Injury surveillance during a 2-day national female youth football tournament in Kenya

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ABSTRACT

Objective To analyse the incidence, characteristics and circumstances of injuries during a female youth amateur football tournament in Kenya.

Design 14 injury recorders prospectively registered and classified all injuries during all matches. Four physiotherapists and two doctors supported the injury recorders.

Setting A 2-day Mathare Youth Sports Association (Mysa) inter-provincial football tournament for female players in Nairobi, Kenya. The tournament is organised by a non-governmental organisation (NGO).

Participants 938 females divided into three age groups (under 13 years (U13), under 16 years (U16) and over 16 years (O16)).

Main outcome measurements Overall injury incidence.

Results 123 injuries occurred in 106 matches. The incidence of all injuries was 93.3 injuries/1000 h. Players in the U13 (relative risk (RR)=2.16, 95% CI 1.3 to 3.5; p=0.002) and U16 (RR=2.17, 95% CI 1.3 to 3.5; p=0.002) age groups had an increased risk of injury compared to the O16 group. Most injuries allowed the players to continue to play (n=98 of 121; 81%). For 15 (12%) of the injuries the player did not continue to play but was expected to fully participate in the following match, and eight of the injuries (6.1 injuries/1000 h) were expected to result in the player’s absence from play for 1–7 days. The injuries most commonly affected the lower limb (n=100; 82%); contusions to the ankle (n=15; 12%) and foot/toe (n=15; 12%) were the most common specific injury types. Most acute injuries (89 of 113, 79%) were caused by player contact.

Conclusions The incidence of injuries among female youth football players in a national tournament in Kenya was high, but time-loss injuries were rare. Playing football in a tournament organised by an NGO at the inter-provincial level was safe.

INTRODUCTION

Over the past decade, the use of sport, in particular football, as a tool to achieve development goals has gained immense recognition from, for example, the United Nations (UN), international sports federations and governments worldwide.1, 2 The UN defines development as a process of enlarging people’s choices and increasing the opportunities available to all members of the society.3 Recent reports show that sport has the potential to contribute to personal and social development.1, 4–6 Kenya is a country that faces major developmental challenges like high poverty levels and high death rates of HIV/AIDS.7, 8 In Kenya, most of the youth football leagues are organised by non-governmental organisations (NGOs) using football as a tool for development. In addition to the organised football activities, the players receive education in healthy values, HIV/AIDS and drug misuse awareness, family planning and leadership.

Mathare Youth Sports Association (Mysa) is one of these organisations. Every year, Mysa also organises national and international football tournaments targeting primarily female youth football players. One major goal of the Mysa tournaments is to educate females outside of the Mysa organisation. The 2-day national tournament has been arranged every year since 2001 in Nairobi, Kenya. This annual tournament has increased in size over the years and approximately 1000 players from 70 teams participate.9

Most studies on injury risk in female youth football players are from Europe and North America. In these studies, injury incidence ranges from 5 to 22/1000 match-hours and 1 to 5/1000 training hours in seasonal play,10–15 and from 5 to 89/1000 match-hours in tournament play.16–21 To our knowledge, there is no previous prospective study on football injuries in female youth players participating in development projects using football as an instrument within the continent of Africa.

An injury in a developing country may cause other challenges and consequences than those faced in the western world; hence, primary and secondary prevention of injuries is especially important. The first step towards prevention of injuries is to examine the magnitude of the problem in terms of incidence, characteristics and severity.22 Therefore, the primary aim of this prospective study was to analyse the incidence, characteristics and circumstances of injuries during the Mysa inter-provincial tournament in 2008. The secondary aim was to investigate if there were differences in injury incidence between the three participating age groups.

METHODS

Study design, setting and participants

We used a prospective cohort design for this study to collect injury data throughout this 2-day tournament. The age categories were under 13 years (U13), under 16 years (U16) and over 16 years (O16). The U13 age category played seven-a-side football and the other age categories played eleven-a-side football. The total match time for U13 players was 2×15 min, and 2×25 min and 2×30 min for U16 and O16 players, respectively.

