BALNEO RESEARCH Balneo and PRM Research Journal
English Edition
e ISSN 2734 - 8458 p ISSN 2734 - 844X ROMANIAN ASSOCIATION OF BALNEOLOGY

Review

Resistance Training in Soccer: A Systematic Review of Holistic vs. Isolated Approaches

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Citation: Kusuma I.D.M.A.W., Bharlaman M.B.F., Himawan A., Sumarno, Vozniuk T. – Resistance Training in Soccer: A Systematic Review of Holistic vs. Isolated Approaches
Balneo and PRM Research Journal **2025**, *16(4)*: 906

Academic Editor(s):
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Received: 21.10.2025
Published: 30.12.2025

Reviewers:
Roxana Bistriceanu
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Abstract: Resistance training plays a critical role in enhancing physical performance in soccer by developing key attributes such as strength, speed, and power. This study reviews the effectiveness of holistic and isolated resistance training in improving soccer performance, highlighting their impact on strength, speed, power, and transfer to match situations to guide training program design. The method followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, with literature searches conducted across four electronic databases (Web of Science, Scopus, SPORTDiscus, and PubMed) covering the period from 2021 to 2025. Out of 541 identified articles, 30 met the inclusion criteria and were qualitatively analyzed following a rigorous selection and qual-ity assessment process. Both approaches improve strength, speed, and power. Holistic training enhances match transfer and adaptation, while isolated training builds physical foundation. Combining both supports optimal performance and injury prevention. The in-tegration of holistic and isolated resistance training may offer complementary benefits, supporting both foundational physical development and the transfer of performance gains to match situations. This study finds that while isolated resistance training enhanc-es physical traits, it lacks match relevance. Holistic training better supports soccer perfor-mance, but further research is needed to refine its application.

Keywords: resistance training, holistic approach, isolated training, soccer, performance

1. Introduction

Resistance training is one of soccer's most commonly applied physical training models, ranging from amateur to elite levels. This form of training aims to enhance muscular strength, power, speed, and endurance, which are essential for supporting soccer players in executing match-related actions requiring rapid acceleration over specific distances, repeated sprint ability, and physical duels such as body chases. Various studies have shown that resistance training, whether through traditional methods or innovative approaches such as power bands and combinations with plyometrics, can effectively improve physical performance parameters such as maximal strength, explosive power, and jumping ability [1]. However, it does not always yield significant improvements in sprint speed or force application efficiency under light loads.

The effectiveness of resistance training depends largely on the principle of training transfer, in which adaptations are maximized when the training stimulus closely replicates the specific physical and neuromuscular demands of soccer performance. In this regard, two general approaches to resistance training are commonly employed:

holistic and isolated. The holistic approach typically integrates multiple physical, technical, tactical, and mental components within a training session. In contrast, the isolated approach focuses on a single component in a controlled setting, often separated from the actual context of the game.

Holistic resistance training incorporates strength elements into soccer-specific activities. Examples include small-sided games (SSG) using weighted vests, sprint drills with added resistance, or technical drills holistically integrated with strength exercises [2,3]. This method mimics real match conditions, enabling players to adapt naturally to the physical demands of soccer [4]. On the other hand, the isolated approach targets specific muscle strength enhancements before application to the game context. The isolated approach includes weightlifting, plyometric drills without the ball, and muscle endurance exercises using resistance bands [1,5–7]. Isolated training is more structured and focuses on building a solid physical foundation before being holistically linked with technical and tactical aspects [4].

Resistance training produces several physiological adaptations, including improvements in neuromuscular coordination, rate of force development, and muscle buffering capacity, all of which contribute to enhanced anaerobic efficiency and fatigue resistance in soccer-specific actions. However, existing studies often differ in training design, measurement protocols, and targeted outcomes, making it difficult to determine which approach is more beneficial in practical contexts.

While both approaches are widely used in soccer training, the question remains: Which method is more effective in improving player performance? Is it better to integrate resistance training directly into soccer-specific contexts or to develop physical qualities in isolation before transferring them to match situations? Although numerous experimental studies have explored the effects of resistance training on soccer performance, few have systematically compared the holistic and isolated models in terms of methodological design, physiological responses, and transfer to game performance.

Given the increasing diversity of resistance training methods in soccer and the inconsistent findings across studies, a systematic review is needed to synthesize available evidence and clarify which approach yields greater functional and contextual benefits for players. Therefore, this study systematically reviews and synthesizes the existing literature comparing holistic and isolated resistance training approaches in soccer, focusing on methodological quality, performance outcomes, and practical implications for coaches and practitioners.

2. Materials and methods

Study design

This study employed a literature review approach following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which serve as a framework for conducting systematic research, with or without meta-analysis [8].

