NEW PARA-CYCLING CLASSIFICATION (24/07/2009)

INTRODUCTION/EXPLANATION

Classification is mandatory within all Paralympic sports. The aim is to maximise the fairness of competition by regrouping athletes in classes/divisions that will allow them to compete against each other as equitably as possible. The current system for para-cycling has been in place since the beginning of the discipline. It is based on each disability, and then divided into the level of disability; blind & visually impaired, locomotion problems, wheelchair users and cerebral palsy.

At the 1996 CP-ISRA World Games in Nottingham, informal discussions started around the possibility of IPC Cycling (now UCI Para-cycling) modifying its classification structure. The idea was to use a system based on functionality rather than disability; ie athletes would be classified/regrouped according to their cycling capacity rather than their disability. This would represent a major change of philosophy in the sport.

The IPC Cycling Chief Classifier, Mr. Jurgen Schmid along with many other classifiers, commission members, teams, doctors, and athletes started to work on the NFCS back in 1996. Since then, several steps have been taken:

- They have been in contact with CP-ISRA, ISOD, alpine skiing, swimming and table tennis, disciplines that have already introduced functional classifications;
- They have carried out a study on the biomechanics of cycling to establish the functional needs of the sport;
- They set up an initial structure, the principle of which they evaluated over several years alongside classification already carried out on the athletes themselves.
- They accumulated and analysed a significant amount of data;
- UCI made a presentation at the Nations Forum in Beijing in 2008 and collected proposals and suggestions;
- In South Africa in December 2008, the UCI presented the proposal to CP-ISRA classifiers in other disciplines that have already changed to functional classification to get their comments and suggestions for modifications;
- The UCI analysed the results of the 2007 Para-cycling World Championships and the 2008 Paralympic Games for time trial, kilo and pursuit in each division. comparing the old system and the new systems making sure the objective was achieved and viable for each division in prevision of the Games;
- The UCI presented the proposal to Dr. Peter Van de Vliet, Medical and Scientific Director of IPC last January;
- UCI classifiers made a final presentation to the Para-cycling Commission on April 25th.

These steps bring us to the official version of the New Functional Classification System. The basics and principles of this NFCS are:

- Establish classes according to the type of vehicle (bicycle, handcycle, tricycle, tandem) used, rather than the type of disability (CP, LC, HC, B&VI);
- The total number of classes/divisons would not be increased;

- Ensure viability of all divisions, both at World Championships and Paralympic Games;
- Ensure that cyclists compete more equitably with other cyclists, allowing the most talented cyclist and/or the most thoroughly prepared to win;
- Include more athletes, some of whom currently feel almost excluded from the existing system, which they consider unfair (most CP-ISRA 5 and 7 athletes);
- Move away from a "medical" system to a "functional" system;
- Based on evidence from the disciplines of biomechanics, kinesiology and physiology applied to the sport of cycling;
- Protect the most severely disabled athletes.

The qualification period for the next Paralympic Games and the Para-cycling World Cup season will start on January 1st 2010; the NFCS will be in place by then.

Explanation will be presented to nations in September, work on a Classification Guide has start and we will review athlete's classification at both the Road & Track 2009 Para-cycling World Championships in order to be ready for the next season.

Following this work, the next step will be to structure a guide, organise a training course for international classifiers and instructors to improve the level of classification, reduce the possibility of mistakes and standardise the function throughout the world.

PROPOSAL

The following guidelines determine in principle the class in which an athlete will compete. However, it is the classification team's prerogative to decide if an athlete needs to be moved in another class, less or more severely disabled, depending on their assessment of the athlete's ability to perform.

Determination of functional class

1. Documentation needed:
Documentation of the disability:
- Medical approved by a physician if necessary
- Medical History

Documentation of the result of the medical testing by classification panel

2. Testing (bicycle, tricycle):
Details of testing will be presented right after the classes descriptions

CLASSES & DIVISIONS

To facilitate the comprehension of our sport by everyone (athletes, coaches and spectators) and provide some constancy among classes, we changed the terminology in the NFCS:

- 1st digit – letter indicating the group of functional disability;
  - B means Blind and visually impaired (they use a tandem);
  - C means Cycle and it includes athletes currently in LC 1-4 and CP 3-4 classes). They use a regular bicycle
  - T means Tricycle and it includes athletes in the CP 1-2 classes
  - H means Handcycle and it includes athletes who are currently in the HC A-C classes, as well as some LC2 and LC3 athletes would choose to use a handcycle rather than a regular bicycle.