Fourteen playing fields were used during the tournament. Six fields were covered with grass and eight with dust.
The study was approved by the Ethical Committee in Kenya, the Regional Committee for Medical Research Ethics in Norway and the Norwegian Social Data Services. Player consent was not obtained since no personal data were recorded on the injury forms or stored in the injury database.

Recording of injuries
Coaches of the participating teams were informed about the study at a pretournament meeting, and information was given in English and Swahili. Before each match, the injury recorders informed both teams in Swahili in a standardised way about the purpose of the research project and emphasised that participation was voluntary.

In the 3 years prior to the 2008 tournament, injury recorders were educated by Norwegian physiotherapists in anatomy, physiology, first aid, and the examination and rehabilitation of sport injuries. Their knowledge was tested in written and practical examinations.

Before the start of the tournament in September 2008, the injury recorders were taught in detail how to complete the injury report form. They were provided with a study manual explaining definitions and instructions on data collection procedures. The method was pilot tested in an international football tournament in Tanzania in July 2008.

One Kenyan injury recorder was present alongside each of the 14 playing fields to prospectively register all injuries reported by the player during or after each match. Two injury-reporting forms were used per match, one for each team. Any incident that required further clarification or insight was reviewed by a Kenyan medical doctor or a Norwegian physiotherapist. To encourage compliance with the reporting procedures during the tournament, the project leader (ML) kept frequent personal contact with the injury recorders. Initially, and to avoid duplicates, the injury recorders asked every injured player if the current injury had been registered before. The injury forms were collected by the project leader at the end of each day and were manually checked for completeness and, if needed, questions were clarified.

Injury report form
The injury report form was a bilingual check-box form (English–Swahili). A check-box for the non-occurrence of injuries in a match was also available on the form.

Before each match, the injury recorders stated the team’s age category, number of players in the team including substitutes and use of shin guards and football boots (including rubber shoes and sandals). For every injury, the injury recorders recorded the location, type, severity, mechanism, referee’s sanction, use of shin guard and/or football boots and age of injured player.

Definitions
The definitions used in this study followed international guidelines for football injury research with some minor modifications to fit the study (table 1).

An injury was defined as “any physical complaint, sustained by a player during a match, irrespective of the need for medical attention or time loss from football.” However, for each injury, time loss from football play was estimated. Medical problems that were not clearly associated with playing football, such as an asthma attack, stomach pain or insect bites, were not registered.

