

Pattern Of Musculoskeletal Injuries In Professional Basketball League In Nigeria

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Abstract

Background & Objectives: Sports injuries is an expected consequence of athletic competition, and are not generally as a result of a single causative factor but are associated with various risk factors interacting at a given time. There is a paucity of knowledge on the profile of basketball injuries in Africa and in particularly Nigeria where the game is relatively new and is gaining popularity by the day. This study was designed to determine the pattern of musculoskeletal injuries among professional basketball players in Nigerian during the basketball league.

Methods: One hundred and twelve of 132 matches of the 2006/2007 professional basketball league in Lagos State, Nigeria were randomly selected for this study. The selected matches were watched and recording of occurrence of injury was done during each of the matches. Injuries were recorded with respect to causes, parts of the body injured, types of injury, zones of the playing field where the injuries occurred and the first aid rendered.

Results: A total of 79 injuries were recorded. Collision was the most common causes of injuries followed by fall. The ankle followed by the knee was the most frequently injured body parts. Sprains followed by contusions were the most common types of injuries sustained. Most of the injuries occurred in the offensive zone of the court followed by the key area. The commonest first aid rendered was cryotherapy followed by massage and bandaging.

Conclusions: The findings from the study therefore recommended that programme and policies aimed at preventing occurrence of injuries should be developed to prevent early or unceremonial retirement of talented player and physical impairment.

INTRODUCTION

The consequent upsurge in sporting activity and the intensity of training has caused a corresponding increase in sports injuries. Sports injuries result from complex interaction of extrinsic and intrinsic risk factors.¹ The extrinsic factors play a dominant role.^{1,2} It is established that age is also an important factor in sport injury. The older the player is the more prone to injuries he or she is.³ Sport equipment can also predispose to injury. Smoking can also reduce the ability of the alveoli to absorb oxygen, thus the individual tires easily. Also performance-enhancing drugs give a false impression of one's ability which leads to an extra load beyond normal capacity.⁴

The existing data regarding the type, nature, and frequency of injuries demonstrate that specific injury pattern occur in different sports.^{5,6,7} Many of the most significant sports injuries may lead to life long physical impairment, however,

each sport has its characteristic injury profile and degree of risk, and the injuries vary widely among sports.⁸ Football players commonly incur knee injuries,^{1,9,10} while wrestlers are often affected by shoulder problems.^{11,12}

Akinbo et al,¹ recently compared the pattern of musculoskeletal injuries between Nigeria professional premier soccer league (NPL) and English premier soccer league (EPL). The finding that the number of incidents of injuries recorded in the NPL was higher than that of the EPL was partly associated to hot climatic condition in Nigeria which enhances fatigue that may predispose to injury. This suggests that weather is an important factor in sports injury. This finding was corroborated by precious studies.^{13,14}

Numerous studies have been published in an attempt to characterize the rate of occurrence, mechanism and contributory factors in sports injuries.^{7,10,15,16} It was thought that understanding how and why athletic injuries occur

should lead to a reduction in these injuries.

Basketball, a game that started in 1891 in Young Men's Christian Association Gymnasium in Springfield, Massachusetts in the United State of America, has grown into game that 300 million people play world wide. ¹⁷ The game was created by Naismith in 1891 and was originally played with soccer ball. ^{17,18} The game is played by two opposing teams of five players with each trying to score point on another by shooting a ball through a hoop (the basket) under organized rules. ¹⁹

Basketball is a contact sport; this may explain why sprain and strain are usually the most frequent traumatic injuries recorded in most matches. ²⁰ It has been observed that there are relatively few studies on the injury pattern and epidemiology of basketball injuries; however the incidence of injury tends to increase as the game gains more popularity globally.

Incidence, the major unit of injury is the rate of injuries per season; it is the most basic expression of risk. ²⁰ Zvijac and Thompson ¹² stated that 50% of injuries result from body contact and majority of injuries occur during competition rather than during practice and that these injuries occur more in females than males.

