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Sports injuries in Basketball players - a players perspective

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ABSTRACT

Basketball is a popular sport worldwide, but it is also associated with a high risk of injury. This research article focuses on the impact of basketball injuries on player performance and health, as seen from the perspective of the players themselves. A systematic review of existing literature on the topic was conducted, and As an amateur basketball player, I share my personal perspective and experience regarding basketball injuries and its effects.

The results of this study indicate that basketball injuries have a significant impact on both the physical and mental health of players. The most commonly reported injuries were ankle sprains and knee injuries all of which had a negative impact on players' ability to perform at their best. Players also reported experiencing psychological stress and anxiety due to the fear of getting injured again or being unable to play.

Despite the risks associated with basketball injuries, players continue to play the sport due to their love for the game and the opportunities it presents. The study recommends that players be educated on injury prevention strategies and provided with the necessary resources to address injuries when they occur. Additionally, the findings highlight the need for better support systems for injured players to ensure a smooth recovery and return to play.

In conclusion, this research article sheds light on the impact of basketball injuries on player performance and health from the players' perspective. It emphasizes the need for greater awareness and support for injury prevention and management in basketball, with the goal of improving player safety and overall well-being.

KEYWORDS: Basketball injuries , players perspective, Basketball, athletic injuries

INTRODUCTION:

Basketball is the second fastest sport in the world and was invented by James Naismith on or about December 1, 1891, at the International Young Men's Christian Association (YMCA) Training School, Springfield, Massachusetts[1,2]and has now become the third most popular sport in the world. As the popularity of the sport grew the participation in the sport also increased which eventually elevated the total number of injuries in basketball players , this brings us to the topic of interest sports injuries in basketball players

In basketball, ankle injuries are among the most common injuries sustained and they are also amongst the most severe.[3-5] An Australian basketball study[4] determined that over half (53.7%) of the total time missed because of an injury in basketball was through an ankle injury. Ankle injuries may result in the player experiencing disability and residual symptoms,[6–8] the most common being pain, sense of instability, crepitus, and weakness.[7]

Several studies have already been published describing injuries in basketball. Some focus on professional athletes,[9]others focus on college students[10] or high school students,[11,12] and others on adult athletes.[13] Some studies focus only on a specific region of the body or a specific diagnosis, such as concussion,[14] shoulder[15] or ankle injury,[16] and many compare injury rates between sexes[17]

The understanding of basketball injury epidemiology is an important first step in the development of targeted, evidence-based interventions to provide recommendations for injury prevention. The objective of this study was to perform an integrative review of the epidemiology of musculoskeletal injuries in basketball.

Methodology:

literature search

An electronic search was performed in the following databases: PubMed, google scholar, MEDLINE

The elaboration of the search strategies gave the research greater sensitivity by combining the terms extracted from the MesH and synonyms: basketball, epidemiology, athletic injuries, sprains and strains. Thus, the eligibility criterion was to identify articles that discussed the general epidemiology of sports injuries in basketball and rates and risks of injury during a season.

EPIDEMIOLOGY:

Longitudinal studies of professional, collegiate, and high school basketball players over multiple consecutive seasons elucidate several important features of injuries sustained while playing the sport. In general, injuries are significantly more common during competition rather than during practice.[20] The ankle is the most frequently injured anatomic site.[21,22] There are both commonalities and differences in injury patterns between male and female players.[18,19,23,24] Despite basketball not being considered a contact sport, injuries are frequently sustained during contact between players.[25]

Moreover, the incidence of injuries in basketball players is quite high relative to other sporting activities.[19]In basketball, lower extremity injuries predominate, with the ankle, specifically ankle sprains, rep- resenting the most common injury.[21,22] In a recently published series reviewing injuries in high school basketball players in the United States, 39.7% of all injuries were at the ankle or foot.[20] Knee and back injuries are also relatively prevalent; injuries at the hip and groin occur less frequently.[22] In the upper extremity, hand and wrist injuries are most commonly encountered. [20,21]

IMAGING TECHNIQUES:

