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# STUDI META ANALISIS CEDERA PADA PEMAIN BOLA BASKET

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## Abstrak
Tujuan dari *literature review* ini adalah untuk mengidentifikasi semua cedera *muskuloskeletal* dan sendi, penyebab umum dan perawatannya untuk mejadi perhatian bagi pelatih bola basket, untuk merawat siswa dan atlet mereka sesuai dengan trauma yang dialami, tetapi juga peringatan untuk pelatih dari berbagai cabang olahraga lain yang banyak menggunakan sendi lutut dan ankle, dan untuk menunjukkan kepada para peneliti sudut pandang yang belum diteliti. Studi meta analisis dengan *literature review* dari 50 artikel yang diterbitkan di jurnal internasional yang berbeda terkait dengan ilmu olahraga dari Q4 ke atas dengan pengambilan sampel secara acak. Data dianalisis menurut epidemiologi cedera olahraga pada bola basket. Hasil Total, 50 artikel dipilih. Sebanyak 1.8275 cedera yang diamati, sebagian besar terjadi pada tungkai bawah 718 (3,92%) cedera lutut, 12030 (93,18%) cedera pergelangan kaki (ankle) dan 1.094, (5,96%) cedera lainnya. Anak-anak, remaja (atlet), dan lansia lebih sering mengalami cedera kepala dibandingkan dengan usia lainnya.

***Kata Kunci: meta analisis, cedera, bola basket***

# META ANALYSE STUDY OF THE COMMON INJURIES OF BASKETBALL PLAYERS

## Abstracts
The aims of this literature review was to identify all musculoskeletal and joints injuries, their common causes, and their treatments in order to pay attention to the basketball teachers, to take care for their students and athletes according to the trauma, but also a warning for the coach trainers of the different disciplines that require a lot of knee and ankle joints, and to show to the researchers the angles which are not yet solicit by the research. Meta analyse study with literature review of 50 articles published in different international journal related to sport science from Q4 and above by random sampling. Data were analysed according to the general epidemiology of sports injuries in basketball. Results In total, 50 articles were selected. A total of 18275 injuries were observed, most of them occurred in the lower limbs 718 (3,92%) Knee injuries,12030(93,18%) ankle injuries and 1094, (5,96%) others injuries. Children, adolescents ( athlete), and elders received head injuries more often compared with the other age.

***Keywords: meta analyse, common injuries, basketball***

## INTRODUCTION

Basketball is a contact sport with complex movements that include jumps, turns and changes in direction, which cause frequent musculoskeletal and joints injuries in all regions of the body.Basketball created in the USA more than a century ago by James NaismithWang, H.-K., Chen, C.-H., Shiang, T.-Y., Jan, M.-H., & Lin, K.-H. (2006). basketball has become one of the most popular sports after football in the world, particularly in the USA Andreoli, C. V., Chiaramonti, B. C., Buriel, E., Pochini, A. de C., Ejnisman, B., & Cohen, M. (2018). In Brazil, basketball is one of the four most popular sports according to the Ministry of SportsWang, H.-K., Chen, C.-H., Shiang, T.-Y., Jan, M.-H., & Lin, K.-H. (2006).

Despite all the benefits resulting from

participation in sports—such as improved body composition,cardiorespiratory function, increased strength, improved self-esteem/psychosocial well-being, weight control, and less abuse of alcohol and drugs, among othersTaylor, J. B., Ford, K. R., Nguyen, A.-D., Terry, L. N., & Hegedus, E. J. (2015). Participating in a sport with so much physical demand, such as basketball, where the athlete performs repetitive jumps during games and training, abrupt changes in direction, running and decelerationDe Oliveira Silva, A., Dutra, M., De Moraes, W. M., Funghetto, S., Lopes de Farias, D., Fernandes dos Santos, P. H., … Prestes, J. (2018). may result in a greater risk of injury. This leads to an increase in health expenses and visits to doctors and hospitals, reduction in court time, and increased risk of new injuriesVan der Wees, P. J., Lenssen, A. F., Hendriks, E. J. M., Stomp, D. J., Dekker, J., & de Bie, R. A. (2006).

