduced adolescent stress and improved executive function versus controls, with greater enjoyment than guided-video boxing. Community boxing offered young people a changed sense of self, a recursive learning process, and a sense of belonging, all linked to improved well-being for a diverse cohort. |
| A Community Perspective on Boxing, Well-being and Young People                                                                                   | Ryan, John & Hanna                                            | 2025 | United Kingdom         | Qualitative ethnography                 | Martial-arts-practising adolescents (n=775) showed higher self-control and lower bullying than non-practitioners; self-control reduced bullying via negative affect and aggression.                                                                                                                                                                              |
| The effects of self-control on bullying behaviour among martial arts practicing adolescents: based on the analyses of multiple mediation effects | Xu, Li, Yan & Zhang                                           | 2022 | China                  | Cross-sectional comparative (mediation) | Across 11 RCTs (n=3640), the two martial-arts trials significantly enhanced adolescent resilience (Cohen's d=0.51–0.73), though the overall evidence base was heterogeneous and inconsistent.                                                                                                                                                                    |
| Mind-body therapies for resilience in adolescents: A systematic review of randomized controlled trials                                           | Mei, Jiang, Zhang, Luo & Luo                                  | 2024 | Multinational (review) | Systematic review of RCTs               |                                                                                                                                                                                                                                                                                                                                                                  |

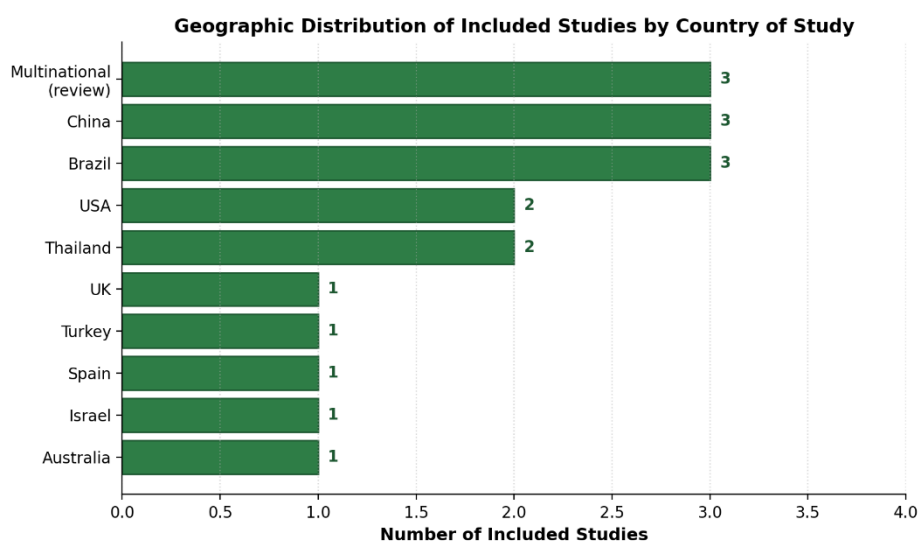
**Table 4.** Study Classification by Design, Theme, Modality, and Outcome

