EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 2, Issue 11, November 2026
brightmindpublishing.com
ISSN (E): 3061-6972
Licensed under CC BY 4.0 *a Creative Commons Attribution 4.0 International License.*

TRAINING LOAD MANAGEMENT PERFORMANCE ENHANCEMENT AND INJURY PREVENTION IN VOLLEYBALL PLAYERS

O‘razbayev Jaxongir Temur o‘g‘li
Faculty of Methods of Teaching Sports,
Jizzakh State Pedagogical University, Jizzakh, Uzbekistan
Email: orazbayevjaxongir45@gmail.com

Abstract

This narrative review examines training load management, physical conditioning, recovery monitoring, and injury prevention in volleyball players. Repeated jumps, rapid changes of direction, attacking, blocking, and defensive movements place substantial demands on the neuromuscular system. Training should therefore be planned using both the work performed and each athlete’s response, including perceived exertion, fatigue, and recovery status. The review discusses the practical use of session rating of perceived exertion, jump monitoring, and brief assessments of sleep and general well-being. It also considers preventive strategies addressing common ankle, knee, and shoulder problems. The synthesis draws on selected international publications and official International Volleyball Federation rules; it does not report an original intervention or a systematic search. Integrating internal and external load measures with physical preparation and recovery information may support individualized coaching decisions. However, no single monitoring variable can reliably predict injury, and the effectiveness of a particular monitoring system must be evaluated in the population in which it is used. Further longitudinal and controlled studies are needed to establish how these approaches affect performance and injury outcomes in specific teams.

Keywords: volleyball; training load; athletic performance; physical conditioning; neuromuscular fatigue; recovery; injury prevention; athlete monitoring; sports physiology.

Introduction

Modern volleyball requires physical fitness, technical proficiency, tactical understanding, and psychological stability. During competition, players repeatedly accelerate, jump, land, receive the ball, and perform attacking actions within short

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 2, Issue 11, November 2026
brightmindpublishing.com
ISSN (E): 3061-6972
Licensed under CC BY 4.0 *a Creative Commons Attribution 4.0 International License.*

periods. Successful execution depends on strength, speed, agility, coordination, and precise movement control.

Under the FIVB Official Volleyball Rules 2025–2028, indoor volleyball is played on an 18 × 9 m court, with six players per team on court [1, 2]. Player movement, positioning, and cooperation are fundamental components of technical and tactical preparation.

Appropriate training volume and intensity are important for improving performance. Excessive demands, insufficient recovery, and inadequate consideration of individual capacity may contribute to fatigue and injury risk. Regular monitoring can help coaches interpret athletes' responses and adjust preparation accordingly [3].

The aim of this review is to examine contemporary approaches to training load management, recovery monitoring, and injury prevention in volleyball and to formulate practical recommendations for coaches.

Review approach

This article is a narrative review of selected scientific literature. Sources comprise review articles published in international journals, materials indexed in PubMed or available through PubMed Central, and official FIVB rules. The synthesis addresses load assessment, fatigue and recovery, common injuries and their risk factors, individualized training, and the practical relevance of these topics.

The source manuscript does not document search dates, a reproducible search strategy, formal eligibility criteria, or a risk-of-bias assessment. Accordingly, the present article should not be interpreted as a systematic review or a comprehensive account of all available evidence. No participants were recruited, and no original experimental or statistical results are reported.

Managing training load in volleyball

Training load encompasses the work an athlete performs and the internal response to that work. External load describes the activity completed, whereas internal load reflects the athlete's physiological and perceptual response. In volleyball, duration alone cannot represent the full training demand. Jump frequency and height, attacking actions, rapid movements, resistance exercise, and match congestion also require consideration [3, 6].

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 2, Issue 11, November 2026
brightmindpublishing.com
ISSN (E): 3061-6972
Licensed under CC BY 4.0 *a Creative Commons Attribution 4.0 International License.*

Rebelo et al. [3] reviewed methods for monitoring training stress, neuromuscular fatigue, and well-being in volleyball. Their synthesis supports combining perceived exertion with external load information and regular assessments of the athlete's condition. Practical monitoring variables include:

Session rating of perceived exertion, which records the athlete's overall perception of the difficulty of a session.

Jump count and, where equipment permits, jump height.

Recovery indicators, including sleep quality, muscle soreness, fatigue, and mood.

Session duration and the volume of exercises and technical actions completed.

In the session-RPE method, a session load can be calculated by multiplying duration in minutes by the session RPE score. For example, a 90-minute session rated 7 on a 0–10 scale produces a load of 630 arbitrary units:

$$\text{Session load (AU)} = \text{session duration (min)} \times \text{session RPE}.$$

This value is useful for following changes within an individual athlete's training record. It is neither a universal workload standard nor a stand-alone predictor of injury. Consistent collection procedures and interpretation alongside other information are essential.

Physical conditioning and performance

Strength and explosive performance

Lower-limb strength, rapid force production, and coordination support jumping and attacking actions. Resistance exercise, jump training, and combined physical and technical drills can be selected according to each athlete's capacity. Exercise prescription should account for age, training status, injury history, and the competition schedule.

Agility and coordination

The ball's trajectory can change rapidly, requiring players to observe opponents, interpret the situation, and respond appropriately. Reaction speed, balance, spatial awareness, and movement accuracy contribute to both attack and defence. Multidirectional movement drills, receiving balls at different heights and speeds, and coordinated exercises with teammates can address these requirements.