Several studies have already been published describing injuries in basketball. Some focus on professional athletesMcKay, G. D. (2001). others focus on college students Bahr, R., Lian, Ø., & Bahr, I. A. (2007). or high school studentsLian, Ø. B., Engebretsen, L., &Bahr, R. (2005), and others on adult athletesHendry, G. J., Fenocchi, L., Woodburn, J., & Steultjens, M. (2018). Some studies focus only on a specific region of the body or a specific diagnosis, such as concussionSadler, S., Spink, M., Cassidy, S., & Chuter, V. (2018). Shoulder or ankle injury Choi, J.-H., & Kim, N.-J. (2015).Ankle and knee traumawere relevant as the most common musculoskeletal and joints injuries, yet a contemporary review and meta-analysis of prospective epidemiological general studies investigating on the common injuries of basketball players according to the different region of the human body: musculoskeletal and joints does not exist. The aim of this studywas to collect all the injuries which often appear to the basketball player during the training and the competition. 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 and joint injuries in basketball.

## METHOD

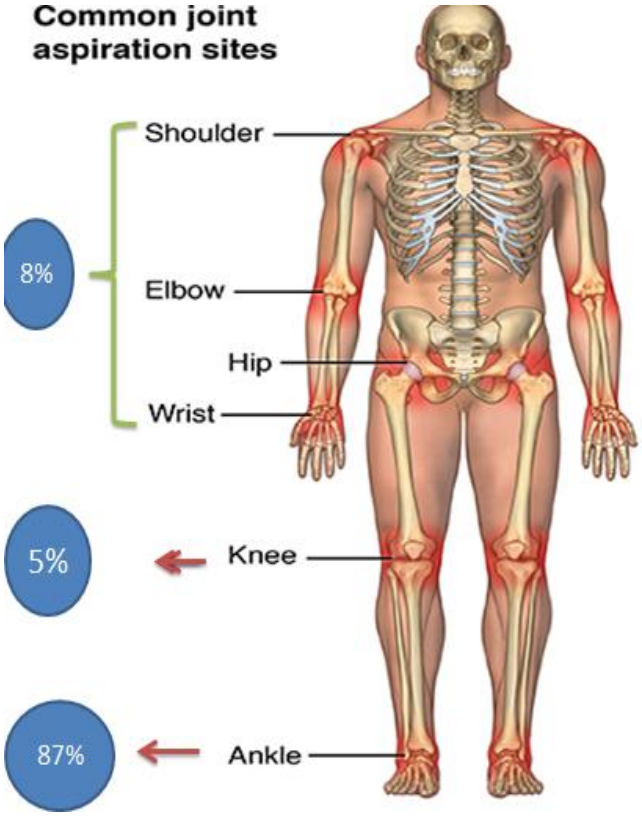
An electronic Literature review searchwas performed in the following databases: literature review of 50 articles published in different international journal related to sport science. The source of any article was by random sampling with criteria published in international journal indexed from Q4, and the limitation of the sample was article published from 1997 up to 2018. A study Metaanalyses was done to identify all injuries musculoskeletal and joints of the human body, to specify the causes, and their treatments.We analysed articles by age to find out and show how research on traumatology of muscles and joints has evolved, to facilitate readings, and researchers to see angles that are not yet solicited by research. This literature review was to identify all musculoskeletal and joints injuries, their common causes, and their treatments in order to pay attention to the basketball teachers, to take care for their students and athletes according to the trauma, but also a warning for the coach trainers of the different disciplines that require a lot of knee and ankle joints, and to show to the researchers the angles which are not yet solicit by the research.

