

The existing state and problems of wheelchair basketball

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Abstract

Several problems arise in wheelchair basketball rules, even though it has the oldest history of all adapted sports. Some researchers have described wheelchair basketball concerning several common areas, including history, classification system, and problems. We found that there were some serious problems in the classification system of wheelchair basketball. There are 8 classes according to players' function, disability, and handicap, and these classes seem to lead to a fair classification that enables all handicapped people to play equally, except for classes 2.5 and 3.5. The definitions of classes 2.5 and 3.5 are vague compared with other classes. It seems difficult to distinguish classes 2.5 from 2 and 3, and similarly, classes 3.5 from 3 and 4. To ensure fairness in wheelchair basketball games, we need to reexamine the half point classification system.

Key words: wheelchair basketball, classification, rule

1. Introduction

Wheelchair basketball has the oldest history of all adapted sports and was pioneered by Dr. Goodman for the rehabilitation of Britons after World War II. Dr. Yutaka Nakamura introduced wheelchair basketball to Japan in 1960. In 1961, he organized the first demonstration of wheelchair basketball in Oita, Japan. It was also the first Japanese meeting concerning adapted sports for physically handicapped people.

The Tokyo Paralympics Games of 1964 was a great opportunity to promote wheelchair basketball through the country. As a result, the first Japanese wheelchair basketball team was founded, and gradually the number of wheelchair basketball teams has increased nationwide. In 1975, the "Japan Wheelchair Basketball Federation" was established and ten local leagues were developed. There were ninety-one teams registered in the Japan Wheelchair Basketball Federation in 2004, including six female teams. Recently, the number of non-disabled people who play in

wheelchair basketball leagues has been increasing. Furthermore, numbers of university wheelchair basketball club teams consisting of mainly non-disabled people have increased. As over two thousand people, including non-disabled people, participate and enjoy the game, we can say that wheelchair basketball has become a very popular sport in Japan. (Gold Cup, 2002. Ookubo M. and Takahashi A., 2001.)

2. Classification of wheelchair basketball

The classification of judo and boxing is made according to the participants' weight. This classification method is adapted for fairness in the game. (Yabe K., Kusano K. and Nakata H., 2003.) Similarly, there is an original classification method for wheelchair basketball that enables all handicapped people to play equally.

At the beginning, the classification of wheelchair basketball advanced according to each player's functional disorder and diagnosed level of spinal cord injury. In 1982,

wheelchair basketball classification changed from a medical classification system to a functional classification system. Under this system, the players were tested on their ability to play the game, not on their medical disability.

Some demonstrators who were called classifiers showed various trunk and arm movements essential for basketball activities, such as shooting, passing, rebounding, pushing, and dribbling. Then, the classifiers observed each player's ability level during wheelchair basketball competition and they determined the classification of each player. In particular, trunk movements and stability observed during actual basketball situations form the basis for the assignment of a player to a particular class. This classification ensures that players with physical difficulties have an equal opportunity to play. Therefore, each player's strategies and skills would be the factors determining success in competition.

Players are usually assigned points according to their disabilities, such as 1, 2, 3, or 4, which are the recognized classes. When a player does not fit clearly into the descriptions of a class, they are assigned a half-point, creating classifications of 1.5, 2.5, and 3.5. Additionally, class 4.5 was added to provide a distinctive class for players with the least or minimal disabilities (Table 1). (IWBF Player Classification Commission, 2004.)

FACTORS DETERMINING CLASSIFICATION

The main factors that determine a player's classification are :

- 1) Trunk function
- 2) Lower limb function
- 3) Upper limb function

4) Hand function

Furthermore, classes are defined according to players' volume of action. The volume of action of a player is described as the limit to which a player can move voluntarily in any direction, or return to the upright-seated-position in a controlled manner, without holding the wheelchair for support or to aid movement. The volume of action includes all directions, and describes the position of the ball when held with both hands.

In the seated position, there are several "planes of movement" available :

- The vertical plane : both arms are extended, and the trunk is made to rotate right and left. (Fig. 1)
- The forward plane: both arms are clasped behind the head, bending the trunk forwards and returning to the upright position. (Fig. 2)
- The forward plane : the ball on one side is picked up by both hands, passed overhead, and put on the other side. (Fig. 3)

TEAM BALANCE

Team points (sum of points from classification) are used during basketball games to ensure that teams are fairly balanced and do not exceed a predetermined maximum number of points on the floor. The total number of points allowed on court at any one time is 14.0. That is, the total sum of points of all five players actually playing must be 14.0 or less. If a coach allows a team to have over 14.0 points on the floor, they will incur a technical foul. (IWBF Player Classification Commission, 2004.)

