

Classification System of Para-sports

순천향의대 재활의학과
박 지 웅

- 세계장애인배구협회 등급분류사
- 한국도핑방지 항소위원단 위원
- 대한장애인조정협회 의무분과 부위원장
- 대한보디빌딩협회 도핑방지위원회 위원
- 대한스포츠의학회 인증전문의관리위원회 위원

2021 대한재활의학회 추계학술대회 Parallel Symposium 5 (Sports)

2021년 10월 30일 08:55 ~ 09:20, 온라인

WHAT IS CLASSIFICATION?

- Classification is simply a structure for competition
 - Same as wrestling, boxing and weightlifting,
 - Athletes with disabilities are grouped in classes defined by the **degree of function** presented by the disability

BRANDON MORENO
FLYWEIGHT (56.82kg)



FRANCIS NGANNOU
HEAVYWEIGHT (113.64 kg)



VS ?

UFC

WHAT IS CLASSIFICATION?

- Cornerstone of Paralympic Movement

“To enable Para-Athletes to achieve sporting excellence and inspire and excite the world.”

- Based on Sportsmanship

“Behaviour in sport that is fair and shows respect to the other players.” (Cambridge Dictionary)

WHAT IS CLASSIFICATION?

Two goals,

- Defines who is eligible to compete in Para-sport and consequently has the opportunity to reach the goal of becoming a Paralympic Athlete
- Groups Athletes into Sport Classes which aim to ensure that the impact of Impairment is minimized, and sporting excellence determines which Athlete or team is ultimately victorious

Not only key for elite sport but also necessary for promoting grassroots participation in Para sports for people with an impairment!

WHAT IS CLASSIFICATION?

- Classification processes
 - Physical and technical assessment
 - Observation in and out of competition
- Classifiers
 - Individuals to conduct the process of classification
- Since the 1960's, classification systems continue to evolve to the present day.

WHO IS CLASSIFIER?

- International Standard for Classifier Personnel and Training (Sep. 2016)
- Certification
 - An International Sport Federation (IF) must assess that a Classifier has met the specific Classifier Competencies required to obtain and maintain certification or licensure.
- Entry Criteria
 - Standards set by an International Sport Federation
 - As expertise or experience levels,
 - May include **1) former Athletes or coaches, 2) sports scientists, 3) physical educators, and 4) medical professionals**
 - Qualifications and abilities relevant to conduct all, or specific parts of, Athlete Evaluation
 - Vary depending on the sport (e.g., ParaVolley, **medical doctor, physical therapist**)

INTERNATIONAL CLASSIFIER EDUCATION AND TRAINING PATHWAY MATRIX

LEVEL 3 International Classifier

May be a Chief Classifier or International Classifier in any World ParaVolley controlled events

NOMINATED BY HEAD OF CLASSIFICATION COMMISSION & APPOINTED TO THESE EVENTS BY WORLD PARAVOLLEY MEDICAL DIRECTOR

LEVEL 2 Classifier

May be appointed as a Classifier in Zonal controlled events with some restrictions

