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Analysis of Endurance Training in Volleyball: A Systematic Literature Review

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Abstract
The purpose of this study is to examine the use of endurance training in Volleyball. Materials and methods: The PRISMA table will be used for systematic review and meta-analysis in this review investigation. Various studies were published from 2020 to 2025. In the search procedure, the following keywords were used: (1) Analysis; (2 Endurance); (3) Volleyball. The search in this study used the Scopus research journal database. The overall theme of this study obtained 170 articles. Contains 63 articles, of which 10 were used in this study. The analysis of endurance training in volleyball includes the effect of endurance training based on relevant results, including increasing vertical jumps, improving performance, and significantly increasing the endurance of volleyball players.

Keywords: group active passing exercises; pair active passing exercises; passing accuracy

1. Introduction

There are several sports branches that have successfully captured the attention of their enthusiasts, whether simply for enjoyment, as a hobby, or as a profession. Among the many existing sports, volleyball is one of the most popular, enjoyed by people of all ages and genders. Sports not only have important meaning for physical health, but also serve as a medium for knowledge and achievement (Rohendi & Rustiawan, 2020). Sports development is a collective effort to improve the welfare of the Indonesian people through the enhancement of physical, mental, and spiritual health (Bangun, 2019). It also aims to develop good character, such as discipline and sportsmanship, which in turn can improve achievement and strengthen nationalism (Amansyah, 2019). Talent, if not properly planned, will be wasted (Adi & Soenyoto, 2020). Sports nutrition is the science that studies the relationship between nutritional needs management and performance, which benefits health, fitness, growth, and sports achievement development (Candra Kurniawan et al., 2022).

Sports are a structured effort designed to improve and develop physical, mental, and social abilities (Rohendi & Rustiawan, 2020). According to Pratama (2021), "the techniques in volleyball consist of service, underhand passing, overhand passing, block, and smash (spike). Each of these techniques has different functions and objectives in its execution." One example is the smash. According to Permana & Suharjana (2013), a smash is one of the key techniques and serves as an attack in volleyball; by performing an accurate and powerful smash, opponents will find it difficult to return the ball. Volleyball has various purposes it can be played as an educational, recreational, or competitive sport.

Pratama (2021) stated that volleyball is a complex game that is not easy for everyone to play. The world of sports today has developed rapidly, and with the increasing variety of sports, it becomes easier for us to maintain our fitness. Moreover, fitness centers are now more widely available, allowing people to train according to their free time. Sports provide many benefits for our bodies not only for health but also as a means of recreation and achievement. To achieve success in sports, we must design our training programs properly, regularly, and systematically (Lisdiana et al., 2021).

Similarly, in volleyball, although it may seem focused only on playing, there are many physical components that must be developed through training to achieve good performance (Dharma & Duhe, 2020). Sports provide many benefits for our bodies not only for health but also as a means of recreation and achievement. To reach achievements in sports, we must organize our training programs properly, regularly, and systematically (Haromain et al., 2023). As in volleyball, while the game appears to focus mainly on playing, there are various physical components that must be fulfilled through training to achieve optimal performance (Rohendi & Rustiawan, 2020).

According to Permana & Suharjana (2013), training is the application of regular, systematic, and continuous physical stress in such a way that it enhances performance and physical fitness. Training itself is a program for athlete development in competition, involving skill improvement and energy capacity (Bompa, 1999, as cited in Endrawan et al., 2023). Training is a systematic process performed repeatedly, with the workload increasing over time (Adi S, Soenyoto, et al., 2023b). Training consists of general physical training aimed at improving the cardiopulmonary system and specific training focused on achieving high performance (Dharma & Duhe, 2020). Training is the process athletes go through to achieve the desired performance; therefore, athletes must train earnestly and progressively. Strength training or resistance training is one of the best methods to enhance strength ability (Adi S, Arbanisa, et al., 2023).