Table 1  Operational definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Match</td>
<td>Scheduled match of the MYSA inter-provincial tournament 2008</td>
</tr>
<tr>
<td>Injury</td>
<td>Any physical complaint of a player newly incurred during the football match, irrespective of the need for medical attention or time loss from football activities (injuries occurring during warm-up were rare and are not accounted for)</td>
</tr>
<tr>
<td>Time-loss injury</td>
<td>Injury where the player was expected to be unable to participate in the training or match for at least 1 day following the incident</td>
</tr>
<tr>
<td>Acute injury</td>
<td>Injury resulting from a specific, identifiable event</td>
</tr>
<tr>
<td>Overuse injury</td>
<td>Injury caused by repeated microtrauma without a single, identifiable event responsible for the injury</td>
</tr>
<tr>
<td>Injury type</td>
<td>Contusion: Tissue bruise without concomitant injuries classified elsewhere (exfracture)</td>
</tr>
<tr>
<td></td>
<td>Sprain: Distraction injury of ligaments or joint capsules</td>
</tr>
<tr>
<td></td>
<td>Strain: Stretching or tearing of muscle fibres</td>
</tr>
<tr>
<td></td>
<td>Fracture: Traumatic break of bone</td>
</tr>
<tr>
<td></td>
<td>Dislocation: Partial (subluxation) or complete (luxation) displacement of the bony parts of a joint</td>
</tr>
<tr>
<td></td>
<td>Superficial skin lesion: Abrasion (bruise)</td>
</tr>
<tr>
<td></td>
<td>Deep skin lesion: Cut, laceration</td>
</tr>
<tr>
<td></td>
<td>Other injury type: Injuries not classified elsewhere. Examples: concussion with or without loss of consciousness etc.</td>
</tr>
<tr>
<td>Injury severity</td>
<td>No time loss: Injury without any time loss in football</td>
</tr>
<tr>
<td></td>
<td>Slight: Injury with expected 0 days of absence, including players who were out for the rest of the match but were expected to fully participate in the following match in the tournament</td>
</tr>
<tr>
<td></td>
<td>Minimal: Injury with expected absence of 1–3 days</td>
</tr>
<tr>
<td></td>
<td>Mild: Injury with expected absence of 4–7 days</td>
</tr>
<tr>
<td></td>
<td>Moderate injury: Injury with expected absence of 8–28 days</td>
</tr>
<tr>
<td></td>
<td>Severe injury: Injury with expected absence of more than 28 days</td>
</tr>
<tr>
<td>Injury mechanism</td>
<td>Non-contact: Acute injury not resulting from contact with another player or object</td>
</tr>
<tr>
<td></td>
<td>Player contact: Acute injury resulting from contact with another player</td>
</tr>
<tr>
<td></td>
<td>Foul play: Violation of the laws of the game leading to injury and sanctioned by the referee</td>
</tr>
<tr>
<td></td>
<td>Other contact: Acute injury resulting from contact with the ground, ball or goalpost</td>
</tr>
<tr>
<td></td>
<td>MYSA, Mathare Youth Sports Association.</td>
</tr>
</tbody>
</table>

Statistical methods
Match exposure was calculated on a team basis as (NM×PM×DM/60), where NM is the number of returned team injury report forms, PM is the number of players on the field and DM is the duration of the match in minutes.23

The incidence of injury was expressed as the number of injuries per match and the number of injuries per 1000 match-hours.23 Injury incidence rates were calculated as the ‘number of injuries divided by number of matches documented with returned injury report forms’ and as the ‘number of injuries multiplied by 1000 and divided on exposure hours’. Descriptive data are presented as absolute numbers and proportions, and incidence rates and relative risk (RR) are presented with 95% CI. A z test based on the Poisson regression model was used to compare the incidence of injury between age groups (U13, U16 and O16). Two-tailed p values ≤0.05 were
regarded as statistically significant. All analyses were conducted in SPSS for Windows, V.15 (SPSS, Chicago, Illinois, USA).

RESULTS
A total of 938 female youth amateur players from 69 different teams participated in the tournament, and 114 matches were played including group play and finals. The injury recorders returned 211 injury report forms from 106 matches resulting in a response rate of 93%. The total exposure to football play was 1318 h (table 2).

Injury incidence
A total of 123 injuries were recorded in 106 matches, resulting in an overall incidence of 93.3 injuries/1000 match-hours or 1.2 injuries/match. Eight injuries (7%) were expected to result in absence from play. The incidence of time-loss injuries was 6.1 injuries/1000 match-hours or 0.08 injuries/match. Details for all age categories are presented in table 2.

The age of the injured players ranged from 10 to 22 years. The player’s age was missing for 3 (2%) injuries. Three injuries in the U13 age category and one injury in the U16 age category were sustained by players who subsequently reported their ages as older than 13 and 16 years, respectively. Players of the U13 age category (RR=2.16, 95% CI 1.34 to 3.47; p=0.002) and of the U16 age category (RR=2.17, 95% CI 1.35 to 3.50; p=0.002) had a twofold increased injury risk compared to those of the O16 age category. There was no difference in injury risk between the U13 and U16 players (RR=1.0, 95% CI 0.67 to 1.48; p=0.98).