NOMINATED BY ZONE, APPROVED BY WORLD PARAVOLLEY HEAD OF CLASSIFICATION & APPOINTED BY WORLD PARAVOLLEY MEDICAL DIRECTOR

LEVEL 1 Classifier

May be a Classifier in National events

APPOINTED TO THESE EVENTS BY NATIONAL FEDERATION/NPC WITH NOTIFICATION TO ZONE HEAD OF CLASSIFICATION

WORLD PARAVOLLEY CLASSIFIER TRAINING

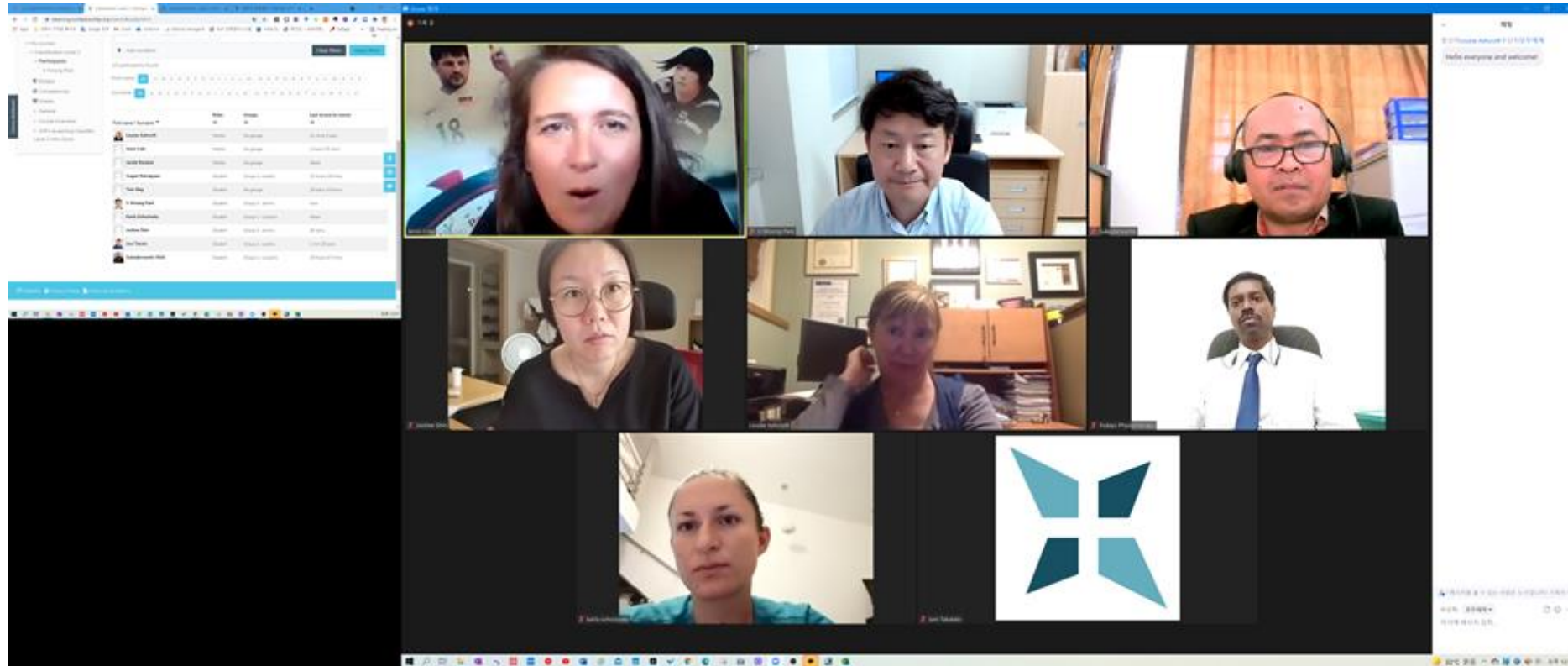
Pre-requisites

Attend minimum 2 WPV Zonal Level events as a Level 2 classifier panel members provide evaluation and feedback at each event
Minimum 2 years since certified Level 1
Excellent written and spoken English
Excellent interpersonal skills

Written and spoken English competence
Identified by level 1 Educator as potential Level 2
NOT part of Health Care Team for national program for min 2 years
Classify locally for min 6 months since Level 1 attained
Complete logbook (min 5 non amputee cases) and submit to Zonal HoC

Medical Doctor or Physiotherapist
(Qualified Athletes must be retired from WPV Masterlist x 4 years)

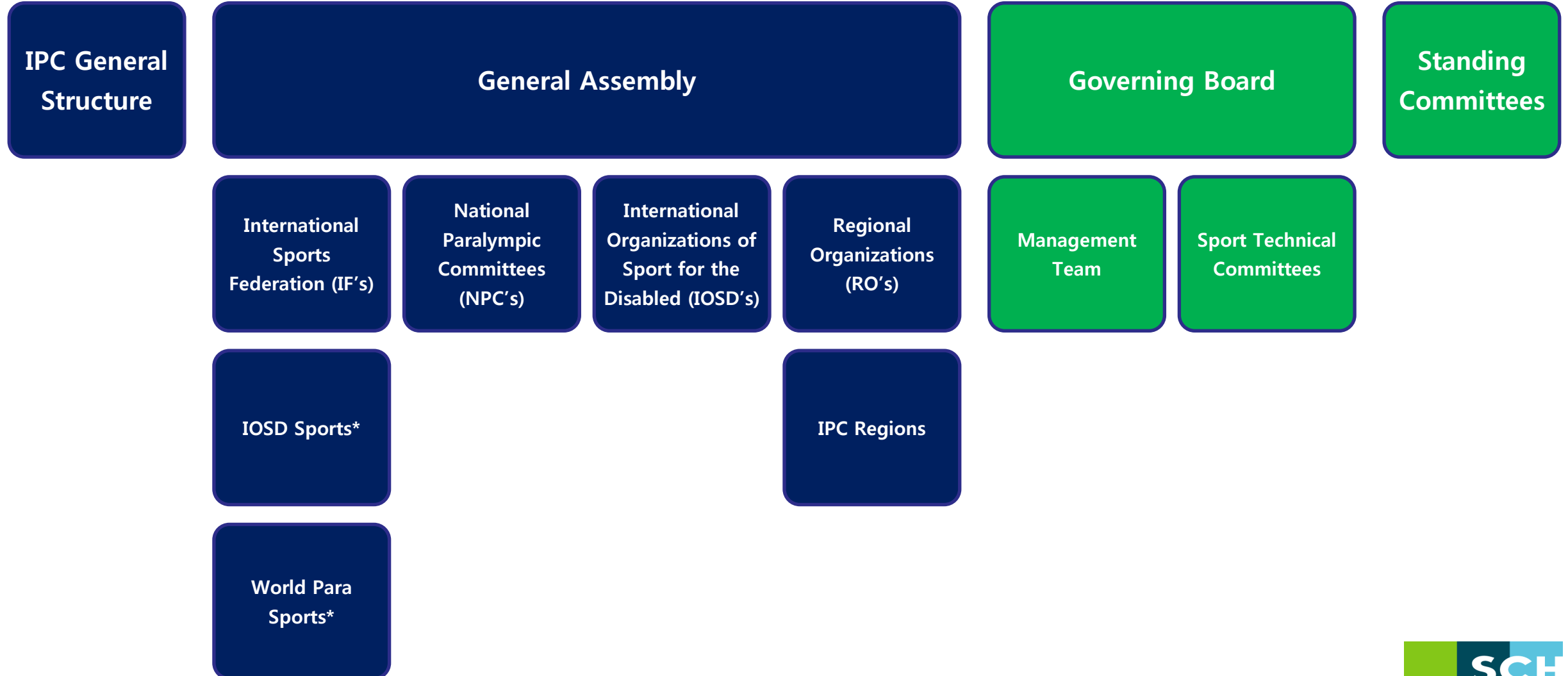
Level 2 Classification Course (on line)



