

# Do hard playing fields increase the risk of injury in community level Australian football?



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# Worried Dons to monitor Telstra Dome surface

Carley Jellett | April 16, 2008



ESSENDON will investigate if the hard playing surface at Telstra Dome has contributed to its shocking run of soft-tissue injuries, coach Matthew Knights said yesterday.

The Bombers are regular tenants of the Dome and played three of their first four matches at the this season.

While Knights admitted it is "a fact" that his tenants at Telstra Dome are in "less than ideal" terms of



# Footy kids doing it hard Injuries mount on dried-up grounds

Ian Royal and Matt Windley

PARENTS and sports medicine experts have raised concerns about a series of injuries among junior footballers on dry, hard grounds across Melbourne.

Several young players have been taken to hospital during the opening weeks of this season.

Footy mums Peter Luckins said rock-hard surfaces caused more bruising and injuries. He said parents and

one for even grounds.

Councils in all parts of metropolitan Melbourne are struggling to provide enough water for grass to grow on their playing fields.

Ten-year-old footballer Beau Hill became just one of the grounds are.

He suffered severe contusion in a clash at Kilsnochan Park, St Kilda, two weeks ago.

"I can't really remember it and a few of the club's coaches 'kicked behind' and which way round I got

every game.

He said the La Salle had taken action to make sure its home ground was still playable.

"The under-16s currently train on the ground once a week for an hour at a time. And we're not allowed to wear body socks, only tights," he said.

AFL Victoria's manager of community football development, Peter McDougall, said he checked the safety of grounds

"Obviously grounds vary between country areas," Mr McDougall said.

He said the records of injuries since 2004 showed no increase of acute injuries.

Hospitals in Melbourne said that it was too early in the season to say if football-related

injury reports were any greater this year.

Mr McDougall said finding playable fields in inner-suburban areas had become a real challenge. "The increase in the number of players is not matched by the number of available grounds," he said.

Latest figures on hospital emergency admissions from the Monash University Accident Research Centre showed children eye football-related

and the figure could be higher — about half of admissions were from unspecified sports

Have your say: [VoteLine](#), Page 10

## Sports probe looks for soft landing

Ballarat team lifts the covers on playing fields. Geoff Maslen reports.

For most of this drought-affected year, dirt-dry and rock-hard playing fields have been typical of most municipal sports grounds across Victoria, raising the question: should football and other sports be banned because of the risk of injury to players? But is kicking a footy or playing cricket on a dry ground more likely to cause injuries than on a well-grassed field?

Researchers at the University of Ballarat have found little evidence of the latter. In fact, almost no information exists about the extent of injuries on community playing fields, or why they occur, because all previous studies focused on elite footballers playing on beautifully tended grounds. International sports science and sports medicine literature also offered surprisingly few studies that linked injuries with ground conditions. Almost all those that did mention such a link were

football-related and none identified the impact of turf, ground or court conditions on the risk of injury.

So, for the first time, the Ballarat researchers began a detailed investigation of community sports ground conditions and injury risk. Associate Professor Lesmie Otago says this was important: conditions in elite sport are markedly different from those in metropolitan and rural communities.

Professor Otago, who heads the school of human movement and sports sciences at Ballarat, began the 18-month project after receiving State Government funding. The team decided to find out what local councils and sporting bodies did, if anything, to assess and improve the conditions of sporting grounds. Then researchers could determine if there was anything that could be done to "improve" the situation.

Forty-seven councils responded to a survey, yet almost half did not have

a policy on, or guidelines for, sports ground safety or suitability.