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 2, Issue 11, November 2026
brightmindpublishing.com
ISSN (E): 3061-6972
Licensed under CC BY 4.0 *a Creative Commons Attribution 4.0 International License.*

Volleyball specific endurance

Although volleyball does not involve continuous running, it requires repeated high-intensity efforts separated by brief recovery periods. Players may repeatedly jump, receive, and transition into attack. Game-related intervals and technical and tactical exercise sequences can therefore be incorporated into conditioning, with workloads adjusted to individual responses.

Monitoring fatigue and recovery

Performance depends on both training exposure and recovery between sessions. Adequate sleep, nutrition, fluid intake, and rest support the athlete's ability to tolerate and adapt to training. Regular records of sleep, fatigue, soreness, stress, and mood provide useful contextual information for interpreting training responses [3].

A practical monitoring routine can include the following steps:

Record session RPE after each training session and match using a consistent procedure.

Track session duration and jumping demands.

Collect a brief daily report of sleep, fatigue, and muscle soreness.

Identify changes relative to the individual athlete's usual pattern.

Adjust training volume or intensity when the combined information indicates a need.

These observations provide a structured record of the athlete's condition. They cannot establish a diagnosis of overtraining or excessive fatigue on their own. Decisions should integrate several indicators, the athlete's account, and appropriate professional assessment.

Injury prevention in volleyball

Repeated jumping, landing, blocking, and overhead attacking actions place demands on the musculoskeletal system. Common problems include ankle and knee injuries, shoulder overuse conditions, and finger injuries [4, 5]. These problems have different mechanisms and should not be addressed through a single undifferentiated prevention strategy.

Kilic et al. [4] reviewed musculoskeletal injury patterns, risk factors, and preventive interventions in volleyball. Their findings suggest that some preventive approaches, particularly those targeting ankle injuries, can be beneficial, while also identifying the need for better evidence in other areas.

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 2, Issue 11, November 2026
brightmindpublishing.com
ISSN (E): 3061-6972
Licensed under CC BY 4.0 *a Creative Commons Attribution 4.0 International License.*

Practical measures include dynamic warm-up exercises, lower-limb strength and balance training, instruction in controlled landing, and conditioning of the shoulder and scapular muscles. Training demands should be increased progressively. Pain or signs of injury require assessment by a suitably qualified sports medicine professional.

Prevention programmes should reflect the athlete's history, current capacity, and playing demands. The inclusion of particular exercises does not establish that all injuries will be prevented.

Discussion

The reviewed literature supports considering load management, physical conditioning, recovery, and injury prevention as related aspects of volleyball preparation [3–6]. A session's duration gives an incomplete account of its demands: two equally long sessions may differ substantially in jump count, attacking volume, resistance exercise, and recovery intervals. Interpreting internal and external load together therefore provides a more informative basis for planning than either measure alone.

Playing position also matters. Middle blockers, attackers, setters, and liberos face different movement demands. A single workload target or recovery criterion is unlikely to suit every player. The scoping review by Rebelo et al. [6] also highlights limitations in external load measurement and the need to account for movements and positions that are insufficiently represented by conventional metrics.

The practical contribution of this review is to bring together principles for a coordinated approach to monitoring and preparation. These principles may help coaches organize information, but they do not demonstrate that a particular system improves match results or reduces injury incidence in a given team. Such effects require prospective evaluation.

The narrative design is an additional limitation. Source selection was not systematic, evidence quality was not formally graded, and the review does not quantify relationships between workload, performance, and injury. Recommendations should therefore be treated as practice considerations rather than validated thresholds or a tested intervention.

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 2, Issue 11, November 2026
brightmindpublishing.com
ISSN (E): 3061-6972
Licensed under CC BY 4.0 *a Creative Commons Attribution 4.0 International License.*

Conclusions

Improving volleyball performance requires coordinated physical preparation, technical and tactical training, appropriate loading, and sufficient recovery. Session duration, perceived exertion, and volleyball-specific external load measures should be considered together. Strength, jumping, agility, and endurance exercises should be adapted to the individual athlete.

Regular monitoring of sleep, fatigue, soreness, and general well-being can inform planning. Sound technique, suitable conditioning, and progressive loading are relevant to injury prevention, although their effects depend on the athlete and context. Controlled and longitudinal studies are needed to establish how integrated monitoring approaches affect performance and injury outcomes across ages and competitive levels.

References

1. Fédération Internationale de Volleyball. Official Volleyball Rules 2025–2028. FIVB; 2025. https://www.fivb.com/document-category/official-volleyball-rules/

2. Fédération Internationale de Volleyball. Basic Rules. https://www.fivb.com/volleyball/the-game/basic-rules/

3. Rebelo A, Pereira JR, Cunha P, Coelho-e-Silva MJ, Valente-dos-Santos J. Training stress, neuromuscular fatigue and well-being in volleyball: a systematic review. BMC Sports Science, Medicine and Rehabilitation. 2024;16:17. https://doi.org/10.1186/s13102-024-00807-7

4. Kilic O, Maas M, Verhagen E, Zwerver J, Gouttebarge V. Incidence, aetiology and prevention of musculoskeletal injuries in volleyball: A systematic review of the literature. European Journal of Sport Science. 2017;17(6):765–793. https://doi.org/10.1080/17461391.2017.1306114

5. Young WK, Briner W, Dines DM. Epidemiology of Common Injuries in the Volleyball Athlete. Current Reviews in Musculoskeletal Medicine. 2023;16(6):229–234. https://doi.org/10.1007/s12178-023-09826-2

6. Rebelo A, Pereira JR, Nakamura FY, Valente-Dos-Santos J. Beyond the Jump: A Scoping Review of External Training Load Metrics in Volleyball. Sports Health. 2025;17(1):111–125. https://doi.org/10.1177/19417381241237738