

Injuries in Elite Jamaican Netballers

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ABSTRACT

Objectives: The purpose of this study is to identify the nature, spectrum and frequency of injuries among national netballers in Jamaica.

Methods: A retrospective study utilizing a questionnaire was used to gather the necessary information among netball players over a five-year period spanning two world cups. A 31-item questionnaire on player's profile, protective equipment, site of injury and associated factors of injury was completed by a study population recruited from players who had represented Jamaica at the senior level, under 21 or under 16 age groups between 2003 and 2007. Statistical analysis was done using the SPSS version 12.

Results: Most of the injuries were confined to the ankle and knee, with the playing surface and poor landing technique the main reasons for the injuries.

Conclusions: There are wide variations in training, players' fitness, levels of coaching and the standards of playing courts, all of which might have contributed to players' injuries.

Keywords: Injury prevention, sports injury

Heridas en los Voleibolistas Jamaicanos de Élite

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RESUMEN

Objetivos: El propósito de este estudio es identificar la natural, el espectro y la frecuencia de las heridas entre los voleibolistas nacionales de Jamaica.

Métodos: Por medio de un cuestionario, se realizó un estudio retrospectivo entre los jugadores de voleibol a fin de obtener la información necesaria, el cual cubrió un período de cinco años. Un cuestionario de 31 ítems sobre el perfil del jugador, el equipo de protección, el lugar de la herida y los factores asociados con la herida, fue respondido por una población de estudio, reclutada de jugadores que habían representado a Jamaica en la categoría de mayores, correspondiente a los grupos de menos de 21 años y menos de 16 años de edad. El análisis estadístico se realizó usando la versión 12 del SPSS.

Resultados: La mayoría de las heridas estuvieron confinadas al tobillo y las rodillas, siendo la superficie del terreno de juego y la pobre técnica de aterrizaje, las razones principales de las heridas.

Conclusiones: Existe una amplia gama de variaciones en el entrenamiento, el estar en forma (fitness), los niveles de coaching, y las normas de las canchas de juego, todas las cuales pudieron haber contribuido a que los jugadores sufrieran heridas.

Palabras claves: Prevención de las heridas, heridas en el deporte

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INTRODUCTION

Sports have enormous benefits to athletes, communities and countries. It not only keeps participants fit and healthy, but can provide significant mental fortitude. In Jamaica, the entire psyche of the nation is lifted by sporting achievements of its athletes on the world stage. Yet there is also significant cost for care from injuries related to the participation of

athletes in sports (1). Netball is a popular sport in Jamaica, and Jamaica is currently ranked fourth in the world.

There is very little published literature on netball injuries in elite netballers, and none on those among Jamaican netballers. Studies recording injuries in netball have recognized that the sport is associated with injuries and the need for injury prevention strategies are of critical importance at all levels (2–4).

The magnitude and spectrum of injuries locally is unknown as no study has been done. This study is the first to look at the range of injuries and possible causes. It is also the first to focus solely on elite level participants at different age groups.

SUBJECTS AND METHODS

A retrospective study was performed over the five-year period spanning two World Cups, between 2003 and 2007. This was done by using a 31-item questionnaire on players' profiles, protective equipment, sites of injury and associated factors of injury. The study population was recruited from players who had represented Jamaica at the Senior Level, Under 21, or Under 16 age groups in the last five years.

An injury was defined as trauma to a specific body part resulting in cessation of play. Repeated injuries were defined as injury to the same site. Each participant was asked to complete the 31-item questionnaire. To ensure confidentiality and anonymity, each data sheet was encoded using a numerical patient identifier system.

Data were entered in a Microsoft Access database and statistical analysis done using the SPSS version 12. The study was approved by the Ethics Committee of the University Hospital of the West Indies/University of the West Indies/Faculty of Medical Sciences.

RESULTS

A total of fifty-nine players, comprising four categories, were evaluated using a questionnaire instrument administered by the senior author. This represented 95% of all those players who represented Jamaica at an international competitive level during the study period. Ten (16.9%) players were at the under-16 level, twenty-two (37.3%) players at the under-21 level, twenty-four (40.7%) players at the senior level and three (5.1%) players who had retired.

Only three (5.1%) players had prior medical conditions which did not impact on injuries. Approximately seventeen (29%) players suffered from an injury at least once, sixteen (27%) players suffered an injury on two occasions while seven (12%) suffered an injury on three occasions. The knees and ankles accounted for 97.7% of all injuries (Table). The remainder was in the wrist as no other body part was injured. The under 16 players sustained the least injuries.

Seventeen of the ankle injuries were grade I or II sprains, all of which were lateral. Two sustained a grade III sprain while five players had Achilles tendonitis. One player had a spur surgically removed from the ankle.

