

1 TITLE PAGE

2 The epidemiology of injuries in football at the London 2012 Paralympic Games

3 ABSTRACT

4 Background: The epidemiology of injury in Paralympic football has received little
5 attention. A study of all sports at the London 2012 Paralympic Games identified football 5-
6 a-side as the sport with the highest injury rate, meriting further detailed analysis, which
7 may allow for future preventative strategies.

8 Objective: To examine the injury rates and risk factors associated with injury in
9 Paralympic football.

10 Design: Secondary analysis of a prospective cohort study of injuries to football 5-a-side
11 and football 7-a-side athletes.

12 Setting: London 2012 Paralympic Games

13 Participants: 70 football 5-a-side athletes and 96 football 7-a-side athletes. Athletes from
14 all but one country chose to participate in this study.

15 Methods: The Paralympic Injury and Illness Surveillance System was used to track injuries
16 over the Games, with data entered by medical staff

17 Main Outcome Measurements: Injury incidence rate (IR) and injury incidence proportion
18 (IP).

19 Results: The overall IR for football 5-a-side was 22.4 injuries /1000 athlete-days (95% CI;
20 14.1-33.8) with an IP of 31.4 injuries per 100 athletes (95% CI; 20.9-43.6). In 5-a-side
21 competition, 62.5% of injuries were associated with foul play. The overall IR for football
22 7-a-side was 10.4 injuries/1000 athlete-days (95% CI; 5.4-15.5), with an IP of 14.6 injuries
23 per 100 athletes (95% CI; 7.5-21.6). The most commonly injured body region in both
24 sports was the lower extremity.

25 Conclusions: To our knowledge, this is the first study examining IR and risk factors
26 associated with injury in Paralympic football. Future studies are needed to determine
27 mechanisms of injury and independent risk factors for injury, thus informing prevention
28 strategies.

29 INTRODUCTION

30 Football (more familiarly known in the United States as soccer) is arguably the world's
31 most popular sport, and injury rates in football have been studied extensively in elite able-
32 bodied athletes¹⁻⁵. In recent studies, injury rates in male able-bodied football players have
33 been reported at 27.0 injuries per 1000 player-days⁵, with an injury incidence proportion at
34 the summer Olympic Games of 27 injuries/100 players¹. Approximately 70% of injuries
35 affect the lower limb⁴, and 56% of injuries are not associated with time-loss⁴. A study
36 examining football injuries at the 2012 London Olympic Games reported that 74.2% of
37 football injuries occurred in competition and that the injury incidence rate (IR) for football
38 was one of the highest of all Olympic summer sports¹.

39

40 The International Paralympic Committee (IPC) has completed injury surveillance at the
41 last three Winter Games - a major advance in Paralympic injury epidemiology^{6,7}. The
42 London 2012 Paralympic Games were the first summer Games where injury and illness
43 surveillance was systematically conducted^{8,9}. Injuries in Paralympic football have not
44 previously been prospectively studied.

45

46 There are two versions of football played in the Paralympic Games – football 5-a-side and
47 football 7-a-side. Football 5-a-side is a sport played by athletes with visual impairment.
48 It has become an increasingly popular sport, having started out as a game for children in
49 schools for the visually impaired (VI). It evolved in different countries before coming
50 under the governance of the International Blind Sports Federation (IBSA) in 1996.

51 Subsequently, an internationally recognized set of rules was developed for the sport¹⁰.
52 Under these regulations, football 5-a-side made its debut at the 2004 Athens Paralympic
53 Games, thereafter growing to its largest number of participants at the 2012 London
54 Paralympic Games. The rules are adapted from the International Federation of Associated
55 Football (FIFA) and include four outfield players and a sighted goalkeeper on each team.
56 The game has two periods of twenty-five minutes and is played on a pitch sized 40 meters
57 by 20 meters for international matches. The pitch is surrounded by boarding (kickboards),
58 1-1.2m in height, to form a perimeter and to assist players in determining their location on
59 the pitch. The ball contains a sound system for making a noise when in motion so that
60 players can detect the ball's location. Although athletes with different levels of visual
61 impairment can participate, all players must use an IBSA-approved eye-shade to ensure an
62 equal level of visual impairment during competition. Full details of the rules may be
63 obtained from the IBSA website¹⁰.