Search strategy

Articles from 2021 to 2025 were searched across four electronic databases: Web of Science (WoS), Scopus, SPORTDiscus, and PubMed. The search results were exported to Mendeley Web to remove duplicates. To identify relevant literature, the following keywords were used: (soccer OR soccer) AND ("resistance training" OR "strength training" OR "power training") AND ("holistic training" OR "integrated approach" OR "comprehensive training") AND ("isolated training" OR "targeted training" OR "specific resistance training") AND ("performance" OR "physical fitness" OR "athletic development"). These keywords were designed to focus the search on studies involving resistance training in soccer, whether through holistic or isolated approaches, and their impact on athletic performance.

The screening process followed two stages: title and abstract screening, followed by full-text screening. In the first stage, two reviewers (Author 1 and Author 2) independently screened the titles and abstracts of all retrieved articles based on predefined eligibility criteria related to the type of intervention, population characteristics, and outcome measures. In the second stage, the full texts of the remaining articles were independently reviewed by Author 3 and Author 4. Any disagreements regarding study inclusion at either stage were resolved through discussion among all reviewers to reach consensus, and if consensus could not be achieved, a majority decision was applied. These keywords were designed to narrow the search to studies examining resistance training in soccer, incorporating both holistic and isolated approaches, and evaluating their effects on athletic performance outcomes.

Study eligibility

Inclusion criteria for this review were: (1) articles published between 2021 and 2025, (2) studies evaluating the application of resistance training in a soccer context using either holistic or isolated approaches, (3) experimental or quasi-experimental designs involving physical training interventions with male or female soccer players aged 14 years and above (adolescents to adults), and (4) studies measuring at least one physical performance variable such as strength, speed, agility, endurance, or anaerobic capacity. Only full-text articles published in English were considered.

Conversely, studies were excluded if they were literature reviews, editorials, opinion papers, or case reports. Articles were also excluded if they did not differentiate between holistic and isolated resistance training approaches or if the training interventions were applied outside soccer. Studies involving non-soccer populations, those available only in abstract form, or those lacking a detailed description of the training intervention methodology were also excluded.

Data was extracted using Microsoft Excel to ensure each study met the established inclusion criteria. After retrieving the search results, the first author screened the titles and abstracts to identify relevant studies on resistance training in soccer using either a holistic or isolated approach. Subsequently, the second and third authors extracted and analyzed data regarding participant characteristics (sample size and age range), study design, type of resistance training intervention (holistic or specific), Performance variables assessed such as anaerobic capacity, agility, sprint speed, strength, and endurance, and the primary outcomes of each study.

Methodological quality assessment

The methodological quality of each included study was assessed using procedures described in previous research [9], applying a modified version of the scoring system outlined in Table 1. Six questions (Q1–Q6) were rated on a three-point scale ('yes' = 2 points; 'partial' = 1 point; 'no' = 0 points), with Q4 having a specific scoring category. The total score from all questions (ranging from 0 to 12 points) was used to classify each study's methodological quality. This score was converted into a percentage, with a threshold of >75% considered sufficient to determine acceptable methodological quality [10]. The assessment was conducted independently by the first and second authors.

Table 1. Methodological Quality Assessment of Each Included Study

Question	Description	Scoring Criteria
Q1	Is the study objective clearly defined?	Yes = 2, Partially = 1, No = 0
Q2	Are participant characteristics presented (level, country, position, age, height, body mass)?	Yes = 2, Partially = 1, No = 0
Q3	Are physical and/or physiological and/or technical/tactical variables clearly described?	Yes = 2, Partially = 1, No = 0
Q4	What is the reliability of the system/equipment? (i) not mentioned; (ii) mentioned with citation from previous studies; (iii) measured under local data collection conditions	Measured = 2, Mentioned = 1, Not mentioned = 0

Q5	Are detailed results such as mean, standard deviation, or confidence interval presented?	Yes = 2, Partially = 1, No = 0
Q6	Is a comprehensive conclusion presented, including clear, practical applications and directions for future research?	Yes = 2, Partially = 1, No = 0

Although the scoring system provides a structured approach to evaluating methodological quality, it has several limitations. A numerical scoring method may oversimplify complex methodological aspects because all criteria are weighted equally, even though their importance may differ. Additionally, some items require subjective interpretation, which may introduce reviewer bias. The conversion of scores into percentages using a specific threshold is also somewhat arbitrary and lacks a universal standard. Therefore, the results should be interpreted cautiously and considered as a complement to qualitative analysis.

Data synthesis

In this literature review, data synthesis was conducted using three approaches. Narrative synthesis presented findings based on the type of training (holistic vs. isolated) and performance improvement indicators. Thematic synthesis identified patterns in the effectiveness of resistance training and its application within SSG. Descriptive qualitative synthesis compared the methodologies and outcomes of the included studies without statistical analysis to understand the variations in applied approaches.