Most acute periarticular injuries, including suspected ligament sprains, are initially evaluated with conventional radiography. Magnetic resonance imaging (MRI) is typically used when there is suspicion of internal derangement at the knee, such as meniscal or ligament tear (Figs. 1(A)and 3), chondral injury, or osseous contusion, at the shoulder for suspected rotator cuff tear, and at the ankle when osteochondral injury is suspected. The early diagnosis and grading of musculotendinous strain is also accomplished via targeted MR imaging (Fig. 2(B)).[26]

Computed tomography (CT) has a supplementary role in the setting of athletic injury but is recommended for the assessment of fracture healing, particularly in the foot, and can be readily performed with fixation hardware in place.

Ultrasonography is a useful adjunct for the evaluation of tendon and other soft tissue injuries and for image-guided interventions in the musculoskeletal system.[27]

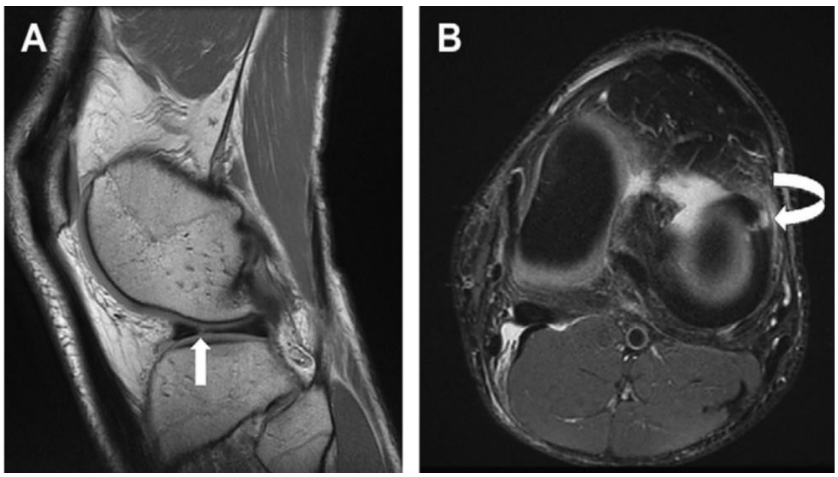

Fig. 1(A). Complex lateral meniscus tear in a 24-year-old professional basketball player. (A) Sagittal proton-density (PD) and (B) axial PD fat-saturated images demonstrate a complex radial tear of the lateral meniscus (arrow). The tear can be clearly seen on the axial sequence extending to the periphery (curved arrow)

Fig. 2(B). Biceps femoris musculotendinous strain in a 39- year-old professional basketball player. Axial T2 fat- saturated image shows edema in the biceps muscle (arrow) and fluid adjacent to the muscle in the surrounding soft tissues, representing a small hematoma (arrowhead).

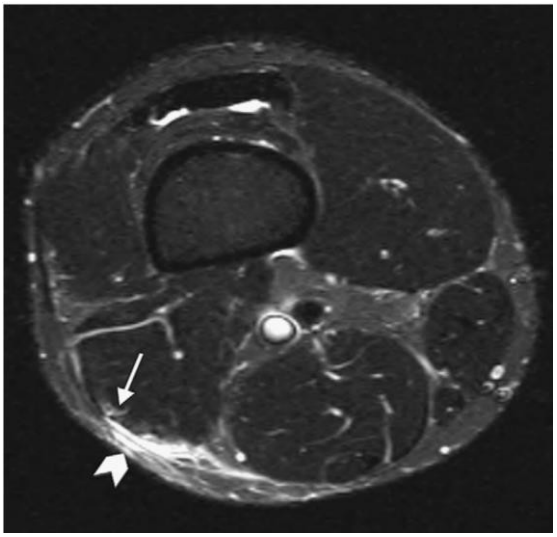

Fig. 3. Medial collateral ligament (MCL) sprain and medial patellofemoral ligament tear in a 25-year- old professional basketball player. (A) Coronal PD fat-saturated image demonstrates MCL sprain.
There is indistinctness of MCL fibers and marked adjacent soft tissue edema (arrow). (B) Axial T2 fat-saturated image demonstrates that the medial patellofemoral ligament is torn and there is marked soft tissue edema (arrow).