HISTORY OF CLASSIFICATION

- **CP-ISRA** (Cerebral Palsy – International Sports & Recreation Association)
- **IWAS-ISMWSF/ISOD** (The International Wheelchair & Amputee Sports Federation-International Stoke Mandeville Wheelchair Sports Federation / International Sports Organization for the Disabled)
- **IWAS** - international governing body (IF) for the paralympic programme sports of Wheelchair Fencing and Wheelchair Rugby as well as Lawn Bowls and Electric Wheelchair Hockey
- **IBSA** (International **Blind** Sport Federation)
CISS (Comité International des Sports **des Sourds**)
INAS-FID (International Sports Federation for Persons with **Intellectual Disability**)

IPC OPERATIONAL STRUCTURE



IPC Classification Code and IS

- Initially, Medical classification based on '**medical evaluation**'
- 1980~90, Functional classification focused on '**sport performance**'
- 2003, IPC Governing Board approved a '**classification strategy**'
- 2007, Firstly, released **IPC classification code & IS**
- 2017, **Revised IPC classification code & IS**
- Focuses on the development of two primary elements:
 - **The Classification Code ("the Code")**
 - **International Standards (IS) to supplement the Classification Code**

PARALYMPIC SPORTS (28)

Summer Sports (22)		Winter Sports (6)
Archery Athletics Badminton <i>(new 2020)</i> Boccia Canoe Cycling Equestrian Football 5-a-side Goalball Judo Powerlifting	Rowing Shooting Para sport Sitting volleyball Swimming Table tennis Taekwondo <i>(new 2020)</i> Triathlon Wheelchair basketball Wheelchair fencing Wheelchair rugby Wheelchair tennis	Alpine skiing Biathlon Cross-country skiing Para ice hockey Snowboard <i>(new 2014)</i> Wheelchair curling

Classification Code (Table of Contents)

1. Scope and application
2. Definition and purpose of Classification in Para-sport
3. Classification Personnel
4. Athlete Evaluation, Sport Class and Sport Class allocation
5. Protests and Appeals
6. Intentional Misrepresentation
7. Intelligence gathering and investigations
8. Data storage and data protection
9. Classification Master List
10. Education and research
11. Changes to Classification Systems
12. Governance, roles and responsibilities
13. Implementation, Compliance and modifications
14. Interpretation of the Code

International Standards (IS)

The Code is complemented by International Standards **that provide the technical and operational requirements for classification.** Adherence to the International Standards is mandatory for compliance with the Code.

1. Eligible Impairments (적격장애)
2. Athlete Evaluation (선수평가)
3. Protests and Appeals (소청과 항소)
4. Classifier Personnel and Training (등급분류사 인력 및 교육)
5. Classification Data Protection (등급분류의 자료에 대한 보호)

Athlete Evaluation

HOW DOES CLASSIFICATION WORK?

Athlete Evaluation

- Classification is carried out through a process called “Athlete Evaluation” that comprise procedures for the assessment of athletes and the allocation of Sport Class and Sport Class Status.
- Athlete Evaluation answers three fundamental questions:
 1. Does the athlete have an Eligible Impairment for this sport?
 2. Does the athlete’s Eligible Impairment meet the Minimum Impairment Criteria of the sport?
 3. Which Sport Class should the athlete be allocated in based on the extent to which the athlete is able to execute the specific tasks and activities fundamental to the sport?

FIRST STEP: Eligible Impairment

- Any athlete wishing to participate in Para sport competition must have an Underlying Health Condition that leads to a permanent Eligible Impairment.
- The Paralympic Movement offers sport opportunities for athletes that have an impairment that belongs to one of ten Eligible Impairment types.

Ten Impairment Types

Impaired Muscle
Power

Impaired Passive
Range of
Movement

Limb Deficiency

Leg Length
Difference

Short Stature

Hypertonia

Ataxia

Athetosis

Physical Impairment

Vision Impairment

Intellectual
Impairment

PARA ATHLETICS, PARA SWIMMING ?