Although there have been studies on the profile of injuries in relatively more contact sports like football in Nigeria, ^{1,4} there is a paucity of knowledge on the profile of injuries of basketball players in Africa and in particularly Nigeria where the game is gaining popularity by the day. This study was therefore designed to determine the pattern of musculoskeletal injuries among professional basketball players in Nigerian. The significant of the study is to provide an insight into the pattern of basketball injury in Nigeria and elsewhere, which is desirable for designing injury prevention and appropriate treatment programme in other to prevent life-long disability and other complications associated with sports injuries.

MATERIALS AND METHOD

SELECTION OF MATCHES

One hundred and twelve (112) of 132 matches of the 2006/2007 professional basketball league in Lagos state, Nigeria were randomly selected for this study. The league comprised of 12 basketball clubs namely: Dodan Warriors, Ebun Comet, Warriors Academy, Union Bank, Raptors, Kaddet, Bombers, Whales, Kenny's Bullet, Sea Rover, and Islander.

RESEARCH PROCEDURE

The research design employed in this study was an observational research design. Two of the authors (different from the one that selected the matches) were present when the selected matches were played and they watched the matches together and came to an agreement during the period of play of the selected matches. For the purpose of this study, a player is said to be injured only if there was a halt in the play ordered by the referee to attend to the injured player(s) who appeared to be in pain requiring attention. Recording of occurrence of injury was done during each of the matches using standardized injury report form designed by Marcia and Susan. ²¹ All situations where the matches where interrupted by the referee or when player(s) lay down on the court and appeared to be in pain were recorded as injuries. ^{1,9} The assessment format noted the following, among others:

Cause(s) of injury

- Site of injury on the player/Part of the body injured
- Type of injury (Injury characteristics)
- Zones of the basketball court where injury occurred.
- First aid rendered
- Ability of the player to return to the court of play

On the injury recording format the field of play was divided into 3 zones; namely the offensive zone, defensive zone and key area. ²¹ The offensive zone is the area of the court that contains the team's offensive basket, the defensive zone is the area of the court which the team is attempting to defend, and key area is the area where free throw is awarded. ^{17,19,21}

DATA ANALYSIS

Data were summarized using descriptive statistics of frequency, percentage, and pie charts using the software package 13.0 SPSS for windows. An inferential statistics of chi-square was used to determine significant difference between variables.

RESULTS

A total of 132 matches were played and 112 matches were analyzed. A total of 79 injuries were recorded. All subjects were professional male basketball players. The study recorded a mean value of 0.71 injury per match.

CAUSES OF INJURY

Table 1 shows the causes of injuries. Collision with fellow or opposite players (contact) recorded the highest cause of injury 50 (63.3%), followed by dribbling fall 14 (17.7%). On the other hand, previous injury was the least cause of injury 1 (1.3%).

BODY PARTS INJURED

Table 2 shows the distribution of body parts injured. Injury to the ankle was the most common 19 (24.1%) injuries, followed by knee with 11 (13.9%) injuries. The body parts with least injury were the forearm and elbow with 1 (1.3%) injury each.

TYPE OF INJURY SUSTAINED

Table 3 shows the distribution of injury sustained. Sprains accounted for the highest number of injury sustained 36 (45.6%), followed by contusion/bruise with 20 (25.4%) injuries. The least injury type was dental/mouth injury 2 (2.5%).

ZONE OF THE COURT WHERE INJURY OCCURRED

Figure 1 show the zone of the basketball court where the injuries occurred. The Pie chart shows that majority of the injuries occurred in the offensive zone with 37 (46.8%) injuries, followed by the key area 23 (29.1%) injuries, while the least was the defensive area with 19 (24.1%) injuries.

FIRST AID RENDERED

Table 4 shows the first aid rendered to the injured players. Cryotherapy, massage and bandaging were the most common first aid treatment methods used. Thirteen of the injured players received no treatment because the degrees of injuries were very mild in which no treatments were required.

FURTHER CARE DISPOSITION

Figure 2 shows that 61 (77.2%) injured players continued playing after treatment though some with signs of injury while 18 (22.8%) injured players were prevented from further playing due to the severity of injuries sustained.