64

65 Football 7-a-side has been a Paralympic sport since 1984 and is played exclusively by
66 athletes with central neurologic injury, including cerebral palsy and traumatic brain injury.
67 Athletes must have ataxia, hypertonia, or athetosis. Players are divided into four classes
68 based on their level of physical impairment¹¹. The sport is similar to able-bodied football,
69 with the exceptions of: seven players on the field at a time per team, the measurements of
70 the playing field are smaller, there is no offside rule, throw-ins may be made with just one
71 hand, and matches consist of two halves of 30 minutes each¹².

72

73 Injury surveillance is essential to evaluating risk factors for participation in sport with a
74 view to inform the development and evaluation of prevention strategies and protect the
75 long-term health of athletes¹³. Injuries in professional football have been well-documented
76 for many years¹⁴, with well-developed research methodologies in place¹⁵⁻¹⁸. The lessons
77 learned from these studies are being put into practice in efforts to improve the health of
78 players.

79

80 Willick et al. reported injury incidence rate (IR) values for all sports in the London 2012
81 Paralympic Games⁹. The overall IR was 12.7 injuries/1000 athlete-days across all sports
82 (95% CI 11.7 to 13.7). Football 5-a-side was identified as the sport with the highest IR of
83 22.4 injuries/1000 athlete-days. This study also reported an injury incidence rate for
84 football 7-a-side of 11.2 injuries per 1000 athlete-days, similar to the overall rate reported
85 for Paralympic athletes in all sports. More in-depth analysis of this same dataset was
86 performed to better characterize injuries in the hopes of guiding future preventative
87 strategies specific to these sports. Though the incidence rates carry important information,
88 the timing and anatomic location of the injuries, in addition to the demographic
89 information of the injured athletes, should improve injury characterization for guiding
90 these strategies.

91

92 The objective of this study was to determine the injury incidence rate, characteristics of
93 injury and risk factors for injury in athletes playing football 5-a-side and football 7-a-side
94 at the London 2012 Paralympic Games.

95

96 METHODS

97 This sport-specific cohort study was a component of the larger injury and illness
98 surveillance study completed by the IPC at the London 2012 Paralympic Games. One of
99 the eight football 5-a-side teams in the tournament opted not to participate in the study. All
100 eight football 7-a-side teams participated in the study. The participants included 70 athletes
101 from 7 countries participating in the football 5-a-side competition and 96 athletes from 8
102 countries participating in the football 7-a-side competition. Data were collected over a 14-
103 day period, including 3 days prior to the start of competition and 11 days of the
104 competition period. The seven participating teams in football 5-a-side teams each played
105 three group matches (total 21 match exposures) followed by 14 medal and ranking match
106 exposures, thus totaling 35 match exposures. The eight football 7-a-side teams each played
107 three group matches (total 24 match exposures) followed by 16 medal and ranking match
108 exposures, totaling 40 match exposures. A match exposure is defined as one team playing
109 one game; therefore, one match involves two match exposures.

110

111 Procedures

112 The Paralympic Injury and Illness Surveillance System was approved by the IPC. Prior to
113 initiation of the study, ethics board approval was obtained through the University of
114 Brighton in the United Kingdom (FREGS/ES/12/11) and the University of Cape Town
115 Health Sciences Research Ethics Committee in South Africa (HREC/REF 436/2012).

116 Athletes consent to the use of their de-identified medical data for research purposes was
117 obtained at the time of their registration for the Games.

118

119 A comprehensive database of basic athlete demographic information was obtained from
120 the IPC, containing the following de-identified information: age, country code, and
121 accreditation number.

