

## Assessment of risk and severity of injuries among male professional and national football league players in southwest Nigeria

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**Abstract.** Nigeria has the highest number of football players in Africa with a total of 6,653,710 players. Due to the fast pace and semi-contact nature of football, injuries are regular occurrences. In view of this, it is necessary to examine the risk factors and severity of injuries among Nigerian male professional and national football league players. *Material and method.* Two hundred and sixty six (266) registered male players in the South-West zone of the Nigeria Professional Football League (NPFL) and the Nigeria National League (NNL) for the 2013/2014 season were involved in this study (i.e. 40 from NPFL and 226 from NNL). Self-administered questionnaires were distributed to the participants to obtain information on the demographic data, severity of injury and potential risk factors of injury. Chi-square test was used to evaluate the association between the risk factors of injury and occurrence of lower extremity injuries. The level of significance was set at  $p < 0.05$ . *Results.* This study revealed an overall injury prevalence of 18.7%. Based on the time lost to injury, most (28, 58.2%) of the players with injury, reported to have severe injuries with more of the injuries occurring at the knee joints (20, 31.7%). Out of the risk factors assessed, there was a significant association between the category of play and occurrence of injury. *Conclusion.* Players in the NPFL and NNL are exposed to severe injuries which often affects the knee joint. Various strategies for injury prevention should be implemented by team managers.

**Key words:** football players, injuries, risk factors of injury.

### Introduction

Football (soccer) is the world's most popular sport with an estimated 265 million registered players (1). Nigeria has the highest number of football players (male and female in all categories) in Africa with a total number of 6,653,710 players (1). Due to the physical, fast pace and semi-contact nature of the sport, injuries are regular occurrences (2). Participating in sports on a regular basis is considered a vital component of an active and healthy lifestyle however, there is a high potential of musculoskeletal injuries (3). To some extent, sports injuries are inevitable, with the incidence rate of outdoor football injuries ranking among the highest of all sports injuries, particularly in adult male football players (3,4).

The incidence of injury in football participation has been shown to range from 12 to 35.5 injuries/1000 hours of matches and 1.5 to 7.6 injuries/1000 hours of practice for different leagues across the world and at varying levels of competition (lower-tier professional division, top-tier professional division, international level competition) (2). Similarly, injury risk in football has been shown to be higher in adult males with 65-91% than in adult females with 48-70% sustaining at least one injury during a season (5-7). These injuries result from complex interaction of extrinsic and intrinsic risk factors (8). They include injuries to bones, joints ligaments, muscles, tendons and other soft tissues (9-10). Although regular sports practice facilitates movement skills (11), helps prevent obesity (12) and has long-lasting benefits on bone health (12), unfortunately, it leads to higher rate of acute and overuse injuries. For the young athlete, the consequences of sports injuries could be numerous, ranging from re-injury to career-ending (13). However, promotion of a physically active lifestyle is encouraged worldwide, particularly with regard to its numerous health benefits (14,15).

Injury severity can be described in six criteria which are nature of sports injury, duration and nature of treatment, sporting time lost, working time lost, permanent damage, and cost (16). Most studies of football injuries describe the severity of injury based on sporting time lost. Therefore, severity of injury is

categorized as slight (0 day); minimal (1–3 days); mild (4–7 days), moderate (8–28 days), severe (>28 days) and career ending injuries (17). Bearing in mind the vast number of players involved in football and the negative implications of sport injuries, it is therefore necessary to examine the potential risk factors and severity of injury among Nigerian male professional and national football league players in south-west Nigeria.

### Material and Method

The study involved forty (40) registered male football players of South-West zone in the Nigeria Professional Football League (NPFL) and two hundred and twenty six (226) registered male football players of South-West zone in the Nigeria National League (NNL) for the 2013/2014 season. The NPFL and NNL are different national leagues govern by the Nigeria Football Federation. After a season, four clubs with the lowest points in the NPFL are relegated to the NNL while the best four clubs from the NNL are promoted to join the NPFL.