| Author(s)                | Year  | Research Design         | Theme/Focus                                  | Modality/Intervention                    | Primary Outcome                                   |
|--------------------------|-------|-------------------------|----------------------------------------------|------------------------------------------|---------------------------------------------------|
| Bailey et al.            | 2025  | Narrative review        | Holistic development & psychosocial benefits | Martial arts (mixed)                     | Self-esteem, emotional regulation, aggression     |
| Moore et al.             | 2021  | Quant. randomised (RCT) | Resilience & well-being                      | School martial-arts program (10 weeks)   | Psychological resilience                          |
| Harwood-Gross et al.     | 2021  | Quant. non-randomised   | Aggression & behavioural regulation          | Martial arts, 2×/week, 6 months          | Aggression, self-esteem, executive function       |
| Saraiva et al.           | 2024  | Quant. non-randomised   | Self-esteem & body image                     | Muay Thai, 3×/week, 16 weeks             | Self-esteem, body perception, quality of life     |
| Efek & Eryigit et al.    | 2022  | Quant. non-randomised   | Self-esteem & body image                     | Judo program, 12 weeks                   | Self-esteem                                       |
| Xu et al.                | 2025  | Quant. descriptive      | Aggression & behavioural regulation          | Traditional Chinese & other martial arts | Aggression, self-control, depression              |
| Yang & Wang et al.       | 2025a | Quant. descriptive      | Resilience & well-being                      | Taichi Chuan                             | Mental health, resilience, meaning in life        |
| Lee et al.               | 2025  | Systematic review       | Special & clinical populations               | Olympic combat sports (judo, taekwondo)  | Social-emotional functioning, self-esteem, stress |
| Tozetto et al.           | 2025  | Quant. descriptive      | Resilience & well-being                      | Taekwondo (competitive)                  | Mental well-being                                 |
| Lage et al.              | 2021  | Quant. descriptive      | Emotional regulation                         | Judo (social project)                    | Emotional/behavioural problems                    |
| García-Aguilar et al.    | 2023  | Quant. non-randomised   | Aggression & behavioural regulation          | Boxing (TPSR, 9 weeks)                   | Motivation, aggression, self-esteem               |
| Nukulkij et al.          | 2025  | Qualitative             | Stress & anxiety                             | Taekwondo + chanting/meditation          | Emotional regulation, resilience, focus           |
| Junla et al.             | 2023  | Quant. non-randomised   | Stress & anxiety                             | Online sport counseling (8 weeks)        | Physiological stress markers, reappraisal         |
| Garcia et al.            | 2024  | Quant. non-randomised   | Special & clinical populations               | Family judo (14 weeks)                   | Stress, physical activity                         |
| Cioffi & Lubetzky et al. | 2023  | Quant. randomised (RCT) | Stress & anxiety                             | Virtual-reality boxing (3 weeks)         | Stress, anxiety, executive function               |
| Ryan et al.              | 2025  | Qualitative             | Resilience & well-being                      | Community boxing gym                     | Well-being, belonging, identity                   |
| Xu et al.                | 2022  | Quant. descriptive      | Aggression & behavioural regulation          | Martial arts (mixed)                     | Self-control, aggression, bullying                |
| Mei et al.               | 2024  | Systematic review       | Resilience & well-being                      | Mind-body therapies (incl. martial arts) | Resilience                                        |



*A sustained flow of publications across the review window reflects intensifying scholarly interest in martial arts and youth mental health.*

**Figure 2.** Temporal Distribution of the Included Studies (2021–2025)



*Evidence is concentrated in Brazil and China, with contributions from Thailand, the United States, and several European contexts.*

**Figure 3.** Geographic Distribution of Included Studies by Country of Study

**Thematic Clusters Across Included Studies**  
(bubble size  $\propto$  number of studies addressing each theme)



*Bubble size is proportional to the number of studies addressing each psychological theme; studies may contribute to more than one cluster.*

**Figure 4.** Thematic Clusters Across the Included Studies

### Thematic Synthesis

#### Findings for RQ1: The overall psychological impact of martial-arts participation

The synthesis provides consistent, though not uniform, evidence that martial-arts and combat-sports participation exerts a favourable influence on the mental health of young people. Controlled and quasi-experimental studies form the strongest strand of this signal: a randomised trial demonstrated that a brief, school-embedded martial-arts program improved adolescent resilience relative to controls (Moore et al., 2021), while an extended program for at-risk boys enhanced executive functioning and, through hormonal pathways, reduced aggression and raised self-esteem (Harwood-Gross et al., 2021). Intervention studies of judo and Muay Thai likewise reported gains in self-esteem and body-image satisfaction (Efek & Eryigit, 2022; Saraiva et al., 2024). A pilot randomised trial of virtual-reality boxing extended these benefits to stress reduction and executive function in a school-accessible format (Cioffi & Lubetzky, 2023). Together, these findings answer RQ1 affirmatively: participation is associated with measurable psychological benefit across multiple constructs.

Observational and qualitative studies triangulate this conclusion while adding nuance. Cross-sectional analyses link practice to lower aggression and bullying through the cultivation of self-control (Xu et al., 2022; Xu et al., 2025), and mediation modelling shows that Taichi Chuan improves mental health via meaning in life and resilience (Yang & Wang, 2025a). Qualitative accounts describe how community boxing fosters belonging and a reconstructed sense of self (Ryan et al., 2025), and how contemplative practices embedded in Taekwondo support emotional balance and focus (Nukulkij et al., 2025). Importantly, not all evidence is unequivocally positive: a descriptive study found that a substantial minority of adolescent judo practitioners scored in the clinical range for emotional and behavioural problems, underscoring that participation coexists with, and may attract, young people already experiencing distress (Lage et al., 2021). The overall picture is therefore one of consistent benefit tempered by heterogeneity and by the limits of predominantly cross-sectional designs.