Injury characteristics and circumstance
Most of the injuries (n=120, 98%) were classified as acute (table 2) and affected the lower limbs (n=100, 82%). Contusions to the ankle (n=15, 12%) and foot/toe (n=15, 12%) were the most common specific injury types. A strain to the ankle (n=3, 38%) was the most frequent time-loss injury (table 3).

Information on the injury circumstance was available from 94% (113 of 120) of all acute injuries. Most injuries (98 of 121, 81%) were caused by player contact and 31% of these injuries (35 of 112) were due to foul play according to the referee. Information on foul play was missing in one injury.

Injury severity
An estimate of an injury’s severity in terms of time loss from football play was available for almost all injuries (121 of 123, 98%). In most cases, the player was able to continue playing (98 of 121, 81%). However, for 15 of the injuries, the player was out for the rest of the match but was expected to fully participate in the following match. For six injuries (5%), the expected time loss was 1–3 days and 4–7 days for two injuries (2%); no moderate or severe injuries were reported (table 2). Circumstance of the expected time-loss injuries was available for almost all of these injuries (7 of 8, 88%), and four of those seven injuries were caused by player contact.

Equipment
In 106 matches, 91% of the players (2393 of 2638) did not wear shin guards and 24% (629 of 2638) did not wear football

<table>
<thead>
<tr>
<th>Age category</th>
<th>Total</th>
<th>U13</th>
<th>U16</th>
<th>O16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teams</td>
<td>69</td>
<td>37</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Number of players</td>
<td>938</td>
<td>433</td>
<td>213</td>
<td>292</td>
</tr>
<tr>
<td>Number of matches</td>
<td>114</td>
<td>70</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Returned injury report forms</td>
<td>211/228 (93%)</td>
<td>123/140 (88%)</td>
<td>44 (100%)</td>
<td>44 (100%)</td>
</tr>
<tr>
<td>Exposure hours</td>
<td>1318</td>
<td>431</td>
<td>403</td>
<td>484</td>
</tr>
<tr>
<td>Number of all injuries</td>
<td>123</td>
<td>50</td>
<td>126</td>
<td>26</td>
</tr>
<tr>
<td>Number of time-loss injuries</td>
<td>8/121 (7%)</td>
<td>5/50 (10%)</td>
<td>1/47 (2%)</td>
<td>2/26 (8%)</td>
</tr>
<tr>
<td>Acute injuries</td>
<td>120/123 (98%)</td>
<td>50 (100%)</td>
<td>44/47 (94%)</td>
<td>26 (100%)</td>
</tr>
<tr>
<td>Overuse injuries</td>
<td>3/123 (2%)</td>
<td>0</td>
<td>3/47 (6%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Circumstance (n=113/120, 94%)
- No contact: 7/113 (6%) 2/45 (4%) 3/43 (7%) 2/25 (8%)
- Other contact: 17/113 (15%) 8/45 (18%) 6/43 (14%) 3/25 (12%)
- Player contact: 89/113 (79%) 35/45 (78%) 34/43 (79%) 20/25 (80%)
- Foul play (n=112/113, 99%): 35/112 (31%) 11/44 (25%) 16/43 (37%) 8/25 (32%)

Injury severity (n=121/123, 98%)
- No time loss: 98/121 (81%) 35/50 (70%) 41/46 (89%) 22/25 (88%)
- Slight: 15/121 (12%) 10/50 (20%) 1/46 (2%) 1/25 (4%)
- Minimal: 6/121 (5%) 5/50 (10%) 0 0 0 0
- Mild: 2/121 (2%) 0 1/46 (2%) 1/25 (4%)
- Moderate: 0 0 0 0
- Severe: 0 0 0 0

Incidence (95% CI)*
- All injuries/1000 h: 93.3 (76.8 to 109.8) 116.0 (83.9 to 148.2) 116.6 (83.3 to 150.0) 53.7 (33.1 to 74.4)
- All injuries/match: 1.2 0.7 2.1 1.2
- Time-loss injuries/1000 h: 6.1 (1.9 to 10.3) 11.6 11.7 2.1
- Time-loss injuries/match: 0.08 (0.02 to 0.13) 0.08 0.05 0.09

*We did not calculate 95% CI in subgroups with five or fewer injuries.
boots. A variety of equipment was reported to have been used to protect the foot and lower leg, including playing in sandals, rubber shoes, one shoe or only socks and using cardboards as shin guards.