122

123 Data regarding injuries was gathered via two sources. First, a database was populated from
124 the electronic medical data capture system (EMDCS) (ATOS, France) utilized at all athlete
125 medical stations operated by the London Organizing Committee for the Olympic and
126 Paralympic Games (LOCOG). LOCOG medical staff entered all injury encounters when an
127 athlete presented to a medical station with a complaint consistent with the pre-determined
128 definition of injury. A second database was populated by medical staff providing care for
129 their own teams utilizing a novel web-based injury and illness surveillance system (WEB-
130 IISS) that has been developed specifically for the purposes of this study¹⁹. Utilization of
131 the WEB-IISS allowed for the gathering of greater clinical detail regarding injury. The
132 final database contained no information that could personally identify any individual
133 athlete.

134

135 Injury Definitions

136 For the purposes of this study, an injury was defined as ‘any newly acquired injury as well
137 as exacerbations of preexisting injury that occurred during training and/or competition of

138 the 14 day pre-competition and competition period of the London 2012 Paralympic
139 Games.’ An acute traumatic injury was considered ‘an injury that was caused by an acute
140 precipitating traumatic event.’ An acute on chronic injury was considered ‘an acute injury
141 in an athlete with symptoms of a chronic injury in the same anatomical area.’ Finally, a
142 chronic (overuse) injury was considered ‘an injury that developed over days, weeks or
143 months and was not associated with any acute precipitating event.’

144

145 Statistical Analysis

146 Descriptive statistics including means (95% CI), medians (range) and proportions (95%
147 CI) were used to describe athlete characteristics. IR (95% CI) estimates were based on
148 Poisson regression analysis controlling for important covariates, clustering by country and
149 offset for exposure days. Injury IRs and 95% CI were estimated based on frequency of
150 injuries reported (e.g. overall, by age group, and by anatomical region) and total number of
151 athletes-days of participation based on the total number of athlete-days reported for each
152 delegation. The injury incidence proportion (IP) (95% CI) was reported as the number of
153 injuries per 100 athletes. The 95% CI was used to determine significant differences in the
154 incidence data.

155

156 RESULTS

157 Football 5-a-side

158 Injury incidence proportion and incidence rate

159 The seven teams participating each consisted of a squad of 10 players comprising 8 VI
160 outfield players and 2 sighted goalkeepers (n= 70 players). Thus, with data collection over
161 a 14-day period the total exposure for training and competition was 980 athlete-days. Table
162 1 outlines the incidence rates for the 70 football 5-a-side athletes who participated in our
163 study. Duration of time lost from the injury was not reliably recorded and was thus not
164 included in the analysis.

165

166 During the 14 day period of the Games, 22 injuries were documented giving an IP of 31.4
167 injuries per 100 athletes (95% CI; 20.9-43.6) and an IR of 22.4 injuries per 1000 athlete
168 days (95% CI; 14.1-33.8). Analysis revealed that 21 injuries were recorded by NPC
169 medical staff via the WEB-IISS, with only one injury recorded by LOCOG medical staff
170 via the EMDCS.

171

172 A review of the injury data by position showed that none of the goalkeepers (sighted
173 players) experienced an injury; all injuries were incurred by the VI outfield players. Thus,
174 calculating for 56 VI players training and competing for 14 days resulted in a total 784
175 athlete-days exposure. As such the IP among the VI athletes was 39.3 injuries per 100
176 athletes (95% CI; 26.5-53.2) and the IR was 28.1 (95% CI; 17.7-42.2) injuries per 1000
177 athlete-days. All further analyses relate to VI outfield players only. The number of injuries
178 reported by participating countries ranged from 0-9 injuries per team over the duration of
179 the games.