Fig: 4 Acute tear of the ACL in a 19-year-old division I female basketball player. Sagittal STIR sequence through the injured knee demonstrates disruption of ACL fibers (arrow). The remaining ACL fibers are amorphous and wavy with areas of discontinuity.
Other sequences demonstrated the associated bone contusions in the lateral femoral condyle and lateral tibial plateau.

Body Region of Injury and Most Common Injuries

On a study done by Willem H. Meeuwisse based on the data of 318 athletes , knee had the highest injury rate when injuries resulting in seven or more games of time loss were examined, but the ankle had the highest overall rate.[27] This findings are consistent with those of a study based on data from the National Collegiate Athletic Association's Injury Surveillance System[28] that found the knee injury rate to be 0.7 per 1000 athlete-exposures. Furthermore, a number of other investigations found ankle and knee injuries to be the most frequent.[29 - 34] Two investigations found the fingers and hand to be the most common region of injury,[35,36]where as another found the head and neck to be the area most frequently injured.[37] In all four of these reports, the ankle was the next most commonly injured region. With such consistency in the literature, it seems reasonable to suggest that the ankle represents the most commonly injured region and the knee one of the next most common. It should be noted that although injuries to the foot are not as prevalent as ankle or knee injuries,

these injuries resulted in greater average time loss/ games missed than those to the ankle.Ankle sprains were the most common injury diagnosis over the 2 years of investigation , followed by concussions.[27]The injury definition included concussions and brachial plexus injuries without time loss, based on the rationale that these injuries constituted serious health concerns that are not necessarily reflected in missed participation. Anterior cruciate ligament (ACL) tears are a severe injury resulting in significant loss of playing time and lengthy rehabilitation after surgical repair. From an epidemiologic standpoint, ACL injury in basketball players shows a strong female predilection; this is not the case with many other orthopaedic injuries, which affect men and women more equally.[43,59,60]

However, only one concussion did not result in time loss. Powell and Barber-Foss[22] found a concussion injury rate among high school basketball players of 0.11 per 1000 athlete- exposures, similar to our result of 0.16 per 1000 athlete-exposures. In Willem H. Meeuwisse's investigation, all concussions resulted in fewer than seven sessions of time loss.[27]

Upper extremity injuries

Basketball injuries to the upper extremity are far less frequent than those involving the lower extremity. Of upper extremity injuries, those in the hand and arm predominate over injuries to the shoulder or elbow.[40]Upper extremity injuries, overall, accounted for 12% to 13% of injuries sustained at both the high school level and professional levels of play.[41,42]
Excluding stress fractures and nasal bone injuries, the fingers and thumb represent the most likely site of acute fracture in basketball players.[43] The proximal inter phalangeal joints (PIP) are the most frequently injured sites. At the PIP joints various injuries are observed, including those involving joint capsule and ligaments, closed tendon injuries, and intra-articular fractures. At the distal inter phalangeal joint, injuries to the terminal extensor tendon, flexor profundus tendon injuries, as well as fractures and dislocations have been re- ported.[40,44] "Dunk lacerations" have also been described in basketball players. These injuries occur secondary to the impact of the player's hand with sharp edges of the rim or with the flange connecting the rim to the backboard. [45]

At the hand, injuries to the metacarpophalangeal (MCP) joints of the second through fifth rays are observed, as are injuries at the carpometacarpal (CMC) joints of the second through fifth rays. At the ulnar aspect of the hand, dorsal dislocations at the CMC joints may occur. Thumb injuries include fractures at the CMC joint as well as MCP ligament tears [46]
Suspected fracture and/or dislocation at the hand and wrist are evaluated with conventional radiographs. Complex and intra-articular fractures may benefit from CT with multi planar image reformation, which is of particular benefit in assessing alignment and fragment position in the setting of CMC fracture/dislocation. Injuries to the joint capsule, ligaments, and tendons at the hand and wrist are well evaluated by MR imaging or sonography.
Shoulder injuries sustained during basketball are uncommon. In a review of shoulder injuries in high school athletes between 2005 and 2007, the incidence was 0.47 injuries per 10,000 exposures for boys and 0.45 injuries per 10,000 exposures for girls. Injuries were much more commonly sustained during competition than during practice, with most injuries occurring during defending and rebounding .[47]
In the NBA, the most frequently identified shoulder injuries were glenohumeral sprain, acromioclavicular joint sprain , and rotator cuff inflammation.[48]