A training program should be designed to achieve the best performance the peak performance during a competition. The expected peak performance involves maximizing athletes' physical (biomotor and physiological), technical, tactical, and psychological (mental) adaptations (Rohendi & Rustiawan, 2020). The physical training program in volleyball must be tailored to achieve specific abilities necessary for becoming a champion. The first component is strength training, which refers to the ability to resist or overcome physical resistance, either external or from one's own body (Duhe, 2020).

Next is endurance training, which is the ability to use a group of muscles to contract continuously over a long period (Ummah, 2019). Then comes power training, defined as the product of strength and speed (Permana & Suharjana, 2013). Speed training refers to the body's ability to respond to stimuli in the shortest possible time. Agility training is the ability to change direction quickly and accurately while moving from one place to another. Lastly, flexibility training is the ability of joints and muscles to perform movements in all directions optimally. Thus, these six components are essential elements that every volleyball athlete must possess to achieve optimal results.

The measurement of flexibility varies across sports, as flexibility needs differ depending on the type of sport, and so do the training methods (Adi S, Soenyoto, et al., 2023). Therefore, the researcher aims to analyze endurance training in volleyball.

2. Method

A Systematic Literature Review refers to a collection of studies concerning data collection techniques or research subjects investigated using various literature sources such as books, encyclopedias, scientific journals, magazines, and documents (Rumini et al., 2024). This study employs the PRISMA table method, which is used for systematic reviews and meta-analyses in investigations. This means collecting data from books, journals, articles, magazines, and the internet.

Study Participants

The terms "Endurance," "Training," and "Volleyball" can be searched in articles published in the Scopus research journal database from 2020 to 2025. PRISMA 2020 aims to enhance terminology and methodology by facilitating comprehensive, transparent, and complete reporting of systematic reviews (Page et al., 2021).

Study Organization

The variables selected for the Scopus search are:

1) the number of databases included in the keyword search in Scopus;
2) publication years of the selected articles (2020–2025);
3) relevance of the articles;
4) field (sports, training, education, or mixed);
5) research type (exploratory, experimental, descriptive, quantitative, qualitative);
6) selection of positively relevant articles.

Statistical Analysis

This study focuses on the titles, abstracts, and keywords of the articles, as these are essential to create a reliable and adequate core for analysis and further use. Only a few open-access articles were used in this review study. This was done because the author wanted everyone to have access to the research. The following inclusion and exclusion criteria were applied to select only those relevant and capable of contributing to the topic under discussion.

3. Result and Discussion

Research Results

The identification of literature search results in the database using the specified keywords yielded a total of (n=170) articles from the entire database. These were filtered from the years 2020 to 2025, and a total of (n=63) articles were selected. Articles that were inaccessible or did not meet the inclusion criteria were excluded (n=107). The screened and selected articles based on the keywords endurance, training, and volleyball totaled (n=63). Finally, the articles that met the relevance criteria were included in the results, totaling (n=10) relevant articles.

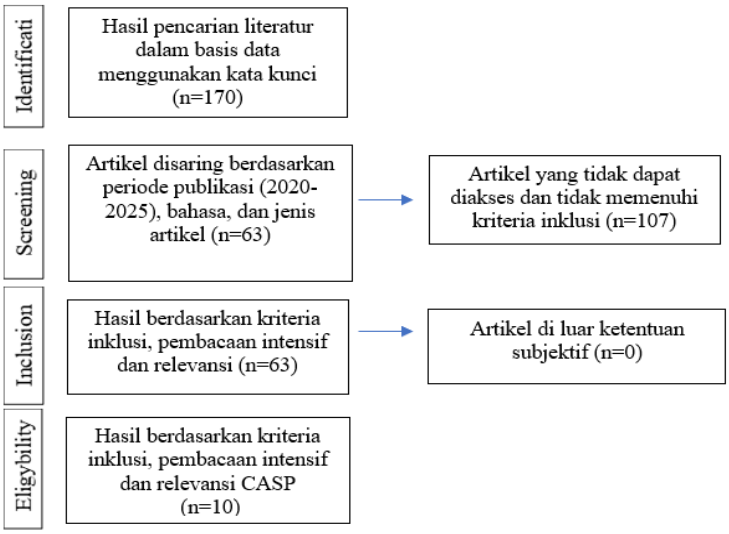

Figure 1. The prisma scheme in the literature selection process

The following table shows the total number of publications released during the selected period.