#### Findings for RQ2: Mental-health indicators most frequently affected and their direction

Across the corpus, five psychological indicators recurred most often, and their reported direction of change was predominantly favourable. Self-esteem was the most frequently examined outcome and improved consistently following structured programs (Harwood-Gross et al., 2021; Efek & Eryigit, 2022; Saraiva et al., 2024; Bailey et al., 2025). Psychological resilience formed a second prominent cluster, with controlled and modelling studies reporting enhancement (Moore et al., 2021; Yang & Wang, 2025a; Mei et al., 2024), the last quantifying moderate effects for martial-arts trials specifically. Aggression and externalising behaviour formed a third cluster; rather than increasing hostility, participation was associated with its reduction, mediated by self-control (Xu et al., 2022; Xu et al., 2025; García-Aguilar et al., 2023). This directly addresses a longstanding public concern and constitutes one of the review's most robust convergent findings.

Stress and anxiety comprised a fourth cluster with a more mixed profile. Interventions reduced physiological stress markers and perceived stress (Junla et al., 2023; Cioffi & Lubetzky, 2023; Garcia et al., 2024), yet anxiety reductions were not always statistically distinguishable from control conditions, indicating that stress reactivity may respond more readily than trait anxiety within short programs (Cioffi & Lubetzky, 2023). A fifth cluster, broad psychological well-being and social-emotional functioning, improved in observational and review evidence, particularly where the coach–athlete relationship was strong and among youth with disability (Tozetto et al., 2025; Lee et al., 2025). In sum, RQ2 is answered by identifying self-esteem, resilience, and reduced aggression as the most consistently improved indicators, with stress and well-being improving under favourable program and relational conditions.

### **Findings for RQ3: Effective modalities and program characteristics**

The evidence indicates that psychological benefit is shaped less by the specific martial-arts style than by how programs are structured and delivered. A comparative study found no meaningful difference in outcomes between traditional Chinese and other martial arts, suggesting that shared pedagogical elements, rather than stylistic content, drive change (Xu et al., 2025). Effective programs in the corpus tended to be sustained over 9 to 24 weeks, delivered two to three times weekly, and embedded in supportive settings such as schools, social projects, or community gyms (Moore et al., 2021; Saraiva et al., 2024; García-Aguilar et al., 2023). Explicit ethical and self-regulatory instruction, contemplative components, and a strong instructor relationship emerged repeatedly as active ingredients (Nukulkij et al., 2025; Tozetto et al., 2025; Willhite & Becht-Buss, 2025).

Program design also determined reach and inclusivity. Family-based and adapted formats extended benefits to children with autism and their caregivers (Garcia et al., 2024; Morales et al., 2021), and technologically augmented formats broadened access while preserving core mechanisms (Cioffi & Lubetzky, 2023; Lee et al., 2024). Reviews converged on the conclusion that well-structured, philosophy-informed programs delivered by skilled instructors are most likely to produce holistic benefit, whereas poorly structured or purely competitive framings may dilute or reverse gains (Bailey et al., 2025; Willhite & Becht-Buss, 2025). RQ3 is therefore answered by pointing to dose adequacy, pedagogical intentionality, contemplative and moral components, and instructor quality as the decisive program characteristics.

### **Comparative and Critical Analysis**

Methodologically, the corpus is dominated by cross-sectional and small quasi-experimental designs, with only two randomised trials and a small number of qualitative inquiries. This distribution constrains causal inference and raises the possibility of self-selection, whereby psychologically robust or distressed young people differentially enter martial-arts settings (Lage et al., 2021). The two systematic reviews reinforce this caution, reporting heterogeneity in populations, instruments, and effect sizes that precludes firm clinical recommendations (Lee et al., 2025; Mei et al., 2024). A sensitivity perspective is warranted: the two medium-confidence studies in the appraisal (García-Aguilar et al., 2023; Junla et al., 2023) featured very small samples, and their findings should be weighted as suggestive rather than definitive. Encouragingly, the higher-confidence studies, including both randomised trials and the mediation analyses, align in direction with the weaker studies, lending coherence to the overall signal.