Impaired Muscle
Power

Impaired Passive
Range of
Movement

Limb Deficiency

Leg Length
Difference

Short Stature

Hypertonia

Ataxia

Athetosis

Vision Impairment

Intellectual
Impairment

GOALBALL, FOOTBALL 5-A-SIDE, JUDO ?

Impaired Muscle
Power

Impaired Passive
Range of
Movement

Limb Deficiency

Leg Length
Difference

Short Stature

Hypertonia

Ataxia

Athetosis

Vision Impairment

Intellectual
Impairment

WHEELCHAIR FENCING, WHEELCHAIR RUGBY ?

Impaired Muscle
Power

Impaired Passive
Range of
Movement

Limb Deficiency

Leg Length
Difference

Short Stature

Hypertonia

Ataxia

Athetosis

Vision Impairment

Intellectual
Impairment

SECOND STEP: Minimum Impairment Criteria for a sport

- Based on impact of impairments on the sport's activities, how severe an Eligible Impairment must be for an athlete to be considered eligible to compete.
(Example)
 - A maximum height defined for athletes with short stature
 - Level of amputation defined for athletes with limb deficiency
- Specific for each sport

THIRD STEP: Athlete's Sport Class

- The type and number of sport classes vary depending on the sports
- Only one Sport Class
 - Para ice hockey or Para powerlifting
- Over 50 Sport Classes in Para athletics
 - Different disciplines (running, jumping, throwing events)
 - All 10 Eligible Impairments



Ex) SITTING VOLLEYBALL

- SPORT CLASSES: VS1 and VS2
 - Sport class VS2 is generally less severe than the VS1.
- SPORT-TECHNICAL RULES
 - There can be two athletes with sport class VS2 on the team.
 - One VS2 athlete on the court at a time.
 - The other five athletes must have sport class VS1.



Impaired muscle power	✓	Involuntary movements	✓
Impaired passive range of movement	✓	Muscle tension	✓
Limb deficiency	✓	Uncoordinated movements	✓
Leg length difference	✓	Short stature	
Intellectual impairment		Vision Impairment	

THIRD STEP: Athlete's Sport Class

- Similar activity limitation together for competition
- Not necessarily same Eligible Impairment
- In athletics wheelchair racing events,
 - Athletes with paraplegia and leg amputations racing together



THIRD STEP: Athlete's Sport Class

- Multi-staged process
 - Physical and technical assessments
 - Observation in Competition
- Repeated classification
 - Progressive nature of some impairments
 - Changes in medical condition
- Minimum of two classifiers
 - Classifiers are trained experts – physicians, physiotherapists, coaches, sport scientists, psychologists, ophthalmologist

THIRD STEP: Athlete's Sport Class

- Sport Class Status
 - N = New (no international classification before)
 - R = Reviewed (under review)
 - C = Confirmed (permanently classified)
 - FRD = Fixed Review Date (FRD)
- Not Eligible (NE) – a kind of classification status

SITTING VOLLEYBALL CLASSIFICATION CHART

	MINIMAL DISABILITY	DISABILITY	Impairment Type
Amputation Upper limb	Unilateral Amputation of any 4 digits (thumb or fingers)	amputation of all five digits (4 fingers and a thumb) at MCP joints on one hand or more proximal amputation	Amputation
	Unilateral Amputation of Thumb and 2 adjacent fingers (index and long) at MCP joint		
	Bilateral amputation of thumbs		
	Bilateral amputation of index and long fingers	amputation of eight digits across both hands	
	Bilateral amputation of thumbs and index fingers	amputation of first three digits across both hands	
Amputation Upper and lower limb	Combination of amputations in upper and lower limbs - 더 심하고 핵심동작에 중한 것을 선택		Amputation
Amputation Lower limb	Complete unilateral or bilateral Lisfranc amputation Equivalent congenital limb deficiency	All lower limb amputations at or more proximal than Through ankle (no calcaneum)	Amputation
Upper Limb Dysmelia	25% ~ 32% shortening [Dysmelia]	33%~ shortening [Dysmelia]	Limb length difference
Shortening Lower Limb	7 - 32%	33% or more	Limb length difference
Loss of muscle points ONE upper limb	Combined loss of 15 muscle points (15~24) (max 70) Loss of 3 muscle points in shoulder flexion (muscle grade 0~2)	Loss of 25 or more; Loss of 20 or more muscle points is in the shoulder	Impaired muscle power
Loss of muscle points BOTH lower limb	7~15 muscle point loss in one or both lower limbs (max 80)	16 ~ muscle points loss in one or both lower limbs	Impaired muscle power
ROM shoulder one side#	Shoulder abduction or flexion ≤ 90° available in the range between 0° and 90° abduction or flexion.		Impaired passive ROM
ROM elbow one side##	Elbow extension deficit of ≥ 45°	Stiffness in 90 degrees flexion or more	Impaired passive ROM
ROM wrist one side###	Wrist ankylosed in any position (stiff or <5 degree arc of motion) in any position	Wrist stiff (ankylosed) in position between neutral to full extension (dorsiflexion) (≤ 5° arc of movement	Impaired passive ROM
ROM fingers one side####	Fingers on one hand stiff/afunctional		Impaired passive ROM
ROM hip one side*	Hip flexion deficit of ≥ 30 degrees	Stiff in any position	Impaired passive ROM
ROM knee one side**	Maximum knee flexion is between 45-90 degrees measured from full extension (0 degree)	Maximum knee flexion is less than 45 degrees measured from full extension (0 degree) or Stiff in	Impaired passive ROM
ROM Ankle one side***	Stiff (ankylosed) ankle (≤5° combined Ankle dorsi / plantar flexion available).	(-)	Impaired passive ROM
CP-ISRA	Class 8	Class 7 or lower	Spasticity / athetosis