180

181 Acute vs. overuse injuries

182 When the categories of acute onset injuries and acute on chronic injuries are combined, it
183 becomes clear that acute injuries occur more frequently than chronic overuse injuries
184 football 5-a-side. Only 5 overuse injuries were reported in this VI cohort for an IR of 6.4
185 per 1000 athlete days (95% CI; 2.1-14.8). Of the 17 acute and acute on chronic injuries, 8
186 occurred during competition, 6 during training, 2 prior to village entry and 1 injury was
187 non-sport related. For all acute injuries the IR was 21.7 per 1000 athlete-days (95% CI;
188 12.7-34.5). For acute sport-related injuries (excluding the pre-village and non-sport injury)
189 the IR was 17.9 injuries per 1000 athlete-days (95% CI; 9.8-29.8).

190

191 There were 8 acute injuries in competition [IR = 10.2 (95% CI; 4.4-20.0)] acute injuries
192 per 1000 athlete-days. There were 33 matches involving 8 outfield VI players per match,
193 which totals 264 player-games. Although substitutions were made during matches, there
194 were only 4 players that were on the field of play at any one time. The risk of any player
195 getting an acute injury in a match was thus 1 in 33 or 3.03% (95% CI; 1.32-5.88).

196

197 All 8 injuries in competition were classified as extrinsic in mechanism. This included 7
198 injuries where there was contact with other athletes and 1 where there was contact with the
199 ball leading to injury. Among these acute competition injuries with extrinsic mechanisms,
200 5 out of 8 (62.5%) were reported as relating to foul play and contact with another athlete.

201

202 Anatomical location of injuries

203 The lower extremity was the most common site of injury for all injury types. The head and
204 neck accounted for 25% of acute competition injuries and 18% of all injuries, while the
205 knee was the most commonly-injured area (table 2).

206

207 Football 7-a-side

208 Injury incidence proportion and incidence rate The eight teams participating each consisted
209 of a squad of 12 players (n= 96 players). Thus, with data collection over 14 day period the
210 total exposure for training and competition was 1344 athlete-days.

211

212 During this period 14 injuries were documented giving an IP of 14.6 injuries per 100
213 athletes (95% CI; 7.5-21.6) and an IR of 10.4 injuries per 1000 athlete-days (95% CI; 5.4-
214 15.5) (Table 3). There was a trend toward a higher injury rate in the 26-34 year-old age
215 group compared with younger and older athletes, but this did not reach statistical
216 significance.

217

218 Seven of the 14 reported injuries (50%) resulted in less than one day of time lost from
219 training or competition. Five injuries resulted in more than one day lost from training and
220 competition. Time loss was not reported for two of the injuries (Table 3).

221

222 Acute vs. overuse injuries

223 The most common onset of injury was acute traumatic in nature (71% of all injuries),
224 followed by acute-on-chronic injuries (22%). There was only one chronic overuse injury

225 (7.1% of all injuries). For all acute injuries, consisting of acute traumatic injuries combined
226 with acute-on-chronic injuries, the IR was 9.7 (95% CI 4.8 – 14.6), which was significantly
227 more common than chronic injuries (IR 0.7, 95% CI 0.0 – 2.2). The majority of injuries
228 occurred during competition (64% of all injuries) (Table 3).

229

230 Anatomical location of injuries

231 Table 4 outlines the anatomic locations of injuries for the athletes. The lower extremity
232 was involved in 12 out of 14 injuries (86% of all injuries). The ankle (36% of all injuries)
233 and knee (29%) were the most commonly injured regions of the body. Five injuries (36%
234 of all injuries) were due to contact with another athlete.

235

236 DISCUSSION

237 This is the first study to prospectively examine injury rates and characteristics of injury in
238 the sport of football at the Paralympic Games. We demonstrate an injury IR of 22.4
239 injuries per 1000 athlete-days in football 5-a-side and 10.4 injuries per 1000 athlete-days in
240 football 7-a-side. Prior to the London Games injury patterns in football 5-a-side have only
241 been reported in one study²⁰. In this study, a group of 13 players were followed over a five-
242 year period playing in five international competitions for one nation. Not all athletes
243 played in all competitions. Only injuries that occurred during competition were
244 documented. Twenty-three matches occurred during the period of the study and 11 of the
245 13 players experienced some form of injury (incidence proportion 84.6%). A total of 35
246 injuries were documented (mean injury frequency = 2.7 injuries per athlete over 5 years