Back injuries

Back injuries in basketball players are relatively common and account for a substantial proportion of missed games. Despite their relative frequency, a large percentage of these injuries are classified as muscle strains. This classification may account
for the low proportion of these injuries that present for imaging evaluation.
Lumbar spine injuries accounted for 6.8% of all injuries sustained by NBA players over a 10- year period but represented 11% of all days missed. Back muscle strain was the most common presentation; disk rupture/herniation was far less prevalent. Cervical spine injuries were significantly less common than lumbar injuries, accounting for 1.3% of injuries overall. Sacral injuries amounted to 0.6% of the total and thoracic spine injuries 0.5% of the total.[48]

Pars interarticularis defects are an important cause of back pain in young athletes, including basketball players.[49]

Non orthopaedic injuries

Injuries to the head, face, and neck generally result from a collision with another player. A proportion of these occur during illegal or foul play. Most concussions also result from collision with another player.[50] In the WNBA experience, concussions ac- counted for 6.5% of all injuries sustained during games and 3.7% of injuries during practices.[51]

Concussions were less frequently reported in men's NCAA competition (3.6% of injuries sustained during games)[52] and in NBA competition.[48]
Other basketball injuries to the head and face re- ported with some frequency include nasal fractures, eye injuries, and dental injuries. Nasal fractures represent 1.5% and 1.7% of injuries in the NBA and NCAA men's competition, respectively.[52,48] Eye injuries range from eyelid lacerations to corneal abrasions to severe orbital fractures and more severe injuries to the globe.[53,54] Oral injuries, particularly to the teeth, have decreased with the increasing use of mouth guards.[53]

Sudden cardiac death in basketball players, although rare, has generated greater interest since the death of Hank Gathers during an NCAA men's game in 1990 and the sudden death of the ex- NBA player Pet Maravich while playing basketball at age 40 years. In most cases, sudden cardiac death in basketball players is caused by a congenital structural cardiac condition, such as hypertrophic cardiomyopathy, Marfan syndrome, or myocarditis.[40,55] Sudden cardiac death in young athletes is often reported in high school or college-age basketball players.[55-57] Prevention of sudden cardiac death requires careful medical screening of prospective players.[40]

Mechanism of Injury

The majority of injuries causing absence to the game were due to contact with another player; non contact injuries caused the next greatest amount of time loss. Yde and Nielsen[36] found that, for contact injuries, the ball itself was responsible for the greatest number of injuries, and contact with an opponent the next greatest. Players in the guard position sustained the most injuries during the 2 years of study, followed by forwards and centers. The greatest number of injuries occurred within the 3-point line.

This result is likely due to the amount of playing time spent in the key (thus, greater exposure) and the increased player-to-player contact due to higher player concentration. Future studies should examine the effect of protective interventions employed to reduce the injury rate to guards and to other players in the key.

Risk factors

Sex, age, height, weight, games played a week, and amount of training a week, cut of shoe worn, position played on the court, or quarter of the game injured, history of injury improper technique overuse / over training and stretching during warmup are few of the few of the factors responsible for the injuries caused

In which three variables were determined to be predictors of ankle injury: history of ankle injury, presence of air cells in the heels of the shoes, and stretching during warm up.[39]

Interestingly, the risk of ankle injury was not related to factors that players could not change, such as sex, age, and height. Some more changeable factors such as the player's weight, the amount of training undertaken, the number of games played a week, the cut of shoe worn, the position played on the court, and the quarter of the game played were also not significantly related to the occurrence of ankle injuries in this study.[39]

PERSPECTIVE OF A PLAYER:

