

HEAD INJURY EVALUATION STRATEGY FOR SEPAK TAKRAW BALL HEADING: A SYSTEMATIC REVIEW

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Abstract

Since Sepak Takraw was introduced in 1965 in South East Asian Peninsular (SEAP) Games, the players have intensively trained the heading ball as the main movement during the game. The impacts of repetitive Takraw ball heading, however, can lead to brain traumatic injuries such as concussion, internal bleeding and dizziness. This article set out the current trend and research gap on head impact injury during sepak takraw ball heading. Guided review method using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) Statement has identified 26 related studies from Scopus, Web of Science, and PubMed databases. This review from 2014 to 2021 resulted in only one article has been carried out on sepak takraw ball heading head injury and 25 articles on soccer and lacrosse. Six main themes have resulted from further review of the articles in measurement strategy, type of head impact, measurement tool, output data, subject category, and head protector in sepak takraw to study the ball heading head impacts. A total of 26 sub-themes further has been produced by the six themes. Several recommendations are proposed to conduct laboratory experimental studies considering ball-to-head heading only and studying headband for concussion reduction considering both linear and angular kinematics as the head injury predictors.

1 Introduction

Sepak Takraw is a famous sport, especially in South East Asia. Sepak Takraw was officially included in the South East Asian Peninsular (SEAP) Games, the origin of the Southeast Asian Games (SEA Games) in 1965 since the SEAP started in 1959 in Bangkok [1]. Sepak takraw is a challenging, point-based competitive team sport that is played both outdoors and indoors. Before it was named sepak takraw, this game was played by controlling a rattan ball by a group of players in a circle [2]. Although it was long known among the people in Southeast Asia, the development of this game was much slower than other games due to the inadequacy of professional trainers, coaches and teachers since primary school [3].

Sepak takraw is a unique game compared to other games due to its acrobatic ball control, using the head and legs especially. Sepak takraw requires complex ball control using legs and head since the ball is served and received (by the opponent) at the beginning of the game. A player needs to make a powerful, high speed, and accurate serve-ball to make a good attacking move [4]. This will force the opponent to receive a hard serve-ball. One of the skills that players intensively train is ball control while heading, especially to receive the powerful serve-ball. Since the game requires complex ball control skills, it is important for sepak takraw players to have sufficient and thorough training.

As far as this study is concerned, games that need to head a ball are only soccer and sepak takraw. Many studies show

that purposefully heading a soccer ball is connected to mild traumatic brain injury [5]. On the other hand, receiving a high-speed ball using the head could lead to a head injury, since the takraw ball is harder than a soccer ball in particular.

However, sports such as boxing, martial arts, football, ice hockey, soccer and bicycling are riskier for head injury [6]. Nearly 60% of injuries to children (5 – 15 years) in New South Wales, Australia, come from combined football codes sports (rugby league/union) and soccer from 2005 to 2013 [7]. Moreover, [7] it was also found that head injury is the most common injury after forearm injury for children in sports-related injuries hospitalised from 5 to 15 years of age in New South Wales (NSW), Australia, from 2005 to 2013.

According to a recent report on South Korean elite athletes' sports injury occurrence in the 2018 Asian Games, sepak takraw is highest in the rate of injury (62.96%), followed by sport climbing (57.14%) and therefore, this suggests the need for protective equipment for these two games [8]. On top of that, the Malaysia Takraw Team, through the Malaysian Sepak Takraw Association [Persatuan Sepak Takraw Malaysia (PSM)] has withdrawn from the 24th SEA Games in Thailand (2007) due to the abandonment of the protest against the use of a rubber-coated ball rather than a rattan ball (The Star, 1/12/2007). A Malaysian spiker, Arif Basu, complained of headaches and required subsequent medical treatments after every session of training. The rubber-coated ball had yet to be tested for six months as a pre-endorsement requirement, especially when the ball is claimed to be intrinsically dangerous during training sessions where a