For almost all injury cases (111 of 123 injuries, 90%), the injured player did not use shin guards, and in 27% (33 of 122) of the injuries the player did not use football boots.

Most of the injured players of the U13 (50 of 50, 100%) and U16 (46 of 47, 98%) age categories were lacking shin guards compared with O16 players (15 of 26, 58%). A total of 45% (22 of 49) of the injured U13 players, 17% (8 of 47) of the injured U16 players and 12% (3 of 26) of the injured O16 players did not use football boots.

**DISCUSSION**

The main findings of this first prospective cohort study among Kenyan female youth football players showed a high overall injury incidence. However, 81% of the injuries allowed the player to continue playing. The two youngest age categories, U13 and U16, had the highest injury risk.

**Injury incidence**

The only study among female youth tournament players using a comparable injury definition, ‘any physical complaint’, is by Soligard et al who, over a 4-year period, registered injuries in the Norwegian Cup tournament. Despite a comparable method to register injuries by coaches on the field, the injury incidence of female players in the Norwegian tournament study was 42 as compared to 93.3 injuries/1000 match-hours in the present study. However, according to the Norwegian study, the coaches registered only half of the injuries compared with medical doctors validating the coaches’ reports of the same 49 randomly selected matches. One reason for the observed discrepancy could be that coaches in the Norway Cup study underestimated injuries, as they may have been more interested in coaching their teams than in registering the injuries of their teams.

However, looking at injury severity, the present incidence of injuries with expected time loss (6.1) was comparable or lower than the incidence of match injuries of female players during seasonal play (5–22) and during tournaments (11–49).

**Injury characteristics, circumstance and severity**

The majority of injuries in our Kenyan study affected the lower limb (82%) with the knee (25%) and ankle (19%) as the most common injury locations, which is well in line with previous reports in female youth players. However, according to the Norwegian study, the most common mechanism leading to injury in our study was player contact (79%). However, the risk of injuries caused by foul play (31%) was much higher in the present study compared with other studies on female youth players (13–14%). Thus, foul play appears to be a considerable injury risk factor for players in the Kenyan tournament. Moreover, the attitudes of the players to fairplay should be given more attention in future tournaments. However, the high proportion of foul play injuries in this study could also be interpreted as resulting from a stricter interpretation of the laws of the game by the referees.

For the majority of the injuries (81%), the player could continue to play, which is similar to another youth tournament study. Only 7% of the reported injuries were expected to cause absence from training or match for at least 1 day and no moderate or severe injuries were reported. These results indicate that playing football in the MYSA inter-provincial tournament is safe and primarily results in minor non-time-loss injuries.

**Geographical differences**

Geographical differences have been reported to influence the injury rates and pattern. An African population might yield a higher incidence of injury than a comparable western world population, possibly due to the lack of protective equipment and access to a health system. More than half of the population in Kenya is living on less than US$1 a day, and few can afford adequate football equipment or healthcare. In this tournament, 90% of the injured players did not use shin guards, and in 27% of the incidents, the player did not use football boots. Lack of protective equipment has been reported to influence injury risk and might also be associated with injury risk in our study. Furthermore, the cost and availability of healthcare were reported as the main reasons why one-fourth of the Kenyans who reported being ill did not seek healthcare.