As a basketball player, injuries can be a frustrating and debilitating aspect of the sport. While playing, you push your body to its limits, often exposing yourself to physical stress and the risk of injury. The most common basketball injuries include sprains, strains, and fractures to the ankles, knees, and hands. Depending on the severity, injuries can keep a player out for a few games, or even an entire season
Dealing with an injury can be a long and difficult process, affecting not only your physical well-being but also your mental state. As a basketball player who has gone through an ACL tear a year ago, I can attest to the devastating impact that injuries can have on both on and off-court aspects of life. Physically, the injury made it impossible for me to continue playing basketball and performing daily tasks that required physical activity. It was a long road to recovery, requiring several months of rehabilitation, which can be frustrating and emotionally draining.

The psychological effects of injuries can also be just as impactful as the physical ones. Not only did I have to miss out on the sport that I love, but I also experienced a decrease in confidence and self-esteem. The fear of reinjury was constantly present, and it took a lot of mental strength to overcome this fear and regain confidence on the court.

As an athlete, basketball is a big part of my social life and being unable to play took away an important aspect of my daily routine. I also missed out on team practices and games, which meant I was unable to spend time with my teammates and form bonds with them.

However, it's crucial to approach your injury with a positive attitude and a strong mindset. With the proper support and guidance from medical professionals and coaches, you can return to the game stronger and more prepared than before.

Injury prevention and management are crucial for basketball players to ensure their safety and ability to perform at their best.

Here are some tips for injury prevention and management in basketball:

Proper Conditioning: Players should ensure that they are in good physical condition before playing basketball. This includes a combination of cardiovascular exercises, strength training, and flexibility exercises to help prevent injuries.
Warm-Up: Before playing, it's essential to warm up properly to help prevent injuries. A good warm-up should include light exercises such as jogging, jumping jacks, and stretching.
Proper Footwear: Wearing proper basketball shoes with good ankle support can help prevent ankle sprains and other foot injuries.
Technique: Learning proper basketball techniques can help reduce the risk of injuries. Coaches should emphasize correct body positioning, movement, and landing techniques to prevent injury.
Rest and Recovery: Adequate rest and recovery time between practices and games are essential for injury prevention. Overtraining can lead to fatigue, muscle soreness, and injury.

In case of injury, prompt management is necessary to prevent further damage and ensure a speedy recovery. Here are some guidelines for injury management:

Stop Playing: If an injury occurs, stop playing immediately and seek medical attention.
Rest: Adequate rest is essential for recovery. Depending on the severity of the injury, rest can range from a few days to several weeks or months.
Ice: Applying ice to the affected area can help reduce swelling and pain.
Compression: Wrapping the affected area with a compression bandage can help reduce swelling and support the injured area.
Elevation: Elevating the affected area above the heart can help reduce swelling and improve blood flow.
Rehabilitation: Rehabilitation and physical therapy can help restore strength and mobility after an injury.

By following these injury prevention and management guidelines, basketball players can reduce their risk of injury

In conclusion, basketball injuries are a part of the sport and should be taken seriously. They can also provide a valuable learning experience for players, both on and off the court. It's essential to stay positive, stay focused, and follow the proper protocol for recovery. With determination and hard work, you can overcome any setback and come back stronger.

CONCLUSION:

Basketball is a physically demanding sport that can lead to a variety of injuries, ranging from sprains and strains to more serious injuries such as fractures and concussions.
This review of research’s has shown that the most common injuries in basketball are ankle sprains, knee injuries, and hand/wrist injuries. The risk of these injuries can be reduced through proper training, using proper techniques, wearing appropriate protective equipment, and ensuring that the playing surface is safe and well-maintained .Furthermore, injuries can also take a toll on a player's mental health, causing anxiety and depression.

A vital key factor in reducing the risk of injury in basketball is developing good conditioning and strength in the muscles and joints used during the sport. This can help to prevent overuse injuries, as well as reduce the risk of more serious injuries if an impact does occur.
In conclusion, while basketball is a popular and exciting sport, it is important to take steps to reduce the risk of injury. By incorporating proper training, safety precautions, and injury prevention techniques, players can enjoy the sport while minimising the risk of injury.

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