3. Results

The literature search was conducted across four electronic databases: Web of Science (WoS), Scopus, SPORTDiscus, and PubMed, targeting relevant articles published between 2021 and 2025. The search results were exported to Mendeley Web for reference management and duplicate removal. The selection process was carried out in stages involving the screening titles, abstracts, and full texts based on the predefined inclusion criteria. Out of a total of 541 identified articles, several studies met the eligibility criteria and were included in the literature review. The selection process flow is illustrated in the following figure.

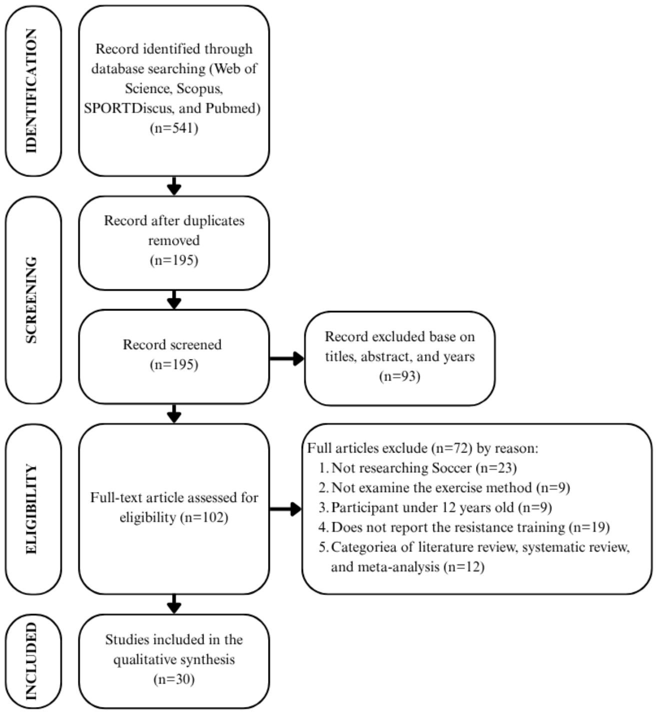

Figure 1. The article selection process followed the PRISMA guidelines

After the removal of duplicates, 195 articles remained for further screening. Title, abstract, and publication year screening led to the exclusion of 93 articles. One hundred and two articles were then assessed through a full-text review to determine their eligibility. During this process, 72 articles were excluded for the following reasons: not focusing on soccer (n = 23), not examining training methods (n = 9), involving participants under the age of 12 (n = 9), not reporting any resistance training components (n = 19), and being categorized as literature reviews, systematic reviews, or meta-analyses (n = 12). As a result, 30 articles met the inclusion criteria and were included in the qualitative synthesis. The flow diagram below illustrates the identification and selection process of the articles included in the literature review.

Methodological quality assessment result

The methodological quality assessment of the 30 studies in this review revealed a diverse range of results, with an average score of 9 out of a maximum of 12 points and scores ranging from 7 to 12. The evaluation was based on six key criteria (Q1–Q6) and was conducted independently by two authors. Most studies clearly stated their research objectives and described participant characteristics, including age, playing position, height, and body mass. Nearly all studies reported the physical, physiological, or technical-tactical variables measured. However, only about one-third of the studies validated their measurement instruments under local conditions; the remainder either only mentioned this or did not report it.

A total of 27 studies presented detailed results, including means and standard deviations, while 20 provided in-depth conclusions, practical implications, and suggestions for future research. Meanwhile, 11 studies offered more descriptive conclusions without substantial discussion of practical implications. After converting the scores into percentages, 23 studies scored above 75%, indicating satisfactory methodological quality. The remaining seven studies scored exactly 75% and were categorized as having adequate methodological quality.

Table 2. Sample Characteristics, Gender, and Intervention Duration of the Included Studies