Classification Master List

- Athlete's name, country, Sport Class and Sport Class Status
- Should identify athletes that enter international competitions

ATHN	ID	NAME	FIRSTNAME	BIRTHDATE	COUNTRYC	GENDER	STATUS	CLASST
0000008959	AT-ALB-1-	GJONCA	Acim		ALB	M	PPS	54
0000009290	AT-ALG-2-20121971	BOUDELMI	Fatima	1971-12-20	ALG	F	NPS	53
0000007579	AT-ALG-2-23111971	FOUDIL	Ghania	1971-11-23	ALG	F	PPS	53
0000009340	AT-ALG-2-28071969	TABBENI	Fetiha	1969-07-28	ALG	F	NPS	54
0000009347	AT-ALG-2-11051983	KHIAT	Halima	1983-05-11	ALG	F	NPS	54
0000009348	AT-ALG-2-29101988	SAIFI	Nacima	1988-10-29	ALG	F	PPS	54
3439	AT-ALG-2-04061981	AZZOUZ	Samia	1981-06-04	ALG	F	PRS	54
3513		SAMIA	Azzouz		ALG	F		54
0000008960	AT-ALG-1-	ABI	Omar		ALG	M	PPS	52
0000009291	AT-ALG-1-04061986	MEGUEDDM	Abdelkarim	1986-06-04	ALG	M	NPS	54
0000009292	AT-ALG-1-28041967	SALHI	Sihem	1967-04-28	ALG	M	NPS	54
0000009353	AT-ALG-1-05071983	OUCHENE	Mohamed	1983-07-05	ALG	M	NPS	54
0000009357	AT-ALG-1-15111969	OUGOUR	Kheireddine	1969-11-15	ALG	M	NPS	54
0000008961	AT-ALG-1-	CHOUARI	Kamel		ALG	M	PPS	54
0000008962	AT-ALG-1-	DJEBIL	Sid Ali		ALG	M	PPS	54
0000008963	AT-ALG-1-	FREDJ	Karim		ALG	M	PPS	54
0000008964	AT-ALG-1-	TAOUTAOU	Mohammed		ALG	M	PPS	54
0000008965	AT-ALG-1-	YOUSEI	Abdelkrim		ALG	M	PPS	54
2226	AT-ALG-1-04041983	MAAMAR	Rachif	1983-04-04	ALG	M	PRS	54
0000007611		BOUADDA	Mohamed		ALG	M		54
0000008966	AT-ARG-2-	CHIODI	Ana		ARG	F	PPS	54
0000008968	AT-ARG-2-	GRELO	Beatrice		ARG	F	PPS	54
4704	AT-ARG-1-28121961	BASCONI	Horacio	1961-12-28	ARG	M	PPS	52
0000008969	AT-ARG-1-	HAYLAN	Daniel		ARG	M	PPS	52
0000008970	AT-ARG-1-	MARINO	Leonardo		ARG	M	PPS	52
2036		GOMEZ	Walter		ARG	M		53
2147		TRABUCO	Sergio		ARG	M		53
2150		JIMENEZ-HER	Jorge		ARG	M		53
2181	AT-ARG-1-07031977	MALDONADO	Alejandro	1977-03-07	ARG	M	PPS	54
2514	AT-ARG-1-	SILVA	Pablo		ARG	M	PPS	54
0000008971	AT-ARG-1-	MARTINEZ	Jose Luis		ARG	M	PPS	54
0000008972	AT-ARG-1-	URBANO	Anibal		ARG	M	PPS	54

What is a Protest?

- IPC Code Definition:
 - *A protest is the procedure by which a reasoned objection to an Athlete's Sport Class is submitted and subsequently resolved.*
- A protest relates to errors or omissions in the process of classification evaluation that:
 - the protesting nation believes has resulted in an incorrect sport class, OR
 - WPV believes may have resulted in incorrect sport class allocation

Who can Protest?

- A Protest may only be made by one of the following bodies:
 - **a National Body (only in relation to their own athlete) or**
 - **World ParaVolley**
- Protest Rules
 - IPC International Standard for Protests and Appeals (2017)
 - 'O' - Athlete's Sport Class
 - 'X' - Athlete's Sport Class Status
 - Not in Sport Class Not Eligible

What is an Appeal?