A clear methodological evolution is nonetheless visible across the review window. Earlier studies emphasised descriptive profiling and single-outcome pre–post comparisons, whereas more recent work incorporates mediation and moderation modelling, control conditions, and technologically delivered formats (Xu et al., 2025; Yang & Wang, 2025a; Cioffi & Lubetzky, 2023). Mechanistic constructs such as self-control, meaning in life, and the coach–athlete relationship are increasingly foregrounded, signalling a shift from documenting whether martial arts help toward explaining how and for whom. This maturation is promising, but the field still underuses adequately powered, pre-registered randomised designs with long-term follow-up and standardised psychological instrumentation.

Interpreted collectively, the findings suggest that martial arts function as biopsychosocial interventions whose psychological benefits arise from the interaction of physical exertion, self-regulatory training, and relational belonging. The convergence of resilience, self-esteem, and aggression-reduction findings implies that these practices support both the promotion of positive assets and the prevention of externalising difficulties, a dual capacity uncommon among single interventions (Willhite & Becht-Buss, 2025; Xu et al., 2022).

Theoretically, the results extend and partially challenge existing frameworks. The recurrent mediating role of self-control and resilience supports self-regulation and positive-youth-development accounts of sport participation (Alif et al., 2024; Bae et al., 2021; Yang et al., 2025b), while the embodied-cognition interpretation of Taichi Chuan enriches purely behavioural explanations by linking bodily practice to meaning-making (Yang & Wang, 2025a). The prominence of the instructor relationship aligns with mentorship and life-skills-transfer

theory, positioning the coach as a proximal mechanism of change rather than a peripheral factor (Shen et al., 2023; Massey & Whitley, 2024; Mansouri et al., 2025).

Practically, the review offers actionable guidance. Educators and community providers can embed structured, philosophy-informed martial-arts programs of adequate dose within schools and social projects as accessible, low-stigma mental-health supports (Rose-Clarke et al., 2023; García-Aguilar et al., 2023; Cerchia et al., 2022). Clinicians and policymakers can consider adapted and family-based formats for young people with disabilities and their caregivers (Garcia et al., 2024; Lee et al., 2025). Program commissioners should prioritise instructor training and a clearly articulated training philosophy, since these appear decisive for outcomes (Bailey et al., 2025).

Situated against prior reviews, the present synthesis corroborates earlier narrative claims of broad psychosocial benefit (Bailey et al., 2025; de Borja et al., 2025; Ciaccioni et al., 2024; de Souza et al., 2022) while adding a structured, appraisal-based account focused specifically on mental-health indicators in the young. It also echoes the cautions of quantitative reviews regarding heterogeneity and the scarcity of high-quality trials (Mei et al., 2024; Zhou et al., 2025), thereby bridging optimistic narrative and more sceptical quantitative traditions.

Contradictions in the literature nonetheless remain. The clinical-range distress reported among some practitioners (Lage et al., 2021) sits in tension with the predominantly positive intervention findings, and the failure of some programs to reduce trait anxiety contrasts with their success in reducing stress reactivity (Cioffi & Lubetzky, 2023; Junla et al., 2023). These discrepancies may reflect differences between selection effects in observational samples and intervention effects in controlled ones, as well as the differential responsiveness of state versus trait constructs to short programs.

At least three research gaps are evident. First, there is a shortage of adequately powered randomised trials with long-term follow-up and standardised psychological outcomes. Second, mechanistic pathways, though increasingly modelled, remain under-tested experimentally, leaving the active ingredients inferential. Third, evidence is geographically concentrated and under-represents low-resource and culturally diverse contexts beyond a handful of countries. Correspondingly, this review has limitations. It searched a single database, restricting retrieval to Scopus-indexed English-language literature published from 2021 onward, which may have excluded relevant grey literature and non-English studies; it precluded meta-analysis owing to heterogeneity; and it relied on abstract-level classification for some appraisal decisions.

A concrete future agenda follows. First, multi-site, pre-registered randomised trials should test standardised programs against active comparators with follow-up of at least twelve months. Second, dismantling and mediation designs should isolate the contributions of physical load, moral instruction, contemplative practice, and instructor relationship. Third, implementation research should evaluate scalability, cost, and equity in diverse educational and community settings, including digital delivery. In direct summary, the evidence answers RQ1 by affirming a consistent psychological benefit; RQ2 by identifying self-esteem, resilience, and reduced aggression as the most reliably improved indicators, with stress and well-being improving under supportive conditions; and RQ3 by attributing effectiveness to adequate dose, intentional pedagogy, contemplative and moral components, and instructor quality rather than to any single martial-arts style.