Study	Sample Characteristics	Sex	Duration
[11]	Age 17.1 ± 0.76 years, body mass, 69.0 ± 5.32 kg, height 176 ± 6.18 cm	Not specified	8 weeks
[12]	Age 20.50 ± 0.51 years	Male	4 week
[13]	Age 19.1 ± 0.5 years, body mass 70.3 ± 5.3 kg, height 180.3 ± 3.0 cm, body fat 9.2 ± 4.1%	Male	6 week
[14]	Age: 21.22 ± 1.18 years, body mass 73.91 ± 4.83 kg , height 1.79 ± 0.05 m;	Male	6 week
[15]	Age 18.10 ± 0.66 years; body mass 76.22 ± 4.76 kg, height 179 ± 0.06 cm	Male	6 week
[16]	HIIT (age: 17.8 ± 0.6 years) and SSG (age: 18.0 ± 0.6 years)	Male	11 week
[17]	Age 14.55 ± 0.51 years, body mass 61.20 ± 7.57 kg , height 1.73 ± 0.06 cm	Male	Not specified
[18]	Age 18.4 ± 0.7 years, body weight 71.8 ± 6.4 kg, height 178.1 ± 6.0 cm	Not specified	4 week
[19]	PTG (age 22.95 ± 1.26 years, body weight 68.96±4.61 kg, height 1.77±0.006 m, BMI 21.88±1.16); STG (age 22.20±1.84 years, height 1.75±0.05 m, body weight 70.23±2.81 kg, BMI 22.73±1.13); CG (age 22.36±1.60 years, height 1.73±0.04 m, body weight 69.00±3.75 kg, BMI 22.70±1.23)	Male	6 week
[20]	Age 15.4 ± 1.9 years	Female	12 week
[21]	SE (age 14.9± 1.0 years, height 173±8.5 cm, body mass 58.9±8.5 kg) ES (age 14.8±1.0 years, height 172.7±7.8 cm, body mass 55.5±5.8 kg)	Male	12 weeks
[22]	Age 16.6 ± 0.2 years, height 175.6 ± 5.7 cm, and body mass 67.6 ± 8.2 kg	Male	6 week
[23]	Age 24.1 ±5.1 years, height 180 ±10 cm, body-mass: 76.7 ±7.7 kg	Male	9 Week

[24]	15 males (age 27.1±4.8 years, height 176±3.6 cm) 9 males and 12 females (age 27.1 ±2.3 years, height 175±9.7 cm	Male and Female	10 week
[25]	Age 15.3 ± 0.68 years, body weight 61.4 ± 7.08 kg, height 1.60 ± 0.06 m	Male	6 week
[26]	Age 16.7 ± 0.3 years, height 178 ± 6 cm, body mass 72.1 ± 7.1 kg, and body mass index 22.1 ± 1.3 kg·m-2	Male	Not specified
[27]	FSQ (age 19 ± 1 years, height 177 ± 6 cm, weight 66 ± 5 kg), LSQ (age 20 ± 1 years, height 176 ± 10 cm, body weight 70 ± 11 kg) and FWT (age 20 ± 1 years, height 173 ± 7 cm, body weight 64 ± 8 kg)	Male	4 week
[28]	Age 20.47 ± 1.85 years, height 1.77 ± 0.08 m, mass 70.49 ± 4.15 kg	Male	6 week
[29]	Body mass 68.3 ± 6.0 kg, height: 1.80 ± 0.10 m, age 18 ± 1 years.	Not specified	2 week
[30]	Age 23,83 ± 5,06 years, body weight 79,5 ± 9,13 kg, body fat 12,66 ± 2,76%	Male	Not specified
[31]	Age 18 ± 0.75 years, height 169.42 ± 5.84 cm, weight 58.5 ± 4.21 kg, and BMI 20.44 ± 2.00	Male	6 week
[32]	Aage 23 ± 4 years, body mass 77 ± 5 kg, height: 1.80 ± 0.11 m)	Male	8 week
[33]	Age 20.3 ± 0.66 years, height 174.0 ± 6.01 cm, body mass 69.1 ± 6.4 kg, body mass index 22.8 ± 1.6 kg/m2	Male	8 week
[34]	Age: 22.3 ± 3.52 years, body height 180.5 ± 5.43 cm, body mass 74.2 ± 5.19 kg, body mass index 22.8 ± 1.32 kg·m2, body fat 12.6 ± 3.31%, fat-free mass 64.4 ± 5.02 kg)	Male	Not specified
[35]	Aged 14.5 ± 0.5 years, body weight 62.9 ± 6.6 kg and height 170 ± 5.9 cm	Male	Not specified
[36]	VI group (age 22.00 ± 5.71 years, height 1.82 ± 0.08 m, body mass 76.20 ± 6.40 kg) CI group (age 22.9 ± 7.2 years, height 1.80 ± 0.04 m, body mass 75.66 ± 6.13 kg)	Male	7 week
[37]	RT (age 15.34 ±1.34 years) OG (age 16.28 ±1.21 years)	Male	15 week
[38]	Under-20 category	Male	7 week
[39]	Age 21.8 ± 2.6 years, body mass 67.5 ± 7.4 kg, height 179.6 ± 7.8 cm, BMI: 21.5± 2.5 kg/m2	Male	8 week
[40]	FWTG (age 20.8±2.6 years, height 1.61±0.04 m, weight 57.5±7.3 kg, BMI 22.15±2.8) CG (age 20.1±2.6 years, height 1.64±5.6 m, weight 59.9±6.9 cm, BMI 22.3±2)	Female	6 week

Table 2 summarises participant characteristics from the included studies, encompassing age, height, and body mass, as well as information on sex and intervention duration. Most of the studies involved male participants ranging from adolescence to young adulthood. The duration of the training interventions varied between 2 and 15 weeks. Some studies did not explicitly report the sex of participants or the duration of the intervention.