Table 1. Evolution of the number of publications by year

Year of Publication	Number of Articles	Percentage
2020	0	0%
2021	1	10%
2022	1	10%
2023	5	50%
2024	2	20%
2025	1	10%
Total	**10**	**100%**

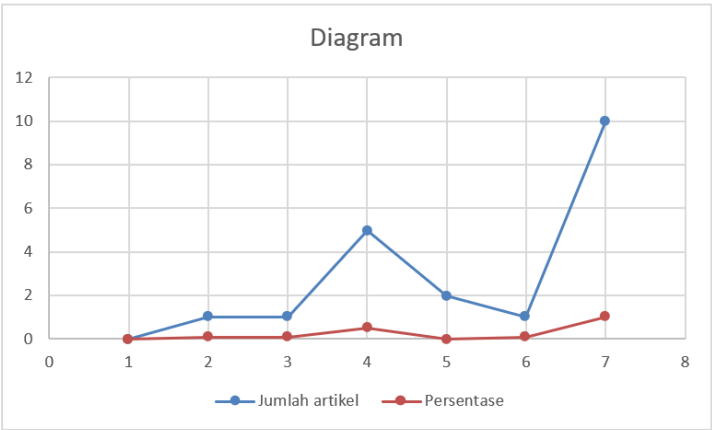

Figure 2. Percentage evolution chart

According to the literature, the analysis that can be applied in plyometric training is shown in the table below:

Table 2. Applicable analyses in plyometric training

Title	Sample	Results
High-Intensity Interval Training Impacts On Endurance Of Volleyball Players Impactos Do Treinamento Intervalado De Alta Intensidade Sobre A Endurance Dos Jogadores De Voleibol (Wu, 2023).	Volleyball Players	Improving The Endurance
Relationship Between Vertical Jumping Ability And Endurance Capacity With Internal Training Loads In Professional Volleyball Players During Preseason (Berriel Et Al., 2022)	Professional Volleyball Players	Improve Vertical Jumping Ability And Endurance Capacity
Development Of Iot-Based Pulse Rate Detection Bracelet For Volleyball Endurance Training | Desarrollo De Una Pulsera De Detección De Frecuencia Cardíaca Basada En Iot Para El Entrenamiento De Resistencia En Voleibol (Muharram Et Al., 2025)	Volleyball Coaches And Players	Endurance Training Is Proven To Be Suitable For Use
The Effects Of Circuit Training Versus High-Intensity Interval Training On The Endurance Of Volleyball Athletes: A Randomized Controlled Trial | Los Efectos Del Entrenamiento En Circuito Frente Al Entrenamiento En Intervalos De Alta Intensidad En La Resistencia De Los Atletas De Voleibol: Un Ensayo Controlado Aleatorio (Latino Et Al., 2024).	Volleyball Athletes.	Enhancing Volleyball Athletes' Endurance
Reaction Speed Training In Volleyball Treinamento De Velocidade De Reação No Voleibol (Wang et al., 2023)	Volleyball Players	Speed Training Daily To Perform Better Close To The Net