Table 5 shows the chi-square test for significance difference in the occurrence of injury in the 3 zones of the basketball court. The test revealed a chi-square value of 6.785 with df of 2 and p value of 0.034 ($p < 0.05$). Thus, it can be inferred that there was a significant difference in the occurrence of injury in the 3 zones of the basketball court, with the

offensive zone having the highest frequency of injuries.

Figure 1

Table 1: Distribution of Causes of Injury

Injury Causes	Frequency (n)	Percentage (%)
Collision	50	63.3
Dribbling fall	14	17.7
Hit by a projectile/object	9	11.4
Previous injury	1	1.3
Sudden turn, twist or stop	5	6.3
Total	79	100

Figure 2

Table 2: Distribution of the Body Parts Injured

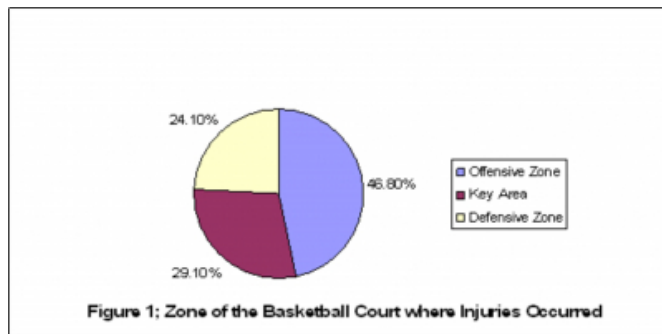
Body Parts	(n)	(%)
Abdomen/trunk	6	7.6
Eyes	5	6.3
Face	8	10.1
Hip/thigh	5	6.3
Head	7	8.9
Neck	4	5.1
Shoulder	2	2.5
Arm	2	2.5
Forearm	1	1.3
Elbow	1	1.3
Wrist & Finger	6	2.5
Leg	2	2.5
Knee	11	13.9
Ankle	19	24.1
Total	79	100.0

Figure 3

Table 3: Distribution of Type of Injury Sustained

Type of Injury	(n)	(%)
Contusion/Bruise	20	25.4
Laceration	4	5.0
Sprain	36	45.6
Muscle Cramps	17	21.5
Dental/mouth	2	2.5
Total	79	100

Figure 4



KEY

- Offensive area: the half of the court that contains the team's offensive basket
- Defensive area: the half of the court which the team is attempting to defend
- Key area: the area where free throw is awarded

Figure 5

Table 4: First Aid Rendered

Treatment Methods	(n)	(%)
CPR/breathing exercise	2	2.5
Cryotherapy	60	75.9
Massage	40	50.6
Exercise therapy	15	19.0
Strapping/bandaging	38	48.1
Bleeding control	4	5.0
No treatment rendered	13	16.5

Figure 6

Figure 2: Further Care Disposition

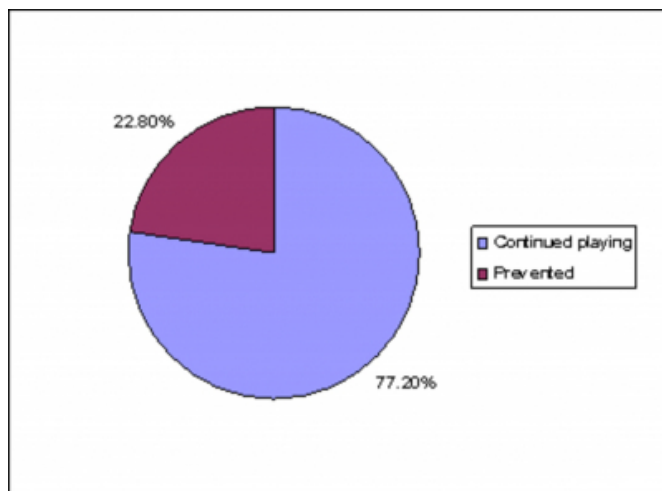


Figure 7

Table 5: The chi-square test for significant difference on the zone of the court where injury occurred

	Defensive half		Offensive Half		Key area		X ²	P-value
	n	%	n	%	n	%		
Occurrence of injury	19	24.1	37	46.8	23	29.1	6.785	0.034