## RESULT AND DISCUSSION

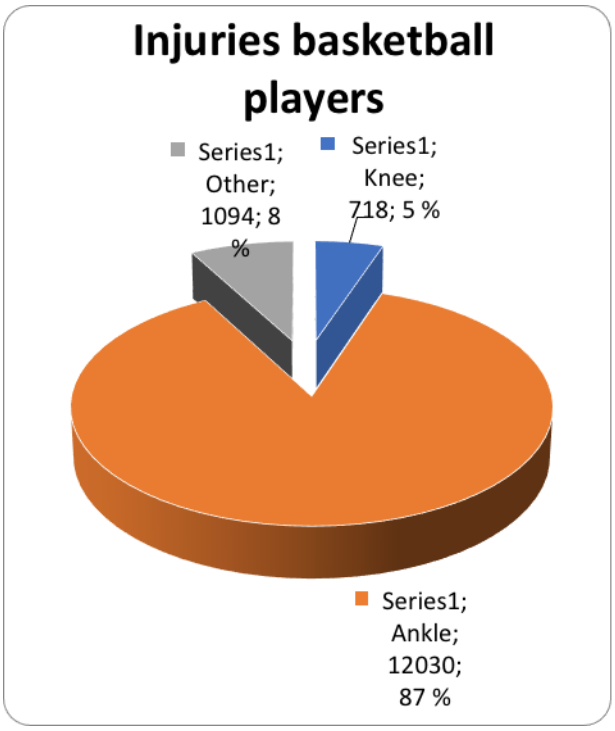
### Result

The presentation and interpretation of the results of our research was based on the (1) location (2) types, (3) causes,(4) treatments of traumas of basketball Player, in total, 50 articles were selected, of which 11 were eligible for the integrative review. A total of 18275 injuries were observed, most of which occurred in the lower limbs 718 (5%) Knee with 12030(87%) ankle injuries and 1094, (8%) others injuries. Children, adolescents, and elders received head injuries more often compared with the other age and skill categories. In the adult category, there was an increased prevalence of injuries in the trunk and spine. In the upper limbs, hands, fingers and wrists were affected more frequently than the shoulders, arms and forearms. In the masters' category, there was an increase in the incidence of thigh injuries.

**Location of the common injuries on the different region of the human body**




Picture 1. Common joint aspiration sites




Picture 2. Injuries basketball players

The lower limbs were the most affected, with the ankle and knee joints having the highest prevalence of injuries regardless of gender and category. Further randomised studies, increased surveillance and epidemiological data collection are necessary to improve knowledge in sports, this result will help basketball teacher, and coach trainer of the different games to improve knowledgeable about gravity of injuries which often appear on their athlete, and they could take care for the health of their athletes or students during the course of physical education.

**The types of trauma of basketball player** Witvrouw, E., Vanden Borre, K., Willems, T. M., Huysmans, J., Broos, E., & De Clercq, D. (2006).Gerber, J. P., Williams, G. N., Scoville, C. R., Arciero, R. A., & Taylor, D. C. (1998).Ogilvie-Harris, D. J., Gilbart, M. K., & Chorney, K. (1997).Fadale, P. D., & Hulstyn, M. J. (1997).Bavdek, R., Zdolšek, A., Strojnik, V., & Dolenec, A. (2018).

Table 1. The types of trauma of basketball player

| No | Types of Trauma | No | Types of Trauma |
|---|---|---|---|
| 1 | AC Joint Injury | 42 | Neck Arm Pain |
| 2 | Achilles Tendon Rupture | 43 | Neck Headache |
| 3 | Achilles Tendonitis / Tendinitis | 44 | Neck Sprain |
| 4 | ACL Injury | 45 | Olecranon Bursitis |
| 5 | Adductor Tendinopathy | 46 | Osgood Schlatter's |
| 6 | Anterior Ankle Impingement | 47 | Osteitis Pubis |
| 7 | Avascular Necrosis of the Femoral Head | 48 | Overuse Injuries |
| 8 | Back Muscle Pain | 49 | Patella Tendonitis (Tendinopathy) |
| 9 | Bicep Tendonitis | 50 | PatellofemoralPain Syndrome |
| 10 | Bulging Disc | 51 | PCL Injury |
| 11 | Bursitis Knee | 52 | Peroneal Tendonitis |
| 12 | Bursitis Shoulder | 53 | Pes Anserinus Bursitis & Tendinitis |