Effect Of Volleyball Training On Physical Fitness And Cardiopulmonary Endurance Of College Students | Efeito Do Treinamento De Vôlei Sobre A Aptidão Física E A Resistência Cardiopulmonar De Estudantes Universitários (Yue & Hong, 2023)	College Students'	Positively Impacted College Students' Physical Fitness And Cardiopulmonary Endurance.
The Effect Of Strength-Endurance Training On Serum And Urine Metabolic Profiles Of Female Adolescent Volleyball Athletes (Zhou et al., 2021)	Volleyball Athletes	Potential To Reveal The Global Physiological Changes In Response To Exercise Training.
Relaxation Training To Relieve Sports Fatigue In Volleyball | Treinamento De Relaxamento No Alívio Da Fadiga Esportiva No Voleibol (Qin, 2023)	Volleyball Players	Improving The Performance Of Volleyball Players
Effects Of Game-Based Training Approach On Physical Abilities In Male Youth Volleyball Players (Wubale et al., 2023)	Volleyball Players	Improved The Physical Performances
Effects of Mental Fatigue Induced by Social Media Use on Volleyball Decision-Making, Endurance, and Countermovement Jump Performance (Luisa et al., 2024)	volleyball athletes	improved their endurance

Discussion

Based on the characteristics of intensity, duration, and energy expenditure in volleyball training, athletes are required to maintain fast movements over a certain period of time. Among these, endurance quality is a fundamental athletic component and a specific ability needed to sustain high-intensity competition. To ensure the stability of volleyball players during matches, endurance training plays a crucial role. In endurance training, exercises should be conducted following the principle of gradual progression to prevent injuries caused by excessive intensity. Endurance is an essential part of volleyball (Wu, 2023). In endurance quality training, the aerobic endurance of volleyball players should be developed first, followed by anaerobic endurance, and then combined once both are fully developed. Data analysis indicates that intensive interval training methods can effectively improve the endurance of volleyball players aged 18–19 years (Wu, 2023).

To improve endurance in volleyball players, internal training methods can be used to enhance vertical jump ability and endurance capacity during the preseason, while exploring the relationship between players' initial physical fitness and the accumulated internal training load over the first two weeks. Internal load was measured using session rating of perceived exertion. The internal training load and strategies used by the team proved effective in improving vertical jump ability and endurance capacity among players (Berriel et al., 2022). Coaches must therefore improve players' physical qualities to enhance their tolerance to training (Berriel et al., 2022).

One innovation in sports is the Internet of Things (IoT), introduced by Kevin Ashton in 1999. Today, IoT technology has been developed and applied widely (Eraslan et al., 2021). One of the most common uses of IoT is the Global Positioning System (GPS), which enables connected devices to be accessed and monitored anytime and anywhere. The device developed in the study demonstrated significant progress in real-time heart rate tracking, offering valuable benefits to athletes, particularly in athletics. With this device, athletes can monitor their heart rate and physical condition during training. This real-time monitoring helps them optimize training sessions and manage health effectively (Muharram et al., 2025). Current technological advancements allow endurance athletes, sports teams, and physicians to monitor workload, performance, and biomarkers to optimize performance and minimize injury risk (Zhong, 2021). Digital literacy, signal transmission, and internet usage are all interconnected (Adi, Rohidi, et al., 2023).

High-Intensity Interval Training (HIIT) outperforms circuit training methods in improving volleyball athletes' endurance (Latino et al., 2024). Thus, incorporating HIIT into standard volleyball training regimens would be beneficial. This finding aligns with a growing body of literature supporting the effectiveness of HIIT in improving speed and power among athletes engaged in intermittent sports like volleyball (Latino et al., 2024). The primary goal is to enhance metabolic rate and increase anaerobic endurance, thereby contributing to substantial improvements in endurance capacity among volleyball athletes (Latino et al., 2024).

To maintain endurance, athletes should engage in specific physical training tailored to particular characteristics (Wang et al., 2023b). During training, athletes need to distinguish between primary and secondary skills and understand dominant qualities. This approach helps improve specific fitness aspects. In technical and tactical training, mastering specific techniques and tactics enables breakthroughs in performance (Wang et al., 2023). Psychologically, athletes must identify and overcome mental weaknesses to develop stronger willpower. The fixed-intensity load training model optimizes reaction speed in volleyball, significantly improving athletes' endurance ability (Wang et al., 2023). This model provides a methodological reference for coaches in developing training strategies.