The Ballarat researchers note in their report that some councils collaborated with clubs to try to ensure sports grounds were safe and this was considered good practice. There was evidence of more football injuries early in the season, and although the report says this may be related to harder grounds or greater shoe-surface traction at the start,

other factors such as player fitness, training schedules and the speed of the game may be just as important. Professor Otago says US research has found an increased risk of lower limb injuries on Astroturf compared with natural grass.

possibly because of the increased speed on artificial surfaces. She says that in AFL competitions there appears to be an association between the type of

# Existing Evidence

**Increase in game injuries but not training in rugby league**  
(Gabbett et al., 2006)

**Non significant association in elite level rugby union players**  
(Takemura et al, 2007)

**Increase in clavicular fractures in rugby union**  
(Davidson, 1987)

**Hard Ground & Injury Link**

**Increase in acromioclavicular sprains in AFL players**  
(AFL Injury report, 2002)

**Increase in fractures in junior Australian football**  
(McMahon et al., 1993)

# Aim

To investigate the link between hard grounds and injury risk in community level Australian football using objective ground measurements



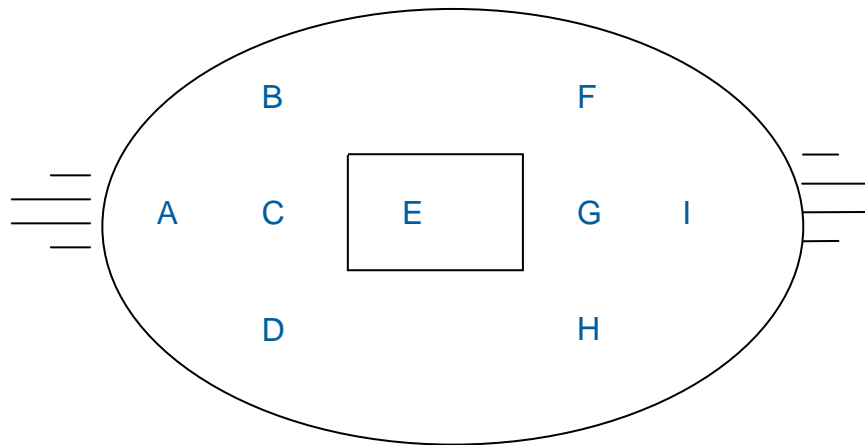
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CRICOS Provider Number 00103D

# Measurement Protocol

- Hardness measures were recorded on eight community level fields in Western Victoria during the 2007 football season
- Measures were undertaken at each of the nine positions below (A-I)



- Four repetitions of each measure at each test site within a 1m<sup>2</sup> area

# Equipment

## Clegg Hammer

-measures deceleration on impact



2.25kg hammer  
dropped from 45cm



Display unit  
with digital output

# Linked to PAFIX Project

- Preventing Australian Football Injuries through Exercise (PAFIX)
- National Health & Medical Research Council funded project (\$1.06m)
- Examining the effectiveness of special training programs on reducing lower limb injuries in community level football players



# Injury Data



## Injury Incident Report Form

Office Use Only

ID: \_\_\_\_\_ Today's date: \_\_\_/\_\_\_/07

### Game Details

Player Name

Club

Grade

Date

Venue

Training  Game

### In which quarter did the injury occur?

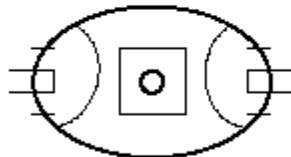
Q1  Q2  Q3  Q4

### Position played at time of injury

Forward Line  
 Back Line  
 Midfield

### Where on the field did the injury occur?

(Mark with X). If during game, indicate where you were positioned using an asterisk.



### Did the player sustain more than one injury during this injury event?

e.g. sprained ankle and knee abrasion

Yes  No

### What was the intent of the injury?

Within game rules  Unsure  
 Outside game rules  Other

### Body Region Injured

Head & Neck  
 Face (including mouth)  
 Teeth/Mouth  
 Shoulder  
 Upper Arm   
 Elbow  
 Lower Arm  
 Hand/Wrist  
 Chest  
 Trunk  
 Groin  
 Back  
 Back  
 Upper  
 Knee  
 Lower  
 Ankle  
 Foot  
 Other

### Nature

Abrasion  
 Contusion  
 Concussion  
 Dental  
 Dislocation  
 Fracture (not stress)  
 Rupture   
 Strain (muscle/tendon)  
 Sprain (ligament/joint)  
 Unsure  
 Other

### Cause of Injury

Contact  
 1st point of body contact

Being tackled  
 Collision with other player/umpire  
 Collision with fixed object  
 Fall/trip/slip on same level during or after contact

