

Original paper

Preventing lower limb injuries: Is the latest evidence being translated into the football field?

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Abstract

There is accumulating international evidence that lower limb injuries in sport can be prevented through targeted training but the extent to which this knowledge has been translated to real-world sporting practice is not known. A semi-structured questionnaire of all coaches from the nine Sydney Australian Football League Premier Division teams was conducted. Information was sought about their knowledge and behaviours in relation to delivering training programs, including their uptake of the latest scientific evidence for injury prevention. Direct observation of a sample of the coach-delivered training sessions was also undertaken to validate the questionnaire. Coaches ranked training session elements directly related to the game as being of most importance. They strongly favoured warming-up and cooling-down as injury prevention measures but changing direction and side-stepping training was considered to be of little/no importance for safety. Only one-third believed that balance training had some importance for injury prevention, despite accumulating scientific evidence to the contrary. Drills, set play, ball handling and kicking skills were all considered to be of least importance to injury prevention. These views were consistent with the content of the observed coach-led training sessions. In conclusion, current football training sessions do not give adequate attention to the development of skills most likely to reduce the risk of lower limb injury in players. There is a need to improve the translation of the latest scientific evidence about effective injury prevention into coaching practices.

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1. Introduction

Lower limb injuries (LLI) are common in many sports and there is accumulating international evidence from both randomised controlled trials and biomechanical studies that they can be prevented through targeted training that incorporates structured warm-up, balance training, side-stepping/cutting skills and jump/landing training.^{1–5} Indeed, players who have participated in pre-season training programs or received specialist coaching are significantly less likely to be injured than other players.⁶ This suggests that coaches could play a pivotal role in the provision of specific training programs to reduce injury risk in players.

Given the accumulation of knowledge about preventing LLI, it is of interest to determine the extent to which this scientific evidence base has informed the content of training programs led by coaches. This information is needed to develop future injury prevention programs, as only research that is adopted as standard sporting practice can actually prevent injuries.⁷

A detailed understanding of the context of sport delivery is needed before research findings can be translated into real world injury prevention practice.⁷ Given this, it is somewhat surprising that coaches' attitudes to sports injury prevention have not been well explored in the peer-review literature. Exploration of coaches' knowledge of the benefits of mouthguards found that the majority believed they were important, but did not feel adequately informed to provide advice to their players.⁸ Another study found that coaches were less convinced of the efficacy of rugby headgear than players

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and believed that its use could actually increase injury rates, so again did not promote it widely to players.⁹ As coaches are critical to the implementation and adoption of sports injury prevention strategies, it is important to understand their attitudes and existing knowledge as determinants of their safety orientated behaviours and that of the players they coach.

The aim of this study was to determine the knowledge, attitudes and behaviours of coaches towards LLI prevention in Australian football. This information was collected as a necessary precursor to the development of a LLI prevention program, to be delivered during coach-led training sessions.

2. Methods

Each coach of the first division teams from all nine clubs in the Premier Division (i.e. the highest level of competition) of the Sydney Australian Football League (SAFL) agreed to participate. Approval for the study was obtained from the Human Research Ethics Committee at the University of New South Wales.

Coaches were surveyed for 10–15 min during a nominated training session. A broad qualitative approach was adopted and a semi-structured questionnaire was developed. Written responses were sought on all but two open-ended questions which were audio taped. Questions on attitudes and knowledge were derived from previous similar questionnaires of Australian football players.^{10,11} Information was collected on coaches':

- ratings of the importance of different elements of training sessions with respect to team performance and LLI prevention;
- perceptions of how specific training programs could prevent LLIs;
- general attitudes to, and knowledge about LLI risk and prevention.

Ratings were collected on a five-point Likert scale from 'little importance' to 'utmost importance' or 'strongly disagree' to 'strongly agree'. Two additional questions about LLI risk factors and prevention strategies currently used were open-ended and the responses audio taped, transcribed and recurrent themes identified using content analysis.¹²

Direct observations of the duration and focus of components of two training sessions were also made at each club on a randomly selected week. Two sessions per club were observed to examine for any differences between sessions, as traditionally the earlier session in the week tended to be more fitness focussed and the later one more game skill related. The coaches were aware that the session was being observed but were not informed about the exact content being monitored. Skills chosen for observation included: warm-up, drills/set plays, ball handling skills, kicking skills, sprinting, weight/resistance training, jumping/landing training, changing direction/side-stepping, balance training, endurance training, and cool-down.

All data were double entered and checked for accuracy. Analyses were undertaken using SPSS version 13.0. Likert scale responses were assigned a value of 1–5, with higher scores being "more desirable". Due to the low number of respondents and lack of discrimination between the categories, the scales were collapsed to 3-points for analyses. For open-ended questions, the frequency of the most common answers was determined.

3. Results

Coaches' ratings of the importance of including various elements in a training session, and their subsequent impact on team performance and injury prevention are shown in Table 1. Coaches generally ranked the elements directly related to

Table 1
Coaches' ratings of the importance particular elements for inclusion in training sessions, team performance and injury prevention ($n=9$)

Elements of training session	Importance for inclusion in training session (n)			Importance for team performance (n)			Importance for injury prevention (n)		
	Little/no	Uncertain	Some/utmost	Little/no	Uncertain	Some/utmost	Little/no	Uncertain	Some/utmost
Warm-up run	0	0	9	0	0	9	0	0	9
Warm-up stretching	1	0	8	1	0	8	1	1	7
Drills and set plays	0	0	9	0	0	9	2	4	3
Ball handling skills	0	0	9	0	1	8	3	4	2
Kicking skills	0	0	9	0	0	9	1	3	5
Sprint sessions	1	7	1	1	5	3	3	4	2
Weights/resistance training	2	6	1	1	6	2	0	5	4
Jumping/landing training	4	5	0	3	4	2	3	3	3
Changing direction/side-stepping	1	5	3	3	2	4	4	2	3
Balance training	6 ^a	2	0	5	4	0	3	3	3
Endurance/fatigue training	0	1	8	0	1	8	1	2	6
Cool-down run/stretching	0	0	9	0	3	6	0	0	9

^a Only eight coaches responded to this question.

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