247 and 0.12 injuries per match). Traumatic injuries (80%) were more common than overuse
248 injuries (20%) and the highest distribution of injuries involved the lower extremity (80%),
249 followed by the head (8.6%), spine (5.7%) and upper extremity (5.7%). Although the study
250 is limited by the small number of participants from only one nation, it does set a
251 benchmark for comparison. To the authors' knowledge, there have been no studies
252 examining football 7-a-side exclusively.

253

254 Researchers with the International Paralympic Committee have successfully demonstrated
255 a decrease in injury rates in the sport of sledge ice hockey through rules changes based on
256 prospective analysis of injury characteristics⁶. This same model can be applied to
257 Paralympic football given the increased knowledge of injuries seen in this sport.

258

259 Football 5-a-side

260 In total, nearly 50% of football 5-a-side players with a visual impairment sustained an
261 injury over the 14 day Games period. Our findings were consistent with the Brazilian
262 study²⁰ showing that the most commonly injured body region is the lower extremity. Head
263 and neck injuries accounted for 25% of acute injuries during competition and 18% of all
264 (acute and chronic) injuries compared to 8.6% in matches in the Brazilian study. The
265 nature of the way the game is played makes patterns of injury different from traditional
266 football. VI athletes play with a more upright posture compared to non-VI soccer athletes
267 that may expose them to collisions of the head. Additionally, a lack of vision reduces the
268 athlete's ability to brace or block their head when anticipating an oncoming blow. This

269 finding contrasts with the able-bodied football population and highlights the susceptibility
270 of the head and neck to injury in VI athletes and forms of protective headgear could be
271 examined for injury prevention.

272

273 In this study over 60% of competition-related injuries were reported as associated with foul
274 play, which is double the percentage previously identified in elite able-bodied football
275 (29%)²¹. To avoid collisions there is an important communication rule in VI football which
276 players must abide by. It is the duty of the player without the ball to say the word “voy”
277 clearly and in a timely fashion each time he or she is moving towards the ball. The
278 expression "voy" is a universally known expression in the world of VI football, adopted
279 from Spanish and meaning "I go." Gabriel Mayr's diploma thesis states that this rule
280 'gives the present ball holder the certainty that he or she learns in advance that an opponent
281 is approaching. If the player does not say "Voy", the referee should punish the team with a
282 foul²².' It is crucially important that referees apply the laws strictly and correctly to try and
283 prevent player collisions. From our data, it would appear that the most effective preventive
284 strategy would be to encourage strict enforcement of these rules.

285

286 Football 7-a-side

287 The incidence rates for the athletes in our study appear to be lower than those of elite able-
288 bodied football players^{1,4,5}, although they follow the trends described in able-bodied
289 football of injuries occurring more commonly in competition and not resulting in
290 significant time-loss. The lower incidence of injury compared to able-bodied athletes has

291 been shown in ambulant athletes with cerebral palsy in the sport of athletics (Blauwet,
292 unpublished observation) as well, although the reasons for these differences have not been
293 elucidated. It should also be noted that several studies examine male and female able-
294 bodied football players, while football 7-a-side has only male participants. Females have
295 demonstrated similar rates of injury in football compared to males in the Olympic Games⁴.

296

297 Several previous studies have examined injuries in para-athletes, but have not provided an
298 in-depth examination of football 7-a-side. Recently, Willick et al. reported on injury
299 incidence rates from all sports using the same dataset, and showed that football 7-a-side
300 athletes sustained injuries at a rate similar to that of all sports combined⁹. Derman et al.¹⁹
301 demonstrated that for all summer Paralympic sports, upper limb injuries were more
302 common during these Games than lower limb injuries; this contrasts with our sport-
303 specific findings, which emphasizes the importance of identifying sport-specific injury
304 patterns. Our results suggest that preventive strategies should focus on prevention of lower
305 extremity injuries, particularly of the ankle and knee, and moreso in the 26-34 age group.
306 Proprioceptive ankle training, or bracing/taping, which have both been demonstrated to be
307 an effective method in the prevention of ankle sprains²³, may be an effective means of
308 preventing ankle injuries in this cohort.

