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MSA Capstone Abstract

INCIDENCE OF BONE STRESS INJURIES IN DIVISION I COLLEGIATE ATHLETES

This abstract provides an overview of the incidence of bone stress injuries (BSIs), previously known as “stress fractures”, in Division 1 college athletes, drawing insights from several key articles on the subject. Many articles were reviewed when preparing for data collection for this project. This review delves into the critical role of knowing athlete risk factors for BSIs, early detection of injuries, prevention strategies, and using a multidisciplinary approach in optimizing outcomes for collegiate athletes.

One article reviewed for this paper, authored by Arendt et al, is a retrospective review (2003) that adds valuable retrospective insights into bone stress injuries in college athletes. The study, conducted at a single institution, provides a comprehensive analysis of the prevalence, distribution, and outcomes of stress injuries, offering a unique perspective on the challenges and successes encountered in managing these injuries within a collegiate sports setting.

By synthesizing this article and many others, we aim to contribute to the understanding of the complex nature of BSIs or “stress fractures” in Division 1 college athletes. However, the review underscores the significance of a comprehensive approach to BSIs, encompassing early diagnosis, advanced imaging, and a well-coordinated management strategy to optimize the health and performance of collegiate athletes while minimizing the long-term impact of these injuries.

Introduction:

In recent years, the incidence of bone stress injuries (BSIs) among Division I college athletes has emerged as a significant concern, necessitating a comprehensive exploration of the factors contributing to their occurrence and the evolution of diagnostic and management strategies. This research project delves into the complex factors of BSIs, aiming to unravel the numerous risk factors and contemporary concepts that surround these injuries. Drawing insights from seminal articles in the field, including Hoenig et al. (2022), Bennell et al. (1999), and Daffner and Pavlov (1992), this investigation seeks to provide a brief understanding of the incidences and risk factors associated with BSIs in the context of male and female Division I collegiate sports.

The history of BSIs dates back to the early recognition of stress fractures, which are a subset of BSIs that gained prominence in medical literature in the early 20th century. However, it was not until more recent decades that advancements in medical imaging, biomechanics, and sports medicine shed light on the broader spectrum of BSIs beyond the traditional diagnosis of “stress fractures”. The recognition of BSIs as a distinct entity, characterized by a continuum of pathology ranging from microdamage to full-blown fractures, has propelled research and clinical efforts to comprehend their etiology, risk factors, and optimal management strategies, especially in competitive athletes.

The foundational work of Bennell et al. (1999) significantly contributes to our understanding of the major risk factors associated with stress fractures, providing a framework for identifying both male and female athletes susceptible to these injuries. This article highlights the interplay of intrinsic and extrinsic factors shaping the vulnerability of athletes to BSIs. These factors include: specific athlete biomechanics,

training load, nutritional status, and hormonal influences. Such insights are pivotal in developing targeted prevention and intervention strategies tailored to the unique demands of Division I college athletics.

Moreover, the article written by Daffner and Pavlov (1992) explores stress fractures in a radiological context, and has played a seminal role in refining diagnostic approaches. The article underscores the importance of advanced imaging techniques in unveiling the subtle signs of stress injuries before the manifestation of overt fractures. These subtle signs include bone bruises and micro-fractures. This radiological perspective is particularly relevant in the context of collegiate sports, where early detection and intervention can significantly impact the athlete's overall health and performance.

As we reflect on the results of this research project, synthesizing contemporary perspectives from Hoenig et al. (2022) and historical foundations laid by Bennell et al. (1999) and Daffner and Pavlov (1992), we aim to provide a comprehensive overview of the incidence of BSIs in Division I college athletes by sport. We will include data from all Division I sports, and data from both genders. Through this exploration, we aspire to contribute to the development of evidence-based strategies for the prevention, early detection, and effective management of BSIs, ultimately optimizing the health and performance of athletes in the demanding collegiate sports environment.