There are several types of endurance. Cardiopulmonary endurance, for example, is reflected in the functional capacity of the respiratory system during aerobic exercise. Scientific studies show that long-term volleyball participation can significantly increase vital capacity and muscle content in the body (Yue & Hong, 2023). Increased muscle mass leads to a higher basal metabolic rate. When metabolism improves, physical activity can be sustained more effectively, allowing physical function to reach an optimal level. Moreover, increased muscle mass enhances strength, helping to prevent sports-related injuries such as muscle strains and joint sprains (Adi, Aliriad, et al., 2023).

Physical activity plays a key role in maintaining health (Adi et al., 2020). Increased muscle strength often correlates with improved body control, which helps prevent injuries caused by imbalance (Yue & Hong, 2023). Sports massage can enhance athletic performance by improving blood circulation, reducing lactic acid levels, and relaxing tense muscles (Adi, Aliriad, et al., 2023).

Long-term physical training can also improve athletes' overall fitness, enabling better training performance (Zhou et al., 2021). According to Zhou et al. (2021), in volleyball, when players' fitness decreases over time — combined with lack of rest and excessive training — the quality of training declines. One key test for athletes involves biochemical indicators. These indicators help

evaluate players' physical condition under high-intensity training. For example, if hemoglobin levels decrease, players may feel fatigued and need timely nutritional support. Protein urine tests can indicate whether physical activity levels are normal. If results remain positive the next morning, it may indicate excessive fatigue. Relaxation exercises can help restore body function, improve training outcomes, and enhance athletic ability (Zhou et al., 2021). Anxiety is also inherent in sports and can occur at all levels (Adi et al., 2024).

Several endurance training programs aim to improve young male volleyball players' physical performance. According to Qin (2023), game-based training programs effectively enhance range of motion, lateral movement, and overall speed. Buchheit et al. (2008) stated that game-based strategies are designed to enhance endurance capacity in volleyball players. Importantly, players benefit from these engaging and enjoyable methods while gaining a better understanding of the game (Billaut & Bishop, 2009). Additionally, game-based training strategies appear to effectively improve athletic performance in volleyball players (Trajković et al., 2011). However, improving vertical jump success in volleyball requires explosive leg strength, meaning game-based methods are physically demanding and can lead to performance adaptations (Qin, 2023).

An analysis of the chronic effects of social media use on smartphones before training sessions showed an impact on decision-making, CMJ (countermovement jump), and endurance performance among young volleyball athletes (Wubale et al., 2023). The main finding indicated that frequent smartphone use before training sessions over four weeks impaired decision-making performance acquisition. However, social media use did not affect endurance or CMJ performance. Multimedia advancements can help address societal challenges related to physical activity and education (Adi et al., 2021). Chronic social media use before training sessions may disrupt cognitive adaptation (e.g., inhibitory control, memory, cognitive flexibility), and mental fatigue induced before training can hinder long-term endurance improvement (Wubale et al., 2023).
Athletes experiencing mental fatigue tend to compensate for reduced inhibitory control accuracy by slowing information processing, leading to longer reaction times (Luisa et al., 2024). In practical volleyball contexts, mentally fatigued athletes may take longer to process environmental information. Given the fast-paced nature of volleyball, slower environmental processing can hinder performance. Consequently, athletes with chronic mental fatigue may be more prone to neuromuscular injuries. Theta waves in the electroencephalogram (EEG), an indicator of mental fatigue, were not measured due to the lack of EEG equipment for analyzing alpha and theta brainwave amplitudes at rest and after mental fatigue induction (Luisa et al., 2024).

4. Conclusion and Recommendation

Based on a review of various studies, it can be concluded that diverse training approaches have a significant impact on improving players' physical capacity, particularly endurance. High-intensity interval training has consistently been shown to enhance both aerobic and anaerobic endurance. In addition, the relationship between vertical jump ability and endurance capacity indicates that explosive and endurance components are interrelated in players' physical performance, especially when facing high internal training loads. Technological innovations, such as IoT-based pulse detection wristbands, have also begun to be applied to monitor endurance training effectiveness in real time, improving evaluation accuracy and the individualization of training programs. Reaction speed training and game-based approaches have been proven to support overall physical development, strengthening endurance while sharpening response and concentration on the court.