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**Table 3: Specific injury types with and without time loss**

<table>
<thead>
<tr>
<th>Location and type</th>
<th>Number of injuries</th>
<th>Total</th>
<th>Without time loss</th>
<th>With time loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head/neck</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Upper limb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Sprain (joint/ligament)</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Laceration/skin lesion</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Other injury type</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Trunk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Hip/groin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Strain</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Other injury type</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Thigh</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Other injury type</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Knee</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>12</td>
<td>11</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sprain (joint/ligament)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Laceration/skin lesion</td>
<td>13</td>
<td>14</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Overuse injury</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Other injury type</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Lower leg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Ankle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>15</td>
<td>14</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sprain (joint/ligament)</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Foot/toe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contusion</td>
<td>15†</td>
<td>15</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Laceration/skin lesion</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other injury type</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>112</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

*Expected absence was missing for two of the injuries.
†Expected absence was missing for one injury.
growing up in poverty could cause the players to report injury to receive treatment more easily even though the injury was a minor one.

According to Wekesa et al., the occurrence of injuries in sport and the neglect of injured players can cause premature retirement of talented players in most developing countries. Poverty and cost of healthcare are major challenges in a developing country. The total cost to be paid by a patient for an ACL reconstruction in a public hospital in Kenya is approximately US $2000 and this is unaffordable for most Kenyans.

Methodological considerations
The results of the present cohort study are based on one tournament only and contain significant variability. The results cannot be generalised to other football cohorts and should be interpreted with caution.

Our results reveal that at least four players were competing in a younger age group than their reported chronological age. The consequences of overage players representing African youth teams in international football tournaments have been discussed. Le Gall et al. found that U15 players, competing in the same cohort as U19 players, had the highest incidence of injury. We cannot rule out that other players have been cheating on their age and have played in a younger age category, which may have influenced the data.

Although the injury recorders did not have formal medical training, all injury recorders were carefully instructed by Norwegian physiotherapists prior to the tournament. During the tournament, all recorders were supervised by four physiotherapists and two medical doctors. In addition, all injury recorders spoke the local language (Swahili), and as the injury recording was based on an interview, it was considered an advantage with Swahili-speaking injury recorders for all players.

The players in this tournament did not have an ID number linked to the injury form, and injuries may have been registered twice. However, the injury recorders were carefully instructed to ask if the same injury had been registered before in the tournament to avoid duplicate recording.

Perspectives
The results from this NGO-coordinated tournament study demonstrate that football can be a safe instrument, as most of the injured players had minor injuries only. Some of the injuries could possibly have been prevented by the use of adequate protective equipment, greater emphasis on fair play, and implementation of control mechanisms to prevent overage players playing in the younger age categories.

Injury surveillance and subsequent prevention programmes are especially important in developing countries as the high costs and poorer access to healthcare services may increase the risk of injured players living with lifelong impairments. Therefore, projects (e.g., Football for Health and Right to Play), using football as a tool for development, should implement injury surveillance systems and train medical personnel in prevention and rehabilitation of injuries. Also, studies of severe injuries are of interest as their possible long-term complications may have personal and societal costs.

In summary, the incidence of injuries among female youth football players in a national tournament in Kenya was high, but time-loss injuries were rare. Playing football in a tournament organised by an NGO at the inter-provincial level was safe.

What are the new findings?

- The incidence of injuries among female youth football players in a national tournament in Kenya was high, but time-loss injuries were rare.
- The two youngest age categories, under 13 years and under 16 years, had the highest injury risk.
- Most injuries were caused by player contact, and contusions to the ankle and foot/toe were the most common specific injury types.

How might it impact on clinical practice in the near future?

- The occurrence of only minor injuries indicates that playing football in this particular inter-provincial tournament is safe.
- As the main risk factors were contusions and foot trauma, we speculate that one mechanism to reduce injuries could possibly have been prevented by the use of adequate protective equipment and by a stronger emphasis on fair play.

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Contributors
ML, TEA, AJ, JD and KS were responsible for the conception and design of the study, and had full access to all the data. ML coordinated the study and managed all aspects, including data collection. ML, TEA and KS initialised and conducted the analyses, which were planned and checked with the other coauthors. ML wrote the first draft of the manuscript and all authors provided substantive feedback on the article and contributed to the final version of the manuscript. ML, TEA and KS are the guarantors.

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