Football players who declined consent of participation and those with physical complaints not related to the training sessions and matches were excluded from the study. The flow chat of the study population is as shown in figure 1.

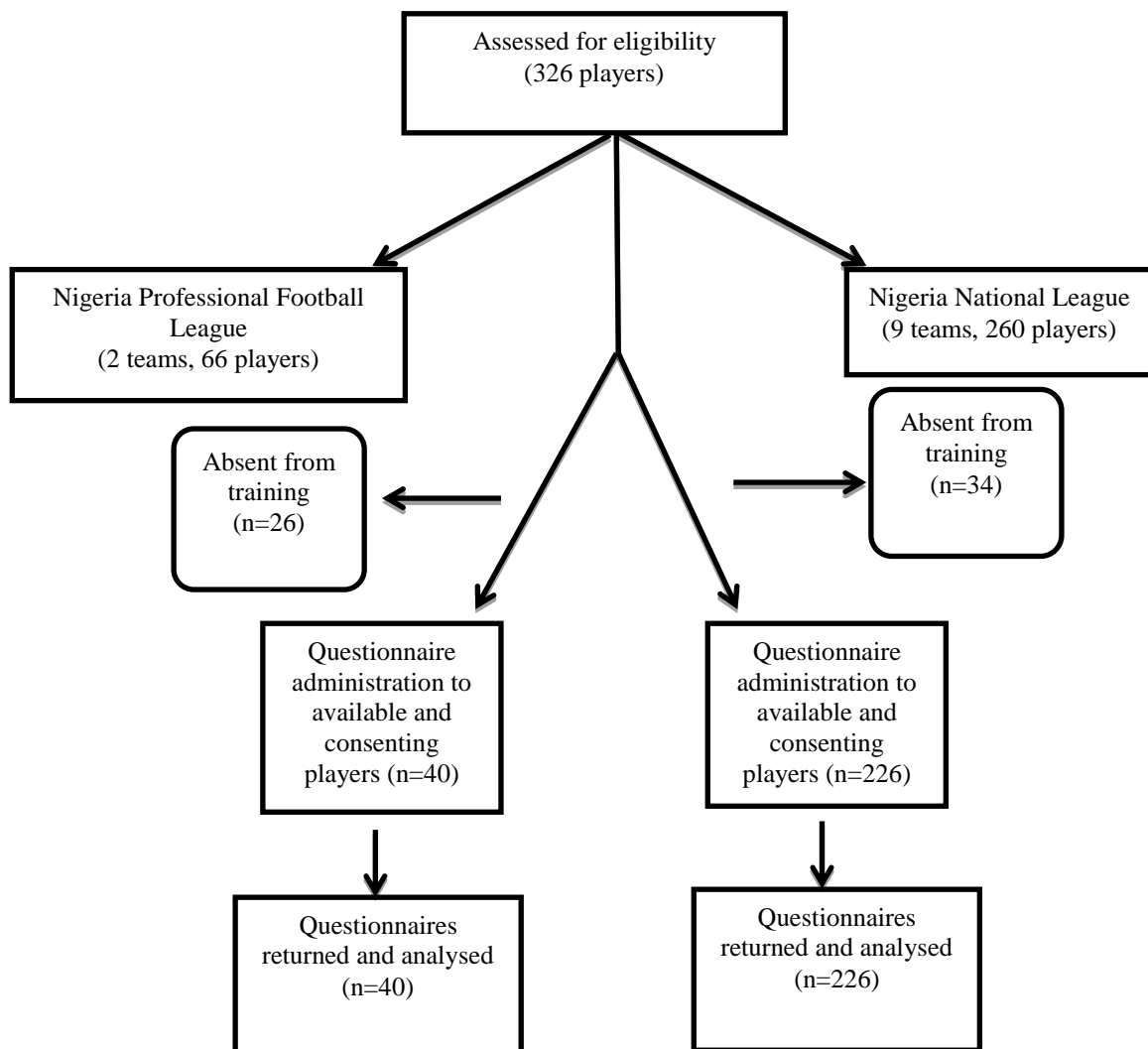


Figure 1. Flow Chart of the Study Population

Prior to the commencement of the study, ethical approval was sought and obtained from the Health Research and Ethics Committee of Lagos University Teaching Hospital, Lagos, Nigeria. Informed consent from the participants were sought and obtained prior to the commencement of the study.