Relaxation exercises play a role in reducing psychological fatigue and enhancing mental readiness, which positively influences recovery and consistency of physical performance during intensive training sessions.

References

Adi, S., Aldapit, E., Nova, A., Dharmika Nugraha, P., Hutomo Bhakti, Y., & Bang Redy Utama, M. (2021). Virtual Multimedia Communication For Physical Distancing In Physical Education. Journal Of Physics: Conference Series, 1779(1). Https://Doi.Org/10.1088/1742-6596/1779/1/012016

Adi, S., Aliriad, H., Arbanisa, W., & Winoto, A. (2023). Sport Massage On Sports Performance. Phedheral, 20(2), 1–11.

Adi, S., Aliriad, H., Kusuma, D. W. Y., Arbanisa, W., & Winoto, A. (2024). Athletes' Stress And Anxiety Before The Match. Indonesian Journal Of Physical Education And Sport Science, 4(1), 11–21.

Adi S, Arbanisa, W., & Winoto, A. (2023). Program Latihan Beban Pada Olahraga Bulutangkis: Sebuah Tinjauan Pustaka. Citius : Jurnal Pendidikan Jasmani, Olahraga, Dan Kesehatan, 3(2 Se-Articles), 146–154. Https://Doi.Org/10.32665/Citius.V3i2.2317

Adi, S., Da'i, M., & Cahyani, O. D. (2020). Level Of Physical Activity And Mass Body Index Of Students In The Pandemic Period. Juara : Jurnal Olahraga, 6(1 Se-Articles). Https://Doi.Org/10.33222/Juara.V6i1.1046

Adi, S., Rohidi, T. R., & Rustiadi, T. (2023). Digital Literacy Of Physical Education Teachers In The 5.0 Era. Sport Tk, 12. Https://Doi.Org/10.6018/Sportk.562941

Adi, S., & Soenyoto, T. (2020). Sport Specific Class Analysis And Urgency. Jp.Jok (Jurnal Pendidikan Jasmani, Olahraga Dan Kesehatan), 3(2 Se-Articles). Https://Doi.Org/10.33503/Jp.Jok.V3i2.790

Adi S, Soenyoto, T., & Ramadhan, I. (2023). Latihan Kelentukan Terhadap Performa Olahraga : Sebuah Tinjauan Pustaka Sepak Bola, Futsal, Bulutangkis Dan Renang. Bajra : Jurnal Keolahragaan, 2(2 Se-Articles), 40–47. Https://Doi.Org/10.5281/Zenodo.8385206

Amansyah, D. (2019). Dasar Dasar Latihan Dalam Kepelatihan Olahraga. Jurnal Prestasi, 3(5), 42. Https://Doi.Org/10.24114/Jp.V3i5.13448

Bangun, S. Y. (2019). Peran Pelatih Olahraga Ekstrakurikuler Dalam Mengembangkan Bakat Dan Minat Olahraga Pada Peserta Didik. Jurnal Prestasi, 2(4), 29. Https://Doi.Org/10.24114/Jp.V2i4.11913

Berriel, G. P., Peyré-Tartaruga, L. A., Lopes, T. R., Schons, P., Zagatto, A. M., Sanchez-Sanchez, J., Ramirez-Campillo, R., & Nakamura, F. Y. (2022). Relationship Between Vertical Jumping Ability And Endurance Capacity With Internal Training Loads In Professional Volleyball Players During Preseason. Journal Of Sports Medicine And Physical Fitness, 62(3), 317–323. Https://Doi.Org/10.23736/S0022-4707.21.12107-3