- 2nd digit – number indicating the severity of the disability, "1" being the most severely disabled.
  - B 1-3 They are competing into one class – same as before
  - C 1-5 One less class than before
  - T 1-2 Same number of classes
  - H 1-4 One more class than before

- For a total number of 4 classes and 12 divisions, grand total of 24 divisions including men and women.

CYCLING CLASS PROFILES

Ad 1: Handbike Class H 1

H 1.1

- Tetraplegic with impairments corresponding to a complete cervical lesion at C6 or above
- Complete loss of trunk and lower limb function
- Limited extension of the elbow with a muscle score of 6 (total of both triceps)
- Limited handgrip
- Thermo-regulatory system limitations
- Impaired sympathetic nerve system
- Non-spinal cord injury, but functional ability profile equivalent to class H 1.1
- Recumbent position in handbike mandatory (AP-bikes)
- Severe spastic quadriplegic with/without athetosis/ataxic and elbow extension limitation (poor head and very poor trunk control)

H 1.2

- Tetraplegic with impairments corresponding to a complete cervical lesion at C7/C8 or above
- Complete loss of trunk and lower limb function
- Thermo-regulatory system limitations
- Impaired sympathetic nerve system
- Non-spinal cord injury, but functional ability profile equivalent to class H 1.2
- Recumbent position in handbike mandatory (AP-bikes)
- Severe spastic quadriplegic with/without athetosis/ataxic and no elbow extension limitation (poor to fair head and very poor trunk control)

Ad 2: Handbike Class H 2

H 2.1

- Paraplegic with impairments corresponding to a complete lesion from Th1 to Th3
- Very limited trunk stability
- Impaired sympathetic nerve system
- Non-spinal cord injury, but functional ability profile equivalent to class H 2.1
- Recumbent position in handbike mandatory (AP-bikes)
- Moderate quadriplegia with/without athetosis/ataxic. Poor trunk control, asymmetry in upper limbs

H 2.2

- Paraplegic with impairments corresponding to a complete lesion from Th4 to Th9/Th10
- Limited trunk stability
- Non-spinal cord injury, but functional ability profile equivalent to class H 2.2
- Recumbent position in handbike mandatory (AP-bikes)
- Moderate quadriplegia with/without athetosis/ataxic. Poor trunk control, symmetrical upper limbs, severe hemiplegia (non-ambulant), severe diplegia (non-ambulant) and athetosis/ataxic (moderate upper limb involvement, severe lower limb involvement)

Ad 3: Handbike Class H 3

- Paraplegic with impairments corresponding to a complete lesion from Th11 or below
- No lower limb function or limited function
- Normal or almost normal trunk stability
- Non-spinal cord injury, but functional ability profile equivalent to class H 3
- Incomplete loss of lower limb function, functional ability profile equivalent to class H3 or H4, with other disabilities, which prevent the safe use of a conventional bicycle, tricycle or the Kneeling position in a handbike
- Recumbent position in handbike (AP-bike)
- Severe diplegia and athetosis/ataxic (almost normal trunk and upper limb function, severe lower limb involvement), hemiplegic with spasticity Grade 2-3, lower limb more involved

Ad 4: Handbike Class H 4

- Paraplegic with impairments corresponding to a complete lesion from Th11 or below
- Double below or Double through knee amputee
- Single leg amputation (AK), minimal disability below knee amputation (BK)
- Incomplete loss of lower limb function, with other disabilities, which prevent the save use of a conventional bicycle or tricycle
- Kneeling Position (ATP-bike), in case of mobility reduction if prevents kneeling, the athlete can use a recumbent bike in H3
- Hemiplegic with spasticity Grade 2, lower limb more involved, mild to moderate diplegia or athetoids with almost normal trunk and upper limb function

