

The Use of Padding in Rugby Union

An Overview

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Contents

Summary	329
1. Types of Padding Used in Sport	330
2. Shoulder Pads	330
3. The Case for Shoulder Padding	330
4. Shin Guards	331
5. Newer Forms of Padding	331
6. Conclusions	331

Summary

In any contact sport where impact and collision are an accepted feature, the use of various forms of external padding has become more common. Rugby union players experience a combination of characteristic extrinsic forces through the acts of tackling and scrummaging. The laws which are part of the international regulation of rugby union only permit the wearing of certain, clearly delineated forms of padding. Only then is such padding permitted on medical recommendation, provided that this padding is attached to the body or sewn into the jersey. This article discusses the padding of the shoulders, shins and thighs of rugby union players and highlights the need to address these issues with respect to the increasing number of women who are now playing this sport, particularly in the Southern hemisphere.

There is little evidence to show that shoulder pads decrease the incidence of severe shoulder injuries. However, well-fitting shoulder pads constructed of materials that effectively disperse the force of impact appear to reduce the effect of direct contact and reduce the potential for soft tissue damage. Shin guards that are made of light, soft, compliant materials are effective in reducing impact to the shin and thereby reduce the risk of bruising injuries which are common to the pretibial region. Similarly, thigh pads are considered to be able to modify the effects of direct contact forces to the anterior thigh where deep contusional injuries with the potential for myositis ossificans are well reported.

Informed advice for women rugby players regarding the use of specific padding is unavailable at present. Current information is anecdotal and not confirmed by statistical studies or well-conducted research. In these circumstances, women rugby players should observe the same recommendations that apply to their male counterparts.

1. Types of Padding Used in Sport

Padding is most commonly seen as the use of any material with impact absorption qualities that is applied to vulnerable body parts to minimise the effects of direct contact. Examples used in sports are shoulder pads and shin guards which are worn commonly in rugby league and soccer, respectively, and a variety of chest, limb and thigh protectors worn in American football. The different materials currently used in padding including various combinations of rubber, compressed foam, leather and industrial foam rubber.

2. Shoulder Pads

The characteristics of shoulder pads include their ability to absorb and disperse applied forces which results from their composition and design. A study of the dynamic properties of shoulder pads used in rugby league was prompted by the shoulder injury profile of elite players in 3 football codes: rugby league, rugby union and Australian rules football (Baillie et al., unpublished observations). This study confirmed that the shoulder joint appears to be equally vulnerable in each code. Shoulder pads are worn by most rugby league players, whose choice of padding is dictated by personal design and the impact quality of the material used. The number of different designs of shoulder pads on the market, many of which are endorsed by rugby league players, is evidence of the increasing use of these products in this code. Despite their increasing use, the debate continues over the real benefit of pads as protectors against superficial soft tissue trauma as opposed to their ability to prevent more serious joint damage. In rugby union, the laws of the International Rugby Board (IRB) clearly delineate the extent to which padding can be worn. Before 1994, Law 4 (2),^[2] relating to padding, stated that:

Shoulder pads of the harness type must not be worn. If the referee is satisfied that a player requires protection following injury to a shoulder, the wearing of thin pads of cotton wool, sponge rubber or similar soft material may be permitted provided they are attached to the body or sewn into the jersey.

Prior to the 1995 World Cup, it was decided that only players with a medically acknowledged condition would be permitted to wear padding. As a consequence, the current use of shoulder padding is at the discretion of the referee and its use is restricted to players in whom there is a medical indication. This is in accordance with Law 4 (2).

3. The Case for Shoulder Padding

In rugby, one of the most debated uses for padding is for the protection of the shoulders. Given the current understanding of the forces responsible for severe shoulder injury, there is an argument that shoulder padding will not prevent major injuries such as fractures or dislocation. The common cause of a dislocation of the shoulder is a force transmitted through an outstretched arm compounded by a vigorous rotational force with the arm held in abduction. In this position, the head of the humerus is dislocated from the glenoid fossa by forcibly overwhelming the surrounding muscles and ligaments. This most commonly results in an antero-inferior dislocation. Clearly, the mechanism of such a trauma does not involve impact alone, which padding is designed to minimise. Therefore, it is argued that shoulder pads will do little to minimise the potential of such rotational forces.