Billaut, F., & Bishop, D. (2009). Muscle Fatigue In Males And Females During Multiple-Sprint Exercise. Sports Medicine, 39(4), 257–278. Https://Doi.Org/10.2165/00007256-200939040-00001

Candra Kurniawan, Surisman, S., Adi, A. S., & Dwi, D. P. (2022). Pelatihan Gizi Olahraga Untuk Atlet, Pelatih, Dan Guru Pendidikan Jasmani. Jurnal Pengabdian Masyarakat Ilmu Pendidikan, 1(01 Se-Articles). Https://Doi.Org/10.23960/Jpmip.V1i01.61

Endrawan, I. B., Aliriad, H., Apriyanto, R., Da'i, M., Adi, S., Cahyani, O. D., Santoso, S., & Muryadi, A. D. (2023). The Relationship Between Sports And Mental Health: Literature

Analysis And Empirical Study Tt -. Mdrsjrns, 11(2), 215–222. Https://Doi.Org/10.58209/Hehp.11.2.215

Eraslan, L., Castelein, B., Spanhove, V., Orhan, C., Duzgun, I., & Cools, A. (2021). Effect Of Plyometric Training On Sport Performance In Adolescent Overhead Athletes: A Systematic Review. Sports Health, 13(1), 37–44. Https://Doi.Org/10.1177/1941738120938007

Haromain, I., Wiriawan, O., Arief, N. A., Hidayat, T., Wibowo, S., Siantoro, G., & Wahyudi, A. R. (2023). Pengaruh Latihan Plyometric Barrier Hops, Front Cone Hops, Jump To Box, Dan Depth Jumps Terhadap Peningkatan Power, Kekuatan, Dan Kecepatan Siswa Ekstrakulikuler. Eduinovasi: Journal Of Basic Educational Studies, 4(1), 622–639. Https://Doi.Org/10.47467/Edui.V4i1.5596

Latino, F., Susanto, N., Anam, K., Setyawan, H., Saraiello, E., & Tafuri, F. (2024). The Effects Of Circuit Training Versus High-Intensity Interval Training On The Endurance Of Volleyball Athletes: A Randomized Controlled Trial. Retos, 58, 1050–1060. Https://Doi.Org/10.47197/Retos.V58.107877

Lisdiana, L., Siregar, K., Lestari, R., & Nasution, M. I. (2021). Meningkatkan Kesehatan Masyarakat Dengan Kegiatan Senam Pagi Di Desa Cinta Makmur. Riyadhoh : Jurnal Pendidikan Olahraga, 4(2), 34. Https://Doi.Org/10.31602/Rjpo.V4i2.5421

Luisa, A., Luisa, A., Costa, J., Barbosa, B., & Monti, A. (2024). Alma Mater Studiorum Università Di Bologna Archivio Istituzionale Della Ricerca Environmental Impact Assessment Of Perennial Crops Cultivation On. September.

Muharram, N. A., Pratama, B. A., & Indarto, P. (2025). Development Of Iot-Based Pulse Rate Detection Bracelet For Volleyball Endurance Training. Retos, 65, 931–940. Https://Doi.Org/10.47197/Retos.V65.109938

Permana, H., & Suharjana, S. (2013). Pengaruh Sirkuit Training Awal Akhir Latihan Teknik Terhadap Kardiorespirasi, Power, Smash, Passing Bawah Atlet Bola Voli. Jurnal Keolahragaan, 1(1), 49–62. Https://Doi.Org/10.21831/Jk.V1i1.2345

Pratama, U. (2021). Pengaruh Squat Thrust Dan Plyometrics Jump Box Terhadap Hasil Smash Bola Voli Di Klub Provos Sewaka. Corner: Jurnal Pendidikan Jasmani Dan Olahraga, 1(2), 30–38. Https://Doi.Org/10.36379/Corner.V1i2.119

Qin, G. (2023). Relaxation Training To Relieve Sports Fatigue In Volleyball. Revista Brasileira De Medicina Do Esporte, 29. Https://Doi.Org/10.1590/1517-8692202329012023_0045