The study involved the use of questionnaires adapted from previous studies (18-20). It comprised of two sections (A and B). Section A assessed players' demographics; section B assessed injury risk and severity. A focus group was setup to validate the content of the questionnaire, which was pilot-tested with an Amateur Team at the National Stadium, Lagos. Minor changes were made before it was administered to the study sample.

The questionnaires were self-administered and were distributed on training grounds after the delivery of brief information on the objectives of the study and how to complete the questionnaire. Access to the teams was facilitated either by the Sport Medical Officer where present, team manager or coach who provided contact information.

**Data Analysis.** Descriptive statistics of mean and standard deviation were used to summarize the physical characteristics of the participants. Independent t-test was used to determine the difference in the physical characteristics of the players in the two categories of play (i.e. NPFL and NNL). Chi-square test was also used to evaluate the association between the potential risk factors of injury and actual occurrence of lower extremity injuries. The level of significance was set at  $p < 0.05$ . All data were analyzed using SPSS (Statistical Package for Social Sciences) version 20.0 (SPSS Inc, Chicago, II).

## Results

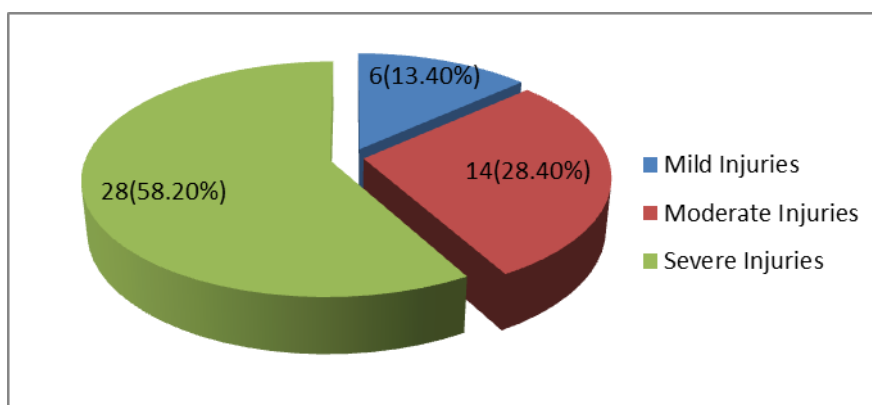
Two hundred and sixty six (266) of the 326 distributed questionnaires were returned with 81.6% response rate, forty (40) from the Nigeria Professional League and 226 from the National League. The result of this study revealed an injury prevalence of 30% and 16.7% for the Professional and National League of the Nigeria Football Federation respectively with an overall injury prevalence of 18.7%.

The overall mean body mass index (BMI) of the players was  $23.39 \pm 4.28 \text{ kg/m}^2$ , mean age was  $21.57 \pm 4.30$  years with an average of  $10.87 \pm 4.39$  years of football experience (Table I).

**Table 1.** Descriptive characteristics of professional and national league players

Variable	Category of play		t-value	p-value
	Professional Mean $\pm$ SD (N=40)	National Mean $\pm$ SD (N=226)		
Age (years)	21.73 $\pm$ 3.99	21.54 $\pm$ 4.36	0.25	0.804
Experience (years)	9.74 $\pm$ 4.55	11.07 $\pm$ 4.34	-1.65	0.100
Height (m)	1.73 $\pm$ 0.14	1.71 $\pm$ 0.15	0.59	0.559
Weight (kg)	73.60 $\pm$ 7.67	67.00 $\pm$ 7.65	5.01	0.000*
BMI (kg/m <sup>2</sup> )	24.94 $\pm$ 3.80	23.11 $\pm$ 4.31	2.39	0.018*

\* Significance at  $p < 0.05$  (SD- Standard Deviation; BMI- Body Mass Index; m- Meters; kg- Kilogram; kg/m<sup>2</sup>- Kilogram per meter square)



