

Toma Garbenyte-Apolinskiene – The relationship between lower extremities sport injuries and functional indicators of the musculoskeletal system in high level female basketball players



Toma Garbenyte-Apolinskiene finished her studies and obtained diploma of physical therapy qualification, rehabilitation bachelor qualification degree (2010) and Physical therapy qualification, rehabilitation master qualification degree (2012). In 2020 defended her PhD thesis extramurally. Toma is working as a physical therapist in Palanga Hospital at LUHS Neuroscience Institute.

INTRODUCTION

The popularity of basketball is on the rise, with an estimated 11% of the world's population (450 million people) currently playing basketball in 213 countries affiliated with the International Basketball Federation. Not only is the popularity of basketball increasing, but also the intensity with which it is played. The physiological demands of the sport include elevated aerobic and anaerobic capacities in addition to the integration of physical characteristics such as muscle strength, power, endurance, flexibility, speed, agility, and skill. Frequent jumping, landing and changes of direction make up much of the physical load of competitive games, with players exposed to high levels of eccentric loading.

Playing any sport comes with a considerable probability of injury for elite athletes and basketball players in particular, both amateur and professional, are at high risk. In terms of the various body part groups (e.g. head and waist, upper extremities or lower extremities), much of the literature addressing basketball injuries mentions the lower extremities as the most likely to be injured. The highest incidence is seen in adolescents, and the incidence is 3–5 times higher in female than male athletes. Studies of professional female basketball players in the United States have shown that they sustain 60% more injuries. The dangers and risks associated with playing basketball may result not only in serious injury, but may also seriously impair athletes' ability to earn a living or to engage in other professional, social and recreational activities, and impact their overall quality of life in general. A key component of athletic preparation is pre-season musculoskeletal screening and testing. The National Athletic Trainers' Association highlights musculoskeletal injury as a common cause of reduced sports activities (i.e., a loss of training and game time). Some authors claim that Functional Movement Screen tests (FMS), the Y Balance test for the lower quarter (YBT-LQ) and the Landing Error Scoring System for the jump-landing task (LESS) are popular in-the-field sport medicine screening tools, all able to identify players at risk of injury. Each of these assessments makes it easy to identify inefficient and/or compensatory movement tendencies, useful at the end of rehabilitation to determine an athlete's readiness to play sports again. Screening is of interest to injury researchers, physical therapists/ coaches, strength and conditioning specialists and sports medicine practitioners.

AIM

To identify the relationship between lower extremities sport injuries and functional indicators of the musculoskeletal system in high-level female basketball players.

OBJECTIVES

1) To determine the prevalence and localizations of lower limb sports injuries in high-level female basketball players. 2) To evaluate the influence of health problems on musculoskeletal system indicators and to assess their changes during the study period of high-level female basketball players. 3) To determine and compare the pre-seasonal fatigue level, the average weekly training time, the functional indicators of the musculoskeletal system and their correlation with lower limbs sports injuries. 4) To create an algorithm model for prediction of lower extremity sports injuries of high-level female basketball players and to identify the most significant indicators of risk assessment of sports injuries.

CONCLUSIONS

1. During the four-year period 36.7% of elite basketball players were found to have suffered from lower limb musculoskeletal injuries. The most commonly encountered sports injuries were in knee (53%) and ankle (31%) areas.

2. It was found, that pre-study health problems did not influence the functional movement's quality, dynamic stability and jump landing biomechanics indices and during study period they unchanged.

3. For the high-level female basketball players who had no sport injuries the preseason fatigue was lower and the quality of the functional movement and the jump-landing biomechanics were greater.

4. Creating and applying a lower extremity sports injury prediction algorithm model has found that the most significant indicators of the risk of sports injury are the quality of functional movements and the dynamic stability. Creation and application of the lower extremity sports injury prediction algorithm allowed determining that functional movement quality and dynamic balance were the most important risk indices of trauma.