Table: Body part injured

Body part injured	Number of times injured	Percentage
Wrist	1	2.3
Knee	18	41.9
Ankle	24	55.8
Total	43	100.0

With regards to the knee, four players had anterior cruciate ligament (ACL) injuries (one bilateral), three had meniscal injuries and one had a loose bony fragment in the knee. Two of these players had combined ACL and meniscal injuries. All of these players had surgical intervention. Six players had patella tendon disorders and there were four players who had patello-femoral disorders. The above mentioned injuries were confined mainly to the under-21 and senior level categories. Nine of the combined injuries were of knee and ankle. Fourteen (23.7%) players had recurring injuries, all confined to the knee and ankle.

Forty players gave a possible reason for their injuries: 21 (52.5%) players ascribed it to poor landing technique, 11 (27.5%) to collisions, seven (17.5%) players cited poor playing surface, and one (2.5%) described repetitive movements (Figure).

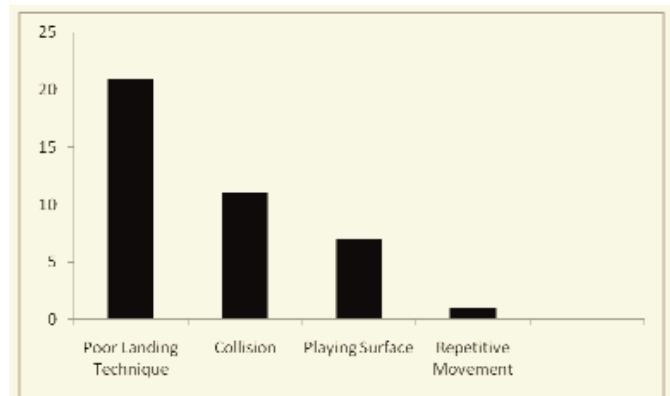


Figure: Reason for injury among elite netball players.

The playing positions: wing attack (31.3%) and goal defence (23.5%) contributed to over half of the injuries. Thirty-seven (62.7%) players participated in netball training for six hours or more, while the others trained for less than six hours. Fifty-four (91.5%) players did fitness training before the netball training with forty-two (71%) players training for three hours or more. Forty-six (78%) players trained under the guidance of a qualified fitness instructor, while the others were either self-regulated or with a gym instructor. Six (10.2%) players reported that they had a foot abnormality. In terms of footwear, 35 (60%) players used medium-cut footwear and 22 (37.3%) players used low-cut footwear.

Forty-eight (81.4%) players had five coaches or more during this study period with ten (17%) players having three to four coaches. Twenty-five (42.4%) players had certified coaches, five (8.5%) players had purely uncertified coaches and 29 (49%) players had a mix.

In all three groups, there were more players who had five or more coaches; 56% of the under-21 players had certified coaches and 27.6% had a mix of certified and uncertified coaches. At the senior level, 62.5% had a mix of coaches. Yet most injuries were in players with certified coaches, and least with solely uncertified coaches.

DISCUSSION

Jamaica has a very rich sporting history and netball is the top female team sport. The Jamaican Senior Netball team has consistently been in the top four of the world for the last two decades. There is no professional netball league, and many elite players engage in other sports as well. This study captures almost all of the elite netball players who have represented Jamaica over a five-year period (inclusive of two World Cups).

Injuries are more likely among skilled players, with the highest rates seen in Senior and Grade A players in Australia (4, 5). This was thought to reflect the intensity of the game at a higher level. In our study, there was no injury among the under-16 players. Assuming that all national representatives in all categories play at their highest intensity, age would be an independent factor in susceptibility to injury.

Netball had the highest proportion of lower limb injuries among all the popular sports played in Australia (6). It is described as a game prone to ankle and knee injuries and comprises 40–84% and 14–20% of said injuries, respectively in Australian netball (3–6). Wrist and hand injuries were seen more in junior grades, attributed to poor skill and technique (5).

There were no finger injuries and, except for a single wrist injury, all other injuries were around the ankle and knee joints. Ankle injuries accounted for 55.8% of the injuries in this study. No fractures were noted unlike 10% quoted elsewhere (4). The lateral side had all the strains, of which 89.5% were grade I or II strains. This was higher than the 84% quoted for similar grade injuries in Australia (4). Ankle injuries are inevitable given the nature of the game, and these minor strains would lead to the least time lost from the game. The single player requiring surgery was for excision of a spur which was done electively, out of season.