309

310 Football athletes with central neurologic injury such as cerebral palsy may carry a greater
311 risk of muscle strain and injury due to spasticity and weakness, and are heterogeneous in
312 their abilities and clinical presentation^{24,25}. Athletes with cerebral palsy have been shown

313 to sustain soft tissue injuries and lacerations more often than athletes with other physical
314 impairments²⁶. Nyland et al.²⁷ demonstrated that Paralympic athletes with cerebral palsy
315 sustained similar rates of injuries of the knee, shoulder, leg/ankle, and hand/finger when
316 accounting for all sports.

317

318 This study has limitations common to many sports injury epidemiology studies conducted
319 at major games. Despite the large size of the Games, there were still fewer than one
320 hundred athletes participating in each football 5-a-side and football 7-a-side. Therefore,
321 subtle findings may not have been detected. It is possible that the injury IR is
322 underestimated as data collection is dependent upon medical personnel entering a daily
323 report of injuries. It is impossible to ensure that the NPC medical personnel reported all
324 injuries assessed in their medical stations in the Paralympic Village. To estimate overall
325 injury rates, denominator data has been estimated based on number of athletes and 14 days
326 of athlete exposure at the London Paralympics. As such, injury rates may be
327 underestimated if all athletes were not at risk of injury throughout the entire games period.
328 In addition, injuries that occurred in competition may have been more likely to be reported
329 compared with non-competition injuries, as competition injuries are often more significant
330 and memorable and occur within the proximity of medical personnel. Furthermore, the
331 available data does not allow for determination of an association between injury and other
332 potential causative factors such as player position, field surface, time of injury during a
333 match, and whether or not an injury affected an athlete's spastic or paretic limb versus a
334 limb unaffected by their neurologic condition. The low number of injuries also does not

335 allow for a multivariate analysis, which could be used to determine independent risk
336 factors for injury. To further characterize mechanisms of injury, future research should
337 include analysis of injuries captured on video to elucidate specific mechanisms. Finally,
338 the estimation of time loss to define injury severity could be inaccurate as it was guessed
339 by the medical professional that completed either the LOCOG medical encounter form or
340 the web based injury survey as the estimated number of training and competition days that
341 an athlete was likely to lose based on his initial presentation. In the future, improved data
342 collection methodology will aid the ability to overcome some of these limitations and
343 provide for more informative injury data. Specifically, further refinements in the injury
344 surveillance system are needed to capture more detailed information about specific
345 diagnoses and mechanisms of injury.

346

347 CONCLUSION

348 To our knowledge, this is the first cohort study examining injury IR and factors associated
349 with injury in football at the Paralympic Games. Football 5-a-side recorded the highest
350 incidence of injury among all of the twenty summer Paralympic sports competed at the
351 London 2012 Paralympic Games, while football 7-a-side had an incidence rate similar to
352 that of all sports competed at the Games. For football 7-a-side, athletes sustained primarily
353 acute injuries during competition. Of the injuries sustained, 50% resulted in less than one
354 day of time lost from training and competition. The most commonly affected injury
355 locations for athletes were the knee and ankle. For football 5-a-side, the majority of
356 injuries occurred in competition and were deemed to be related to foul play resulting in

357 collisions, which deserves further in-depth evaluation of illegal play and more rigid
358 application of the rules by referees. There may be a role for protective headgear if the high
359 incidence of head and neck injuries (25%) during competition is borne out in further
360 studies.

