



A SURVEY OF FALLS DURING WHEELCHAIR BASKETBALL FROM THE OFFICIAL VIDEO OBSERVATION

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Abstract [Purpose] Wheelchair basketball is played by athletes with dysfunction of the lower limbs and/or trunk. Falls frequently cause various sports injuries including bruises, concussions, and fractures. However, no survey has explored falls in wheelchair basketball. This study aimed to clarify the situation of falls in wheelchair basketball using official videos and, thereby, help prevent sports injuries. [Methods] A total of 20 game videos of the top eight teams of men and women competing in wheelchair basketball at the Rio de Janeiro Paralympic Games 2016 were obtained from among the official videos of the International Paralympic Committee. The situation of falls was surveyed in the official videos. The number of falls, time of fall, body part that contacted the floor first, and direction of the fall were recorded. A fall was defined as when the body came in contact with the ground. [Results] With 263 falls in total, the frequency was 13.2 falls per game. In the first and second halves of the game, 109 and 151 falls occurred, respectively, and 3 falls occurred during overtime. The hand was the most frequent body part to first touch the ground in 242 falls. The directions of falls ranked in descending order were as follows: 156 forward, 48 backward, 28 right, 20 left, and 11 unclear. [Conclusion and Discussion] In wheelchair basketball, falls occurred mostly in the latter half with the hand contacting the ground first in most cases. The direction of the fall was more often forward and backward than to the right and left. Wheelchair basketball uses sports wheelchairs that use the rear-wheel camber. Moreover, wheelchair basketball players tend to tilt their wheelchair on one side when shooting and rebounding. These results and characteristics led to various sports injuries. However, what kind of injuries will occur in this survey is unknown. Future research is needed to investigate injuries due to falls.

Keywords Wheelchair basketball, fall, injury

Introduction

Wheelchair basketball is played by athletes with lower limb and/or trunk dysfunction, and falls are common during play. Falls among wheelchair users frequently cause various serious injuries, including bruises, fractures, and concussions (Kirby, Ackroyd-Stolarz et al, 1994). There is a high risk of injury in wheelchair basketball (Curtis & Dillon, 1985). However, the conditions in which these injuries occur have not been clearly studied yet. In addition, there is no research on falls during wheelchair basketball. This study aims to pinpoint the conditions of falls during wheelchair basketball using official videos, and therefore, help prevent sports injuries.

Methods

Subjects

A total of 20 game videos of the top eight teams of men and women competing in wheelchair basketball at the Rio de Janeiro Paralympic Games 2016 were obtained from among the official videos of the International Paralympic Committee.

Process

The conditions in which falls occurred, as recorded in the official videos, were separately surveyed by three physical therapists familiar with disabled sports.

“Fall” was defined as being unable to drive the wheelchair as the body part came into contact with the floor.

Analysis items

The following analysis items were measured and recorded:

- The number of falls
- Time of fall
- Body part that contacted the floor first
- Direction of the fall

Results

With 263 falls in total, the frequency was 13.2 falls per game. In the first and second halves of the game, 109 and 151 falls occurred, respectively, and 3 falls occurred during overtime. The body part that most frequently came into contact with the floor first was the hand, in 92.0% or 242 cases (Figure 1). The directions of falls ranked in descending order were as follows: 156 forward, 48 backward, 28 right, 20 left, and 11 unclear (Figure 2).

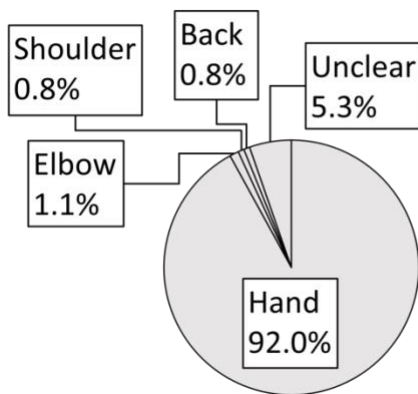


Figure 1. The rate body parts contacted the floor first

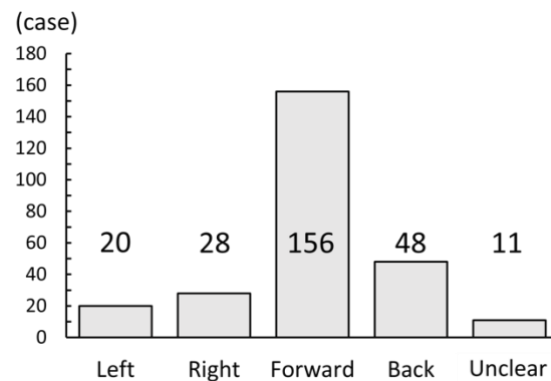


Figure 2. The number of falls per direction

Conclusion and discussion

This result demonstrates that more than 10 falls occur per game. Possible causes of the falls may be an excess of contact during play, and play in an unstable position such as tilting the wheelchair to one side when shooting and rebounding. Further, the most common fall scenario was a fall forward with a hand contacting the floor first. Wheelchair basketball is considered to have more falling forward than towards the left, right, and back, because it uses sports wheelchairs with a rear-wheel camber and a caster at the back to prevent falling. Moreover, due to the competitive characteristic of the game, one of the reasons for falling forward is that there is a lot of contact from the front. In addition, it has been suggested that a forward fall for a wheelchair user causes serious injuries to the hand and wrist joint (DeGoede & Ashton-Miller, 2002), which could be applicable to players of wheelchair basketball. However, it is not clear from this research what kind of injuries actually occur due to such falls. In order to prevent injury, it is therefore necessary to clarify the injuries caused by falls in wheelchair basketball.

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