Poor landing technique had been attributed by players as being the primary reason for ankle injuries (4, 7). This was similarly cited by 52.5% of the respondents in this study, with collisions being blamed half the time (27.5%). Many netball matches in Jamaica are still played on hard courts, but only 17.5% suggested the playing surface as being the primary cause. With all of the strains being on the lateral side, specific lateral ankle strengthening exercises and landing drills should be instituted to reduce these injuries as was

advocated by Steele (6). Plyometric training was shown to improve power and agility in netball players (8).

Knee injuries were seen in the under-21 and senior level categories and comprised 41.9% of all injuries. Many of these required surgery, leading to longer absences from the game than ankle injuries. All of the ACL and meniscal injuries [38.8% of the knee injuries as compared with 16.5% in Australia (9)] required surgery. Ten (55.6%) had patella related disorders. The incidence of knee injuries was much higher in this study and may be attributed to the playing surfaces as well as landing techniques.

Whereas 10.2% of the players reported a foot abnormality, no correlation was made between these players and those who suffered an injury. Biomechanical assessments of the lower limbs of the players should be considered in the future to determine if such could be a causative factor. In another study, 47.5% of netball players reported problems with the feet (5). In that study, footwear was attributed by 8.9% of the players as the cause of the injury. In this study, 88% wore low or medium cut shoes. It is likely that high cut shoes would be more protective to the ankle (10).

Fourteen (23.7%) players had recurring injuries, all confined to the knee and ankle. This is less than the 55% recurrent injuries noted in these joints in Australia (4), suggesting that elite netballers may have less recurrent injuries. This may be due to better care and follow-up at this level. In this study, wing attack (31.3%) and goal defence (23.5%) were the main positions related to injury. Other studies identified centre and goal defence (19% each) as the most common positions (4). The Jamaican style of playing involves large jumps on the flanks and could cause increased injuries in wing attack. Goal defence involves a lot of backpedalling which would increase the likelihood of ankle and knee injuries.

Most of the injuries seen in Australia were in players who trained one to two hours per week [93.8% and 84.4% in senior and junior grades, respectively] (4). The training schedule for the elite Jamaican players was appreciably higher (nine hours a week), mainly under the supervision of a certified coach or trainer. The Under 21 group had two training sessions of three hours each and the Under 16 group had one such session. However, many of these players would have been playing at school as well, and, therefore, it is difficult to comment on correlation between training loads and injury from the present study.

There were more injuries in players who had both formally and non-formally trained coaches. Many of these players had up to five coaches per season, distributed among the national, club and workplace teams that they represented. No correlation, however, could be determined between level of coaching and injuries.

CONCLUSION

Injuries in netball are well recognized. Most of these were confined to the knees and ankles in players in the under-21

category. More formal training in injury prevention for coaches at all levels is needed. There is also a need for the improvement of the playing surfaces. These factors will further impact on the national team to maintain top international ranking.

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REFERENCES

1. Williams JM, Wright P, Currie CE, Beattie TF. Sports related injuries in Scottish adolescents aged 11–15. *Br J Sports Med* 1998; **32**: 291–6.
2. Smith R, Damodaran AK, Swaminathan S, Campbell R, Barnsley L. Hypermobility and sports injuries in junior netball players. *Br J Sports Med* 2005; **39**: 628–32.
3. McGrath AC, Ozanne-Smith J. Attacking the goal of netball injury prevention: a review of the literature. Report 130. Victoria, Australia: Monash University Accident Research Centre; 1998; 1–94. Available from: <http://www.iec.monash.edu.au/miri/research/reports/muarc130.pdf>
4. Hopper D, Elliot B, Lalor J. A descriptive epidemiology of netball injuries during competition. *Br J Sports Med* 1995; **29**: 223–8.
5. Egger G. Sports injuries in Australia. Causes, costs and prevention. Sydney: Centre for Health Promotion and Research; 1990.
6. Steele J. Biomechanical factors affecting performance in netball. Implications for improving performance and injury reduction. *Sports Med* 1990; **10**: 88–102.
7. Hume P, Steele J. A preliminary investigation of injury prevention strategies in netball: are players heeding the advice? *J Sci Med Sport* 2000; **3**: 406–13.
8. Roopchand-Martin S, Lue-Chin P. Plyometric training improves power and agility in Jamaica's national netball team. *West Indian Med J* 2010; **59**: 181–7.
9. Flood L, Harrison JE. Epidemiology of basketball and netball injuries that resulted in hospital admission in Australia, 2000–2004. *Med J Aust* 2009; **190**: 87–90.
10. McKay GD, Payne WR, Goldie PA, Oakes BW, Stanley JJ. A comparison of the injuries sustained by female basketball and netball players. *Aust J Sci Med Sport* 1996; **28**: 12–7.