Table 3. The Effects of Holistic Resistance Training on Soccer Players' Performance.

Study	Key Findings
[11]	This study suggests that wearable resistance (WR) during warm-ups can be a form of holistic resistance training. WR was applied during moderate running, dynamic stretching, technical drills, sprinting, and high-intensity jumps and removed before the main training session. The findings indicate that WR does not hinder training quality and can enhance performance without altering routines, although it was not used during SSG to preserve game dynamics.
[12]	Holistic resistance training integrating SSG and resistance exercises improved youth players' lower-body strength, agility, and aerobic endurance. This approach merges physical conditioning with game-like movement patterns, thus supporting more comprehensive performance development.

[13]	A holistic resistance approach combining strength training with SSG significantly improved sprint speed, jumping ability, and change-of-direction performance without additional training programs. This method mimics match-like physical demands, enhancing performance more rapidly and with lower fatigue.
[14]	Resistance training that incorporates weighted sprints and SSG led to significant improvements in acceleration, jumping ability, and repeated sprint ability. Integrating physical conditioning with game scenarios made the approach effective in promoting well-rounded performance enhancement.
[15]	Combining strength training and SSG in a holistic resistance training program has the potential to improve both physical and technical aspects of player performance. Sprinting with resistance while using the ball enhanced speed, agility, and technical execution, offering comprehensive benefits.
[16]	Holistic resistance training combines strength elements and SSG to improve aerobic fitness and match performance. The program enhanced high-intensity running, technical-tactical skills, change-of-direction ability, repeated sprints, and aerobic and anaerobic capacity, making it a comprehensive training strategy.
[17]	Integrating strength training with SSG in a holistic resistance model can improve physical conditioning and tactical awareness simultaneously. This approach simulates match scenarios, supports decision-making, and promotes on-field adaptability, making it a realistic and effective training strategy.

Table 3 presents findings from various studies demonstrating the effectiveness of holistic resistance training in enhancing soccer players' performance. This approach typically combines resistance exercises with SSG. It has improved physical performance components, including muscular strength, sprint speed, jumping ability, agility, and repeated sprint capacity. Furthermore, integration with game-related contexts supports the simultaneous development of technical and tactical skills without disrupting the flow of regular training. Several studies also highlight wearable resistance (WR) during warm-ups, which, although not used during SSG, still contributes to early performance gains without compromising training quality. Holistic training allows for time-efficient sessions, reduced excessive fatigue, and better physiological and mechanical adaptation to match demands. Overall, the evidence affirms that combining resistance training with SSG is a realistic, applicable, and effective strategy for comprehensive physical development in soccer players.

Table 4. The Effects of Isolated Resistance Training on Soccer Player's Performance.

Study	Key Findings
[18]	This study showed that isolated resistance training improved maximal strength and jump ability, as evidenced by relative strength (RS) and relative peak force (RPF) increases. However, the increased strength deficit (SDef) indicated that these improvements did not fully translate into light activity performance such as sprinting.
[19]	This study found that isolated strength training was more effective than plyometric training in improving muscle strength, sprint speed, and lower limb functional performance in male soccer players. The training significantly enhanced specific performance metrics crucial to players.
[20]	This study revealed that isolated resistance training in elite young female soccer players significantly improved muscle strength, jumping ability, and sprint speed. Exercises such as bench press, leg press, and lat pull-down effectively enhanced physical fitness components essential for soccer performance.
[21]	Isolated resistance training focused on strength, such as weightlifting and plyometrics, was shown to improve strength and power through neural and morphological adaptations beneficial to soccer players.