**Figure 2.** Severity of injuries

*Risk Factors for Injuries in Players.* The potential risk factors for injuries assessed were the playing position, years of experience, category of play and age of the players. Table III shows the relationship between the potential risk factors and the prevalence of injury among the football players. There was a significant association between the prevalence of injury and the category of play ( $p = 0.047$ ) while prevalence of injury was not significantly associated with playing position ( $p = 0.134$ ), years of experience ( $p = 0.327$ ) and age of the players ( $p = 0.134$ )

**Table II.** Lower extremity injury location of players according to category of play

Injury location	Category of play		Total, N (%)
	Professional, n (%)	National, n (%)	
Hip	4 (25.0)	9 (19.1)	13 (20.6)
Thigh	2 (12.5)	7 (14.9)	9 (14.3)
Knee	5 (31.5)	15 (31.9)	20 (31.7)
Lower leg	0 (0.0)	4 (8.5)	4 (6.3)
Ankle	4 (25.0)	9 (19.1)	13 (20.6)
Foot	1 (6.2)	3 (6.4)	4 (6.3)

**Table III.** Potential risk factors for lower extremity injuries in players

Potential Risk Factors	Injured Players, n (%)	Uninjured Players, n (%)	Total, N	Chi Square	p-value
<b>Playing Position</b>					
Goal Keeper	4 (13.3)	26 (86.7)	30 (100.0)	5.58	0.134
Defender	18 (23.4)	59 (76.6)	77 (100.0)		
Midfielder	7 (10.1)	62 (89.9)	69 (100.0)		
Striker	16 (21.9)	57 (78.1)	73 (100.0)		
<b>Years of Experience</b>					
3 – 8 years	10 (15.4)	55 (84.6)	65 (100.0)	3.46	0.327
9 – 13 years	21 (19.4)	87 (80.6)	108 (100.0)		
14 – 19 years	7 (15.9)	37 (84.1)	44 (100.0)		
20 years and above	3 (42.9)	4 (57.1)	7 (100.0)		
<b>Category of Play</b>					
Professional	12 (30.0)	28 (70.0)	40 (100.0)	3.94	0.047 *
National	36 (16.7)	180 (83.3)	216 (100.0)		
<b>Age (Years)</b>					
15 – 19 years	13 (15.1)	73 (84.9)	86 (100.0)	1.47	0.134
20 years and above	34 (21.5)	124 (78.5)	158 (100.0)		

\*Significant at  $p < 0.05$

## Discussion

The result of this study revealed an injury prevalence of 30% and 16.7% for the Professional and National League of the Nigeria Football Federation respectively, with an overall injury prevalence of 18.7%. Higher injury prevalence in the Professional League depicts the competitive nature of events as the level of play increases. The injury prevalence rate in this study is however lower than in European male elite players with documented rate ranging from 65-91% (21-23). Similarly, the prevalence of injury reported in this study is lower than those reported from previous studies among Nigerian male football players in which the recorded injury prevalence was 67.8(%), 81.6(%) and 32.2(%) respectively (8, 24, 25). This difference in prevalence reports may be due to differences in methodological approaches and definition of reportable injury, which is a key factor in the analysis of the injury prevalence in any study.

There is general agreement among researchers that injury incidence is greater during competition than in training sessions (5, 24, 27). Findings from this study revealed that of the injury that occurred during the 2013/2014 League season there was an overall higher prevalence of injuries during matches than training sessions. This finding suggests that players may be more prone to aggressive and risk taking behaviors during competition, which may in turn increase the potential for injury. All the joints of the lower limb were subject to injury with the knee joint ranking highest (31.7%) followed by the ankle and hip joints (20.6%). This result agrees with the findings of studies on professional footballers in Africa (8, 24, 25) which reported that the knee joint ranked most frequently injured with the ankle and hip joints following. The knee joint takes on a lot of stress during sports and during a lifetime.