DISCUSSION

The study observed 112 matches out of 132 matches in the 2006/2007 professional basketball league in Lagos State Nigeria with a total of 4480 registered professional basketball players. Collision recorded the highest cause of injury. This is because basketball is a contact sport with known high incidence of injuries as reported by previous studies.^{14,22,23} Basketball compared with football is less contact sport, the mean injury per match in this study was 0.71 injury per matched. The study of Akinbo et al,¹ on football injuries reported a mean value of 6.24 injuries per match. This revealed that basketball has less injury compared with football. Another reason for this is because basketball is an in-door game in which players are protected from adverse weather condition.

Fall as a result of dribbling at a high speed is another major cause of injury, this is not surprising because dribbling with the ball and bodily movement is a major skill in basketball. The basketball court with gloss, polished, and shinning surface resulting in slippery of the floor may also be a reason for persistent fall. Hit by a projectile e.g. ball is another major cause of injury, because players commonly forcefully throw ball on their opponent while on the side line in other to gain possession when throw-in is being awarded. However, sudden turn, twist or stop also caused injury, this may be due to the fact that the time-taken for warm up exercise before the commencement of the match was short which prevent full stretching of the muscles thus exposed the players to injuries. Also some of the players do not know the technicality involved in "cutting" and changing of direction which is integral part of basketball, because the game is still relatively new compared with football in Nigeria with some of the players having low technical skill of the game.

The study also revealed that the ankle was the most frequently injured body part. The knee was the second most common. Other studies have also found these areas to be the most frequently injured.^{13,14,23,24} The likely reason for this may be due to the fact that jumping and landing are skills often performed by basketball players. Therefore most ankle

injuries were sustained during this maneuver. Another cause of ankle injuries is sharp twist or turn, which is a component of cutting; and changing of direction, which is also an integral part of basketball as half of the landing injuries and all of the twisting/turning injuries were incurred during weight bearing, as reported in the studies of McKay et al.^{23,24} More research needs to be done towards identifying appropriate landing and body movement maneuvers for effective injury prevention strategies. Also ankle and knee stabilizer/brace should also be worn by the players to reduce ankle and knee injuries.

This results of this study revealed that sprains were the most common type of injuries, with contusions the next most common type. These data were comparable with findings reported in previously reported studies.^{13,14,23} The offensive zone recorded the highest injuries of the three zones; this is because the area is the most active area similar to the mid-field zone in football game. Also the key area recorded the second most common injury zone because players guided their opponent from shooting into the basket to making scoring points in the zone with a lot of ball struggling.

Sequel to injury, 13 (16.5%) of the injured players did not receive any treatment because the degree of the injury were very mild. The first aid commonly used were cryotherapy, massage, bandaging and exercise therapy. These modalities were common sports injuries first aid methods, corroborated by previous studies.^{1,9,25}

It was also observed that some of the clubs do not have proper medical team of doctor and physiotherapist to render on-court and off-court first aid treatment. Therefore some of the injured players were not properly treated; this may be the reason for some of the players returning to the field of play with signs of injury. The need for prompt and effective medical attention to injured players by qualified medical personnel is advocated, all clubs should be mandated to have proper medical team with necessary first aid materials. Also education about importance of proper medical team and benefit of prompt treatment following injury must be emphasized. Programme and policies aimed at preventing occurrence of injuries, has to be developed by sport administrators.

CONCLUSION

This study stimulates questions, discussion and further studies regarding musculoskeletal injury in basketball game in order to reduce incidence of injury, and also established that; injury prevention programs should be in place for

practice sessions as well as games, and the prevention of reinjury through daily injury management is a critical component of an injury prevention program.

While sports injuries cannot be totally eliminated, consistent and professional evaluation of the weekly, monthly, and yearly injury patterns of professional sports men and women can help to focus the task of developing and evaluating injury prevention strategies. The best way to minimize the risk of injury in sports is to provide a well-design and operational injury prevention program.