[22]	This study emphasized that both traditional and resisted sprint training can improve explosive strength and sprint performance.
[15]	This study demonstrated that resisted sprint training without the ball effectively improved acceleration and change of direction, two key components in soccer performance.
[16]	Isolated resistance training effectively increases strength and power; however, its impact on match performance is limited because it does not integrate game-like situations. The study suggests that this type of training alone is insufficient to improve soccer performance comprehensively, as it lacks technical and tactical elements.
[23]	This study showed that isolated resistance training, particularly with heavily resisted sprints, significantly improved initial acceleration, 10–30 meter split time, and mechanical force and power output, which are essential for sprint performance in professional soccer players.
[24]	This study investigated isolated resistance training through resisted sprinting using sleds and robotic devices with horizontal resistance. It focused on individual optimal loads to improve sprint performance and mechanical output. Results indicated that although individual responses varied, L10 and L0pt protocols have potential benefits.
[25]	This study found the method effective in improving strength, speed, and agility regardless of sprint distance, thus supporting the development of key physical attributes in soccer.
[26]	Isolated resistance training focused on strength development without incorporating soccer-specific activities and effectively enhanced power and hypertrophy. The study highlighted the benefits of eccentric overload in increasing power and reducing injury risk in youth players.
[27]	This study found that isolated resistance training with flywheel and free weights significantly improved player performance, including horizontal jump, change of direction speed, and 1RM strength. Flywheel training was more effective than free weights in increasing countermovement jump height.
[28]	This study showed that isolated resistance training using power bands significantly improved collegiate soccer players' 1RM strength, sprint speed, vertical jump, and agility. While effective in enhancing key physical attributes, it did not directly support tactical and cognitive skills in match play.
[29]	Isolated resistance training that excluded game elements significantly improved physical attributes such as sprint speed and jump height. A study on heavy sled warm-ups indicated that this method encourages targeted muscle development and neuromuscular adaptation, which is essential for high-intensity performance.
[30]	This study demonstrated that isolated resistance training, such as plyometrics and sled towing, effectively improved vertical jump performance, particularly when combined with caffeine consumption. These exercises increase strength and explosiveness in professional soccer players.
[31]	This study showed that isolated resistance training, especially sledwork with a 10 kg load, significantly improved 20-meter sprint speed in collegiate soccer players after six weeks, confirming its effectiveness in enhancing key physical attributes like speed.
[32]	This study found that isolated resistance training using Enhanced Negative Training effectively improved change of direction, muscle strength, and the hamstring-to-quadriceps ratio in semi-professional soccer players, contributing to better agility, sprint, and jump performance for high-level play.
[33]	Isolated resistance training, particularly High-Intensity Resistance Training, effectively enhanced soccer players' physical fitness, hormonal balance, and antioxidant factors. These findings highlight the potential of isolated resistance training to significantly improve strength and power, which are critical for sprinting and jumping performance.
[34]	Isolated resistance training, such as Heavy Resistance Training (HRT), effectively improved neuromuscular performance, particularly sprinting and 1-RM half-back squat strength. This approach supports focused muscle development, which is beneficial for increasing maximal strength and power.
[35]	Isolated resistance training improves muscle strength and hypertrophy, but its impact on soccer performance is limited without technical and tactical training. The article also

	noted that improper implementation, such as during periods of high lactate levels, can impair skills like penalty kick accuracy.
[36]	This study found that isolated flywheel resistance training, using variable and constant intensities, effectively increased lower-body maximal strength, essential for sprinting and jumping. However, there were no improvements in countermovement jump or change of direction, suggesting that isolated training alone may not improve all aspects of soccer performance.
[37]	This study showed that isolated resistance training with external loads effectively improved jumping ability in youth soccer players. Both self-load and overload methods were effective, though the overload group showed greater improvements in jump performance.
[38]	This study showed that five weeks of isolated resistance training effectively increased youth soccer players' strength, power, and sprint ability. However, adding a 2RM protocol did not yield extra benefits compared to standard resistance training.
[39]	Isolated resistance training improved squat jump and sprint performance, but the results were less significant than those from holistic training. Due to the lack of dynamic and multifaceted elements, this training has limited transfer to on-field performance. Although effective in building muscle, isolated training is less optimal for speed and agility than holistic methods.
[40]	This study showed that six weeks of squat training using a flywheel significantly improved strength, particularly eccentric strength, in professional female soccer players. However, this isolated approach did not enhance specific abilities such as jumping, changing direction, or sprinting.

Table 4 presents findings from various studies evaluating the effectiveness of isolated resistance training, which refers to strength training performed independently without incorporating game-related elements such as SSG. Overall, this form of training has been shown to enhance specific physical attributes, including muscular strength, acceleration, sprint speed, jump height, and change of direction. Various methods were employed across the studies, including free weights, flywheel devices, sled towing, and plyometric exercises. However, most studies also reported that despite the high effectiveness of isolated training in developing strength and neuromuscular capacity, its application to soccer-specific performance remains limited if not accompanied by technical and tactical drills. Some findings even indicated the potential for adverse effects on technical skills if the training is poorly timed, such as increased fatigue during match play. Therefore, isolated resistance training is essential for developing foundational physical attributes. However, it should be holistically integrated with game-based scenarios to ensure optimal transfer to actual on-field performance and align with the demands of modern soccer.

