

Orthopedic Injuries and Performance of Backcourt Players in Handball

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Abstract

Backcourt players play a strategic role in modern handball: short sprints, frequent changes of direction, long-range shots, and quick decision-making. Bone injuries (ankle sprains, knee ligament injuries, shoulder tendonitis, stress fractures) can affect these functions and reduce individual and team performance. Orthopedic injuries have a biomechanical, functional, and psychological impact on these players' performance, requiring effective prevention and rehabilitation strategies.

Keywords: Handball; Orthopedic injuries; Backcourt players; Performance

Introduction

Handball, an intense and demanding team sport, is characterized by a high level of excitement and one of the highest injury rates among indoor team sports [1]. As a contact sport requiring extreme ranges of motion, it places considerable mechanical stress on the musculoskeletal system. In modern handball, backcourt players (the center back and the two backs) occupy a strategic position on the court. They are responsible for organizing the offense, moving the ball around, and maintaining defensive pressure capable of changing the opponent's tactical dynamics. To do this, they must demonstrate advanced physical qualities (acceleration, change of

direction, jumping, long-range shooting, and lateral movements) as well as technical and cognitive skills. These demands expose these players to a risk of bone injuries, particularly in the lower limbs [2], which can affect not only the player's availability, but also the biomechanical, technical, and psychological abilities necessary to maintain a high level of performance.

Discussion

A systematic analysis of 19 studies involving 7,110 handball players shows that injuries to the lower limbs are particularly common, with a predominance of knee injuries (30.23%) and

ankle injuries (24.80%) [3]. In addition to sprains and ligament tears, bone injuries (fractures, stress fractures, metatarsal injuries) have also been reported [3]. In a four-season study of professional players, bone fractures accounted for 9% of reported injuries among infielders, demonstrating a significant risk even at the highest level [4].

Although research does not always clearly distinguish between “fractures” and “ligament injuries,” the available information indicates that bone disorders are sufficiently common to warrant special attention when assessing their impact on performance.

Backcourt players are subject to:

- Violent head-on collisions during duels with defenders.
- Unbalanced jump shots (suspension shots).
- Direct impacts on the hands during defensive counterattacks.

The aftereffects of bone injuries in defensive players lead to a multifactorial decline in performance. First, there is a decrease in stability and proprioception: neuromuscular reorganization and imbalance can persist long after the injury, hindering the defender’s ability to make the necessary changes of direction [5]. Secondly, loss of power is crucial: modifying the chain of movement reduces jump height and shooting distance, whereas the biomechanics of modern handball require maximum explosive power to break through defensive barriers [6]. Thirdly, decreased bone strength leads to a risk of recurrence: resuming intense activities too quickly can hinder the bone remodeling process, thereby limiting the ability to withstand training loads throughout the season [7]. Finally, psychological impact plays a decisive role: fear of injury (fear of movement) and fear of physical contact alter player commitment. Research shows that psychological confidence is a more reliable indicator of performance than physical tests alone, as fearful players unconsciously reduce their offensive risks and defensive aggressiveness [8].

These successive effects can lead to a decline in technical and tactical performance, reduced playing time, or prolonged absences.

Conclusion

Bone and orthopedic injuries to the lower limbs remain common in handball and can have a lasting effect on the performance of backcourt players, impairing their biomechanical qualities, power, stability, and confidence. Clubs and technical staff must implement specific prevention programs and adopt strict criteria for returning to sport after a bone injury.

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Conflict of Interest

No conflict of Interest.

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