| No | Types of Trauma | No | Types of Trauma |
|---|---|---|---|
| 13 | Calf Muscle Tear | 54 | Pes Planus - Flat Feet |
| 14 | Chondromalacia Patella | 55 | Pinched Nerve |
| 15 | Compartment Syndrome | 56 | Piriformis Syndrome |
| 16 | Corked Thigh | 57 | Plantar Fasciitis |
| 17 | Cramps | 58 | Plica Syndrome |
| 18 | Degenerative Disc Disease | 59 | Poor Hip Core PosteriorAnkle Impingement |
| 19 | Dislocated Shoulder | 60 | Posterolateral Corner Injury |
| 20 | DOMS - Delayed Onset Muscle Soreness | 61 | Retrocalcaneal Bursitis |
| 21 | Facet Joint Pain | 62 | Rotator Cuff Calcific Tendinitis |
| 22 | Fat Pad Syndrome | 63 | Rotator Cuff Syndrome |
| 23 | Femoroacetabular Impingement (FAI) | 64 | Rotator Cuff Tear |
| 24 | Gluteal Tendinopathy | 65 | Sacroiliac Joint Pain |
| 25 | Greater Trochanteric Pain Syndrome | 66 | Sciatica |
| 26 | Groin Strain | 67 | Severs Disease |
| 27 | Hamstring Strain | 68 | Shin Splints |
| 28 | Heel Spur | 69 | Shoulder Impingement |
| 29 | High Ankle Sprain | 70 | Shoulder Tendonitis |
| 30 | Hip Arthritis (Osteoarthritis) | 71 | Sinding Larsen Johansson Syndrome |
| 31 | Hip Labral Tear | 72 | Spondylolisthesis |
| 32 | Hip Pointer | 73 | Sprained Ankle |
| 33 | ITB Syndrome | 74 | Stress Fracture |
| 34 | Knee Arthritis | 75 | Stress Fracture Feet |
| 35 | Knee Ligament Injuries | 76 | Tarsal Tunnel Syndrome |
| 36 | Lateral Collateral Ligament | 77 | Temporomandibular Joint Pain (TMJ) |
| 37 | Medial Collateral Ligament Sprain | 78 | Thigh Strain |
| 38 | Meniscus Tear | 79 | Thumb Sprain |
| 39 | Metatarsalgia | 80 | Tibialis Posterior Tendinopathy |
| 40 | Morton's Neuroma | 81 | Trochanteric Bursitis |
| 41 | Muscle Strain | 82 | Wry Neck |

After this identification we found that the knee and ankle pain were the most pain which often arrive to everybody whether your player or not, but for the players the prevalence was very highest more than others because them their knee and ankle are usefully. The most common incidents that cause knee and ankle injury and pain include falls, sports injuries, or increased activity which demands the over usefully of the knee and ankle joint. Adults particularly those older more than 60 are most likely to experience knee and ankle pain. Basketball is the fourth leading cause of injury in both unorganized settings and organized community team sports. Injuries to basketball players are usually minor, mostly sprain and strains. The ankle and knee are the most common sites of injury, followed by the lower back, hand, and wrist

**The common causes of injuries of the basketball players**

Basketball Injury is caused bysudden changes in direction that put the ligaments and menisci of the knee at risk for injury. A traumatic blow to the knee can injure the medial collateral ligament (MCL) or the anterior cruciate ligament (ACL).Finger injuries can occur due to contact with the ball. The ankle and knee are the most common sites of injury, followed by the lower back, hand, and wrist. The nature of the game allows the several injuries because of the amount of jump movement solicited by the ankle, and knee, but also the bad condition of the playground, and the bad training are the main causes of the injuries (Sulowska, I., Oleksy, Ł., Mika, A., Bylina, D., & Sołtan, J., 2016).

**Treatment**

One of the most common remedies for minor knee pain is rest, ice, compression, and elevation, or RICE Try the following RICE methods:

Avoid the activity that causes you pain, Use crutches to keep weight off your knee, Ice the area three or four times per day for 20 minutes at a

time, Wrap your knee using an elastic compression bandage, place pillows underneath your knee to elevate it to the same level or higher than the level of your heart. You may also take non-steroidal anti-inflammatory drugs such as ibuprofen (Advil) to alleviate swelling. If symptoms persist after three days despite this treatment or if your pain worsens, talk to your doctor.Some treatment methods for more serious knee injuries include:Steroid injection. This injection is used to treat serine bursitis. Physical therapy. Therapy often involves stretching, exercises, and ultrasound therapy. Assistive device. Wearing a knee brace during athletic or everyday activities can help. Discover the best knee braces for people with OA.Surgery. Arthroscopic surgery of the knee is most commonly used after a meniscus tear.According to a 2008 study from the University of Minnesota's department of orthopaedic surgery, helpful exercises include:

• Straight leg lifts, leg presses, mini squats, stationary or recumbent biking, swimming,

Walking or running on an elliptical machine, leg extensions,P.R.I.C.E.