Table 5. Comparison of the Effectiveness of Holistic vs. Isolated Resistance Training

Study	Key Findings
[15]	This study indicated that holistic resistance training is more effective for overall player development than isolated resistance training, as it improves physical capabilities and enhances technical skills and agility with the ball.
[16]	This study demonstrated that holistic resistance training, which combines strength exercises, HIIT and SSG, improves overall soccer performance—including aerobic fitness, goal-scoring ability, and match outcomes. In contrast, isolated resistance training lacks game-specific elements, thus having a more limited impact on comprehensive performance.

Table 5 compares the effectiveness of holistic resistance training and isolated resistance training in the context of soccer player performance development. Based on the synthesis of three studies, holistic resistance training, which integrates strength components with game-based elements such as SSG or ball-related drills, has produced more comprehensive improvements. These include enhancements in physical attributes such as speed, agility, aerobic endurance, and technical and tactical gameplay.

This approach improves individual performance and positively influences match outcomes, such as goal-scoring and team victories. In contrast, isolated resistance training primarily enhances specific physical attributes and lacks the incorporation of realistic game scenarios, thereby limiting its transferability to actual match performance. Consequently, holistic resistance training is considered more effective and efficient, particularly during the competitive season, as it simultaneously develops physical and technical capabilities within game-relevant contexts.

4. Discussion

A review of 30 articles indicates that resistance training approaches for soccer players can be categorized into two main types: holistic and isolated. Of the total studies reviewed, 8 discussed holistic approaches, 25 focused on isolated approaches, and only two directly compared the two. The predominance of research on isolated resistance training reflects the prevailing emphasis on enhancing specific physical attributes such as muscle strength, sprint speed, explosive power, jumping ability, and change of direction. Although this approach has proven effective in improving physical capacity, several studies have noted its limitations in transferring gains to the complex demands of match performance. These limitations are primarily attributed to lacking technical, tactical, and game-contextual elements in isolated training protocols. In contrast, holistic resistance training, which combines strength training with SSG or game-based drills, has demonstrated superiority in enhancing overall performance. This method improves both physical capabilities and technical-tactical skills within a realistic match context. Studies comparing both approaches confirm that the holistic method improves cardiovascular fitness, match performance such as goal scoring and team victories, and game readiness.

However, limited studies investigating holistic resistance training present a significant gap in the current literature. Most available studies are short-term experimental interventions, with few employing longitudinal designs at the professional competition level. These limitations restrict the generalizability of findings and hinder the development of robust scientific evidence across different age groups, competition levels, and training durations. Additionally, the variation in holistic intervention designs complicates establishing standardized and measurable implementation protocols.

The Impact of Resistance Training on Soccer Performance

The effectiveness of resistance training in soccer should not be assessed solely through physiological improvements such as muscle strength or jump height but also through its contribution to specific performance outcomes. Holistic approaches that integrate wearable resistance into small-sided games or use sleds in repeated sprint training have enhanced match-related fitness parameters, including agility, repeated-sprint ability, and stability during physical duels [15]. Acutely, wearable resistance adds external load during sprinting, increasing ground contact time and reducing sprint speed [41]; however, this serves as an adaptive stimulus to improve movement efficiency in game contexts. Resistance training in real-game scenarios has accelerated adaptations to technical and tactical demands, such as decision-making and response under pressure [42].

Conversely, isolated training using squats, deadlifts, power cleans, or flywheel devices significantly improves explosive strength attributes such as countermovement jump or 10–30 meter sprint performance. However, these gains translate into meaningful match performance improvements only when holistically integrated with technical training, highlighting the need for a comprehensive training strategy [28]. Such findings indicate that the effectiveness of resistance training is highly dependent on the context of its application, and optimal results can only be achieved when implemented holistically within the team's training periodization based on the competitive phase, player role, and individual readiness.

Training Efficiency

In modern soccer, where training schedules are dense and efficiency is essential, resistance training must be strategically implemented in a holistic manner within the team's weekly structure. As training methodologies evolve, coaches shift from traditional approaches to sport-specific models that combine metabolic, technical, and tactical demands tailored to individual players and the team's tactical philosophy [43]. Holistic approaches are considered more efficient, allowing strength and fitness goals to be achieved without additional time outside regular soccer sessions. For example, using weighted vests in possession-based SSG or sprint resistance training during build-up play saves time and delivers functional strength stimuli [44,45]. Additionally, research indicates that incorporating the ball into physical training simultaneously enhances physical and technical performance, particularly in youth players [46].

Nevertheless, isolated resistance training is important, especially during the preseason, to establish foundational strength or in individual supplemental and rehabilitation sessions [47]. This approach requires dedicated time and facilities, making it more appropriate for individualized load management or injury prevention. Interestingly, recent studies have begun exploring microdosing strategies that deliver minimal but effective strength stimuli, particularly relevant for maintaining neuromuscular adaptations during congested competition phases. Thus, the efficiency of resistance training depends on thoughtful integration with the team's weekly schedule, resource availability, and the specific objectives of the training program.