Time-loss to injury in this study was documented based on one-year prevalence as reported by the football players. The effect and severity of injuries in this study was quantified in terms of the number of days lost to injuries. More than half of the injuries sustained by the player were severe. This implies that most of the injured football players had injuries severe enough to keep them out of play for more than 28 days. This may be due to inadequate medical support (26) as well poor reporting of recurrent minor injuries which may ultimately result in more severe injuries. It could also be due to the perception of the players about their injuries as a problem they could easily handle on their own with no recourse to health care professionals (28, 29).

In order to establish prevention of injuries, it is important to identify risk factors associated with the occurrence of injury and then provide appropriate information on findings to stakeholders through appropriate risk communication (27). Risk factors such as age, category of play (Professional or National League), position of play and years of experience were assessed and the category of play was found to be significant with higher prevalence of injury among the NPFL players. This may be as a result of the exposure of the NPFL players to a higher level of competitive matches. Although no significant difference was found among the position of play of the players in both leagues, the defenders were prone to higher risk of injury. This corroborates the findings previous studies where it was observed that the defenders were more prone to lower limb injuries (20, 24). This may be due to the all-important and technical duties of a defender by constantly protecting the goal area, which is the part of the pitch that is highly prone to injury.

### Conclusion

Pattern and risk of injuries among the football players of the Nigerian Professional and National Leagues are consistent with literatures on football injuries. However, higher rates of severe injuries were prevalent in this study. Category of play was found to be the only statistical significant risk factor among other potential risk factors to injury assessed.

Furthermore, higher injury prevalence was reported among the professional league football players than the national league players in view of this, all football clubs should have the full range of medical staff who should be present at both training sessions and during matches. In addition, the medical and coaching staff of every football club should attend regular workshops and certifications on current injury prevention strategies.

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### References

1. FIFA. TheBigCount (2006). <http://www.fifa.com/worldfootball/bigcount/index.html> Accessed 26/7/2014.
2. Junge A, Dvorak J, Graf-Baumann T, Peterson L (2004). Football injuries during FIFA tournaments and the Olympic Games, 1998-2001: development and implementation of an injury-reporting system. *American Journal of Sports Medicine*; 32: S80-S89.
3. Schmikli SL, de Vries WR, Inklaar H (2011). Injury prevention target groups in soccer: injury characteristics and incidence rates in male junior and senior players. *Journal of Science and Sports Medicine*; 14: 199-203.
4. Inklaar H, Bol E, Schmikli SL, Mosterd WL (1996). Injuries in male soccer players: team risk analysis. *International Journal of Sports Medicine*; 17: 229-234.
5. Hagglund M, Walden M, Ekstrand J (2005). Methods of epidemiological study of injuries to professional football players: developing the UEFA model. *British Journal of Sports Medicine*; 39: 340-346.
6. Faude O, Junge A, Kindermann W, Dvorak J (2005). Injuries in female soccer players: a prospective study in the German national league. *American Journal of Sports Medicine*; 33: 1694-1700.
7. Jacobson I, Tegner Y (2007). Injuries among Swedish female elite football players: a prospective population study. *Scandinavian Journal of Medicine and Sports in Science*; 17: 84-91.
8. Akinbo SRA, Salau MA, Odebiyi DO, Ibeabuchi NM (2007). Video analysis of musculoskeletal injuries in Nigerian and English Professional Soccer Leagues: A comparative study. *Nigerian Journal of Health and Biomedical Science*; 6(2): 85-89.
9. Owoeye OBA, Akinbo SRA, Odebiyi DO, Odunaya N (2009). A retrospective study of sports injuries reported at the National Sports Medicine, Lagos, South-west, Nigeria. *TheInternet Journal of Rheumatology*; 6: 1. <http://ispub.com/IJRH/6/1/5092>.
10. Alberta Injury Statistics and Costs (2000). Musculoskeletal injuries. *Workplace Health and Safety*; 6(30):1-5.
11. Okely AD, Booth ML, Patterson JW (2001). Relationship of physical activity to fundamental movement skills among adolescents. *Medicine Science Sports Exercise*; 33:1899-1904.