- According to the IPC:
 - ***An Appeal is the process by which a formal objection to how Athlete Evaluation and/or Classification procedures have been conducted is submitted and subsequently resolved.***
 - An appeal is the means by which a complaint that an International Sport Federation has made an unfair decision during the Classification process is resolved.
 - Whether or not a decision is unfair is determined by an Appeal Panel, and this panel sits separately from the classification Commission


Who can Appeal?

- An Appeal may only be made by one of the following bodies:
 - a **National Body; or**
 - a **National Paralympic Committee**
- Judicial Commission CANNOT make a determination about the sport class and sport class status of an athlete.
- It CAN require the Classification Evaluation to be repeated with any procedural errors or omissions corrected


M.O.K. (F/53)

A CASE OF CLASSIFICATION

- Current diagnosis
 - Lt L/Ext weakness and shortening
 - Osteomyelitis of Lt femur and pelvis,
 - S/P Total hip replacement


장애인 배구 등급분류 신청서

최초신청 ☒ 기존신청 ☐

	성명: 김명옥	
	성명(영문): kim myeom gok	
	생년 월일: 681015	
	주 소: 중남 보령시 성주면 성주 중앙길59	
연 락 처: 010-4483-5220		e-mail:
성 별	남 <input type="checkbox"/> 여 <input checked="" type="checkbox"/>	
신청날짜	1차 : 4월10(토) 10:00~12:00 <input type="checkbox"/> 13:00~15:00 <input type="checkbox"/> 15:00~17:00 <input type="checkbox"/>	
	2차 : 4월17(토) 10:00~12:00 <input checked="" type="checkbox"/> 13:00~15:00 <input type="checkbox"/> 15:00~17:00 <input type="checkbox"/>	
등급분류비용 납입 하나은행 725-910010-68904(예금주: 대한장애인배구협회) / 2만원		


등급분류 심사

장애등급 (장애인복지법)	유 <input checked="" type="checkbox"/> 무 <input type="checkbox"/>	발급일	1994년 08월 12일
장애종류	지체	장애급수	3급
소속팀명	중남연맹여자좌식배구단		
신청자 서명	김명옥(인)	지도자 서명	백노원(인)

* 장애유형 및 장애 특이사항

정각 지체장애 중복

위와 같이 등급분류 신청서를 제출합니다.

2021년 04월 06일
 신청자 : 김명옥 

Overview of Case

Personal Details

- Family Name: K**
- Given Name: M**** O*
- Date of birth: Oct 15th 1968
- Place of classification: Cheonan Sports Rehabilitation Center
- Date of classification: APR 17 2021


Sports History

- Sports Class: VS1 (New) for sitting volleyball
- Classifiers:
 - Ji Woong Park, M.D. (Level 1 national/regional classifier)
 - Chang Ryeol Lee, PT (Level 1 national/regional classifier)
- Previous Sport Class: none
- Previous Sports Hx: none

Chief Complaints

- Lt. leg weakness and shortening
- Impaired PROM of Lt. hip joint
- Gait disturbance

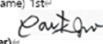
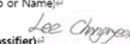
장애인 좌식배구 등급분류서 (협회제출용) <2>

	성명(국문) (Korean name) ⁴²	김명옥 ⁴³	국적 ⁴² (Nationality) ⁴²	대한민국 ⁴³
	성(영문) ⁴² (Family name) ⁴²	Kim ⁴³	이름(영문) ⁴² (Given name) ⁴²	Myoeng Ok ⁴³
	생년월일 ⁴² (Date of Birth) ⁴²	1968년 10월 15일	성별 ⁴² (Sex) ⁴²	여 ⁴³
	주소 ⁴² (Address) ⁴²	충남 보령시 성주면 성주 중앙길 59 ⁴³	핸드폰 ⁴² (Mobile) ⁴²	010-4438-5220 ⁴³
	심사일시 ⁴² (Date of Classification) ⁴²	2021년 4월 17일 ⁴³	심사장소 ⁴² (Place of Classification) ⁴²	천안장애인종합체육관 ⁴³

등급분류 심사 ⁴²			
장애 등급 ⁴² (장애인복지법) ⁴²	유 V 무 □ ⁴³	발급일 ⁴²	1994년 8월 12일 ⁴³
장애 종류 ⁴²	(지체)장애 ⁴³	장애 급수 ⁴²	(3)급 ⁴³
소속팀명(주소) ⁴²	충남연결여자좌식배구단 ⁴³		
신청자 서명 ⁴²	김명옥 (인) ⁴³	지도자 서명 ⁴²	박노철 (인) ⁴³

등급분류 판정 결과 ⁴²			
Sport Class ⁴²	VS 2 □ ⁴³	VS 1 V ⁴³	Not Eligible □ ⁴³
Sport Class Status ⁴²	P □ ⁴³	R □ ⁴³	N V ⁴³
Valid Until (if R, N) ⁴²	Next international tournament ⁴²	Equipment used in sport (if any) ⁴²	None ⁴³