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449 TABLES

450 Table 1: Injury incidence proportion (IP) (injuries per 100 athletes) and incidence rate (IR)

451 (injuries per 1000 athlete-days) with 95% confidence intervals (CI) at the London

452 Paralympic Games for the sport of football 5-a-side during the pre-competition and

453 competition period (14 days). AT = acute traumatic injury, CO = chronic overuse injury,

454 AOC = acute on chronic injury.

	Number of athletes	Number of injuries	IP	IR	IR 95% CI
Overall	70	22	31.4	22.4	14.1 - 33.8
Position					
Goalkeepers (sighted)	14	0	0	0	0-18.6
Outfield (visually impaired)	56	22	39.3	28.1	17.7 - 42.2
Timing of sport-related injuries					
Prior to Games	56	7	12.5	8.9	3.6-18.3
During Games – in training	56	6	10.7	7.7	2.8-16.7
During Games – in competition	56	8	14.3	10.2	4.4-20
During Games – out of sport	56	1	1.8	1.3	0-3.8
Acuity of injury					

AT	56	12	21.4	15.3	7.6 – 23.0
AOC	56	5	8.9	6.4	2.1-14.8
CO	56	5	8.9	6.4	2.1-14.8

455

456 Table 2: Injury incidence rate (IR) (injuries per 1000 athlete-days) by anatomical region at
 457 the London Paralympic Games for the sport of football 5-a-side (n=56 outfield players and
 458 excluding goalkeepers) during the pre-competition and competition period (14 days).

Anatomical region	Number of injuries	Proportion of all injuries	IR
Knee	4	18.2%	5.1
Lower leg	3	13.6%	3.8
Head/face	3	13.6%	3.8
Trunk/abdominal	2	9.1%	2.6
Foot	2	9.1%	2.6
Ankle	2	9.1%	2.6
Wrist/hand	1	4.5%	1.3
Shoulder	1	4.5%	1.3
Neck	1	4.5%	1.3
Lumbar spine	1	4.5%	1.3
Hip/groin	1	4.5%	1.3
Totals	22	100%	28.1

459

460 Table 3: Injury incidence proportions (IP) (injuries per 100 athletes) and incidence rates
 461 (IR) (injuries per 1000 athlete-days) at the London Paralympic Games for the sport of
 462 football 7-a-side during the pre-competition and competition period (14 days). IRR =
 463 incidence rate ratio.

	Number of athletes	Number of injuries	IP	IR	IR 95% CI
Overall	96	14	14.6%	10.4	5.4 - 15.5
Age group					
13-25	48	4	8.3%	6.0	0.4 - 11.5*
26-34	45	10	22.2%	15.9	7.2 - 24.5*
35-67	3	0	0%	0	-
Initial timing of sport-related injuries					
Prior to Games	96	1	1.0%	0.7	0 - 2.2
During Games - in training	96	3	3.1%	2.2	0 - 4.7
During Games - in competition	96	9	9.4%	6.7	2.5 - 10.9
Acuity of injury					

Acute traumatic	96	10	10.4%	7.4	3.1 - 11.8
Acute on chronic	96	3	3.1%	2.2	0 - 4.7
Chronic overuse	96	1	1.0%	0.7	0 - 2.2
Time-loss injuries					
0-1 days missed	96	7	7.3%	5.2	1.5 - 8.9
More than 1 day missed	96	5	5.2%	3.7	0.5 - 6.9
Time not specified	96	2	2.1%	1.5	

464 *IRR between youngest age groups = 2.7 (95% CI; 0.8-11.8)

465 Table 4: Injury incidence rate (IR) (injuries per 1000 athlete-days) by anatomical region at
 466 the London Paralympic Games for the sport of football 7-a-side during the pre-competition
 467 and competition period (14 days).

	Number of injuries	Proportion of all injuries	IR
Ankle	5	35.7%	3.7
Knee	4	28.6%	3.0
Thigh	1	7.1%	0.7
Lower leg	1	7.1%	0.7
Toe	1	7.1%	0.7
Head/face	1	7.1%	0.7
Undefined	1	7.1%	0.7
Totals	14		10.4

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