Hood^[3] identified the use of shoulder padding to be, primarily, as an 'offensive weapon' and not within the 'spirit of the game'. The American Academy of Orthopaedic Surgeons Committee on Sports Medicine^[4] noted that protective equipment, including well-fitted shoulder pads, were '... helpful in avoiding abnormal motion of the shoulder. . .'. In addition, the Committee agreed that the teaching of correct falling techniques, the use of weight training to build up protective musculature and the implementation of a conditioning programme to delay fatigue were all considered to be important injury prevention measures.^[4]

Regarding the frequency and common causes of shoulder injury related to impacts sustained during sport, a recent study of 105 first class British rugby players revealed that 45% of the players questioned gave a history of some form of shoulder

joint injury.^[5] The most common injury mechanism was a fall on the tip of the shoulder (57%), the remainder were injured in the process of being tackled. The forwards were more commonly injured than the backline players and the direct impacts sustained during scrummaging and in tackling were also identified as contributory to shoulder injury. These authors concluded that, although common, injury to the acromioclavicular joint was generally benign and, most often, required conservative treatment only and rest from further contact sport for a mean duration of 4 weeks. Only 1 player in this series required surgery to stabilise the joint. A delay in diagnosing acromioclavicular joint injury was also recognised but, given the minor effects associated with this injury, the authors did not consider this issue to be clinically important.

4. Shin Guards

Bir et al.^[6] compared different soccer shin guards in a study which analysed shin guard construction and their performance under specific laboratory testing. Given that 13.1% of all soccer injuries involved the lower extremity (National Electronic Injury Surveillance System, 1990-1992), the authors investigated the effectiveness of shin guards in attenuating the forces which lead to lower limb injury. This was accomplished by using a pendulum impact apparatus which simulated the impact force of a well-directed kick to the shin of a dummy. The resultant peak loads, as measured on the dummy, were found to be reduced by the use of shinguards by 41.2 to 77.1%. Naturally, this led to the conclusion that shin guards significantly reduce the force of the impact to this area and thereby reduce the risk of injury. Twenty-one brands of commercially available shin guards were tested at 3 different temperatures and their ability to reduce the forces of impact (measured subjectively by the participants) correlated to their composition, weight and comfort. The authors concluded that guards with the highest force reduction : weight ratio were more likely to be worn by players.

5. Newer Forms of Padding

Little has been written about the use of thigh pads – to date, no scientific articles have appeared in the clinical sports medicine or sport science literature and current opinion is based upon the anecdotal evidence of those who use thigh pads. Before recommending the use of thigh protectors, the application of the present IRB law^[2] is appropriate: IRB Law 4 (4) directive 1993 states that for thigh protectors, ‘Undergarments may be worn but must not include any padding’. Further scientific research to identify the most desirable qualities of thigh pad construction is necessary before informed opinion is possible. The lessons learned from sports such as American football and cricket, where thigh protection is commonplace, are likely to contribute to this discussion.

The literature makes no mention of specific items of padding for women rugby players. Given the increasing interest in womens rugby, particularly in the southern hemisphere, it is expected that research in this area will be forthcoming. There are anecdotal reports that women boxers in Australia are using specialised chest protection – since women’s boxing was a demonstration sport at the III Olympic Games (St Louis, 1904), there has been an upsurge of interest in this activity. Given the potential for similar impacts in any contact sport, women rugby players may benefit from research undertaken in this area. As injury statistics for women boxers and rugby players become available, evidence supporting the use of such specialised protective equipment is likely to emerge.

6. Conclusions

There is little evidence that shoulder pads decrease the incidence of severe shoulder injuries such as dislocation. However, well-fitting padding of the shoulders, constructed of materials with good impact and force dispersal characteristics, appears to reduce the effect of direct contact. Thus, such padding reduces the potential for soft tissue damage and injury of the acromioclavicular joint. For this reason, it would seem sensible for the laws

restricting the use of shoulder padding to be reviewed in the interests of a new generation of professional players for whom injury becomes as much a financial consideration as a personal inconvenience.

Shin guards made of light, soft, compliant materials are effective in reducing the impact of forces directed at the shin region and, therefore, reduce the risk of bruising injuries. The experience of investigators performing studies in soccer players suggests that a wider use of shin pads by rugby players could be encouraged, particularly use by forwards in whom lower limb impact is common.

Thigh pads are considered to be effective in modifying the effects of direct contact forces. However, the use of such protection seems also to be discouraged by the sentiments of the new IRB laws.^[2] The use of thigh protection currently requires a medical indication, which dissuades players from the use of such padding for 'offensive purposes'.

Informed advice to women rugby players regarding the use of specific types of padding is unavailable at present. Current information is anecdotal and awaits confirmation by injury statistics and future research. Meanwhile, women rugby players should observe the same recommendations that apply to their male counterparts.

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