심사 내용 ⁴²																																					
Medical Diagnosis⁴² Lt. leg weakness d/t osteomyelitis of femur and pelvis ⁴⁴ Hip joint replacement with instability (-) ⁴⁴ D. onset: childhood after adverse effect of injection ⁴⁴ DEX ⁴⁴ Circumference of calf 34/30 cm, thigh 41/38 cm ⁴⁴ Leg length discrepancy: 6.1% (82/77 cm) ⁴⁴	Description for the Functional Impairments⁴² Loss of muscle points: 26점 → VS1 ⁴⁴ <table border="1"> <thead> <tr> <th>LOWER LIMBS</th> <th>Right</th> <th>Left</th> </tr> </thead> <tbody> <tr> <td>Hip</td> <td>Flexion</td> <td>2</td> </tr> <tr> <td></td> <td>Extension</td> <td>2</td> </tr> <tr> <td></td> <td>Abduction</td> <td>2</td> </tr> <tr> <td></td> <td>Adduction</td> <td>2</td> </tr> <tr> <td>Thigh</td> <td>Flexion</td> <td>2</td> </tr> <tr> <td></td> <td>Extension</td> <td>2</td> </tr> <tr> <td>Shin</td> <td>Flexion</td> <td>2</td> </tr> <tr> <td></td> <td>Extension</td> <td>2</td> </tr> <tr> <td>Heel</td> <td>Plantar Flexion</td> <td>2</td> </tr> <tr> <td></td> <td>Plantar Flexion</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>26</td> </tr> </tbody> </table> Total Muscle Points Loss: 26	LOWER LIMBS	Right	Left	Hip	Flexion	2		Extension	2		Abduction	2		Adduction	2	Thigh	Flexion	2		Extension	2	Shin	Flexion	2		Extension	2	Heel	Plantar Flexion	2		Plantar Flexion	2			26
LOWER LIMBS	Right	Left																																			
Hip	Flexion	2																																			
	Extension	2																																			
	Abduction	2																																			
	Adduction	2																																			
Thigh	Flexion	2																																			
	Extension	2																																			
Shin	Flexion	2																																			
	Extension	2																																			
Heel	Plantar Flexion	2																																			
	Plantar Flexion	2																																			
		26																																			

좌식배구 등급분류위원 [서명] ⁴²	
등급분류위원(Signature, Stamp or Name) 1st ⁴² Ji Woong Park MD, PhD. ⁴⁴ 	등급분류위원(Signature, Stamp or Name) ⁴² Chang Ryeol Lee, PT ⁴⁴ 
(Level 1 national/regional classifier) ⁴²	(Level 1 national/regional classifier) ⁴²

대한장애인배구협회⁴⁴

Underlying Health Condition (I)

Past Medical History

- Personal: Right handedness
- Occupation: Housewife
- Premorbidity: Outdoor cane gait d/t Lt. leg weakness
- HTN / DM / hepatitis / Tbc (+/-/-/-)
- Physical disability classification in S. Korea: Mobility impairment 3 level (Aug 14th 1994)

● Current diagnosis

- Lt leg weakness d.t osteomyelitis of femur and pelvis, S/P total hip replacement
- Lt lower limb shortness

D. onset: childhood,

By adverse effect of injection(?)

Eligible Impairment

- **Loss of muscle points both lower limbs**
- **Limb Length Difference** between right and left legs
- **Impaired Passive Range of Movement (PROM) of Lt hip**

Functional Test results

- **Manual muscle testing (MMT)**

LOWER LIMBS		Muscular Strength	
		Right	Left
Hip	Flexion	5	2
	Extension	5	2
	Abduction	5	2
	Adduction	5	2
Knee	Flexion	5	3
	Extension	5	3
Ankle	Dorsiflexion	5	4
	Plantar Flexion	5	4
Total Muscle Points Loss		26	

- **Muscle atrophy**

- Thigh circumference (R/L)
: 41cm/38cm → 3cm difference
- Calf circumference (R/L)
: 34cm/30cm → 4cm difference

- **Electrodiagnostic study** (21 APR 2021)

- **Lt. sciatic nerve lesion** at or around thigh lesion, peroneal nerve was more involved than tibial nerve, moderate in nature

Electrodiagnostic laboratory Report
Joong-Ang Rehab. clinic
Dae-cheon dong, Boryung
041-935-9991

Patient: Kim Myeong-Ok
Sex: Female
Age: 52
Height: cm
Weight: kg
I.D.#: 210422
Ref. M.D.:

Physician: SJ Lee M.D.
Test Date: 21/04/22

Motor Nerve Study

Left Peroneal Nerve

Rec Site: EDB Lat (ms)
Stim Site
Ankle NR
Fib.Head NR

Dur (ms) Amp (mV) Area (mVms) Dist (mm) C.V. (m/s)

Left Tibial Nerve

Rec Site: AH Lat (ms)
Stim Site
Ankle 3.5
Pop.Fos. 10.6

Dur (ms) Amp (mV) Area (mVms) Dist (mm) C.V. (m/s)
4.8 5.0 11.8
5.3 6.1 16.3 370 52.2

Sensory Nerve Study

Left Peroneal Nerve

Rec Site: dors.ft Lat (ms)
Stim Site
Lower leg NR

Pk Lat (ms) Amp (uV) Dist (mm) C.V. (m/s)