## Conclusions

This systematic review of 18 recent studies indicates that participation in martial arts and combat sports is consistently associated with favourable mental-health outcomes among children, adolescents, and young people. Addressing RQ1, the evidence affirms a broadly positive psychological impact spanning both asset promotion and problem prevention. Addressing RQ2, self-esteem, psychological resilience, and reduced aggression emerged as the most reliably improved indicators, with stress and well-being improving under supportive relational and programmatic conditions. Addressing RQ3, effectiveness depended less on martial-arts style than on adequate dose, intentional and philosophy-informed pedagogy, contemplative and moral components, and instructor quality. The core contribution of this review is a methodologically appraised, biopsychosocial evidence map that consolidates a dispersed literature. Practically, structured martial-arts programs offer accessible, low-stigma mental-health supports for schools and communities. These conclusions are tempered by heterogeneity, small samples, and single-database retrieval, underscoring the need for adequately powered, long-term randomised trials with standardised psychological outcomes.

## References

- Alif, M. N., Komarudin, K., & Muhtar, T. (2024). Positive youth development (PYD) in martial arts activities: Literature review. *International Journal of Disabilities Sports and Health Sciences*. <https://doi.org/10.33438/ijdshs.1471275>
- Bae, J.-S., Cho, E.-H., & Lim, T.-H. (2021). Examining the role of life skills in mediating the relationship between the basic psychological needs and subjective well-being of taekwondo student-athletes. *International Journal of Environmental Research and Public Health*, 18(21), 11538. <https://doi.org/10.3390/ijerph182111538>
- Bailey, R. P., Sweeney, R., Sweeney, C., Huihui, L., & Samsudin, N. (2025). Martial arts for young people? A review of the benefits and outcomes of children's and adolescents' participation in martial arts. *Ido Movement for Culture*, 25(3), 31–43. <https://doi.org/10.14589/ido.25.3.4>
- Cerchia, A., Dal Pubel, L., & Casale, N. (2022). Resolving conflicts and preventing violence in Italian schools. In *Research anthology on modern violence and its impact on society*. IGI Global. <https://doi.org/10.4018/978-1-6684-7464-8.ch049>
- Ciaccioni, S., Perazzetti, A., & Magnanini, A. (2024). Intergenerational judo: Synthesising evidence- and eminence-based knowledge on judo across ages. *Sports*, 12(7), 177. <https://doi.org/10.3390/sports12070177>
- Cioffi, R., & Lubetzky, A. V. (2023). BOXVR versus guided YouTube boxing for stress, anxiety, and cognitive performance in adolescents: A pilot randomized controlled trial. *Games for Health Journal*, 12(3), 259–268. <https://doi.org/10.1089/g4h.2022.0202>
- de Borja, C., Ocampo, R., & Teal, A. (2025). Primary care considerations for youth martial arts athletes. *Current Reviews in Musculoskeletal Medicine*. <https://doi.org/10.1007/s12178-024-09942-7>
- de Souza, F., Marcos de Souza, M. M., & Mendes Marcon, C. E. (2022). Karate training improves metabolic health in overweight and obese adolescents: A randomized clinical trial. *Pediatric Exercise Science*. <https://doi.org/10.1123/PES.2020-0193>
- Dong, L., Ke, B., & Chen, L. (2025). A network meta-analysis of the effects of the choice of exercise mode on the character of children and adolescents. *Psychiatry and Clinical Psychopharmacology*. <https://doi.org/10.5152/pcp.2025.251129>
- Du, R., Zhang, F., & Chang, M. (2022). The effect of physical exercise of different intensities on the mental health of college students. *Revista de Psicología del Deporte*, 31(2).
- Efek, E., & Eryigit, H. (2022). The effect of the 12-week judo physical activity program on the self-esteem of secondary school students during the COVID-19 period. *Pedagogy of Physical Culture and Sports*, 26(3), 182–187. <https://doi.org/10.15561/26649837.2022.0306>
- García-Aguilar, F., Beltrán-Carrillo, V. J., García, E. P., & Sánchez-Sánchez, E. (2023). Boxing as an educational resource with adolescents at risk of social exclusion. *Retos*, 47, 365–374. <https://doi.org/10.47197/retos.v47.93754>
- Garcia, J. M., Hahs-Vaughn, D., Murray, M., Perry, C., Brazendale, K., Rice, D. J., & Fukuda, D. H. (2024). The physical and psychosocial benefits of a family judo program for parents of children with Autism Spectrum Disorder: A pilot study. *Disability and Health Journal*, 17(3), 101631. <https://doi.org/10.1016/j.dhjo.2024.101631>
- Harwood-Gross, A., Lambez, B., Feldman, R., Zagoory-Sharon, O., & Rassovsky, Y. (2021). The effect of martial arts training on cognitive and psychological functions in at-risk youths. *Frontiers in Pediatrics*, 9, 707047. <https://doi.org/10.3389/fped.2021.707047>
- Hong, Q. N., Pluye, P., Bujold, M., & Vedel, I. (2018). Mixed Methods Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada.
- Junla, D., Mitranun, W., Sittiprapaporn, P., & Yotanyamaneewong, S. (2023). Effects of online sport counseling in adolescent taekwondo athletes: Real match after the COVID-19 pandemic. *Journal of Exercise Physiology Online*, 26(6), 1–10.
- Kim, J., Kim, Y., & Piatt, J. (2021). Perspectives of parents on health benefits associated with taekwondo for adolescents and young adults with intellectual and developmental disability. *South African Journal for Research in Sport, Physical Education and Recreation*, 43(2).
- Kolodeznikova, M. G., Cherkashin, Z. N., & Mikhailova, T. A. (2021). Personal reflection development in adolescents engaged in combat sports. *Teoriya i Praktika Fizicheskoy Kultury*.