Protect: The injured area should be protected with a splint, brace or crutches.

Rest: The player should rest the injured area.

Ice: Cool the area with a cool pack or ice bag to prevent swelling and pain, How do you prevent knee injuries in basketball?

(Balsdon, M. E. R., & Dombroski, C. E., 2018; Kim, T. H., Yoon, J. S., & Lee, J. H., 2013).

**Injury Prevention Tips**

1. Wear gym shoes that fit snugly, are non-skid and have high tops.
2. Use a mouth guard, ankle braces and safety glasses.
3. Warm up and stretch before each session.
4. Use proper technique and follow the rules.
5. Do not wear jewelry.
6. Play on a clean, dry, safe surface
7. In addition, you should always begin and end exercising of any kind with stretching all the muscles involved especially the quadriceps, hamstrings and others muscles before the playing.

**Discussion**

This study prospectively observed 18275injuries located on the different region of the human body. Anterior knee pain (AKP) is one of the most frequent reasons for adolescents and young adults to seek consultation for knee, and ankle conditions Sanchis-Alfonso, V., McConnell, J., Monllau, J. C., & Fulkerson, J. P. (2016). For this study the observation made showed 12030 or 87% of the patients were suffering from ankle because is the most solicit with the load of the body and training.The severity of the injury was significantly associated with the body region injured, with more serious injuries incurred to the lower limb than other body regions McKay, G. D., Goldie, P. A., Payne, W. R., Oakes, B. W., & Watson, L. F. (2001). However, the rate of knee injury observed in basketball players in our study was 718, or 5%of several injuries in this study, the luck of improving neuromuscular control of hamstrings muscles might have implications for increasing anterior cruciate ligament injuriesWilderman, D. R., Ross, S. E., & Padua, D. A. (2009). It could be speculated that the lower rate was due to factors such as training methods, quality of footwear, and ankle taping/bracing. Despite the decrease in incidence of ankle injuries, the rate and severity of injury documented here highlights the need to reduce the incidence further. Nevertheless the limb up also was attacked with the injuries from inadequate training, the luck of performance, a total of 1094 or 8% of the injuries surveyed was detected, Basketball is a contact sport with complex movements that include jumps, turns and changes in direction, which cause frequent musculoskeletal injuries in all regions of the bodyAndreoli, C. V., Chiaramonti, B. C., Buriel, E., Pochini, A. de C., Ejnisman, B., & Cohen, M. (2018). In fact this study is very important to help the basketball teachers, and the coach trainers to improve knowledge about all the game which demand the use of human joints.

## CONCLUSION AND SUGGESTIONS

### Conclusion

This study observed a large number of players in their natural environment using a prospective observer based cross sectional method of injury surveillance. However, a relatively amount number of ankle injuries, knee and other was documented. This study focused on acute ankle injuries, knee, shoulder, wrist, finger and other which appear during the games, training, during the different activities which solicit more

the joints of human body. The findings would be generalisable to similar players like volleyball players, rugby players, football players, handball players, marathon, sprinters, semi-marathon, flowers, final this research will help everyone whether his beginner or confirmed to improve the attention about the sport injuries and their treatment.

**Suggestions**

The following safety precautions are recommended to help prevent help basketball injury:

1. Warm up thoroughly prior to playing a game or training.
2. Ensure you have excellent core control, proprioception, speed, strength, endurance, agility and plyometric skills.
3. Wear supportive basketball shoes with skid-resistant soles.
4. Use good technique.
5. Clean of courts before play - check for slippery spots or debris.
6. Wear the right gear.
7. Strengthen muscles.
8. Increase flexibility.
9. Use the proper technique.
10. Take breaks.
11. Play safe.
12. Do not play through pain.

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