Left Sural Nerve

Rec Site: Ankle Lat (ms)
Stim Site
mid calf 2.0

Pk Lat (ms) Amp (uV) Dist (mm) C.V. (m/s)
2.5 16.0

EMG Study

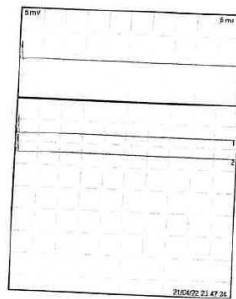
Name	Ins Act	Fibs	PSW	Fascics	Polyph	MU Amp	MU Dur	Config	Pattern	Recruit
L. Rectus Fem.	norm	none	none	none	none	norm	norm	norm	norm	dec
L. Biceps S.H.	inc+	none	none	none	none	norm	norm	norm	norm	dec
L. Tibialis Ant.	inc+	1+	1+	none	none	norm	norm	norm	norm	dec
L. Peroneus Ln.	inc+	1+	1+	none	inc+	dec	dec	poly	norm	dec
L. Gastroc.Med.H.	norm	none	none	none	none	norm	norm	poly	norm	dec
L. Abd.Hallus	norm	none	none	none	none	norm	norm	norm	norm	dec
L. Ext.Dig.Br.	inc+	1+	1+	none	inc+	dec	dec	poly	norm	dec

Patient: Kim Myeong-Ok
I.D.#: 210422

Test Date: 21/04/22

page 1

L. Peroneal MNC



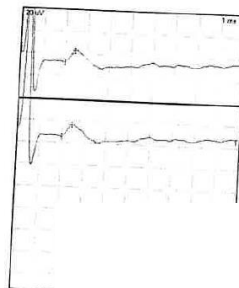
L. Tibial MNC



L. Peroneal SNC



L. Sural SNC



page 2

Patient: Kim Myeong-Ok
I.D.#: 210422

Test Date: 21/04/22

Summary/Interpretation:

Left sciatic nerve lesion at or around the thigh, moderate in nature.
- more involved of peroneal nerve portion

2022/5/5/22

Functional Test results

- **Passive Range of Motion (ROM)**

LOWER LIMBS		Range of Motion
		Left
Hip	Flexion	100
	Extension	0
	Abduction	45
	Adduction	30
Knee	Flexion	135
	Extension	0
Ankle	Dorsiflexion	20
	Plantar Flexion	45

- **Limb length difference**

From the ASIS to the most caudal point of the medial malleolus

- **Leg lengths (R/L)**

: 82cm/77cm → 6.1% difference

- **Non-eligible [cf. VS2: 7-32%]**



Other physical examination

1. Sensory

- Hypesthesia/hypoalgesia (+/+) on Lt anterior calf and foot dorsum
- Anesthesia/analgesia (-/-)
- Paresthesia (-)

2. Spasticity:

- upper 0 / 0
- lower 0 / 0

3. Reflex

- Knee jerk (++) Ankle jerk (++)
- Hoffman sign (- / -)
- Babinski sign (- / -)
- Ankle clonus (- / -)

4. Functional level

- side rolling: +/+
- come to sit: independent
- sitting balance: G/G
- sit to stand: independent
- standing balance: G/P

5. Gait

- Outdoor level cane gait with slight limping

6. Orthosis

- Single cane

Observation on court

- Since she was a new player before official registration, court observation could not be performed in the actual game.
- However, she can perform most ParaVolley activities such as, Serving, Digging, Overhead Passing/Setting, Diving, and Moving on court in the sitting position.

Impairment Assessment methods and results

- **Loss of Muscle Points both lower limbs (VS1)**
 - 1) **Manual muscle test (MMT)**
 - 26 points loss
 - 2) **Muscle atrophy measurements**
 - Thigh circumference (R/L): 41cm/38cm → 3cm difference, Calf circumference (R/L): 34cm/30cm → 4cm difference
 - 3) **Electrodiagnostic study** (21 APR 2021)
 - Lt. sciatic nerve lesion at or around thigh lesion, peroneal nerve was more involved than tibial nerve, moderate in nature
- **Limb Length Difference between right and left legs (Non-Eligible)**
 - 1) **Measure leg lengths from the ASIS to the most caudal point of the medial malleolus**
 - 82cm/77cm → 6.1%
- **Impaired Passive Range of Movement (Non-Eligible)**
 - 1) **PROM test of Lt hip joint**
 - Lt hip flexion 110 degree, Extension 0 degree
 - 2) **X-ray imaging test**
 - Total hip replacement of Lt hip
 - No definite instrument failure

Rationale for sport class allocation

- Neurological examination, including MMT, and electromyography demonstrated her lower extremity muscle paralysis. And the loss of muscle points was **26 points**, which corresponds to **Sport Class VS1** for ParaVolley.
- Shortening of the left leg length and impaired passive range of motion were observed, however, the impairment severity was **not** severe enough for **eligible** Sport Class of ParaVolley.

Thank you