Rohendi, A., & Rustiawan, H. (2020). Kebutuhan Sport Science Pada Bidang Olahraga Prestasi. Journal Respecs, 2(1), 32. Https://Doi.Org/10.31949/Jr.V2i1.2013

Rumini, Adi, S., & Kusuma, D. W. Y. (2024). The Mechanics Of Speed: A Systematic Literature Review On Athletic Sprint Technique. Physical Education Theory And Methodology, 24(6), 990–996. Https://Doi.Org/10.17309/Tmfv.2024.6.17

Trajković, G., Starčević, V., Latas, M., Leštarević, M., Ille, T., Bukumirić, Z., & Marinković, J. (2011). Reliability Of The Hamilton Rating Scale For Depression: A Meta-Analysis Over A Period Of 49years. Psychiatry Research, 189(1), 1–9. Https://Doi.Org/10.1016/J.Psychres.2010.12.007

Ummah, M. S. (2019). Analisis struktur kovarians indikator terkait kesehatan pada lansia yang tinggal di rumah, dengan fokus pada status kesehatan subjektif. Sustainability (Switzerland), 11(1), 1–14. Http://Scioteca.Caf.Com/Bitstream/Handle/123456789/1091/Red2017-Eng-8ene.Pdf?Sequence=12&Isallowed=Y%0ahttp://Dx.Doi.Org/10.1016/J.Regsciurbeco.2008.06.005%0ahttps://Www.Researchgate.Net/Publication/305320484_Sistem_Pembetungan_Terpusat_Strategi_Melestari

Wang, J., Wu, X., Feng, W., & Liu, H. (2023a). Reaction Speed Training In Volleyball. Revista Brasileira De Medicina Do Esporte, 29, 1–4. Https://Doi.Org/10.1590/1517-8692202329012022_0621

Wang, J., Wu, X., Feng, W., & Liu, H. (2023b). Reaction Speed Training In Volleyball. Revista Brasileira De Medicina Do Esporte, 29. Https://Doi.Org/10.1590/1517-8692202329012022_0621

Wu, X. (2023a). High-Intensity Interval Training Impacts On Endurance Of Volleyball Players. Revista Brasileira De Medicina Do Esporte, 29, 17–20. Https://Doi.Org/10.1590/1517-8692202329012023_0047

Wu, X. (2023b). High-Intensity Interval Training Impacts On Endurance Of Volleyball Players. Revista Brasileira De Medicina Do Esporte, 29. Https://Doi.Org/10.1590/1517-8692202329012023_0047

Wubale, A. A., Kebede, D. N., & Mengistie, A. B. (2023). Effects Of Game-Based Training Approach On Physical Abilities In Male Youth Volleyball Players. Pamukkale Journal Of Sport Sciences, 14(2), 206–219. Https://Doi.Org/10.54141/Psbd.1256057

Yue, L., & Hong, C. (2023a). Effect Of Volleyball Training On Physical Fitness And Cardiopulmonary Endurance Of College Students. Revista Brasileira De Medicina Do Esporte, 29, 1–4. Https://Doi.Org/10.1590/1517-8692202329012022_0715

Yue, L., & Hong, C. (2023b). Effect Of Volleyball Training On Physical Fitness And Cardiopulmonary Endurance Of College Students. Revista Brasileira De Medicina Do Esporte, 29. Https://Doi.Org/10.1590/1517-8692202329012022_0715

Zhong, F. (2021). Experiment Of Biological Pulse Sensor And Its Application In Physical Education. Microprocessors And Microsystems, 81. Https://Doi.Org/10.1016/J.Micpro.2020.103781

Zhou, W., Zeng, G., Lyu, C., Kou, F., Zhang, S., & Wei, H. (2021). The Effect Of Strength-Endurance Training On Serum And Urine Metabolic Profiles Of Female Adolescent Volleyball Athletes. Physiology International, 108(2), 285–302. Https://Doi.Org/10.1556/2060.2021.00150