### Injury Details

Give a description of what occurred at the time of injury. Please include details on how many players were involved, form of contact, if any, and specific movement of injured player. Continue overleaf if needed.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

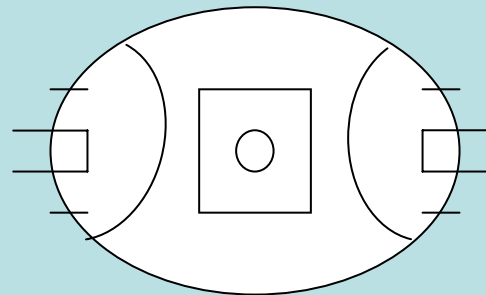
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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Where on the field did the injury occur? (Mark with an X).



### Primary Data Recorder Details

PDC Name

PDC Signature

Date

### Details

Did the injured player leave the field as a result of the injury?

No

Did the injured player return to the field after medical assistance at the ground?

No

Specify medical attendee

Doctor  Sports Trainer  Physio  
 Other

Was the injured player advised to seek off-field medical advice?

Yes  No

Was the injured player taken to hospital?

Yes  No



# Variety of Conditions



# Injuries Sustained

- Total of 41 grounds tested, 7 of the 41 (17%) had no injuries recorded
- **130 injuries** were recorded at the grounds tested
- Likely relationship to ground conditions was ranked by three independent assessors
  - **12** 'likely' to be related
  - 29 'possibly' related
  - 75 'unlikely' to be related
  - 14 unknown (due to incomplete details)



# Hardness Measures

- Clegg hammer measured deceleration on impact in Gravities(G)
- The following classification has been previously recommended (Chivers & Aldous 2004)

Grading	Unacceptably Low	Low/Normal	Preferred Range	Normal/High	Unacceptably High
Clegg Hammer(G)	≤ 30	31 – 69	70 – 89	90 – 119	≥ 120

- The Clegg hammer readings recorded in this study  
42 – 165(G) at all 369 sites (41 fields x 9 test sites)  
67 – 165(G) at 130 injury sites

# Nature v's Hardness

Grading	Low/Normal	Preferred Range	Normal/High	Unacceptably High	Total
Clegg Reading (G)	31- 69	70 – 89	90 – 119	>120	
Abrasion/grazing	0	1	0	0	1
Cartilage injury	0	1	0	0	1
Cork/bruise	1	11	8	6	26
Cut/laceration	0	3	0	1	4
Concussion	0	6	2	1	9
Dislocation	0	2	2	1	5
Fracture	0	3	4	0	7
Strain	1	11	11	7	30
Sprain	0	13	17	5	35
Unsure	0	0	2	0	2
Other	0	7	3	0	10
<b>Total</b>	<b>2</b>	<b>58</b>	<b>49</b>	<b>21</b>	<b>130</b>

No. of readings

49

145

122

53

Relative to  
ground results

4%

44%

43%

43%

# Injury v's Hardness

Grading	Low/Normal	Preferred Range	Normal/High	Unacceptably High	Total
Clegg Reading (G)	31- 69	70 – 89	90 – 119	>120	
Likely to be related	0	4	6	2	12
Unlikely to be related	1	36	28	10	75
Possible related	1	9	12	7	29
Unknown	0	9	3	2	14
<b>Total</b>	<b>2</b>	<b>58</b>	<b>49</b>	<b>21</b>	<b>130</b>



# Relationship between injury profiles and hardness

No apparent association between any specific body region, nature or mechanism of the injury and ground hardness.



# Main Conclusions

- Majority of injuries occurred within acceptable hardness ranges
- Likelihood of being injured on hard ground was similar to grounds in the normal and preferred categories
- Only 9% of injuries could be confidently related to the ground
- No link between specific injury profiles and ground hardness measure



# Future Implications

- Provide solid evidence on the link between ground conditions and increased injury risk for the first time at community level football in Australia
- When published and distributed to governing bodies and local councils it may help inform decisions on ground closure
- The need to continue building the evidence base in this area
- Need to look at measurement protocols - if based on first drop of the Clegg Hammer only, hard ground are less of a risk





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