12. Wong P, Chia MY, Tsou IY (2008). Effects of a 12-week exercise training programme on aerobic fitness, body composition, blood lipids and C-reactive protein in adolescents with obesity. *Annual Academic Medicine Singapore*; 37: 286-288.
13. Kohrt WM, Bloomfield SA, Little KD, Nelson ME, Yingling VR (2004). Physical activity and bone health—ACSM position stand. *Medicine of Science Sports and Exercise*; 36: 1985-1996.
14. Caine D, Caine C, Maffulli N (2006) Incidence and distribution of paediatric sport-related injuries. *Clinical Journal of Sport Medicine*; 16: 500-513.
15. Haskell WL, Lee IM, Pate RR (2007). Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Circulation*; 116: 1081-1093.
16. Van Mechelen W, Hlobil H, Kemper H (1992). Incidence, severity, aetiology and prevention of sports injuries. *Sports Medicine*; 14: 82-99.
17. Fuller CW, Ekstrand J, Junge A, Andersen TE, Bahr R, Dorak J, Hagglund M, McCrory P, Meeuwisse WH (2006). Consensus statement on injury definitions and data collection procedures in studies of football (soccer) injuries. *Scandinavian Journal of Medicine and Science in Sports*; 16: 83-92.
18. Hawkins RD, Fuller CW (1998). A preliminary assessment of professional footballers' awareness of injury prevention strategies. *British Journal of Sports Medicine*; 32:140-143.
19. Owoeye OBA, Akinbo SRA, Olawale OA, Tella BA, Ibeabuchi NM (2013). Injury prevention in football: Knowledge and behaviour of players and availability of medical care in a Nigerian youth football league. *South-African Journal of Sports Medicine*; 25(3): 77-80.
20. Owoeye OBA, Akinbo SRA, Olawale OA, Tella BA (2014). Lower extremity injuries among Nigerian male youth football players. *British Journal of Sport and Exercise Medicine*; 48 (7): 649.
21. Lewin G (1989). The incidence of injury in an English professional soccer club during one competitive season. *Physiotherapy*; 75: 601-605.
22. Mandelbaum BR, Silvers HJ, Watanabe DS, Knarr JF, Thomas SD, Griffin LY, Kirkendall DT, Garrett Jr W (2005). Effectiveness of a neuromuscular and proprioceptive training program in preventing anterior cruciate ligament injuries in female athletes. 2 year follow-up. *American Journal of Sports Medicine*; 33: 1003-1010.
23. Walden SM, Hagglund M, Ekstrand J (2005). Injuries in Swedish elite football- a prospective study on injury definitions, risk for injury and injury pattern during 2001. *Scandinavian Journal of Medicine and Science in Sports*; 15: 118-125
24. Azubuike SO, Okojie OH (2009). An epidemiological study of football injuries in Benin City, Nigeria. *British Journal of Sport Medicine*; 43: 382-386.
25. Afu CS, Appiah-Kubi KO, Olawale OA (2009). Pattern of common injuries among footballers: A retrospective study of professional football clubs in Greater Accra region of Ghana. *Ghana Journal of Physiotherapy*; 1(1): 21-24.
26. Naicker S, Plange-Rhule J, Tutt RC, Eastwood JB (2009). Shortage of Healthcare Workers in Developing Countries—Africa. *Ethnicity & Disease*; 19: 60-64.
27. Fuller CW, Junge A, Dvorak J (2012). Risk management: FIFA's approach for protecting the health of football players. *British Journal of Sports Medicine*; 46: 11-17.
28. L Rusu, S Cernaianu, M Vasilescu, G Baltac, D Ciocanescu, C Fortan (2009). Assessment of knee stability using neuromuscular measurement in soccer players. XVIII International Congress on Sports Rehabilitation and Traumatology; April 25-26, 2009, Bologna (Italia).
29. Ayanniyi O, Abiodun BO, Adekanla BA (2015). Pattern of musculoskeletal injuries among soccer and basketball players in a Nigerian university. *Medicina Sportiva*; 11(4): 2676-2681.

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