- Lage, V., Miyazaki, M. C. O. S., Nagamine, K. K., Verardi, C. E. L., da Rocha, M. M., & Silveiras, E. F. M. (2021). Analysis of the behavioural and emotional profile of adolescent judo practitioners. *Sport Mont*, 19(3), 3–8. <https://doi.org/10.26773/smj.211010>
- Lee, Y., Guidotti, F., Capranica, L., Pesce, C., Benzing, V., Hauck, J., & Ciaccioni, S. (2025). Olympic combat sports and mental health in children and adolescents with disability: A systematic review of controlled trials. *Frontiers in Psychology*, 16, 1567978. <https://doi.org/10.3389/fpsyg.2025.1567978>
- Lee, Y. H., Chiu, W., & Hwang, J. (2024). Mobile-based mindfulness meditation intervention's impact on mental health among young male judo athletes in South Korea: A quasi-experimental study. *Scientific Reports*, 14, 12965. <https://doi.org/10.1038/s41598-024-63637-0>
- Lenze, L., Benzing, V., & Schmid, J. (2025). The effects of different types of leisure-time physical activity on positive mental health among adolescents: A mixed-methods systematic review and meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 22, 34. <https://doi.org/10.1186/s12966-025-01834-4>
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *PLoS Medicine*, 6(7), e1000100. <https://doi.org/10.1371/journal.pmed.1000100>
- Liu, D., & Guo, C. (2024). Exploring the role of traditional martial arts in enhancing physical fitness and health management. *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte*, 24(94). <https://doi.org/10.15366/rimcafd2024.94.006>
- Mansouri, H., Allahveisi, A., & Jennings, G. (2025). Life in and out of combat clubs: The experiences of Iranian martial artists. *Revista de Artes Marciales Asiáticas*, 20(1). <https://doi.org/10.18002/rama.v20i1.2501>
- Massey, W. V., & Whitley, M. A. (2024). Fighting forward: Purpose as a form of resilience for combat sport athletes. *Qualitative Research in Sport, Exercise and Health*, 16(3). <https://doi.org/10.1080/2159676X.2023.2287497>
- Mei, Z., Jiang, W., Zhang, Y., Luo, S., & Luo, S. (2024). Mind-body therapies for resilience in adolescents: A systematic review of randomized controlled trials. *General Hospital Psychiatry*, 91, 43–51. <https://doi.org/10.1016/j.genhosppsych.2024.08.014>
- Moore, B., Woodcock, S., & Dudley, D. (2021). Well-being warriors: A randomized controlled trial examining the effects of martial arts training on secondary students' resilience. *British Journal of Educational Psychology*, 91(4), 1369–1394. <https://doi.org/10.1111/bjep.12422>
- Morales, J., Fukuda, D. H., & Garcia, V. (2021). Behavioural improvements in children with autism spectrum disorder after participation in an adapted judo programme followed by deleterious effects during the COVID-19 lockdown. *International Journal of Environmental Research and Public Health*, 18(16), 8515. <https://doi.org/10.3390/ijerph18168515>
- Nukulij, T., Kittisrivoranan, N., & Trakulkasemsuk, P. (2025). Chanting and meditation: The journey of Thai youth taekwondo athletes and their perceived effects. *Journal of Buddhist Anthropology*, 10(4), 544–557.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Rose-Clarke, K., Rimal, D., & Morrison, J. (2023). Development and testing the feasibility of a sports-based mental health promotion intervention in Nepal: A protocol for a pilot cluster-randomised controlled trial. *Pilot and Feasibility Studies*, 9, 45. <https://doi.org/10.1186/s40814-023-01324-z>
- Ryan, A., John, M., & Hanna, P. (2025). A community perspective on boxing, well-being and young people. *Journal of Community and Applied Social Psychology*, 35(1), e70024. <https://doi.org/10.1002/casp.70024>
- Santana, T. T., López-Morales, J. L., & Romero, J. (2024). Burnout, optimism and resilience in young Mexican athletes. *Revista de Psicología Clínica con Niños y Adolescentes*, 11(3). <https://doi.org/10.21134/rpcna.2024.11.3.5>
- Saraiva, B. T. C., Henn, R. R., Tebar, W. R., Dos Santos, A. B., Antunes, E. P., Ferrari, G., & Christofaro, D. G. D. (2024). Effects of Muay Thai practice on self-esteem, body perception, and quality of life in adolescents with overweight/obesity. *Translational Journal of the American College of Sports Medicine*, 9(4). <https://doi.org/10.1249/TJX.0000000000000269>