Table 1 Feature of Each Wheelchair Basketball Class

Class	Feature
1	Little or no controlled trunk movement in all planes. Balance in both forward and sideways directions significantly impaired and players rely on their arms to return them to the upright position when unbalanced. No active trunk rotation.
2	Some partially controlled trunk movement in the forward direction, but no controlled sideways movement. Has upper trunk rotation but poor lower trunk rotation.
3	Good trunk movement in the forward direction to the floor and up again without arm support. Has good trunk rotation but no controlled sideways movement.
4	Normal trunk movement, but usually, due to limitations in one lower limb, has difficulty with controlled sideways movement to one side.
4.5	Normal trunk movement in all directions. Able to reach side to side with no limitations.

There are situations where a player does not seem to fit exactly into one class, exhibiting characteristics of two or more classes. In this instance, the classifier may assign the player a half point, thus creating 1.5, 2.5 or 3.5 point players. This is usually done only when the player cannot be assigned to a definite class, and should not be regarded as the first option for the classifier.

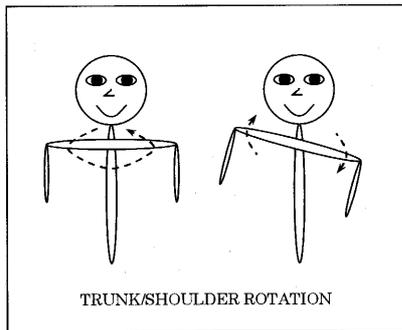


Fig. 1 Vertical Plane

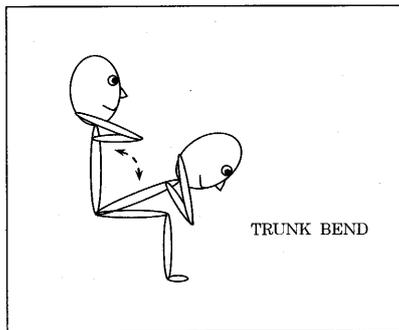


Fig. 2 Forward Plane

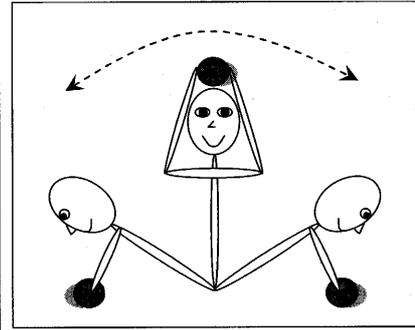


Fig. 3 Sideways Plane

3. Problems with wheelchair basketball

When wheelchair basketball was first introduced to Japan people who could participate were limited. Only people who always used a wheelchair for mobility were allowed to join the games. The Japan Wheelchair Basketball Federation (JWBF) officially allowed the participation of players who had amputees in 1985. As the American Wheelchair Basketball Federation defined wheelchair basketball as a sport for people using a wheelchair, the JWBF allowed people with disabilities except spinal cord injury to play. Recently, the JWBF officially accepted participants with spinal cord injury, amputees, cerebral paralysis, post polio paralysis, Guillain-Barre syndrome, and so on.

In the early days, wheelchair basketball was solely introduced as a form of rehabilitation. Recently, people enjoy this sport for various reasons. Akamine, et al. (2003) sent a questionnaire to 13 wheelchair basketball players who were representatives of Japan. The purpose of this investigation was to determine various reasons and purposes for people playing wheelchair basketball. The research resulted in varying reasons and purposes such as: "Improvement of health and physical strength", "Acquisition of friends and companions", "Reduction of stress", and "Playing the game".

Okuda (2001) reported on the motivation behind doing adapted sports. In the past, the main purposes were found to be health enhancement as a part of rehabilitation, physical strength improvement, prevention of disease syndromes, and positive social participation. Recently, the purposes of playing the game have changed and include reasons such as: "Game sports", "Place of enjoyment",

and "Establishment of identity". Adapted sports play an important role for handicapped people as lifelong sports.

It is believed that adapted sports including wheelchair basketball are meaningful for handicapped people. As I explained above, purposes, meanings, and the value of wheelchair basketball are different for each player. In order to advance adapted sports for each purpose, various issues arise. Akamine, et al. (2003) reported that there are some problems concerning adapted sports performed in Japan, like the absence of a leader, a lack of players, and incompleteness of equipment. Ookubo and Takahashi (2001) described two problems of wheelchair basketball. One was the classification system, which is sometimes made objectively. The other problem was its association with injury and trouble.