Comparing the Effectiveness of Holistic vs. Isolated Approaches

Both holistic and isolated resistance training approaches have distinct advantages and limitations regarding performance enhancement in soccer. Holistic training integrates strength components into match-relevant activities such as SSG, technical drills, or modified games [48]. Its primary advantage lies in inducing neuromuscular adaptations alongside decision-making processes, thereby enhancing the transfer of training effects to match performance [49]. Over the past decade, soccer training has undergone a notable transformation towards tactically driven metabolic stimuli (Kusuma et al., 2025), aiming to optimize established training principles such as frequency, intensity, duration, type, volume, and progression. Strength and conditioning coaches now employ tactical periodization, functional fitness training, and exercises emphasizing acceleration, deceleration, and change of direction [51,52].

On the other hand, isolated training focuses on developing specific physical components, including maximal strength, power, and force output, through traditional gym-based methods such as plyometrics, sled pushes, flywheel exercises, or nordic hamstrings [53]. While these do not reflect game-specific contexts, they remain crucial for building physical foundations and preventing injuries [54]. Some studies recommend combining both approaches within a holistic weekly microstructure to synergize specific and game-applicable strength development [55,56]. However, the effectiveness of each approach is influenced by individual factors such as playing position, physical readiness, and periodization phase [57]. For instance, defenders may benefit more from isolated methods to improve force production, while midfielders might gain more from holistic approaches that challenge decision-making under pressure. A key challenge for coaches is designing holistic approaches that provide adequate strength stimuli without compromising game quality. Conversely, isolated methods must be varied and engaging, as they can lead to monotony if not aligned with players' motivation and preferences [58].

The Potential of Resistance Training Within SSG

Integrating resistance training into SSG has emerged as an innovative strategy with substantial potential to enhance multifactorial soccer performance. SSG replicates match conditions within a limited space and time while maintaining high intensity and complex decision-making demands [59]. When resistance elements such as weighted vests, elastic cords, or mechanical resistance are introduced into these sessions, they significantly increase physiological and neuromuscular load. Several studies have reported that implementing weighted vests during in-season SSG improves sprint performance, jump ability, change of direction, and aerobic and anaerobic capacity in trained youth players [13]. This approach also improves agility and body stability, which are critical components in dynamic game situations [60] and contributes to faster decision-making and responsiveness under game pressure [56].

However, research on the long-term effects of integrating resistance training into SSG, particularly on tactical dimensions, teamwork, and communication, is minimal. Thus, while this method shows significant promise in enhancing performance across multiple domains, further studies are needed to establish safe and effective implementation guidelines, especially for youth athletes or players at higher injury risk.

Future Research Directions

Although several studies have demonstrated the positive impact of resistance training on soccer players' physical performance, current evidence shows that most research remains focused on isolated resistance training. Conversely, studies evaluating or comparing holistic approaches, which combine strength elements with game contexts, are still limited in quantity and depth. Future research should, therefore, focus on several strategic areas. First, more long-term intervention studies are needed to evaluate the effects of holistic resistance training, such as weighted vests during SSG, on technical performance and match outcomes over an entire competitive season. These studies should ideally include additional variables such as injury risk, physiological adaptations, training time efficiency, and the balance between physical and cognitive stimuli. Second, comparative studies assessing the effectiveness of holistic versus isolated approaches across various age groups, playing positions, and competition levels are essential. Few studies offer such direct comparisons despite the significant impact of training context on outcomes and coaching relevance. By strengthening the evidence base, coaches and practitioners will be better equipped to design more targeted, individualized, and game-specific resistance training programs.

5. Conclusions

Isolated resistance training is effective for improving specific physical components such as strength and power, but its transfer to match performance may be limited because it does not include technical and tactical context. A holistic approach using small-sided games allows simultaneous development of physical fitness and game skills, yet direct comparison studies between the two methods remain limited, so any claims of superiority should be made cautiously.

Future research should employ long-term interventions and head-to-head designs to evaluate real match effectiveness. Practically, coaches are encouraged to combine both approaches: isolated resistance training to improve targeted physical qualities and holistic game-based training to maximize transfer to match situations.

Author Contributions: Conceptualization, I.D.M.A.W.K. and M.B.F.B; methodology, I.D.M.A.W.K.; software, A.H.; validation, A.H., S. and T.V.; formal analysis, I.D.M.A.W.K.; investigation, T.V.; resources, I.D.M.A.W.K.; data curation, A.H.; writing—original draft preparation, I.D.M.A.W.K.; writing—review and editing, A.H.; visualization, S.; supervision, M.B.F.B.; project administration, S.; funding acquisition, I.D.M.A.W.K. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest: The authors declare no conflict of interest.

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