Therefore sport injury should not be handle with levity, more emphasizes and attention must be devoted to sport injury prevention and management strategies in order to prevent early or unceremonial retirement of talented player and physical impairment due to sport injury.

References

1. Akinbo SRA, Salau MA, Odebiyi DO, Ibeabuchi NM. Video analysis of musculoskeletal injuries in Nigeria and English professional soccer league: A comparative study. *Nigeria J of Health & Biomedical science* 2006; 6:119- 120.
2. Mark H, Greg M, Clyde, W, John K. *Nature, Prevention and Management of Injury. ABC of sports Medicine* 2001 2nd edition, 1-6.
3. Odebiyi DO, Olalekan AT, Odunuga OAC. *Sport medicine: The Role of a Physiotherapists. J Nigeria Medical Rehabilitation Therapists* 2001; 6: 11-12.
4. Odunuga OAC. (2000). The role of a sport physiotherapist. *J Nigeria Medical Rehabilitation Therapists* 2000; 16: 11 16-21
5. Bahr R, Krosshaugh T. Understanding injury mechanisms: A key component of presenting injuries in sport. *British J Sport Med* 2005; 14: 286 290
6. Bruce CY. Injury and disability in matched men's and women's intercollegiate sports. *AM J Public Health* 1991; 80: 410-504.
7. Brucner C. Sport injury and level of anxiety in soccer players. *J Athletic Training* 1993; 2: 45-8.
8. Taimela S, Kujala UM, Osterman K. Intrinsic risk factors and atheletic injuries. *J Sport Med* 1990; 9:205-215.
9. Hamzat TK, Adeniyi AF, Awolola OE, Olaleye OA. Injury pattern of FIFA, CAF and UEFA Soccer tournaments: A retrospective study of selected 2002 matches. *South African J Physiotherapy* 2004; 60 (3): 10-14
10. Inklaar H. Soccer injuries: Incident and Severity of sports injuries. *Am J Sport Med* 1994; 18:5-73.
11. Requa RK. The Impact of Sport Related Injuries. *J National Institute of Health* 1991; 12: 63-70.
12. Zvijac K, Thompson W. Epidemiology of Sport Injuries. *Am J Sport Med* 1996; 53: 86-97.
13. Orchard J, Seward H. Intrinsic and Extrinsic Risk factors for Anterior Cruciate Ligament Injury in Australian footballers. *Am J Sports Med* 2002; 29:196-200.
14. Lysens RJ, De Weertd W, Nieuwboer A. Factors associated with injury proneness. *British J Sport Med* 1991; 12: 181-289.
15. Lisa RE. Sport injury Incidence. *British J Sports Med* 1999; 34: 133-136.
16. Messina DF, Farney WC, Delee JC. The Incidence of Injury in Texas High School Basketball. A prospective study

among male and female athletes. Am J. Sport Med 1999; 27: 294-296.

17. Adam FM. . History of Basketball, www.google.com. Date Retrieved: Feb 24, 2006.

18. Roy AS. Professional Basketball Injuries. J Physician and Sport Med 1999; 10:16-25.

19. Bensor TI, Kelvin FG. How basketball works, www.google.com. Date Retrieved: January 11, 2006.

20. Peter JU, Ekstrand J, Troop H. (1991). The incidence of ankle sprain. Phys Therapy 1991; 23:332-336.

21. Marcia KA, Susan JH. Sport Injury Management 4th edition 2002: 28-34.

22. De Lee JC, Farmey WC. Incidence of injury in Texas

high school football using a risk based assessment process. British J Sport Med 1994; 36: 446-451.

23. McKay GD, Goldie PA, Payne WRJ. A Comparison of the Injuries Sustained by Basketball and Netball Players. Aust J. Science & Sport Med 1995; 28: 12-17.

24. McKay GD, Goldie PA, Payne WRJ, Dakes B. Ankle Injuries in Basketball: Injury rate and risk factors. British J Sport Med 2001; 35: 10-108.

25. Akinbo SRA. The 19th Nigerian Universities Games Association (NUGA GAMES 2002) : Pattern of Musculoskeletal injuries. J Specialist Doctor 2003; 10: 11-14.

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