Wheelchair basketball has spread nationwide. To formulate rules was very important in order to develop it as a competitive sport. Classifications were developed, so that disabled people could participate in the game on an equal basis. Specialists officially recognized by the JWBF (called classifiers) advance the classifications of wheelchair basketball and determine each player's class according to their physical difficulties. Five players play on court as a team, and the total number of points of the five players on court at any one time must be within 14 points.

At first, players' classes were determined based on their functional disorder and level of spinal cord damage. This is because only people with spinal cord injury and severe lower limb paralysis were admitted as wheelchair basketball players. Therefore, the classification included just four classes, 1, 2, 3, and 4. Regulations concerning wheelchair basketball changed, and various kinds of disabled and

handicapped people were admitted to join in games. Furthermore, some devices like an ankle foot orthosis and splint were allowed to be used on court. As a result, a functional classification system was needed for fairness. The players were tested on their ability to play the game, and not on their medical disability. This allowed wheelchair basketball to be the first sport to include athletes with different disabilities. The functional classification system grew with input from experienced players, coaches and classifiers. The new classification system has been redefined to include half classes (0.5) in addition to existing classes. Hence, this assigns each player a classification of either 1, 1.5, 2, 2.5, 3, 3.5, 4, or 4.5 (Table 2). Classes are defined according to the players' volume of action. The volume of action of a player is described as: The limit to which a player can move voluntarily in any direction, and return to the upright seated position in a controlled manner, without holding the wheelchair for support or to aid movement. The volume of action includes all directions, and describes the position of the ball when held with both hands. In the seated position, there are several "planes of movement"

considered. Players are observed in their competition wheelchairs, complete with all strapping they will use, but in a training situation before the tournament commences. From this initial observation, a player is assigned a class with which they will begin the tournament. The player is then observed during an actual competition, where their classification will be confirmed or modified if the classification panel feels it is necessary.

Reexamining the classification

Recently, half classes are being reexamined by the JWBF. Classes 2.5 and 3.5 are going to be excluded. They stated that the adjustment of the half class was basically an exceptional rule. The definitions of classes 2.5 and 3.5 are especially unclear compared with other classifications. Classes 1, 2, 3 and 4 are defined very clearly and describe a specific disability, damaged spinal cord, and an amputated part. Also, players' range of movement and playing ability are expressed in detail. The descriptions of classes 2.5 and 3.5 are vague compared with the other half classes. However, the descriptions of class 4.5 and 1.5 are comparatively subjective. In the case of class

Table 2 Classification of Wheelchair Basketball

Class	Spinal Cord Damage Level	Typical Disability	Function of Spine		
			Rotation	Bending	Lateral Bending
1	Th1~Th7	<ul style="list-style-type: none"> Paraplegia without abdominal muscle control. Post-polio paralysis with arm involvement and without control of trunk musculature. 	-	-	-
2	Th8~L1	<ul style="list-style-type: none"> Paraplegia. Post-polio paralysis without control of lower extremity movement. 	+	-	-
3	L2~L4	<ul style="list-style-type: none"> Paraplegia, with control of hip flexion and adduction movements, but without control of hip extension or abduction. Post-polio paralysis with minimal control of lower extremity movements. Hip disarticulation or above-knee amputees with very short residual limbs. 	+	+	-
4	L5~S1	<ul style="list-style-type: none"> Paraplegia, with control of hip abduction and extension movements on at least one side. Post-polio paralysis with single leg involvement. Hemipelvectomy. Single above-knee amputees with short residual limbs. Most double above-knee amputees. Some double below-knee amputees. 	+	+	+
4.5	-	<ul style="list-style-type: none"> Single below-knee amputees. Some double below-knee amputees. Players with extensive orthopedic involvement of hips, knees or ankles. Post-polio paralysis with minimal (ankle/foot) involvement on one or both sides. 	+	+	+
5	-	<ul style="list-style-type: none"> Non-handicapped persons. 	+	+	+

1.5, trunk function is the key factor. A complete paralysis of Th8~9 corresponds to class 1.5. A complete paralysis of Th7 or above Th7 corresponds to class 1. Class 1.5 players can rotate their trunks slightly using the rectus abdominis, obliquus externus abdominis, obliquus internus abdominis, and transversus abdominis. This is a meaningful difference between class 1 players and 1.5 players. Similarly, a complete paralysis of Th 10~L1 corresponds to class 2 players who can rotate their trunks fully. Moreover, their iliopsoas on one side or both enables them to flex their hip joints, therefore class 1.5 players are clearly different from class 2 players. Similarly, class 4.5 players can be clearly distinguished from class 4 players. Classes 2.5 and 3.5 should be carefully reexamined to ensure fairness in the classification system of wheelchair basketball.

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