- 
- Shen, Y.-Q., Kim, D.-S., & Bae, J. (2023). Taekwondo instructors' life skills teaching: A key factor in life skills development and transfer of youth trainees. *Archives of Budo*, 19, 1–12.
- Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, 8, 45. <https://doi.org/10.1186/1471-2288-8-45>
- Tozetto, W. R., Kons, R. L., Bussato, E., Felix, G., Ishibashi, M., & Milistetd, M. (2025). Mental well-being in young taekwondo athletes: Psychological-related parameters, associated factors and cluster analysis. *International Journal of Sport and Exercise Psychology*. <https://doi.org/10.1080/1612197X.2025.2547362>
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14(3), 207–222. <https://doi.org/10.1111/1467-8551.00375>
- Wang, Y., Lin, J., & Xie, T. (2021). Mechanism and future prospect of exercise in the treatment of adolescent depression. *Journal of Psychological Science*, 44(5). <https://doi.org/10.16719/j.cnki.1671-6981.20210525>
- Willhite, T., & Becht-Buss, D. (2025). Martial arts as biopsychosocial interventions: Expanding mental health access for youth. *Martial Arts Studies*, (18), 26–39. <https://doi.org/10.18573/mas.230>
- Xu, T., Li, H., Yan, Z., & Zhang, G. (2022). The effects of self-control on bullying behaviour among martial arts practicing adolescents: Based on the analyses of multiple mediation effects. *International Journal of Sport and Exercise Psychology*, 22(1), 92–105. <https://doi.org/10.1080/1612197X.2022.2116470>
- Xu, T., Li, H., Rao, G., & Wang, F. (2025). Exploring the impact of traditional Chinese martial arts and other martial arts on adolescent aggression: A comparative analysis of underlying mechanisms. *BMC Psychology*, 13(1). <https://doi.org/10.1186/s40359-025-02657-5>
- Yang, D., & Wang, X. (2025a). The influence and mechanism of Taichi Chuan on improving mental health in adolescents: The chained mediating effect of meaning in life and psychological resilience. *Acta Psychologica*, 255, 104932. <https://doi.org/10.1016/j.actpsy.2025.104932>
- Yang, D. D., Yao, Q., & Wang, X. Y. (2025b). The influence and mechanism of Chinese martial arts on improving interpersonal skills in adolescents: A randomized controlled trial. *Revista de Psicología del Deporte*, 34(1).
- Zhou, Z., Saibon, J. B., & Khairani, A. Z. (2025). Sport-based interventions to mitigate bullying behaviors among children and adolescents: A systematic review. *Heliyon*, 11, e43307. <https://doi.org/10.1016/j.heliyon.2025.e43307>
-