Ad 5: Tricycle Class T 1

Neurological

Very poor

- Severe Hemiplegia, spasticity grade 4 in lower and upper limb
- Severe Diplegia, lower spasticity Grade 4 in both legs
- Severe athetosis or ataxic
- Severe locomotor dysfunction, can be mixed pattern (athetoid, spasticity or ataxic)
- Poor functional strength in trunk, and / or in all extremities
- Dynamic control and synchronization is poor
- Trunk rotation is very poor to poor
- Balance for cycling is very poor to poor (may use a tricycle)
- Athletes may require assistance with mounts and starts

Co-ordination

Very poor

- Getting off / on a bike difficult, need assistance. Very poor walking.
- Sitting on saddle without support of the handlebar not possible (Tricycle),
- Cycling in standing position not possible (Bi- and Tricycle).
- Severe limitation of pedalling cadence

Abilities

- Very poor (9-10 points).

Decrease in muscle strength

- more than 210 Points (Polio, peripheral neurological lesions incomplete Spinal Cord Lesion, no amputees, not able to ride a bicycle)

Comparable disabilities

- multiple impaired (e.g. amputation with brain damage)

Ad 6: Tricycle Class T 2

Neurological

Poor

- Hemiplegic, spasticity grade 4, lower limb more involved
- Moderate to severe Diplegic, lower spasticity Grade 3 in both legs
- Moderate to severe athetoid or ataxic

Co-ordination

Poor

- Problems in getting off / on bike may need assistance.
- Poor walking
- Limitation of pedalling cadence
- Standing off the saddle just a short time
- Problems with cycling in walking speed

Abilities

- Poor (7-8 points)

Decrease in muscle strength

- between 160 and 209 Points (Polio, peripheral neurological lesions incomplete Spinal Cord Lesion, no amputees, not able to ride a bicycle)

Comparable disabilities

- multiple impaired (e.g. amputation with brain damage), but fluently movement and control of the bike

Ad 7: Cycling Class C 1

Neurological

Very poor

- Severe Hemiplegia, spasticity grade 4 in lower and upper limb
- Severe Diplegia, lower spasticity Grade 4 in both legs
- Severe athetosis or ataxic
- Severe locomotor dysfunction, can be mixed pattern (athetoid, spasticity or ataxic)
- Poor functional strength in trunk, and / or in all extremities
- Dynamic control and synchronization is poor
- Trunk rotation is very poor to poor
- Balance for cycling is very poor to poor (may use a tricycle)
- Athletes may require assistance with mounts and starts

Co-ordination

Very poor

- Getting off / on a bike difficult, need assistance. Very poor walking.
- Sitting on saddle without support of the handlebar not possible (Tricycle),
- Cycling in standing position not possible (Bi- and Tricycle).
- Severe limitation of pedalling cadence

Abilities
- Very poor (9-10 points)

Amputation, Impairment as described in 2b 2 “very poor”

- Single amputation of leg, AK, and arm, AE or BE, on same side or diagonal, with no use of a prosthesis (237 points)
- Double TK amputation with the use of prostheses (246 points)
- Double amputation BE + Single amputation AK, no prosthesis (237 points)
- Single AK amputation + Single BE amputation with the use of prosthesis (210 points)

- Comparable incomplete spinal cord injury by point score
- Comparable multiple imparied with a tested point score more than 210 points.

Ad 8: Cycling Class C 2

Neurological

Poor
- Hemiplegic, spasticity grade 4, lower limb more involved
- Moderate to severe Diplegic, lower spasticity Grade 3 in both legs
- Moderate to severe athetoids or ataxic

Co-ordination

Poor
- Problems in getting off / on bike may need assistance.
- Poor walking
- Limitation of pedalling cadence
- Standing off the saddle just a short time
- Problems with cycling in walking speed

Abilities
- Poor (7-8 points): very limited function

Decrease in muscle strength
- between 160 and 209 Points (Polio, peripheral neurological lesions incomplete Spinal Cord Lesion, HMSN, MS)

Amputation, Impairment as described in 2b 2, “poor”
- Single AE amputation with or without use of prosthesis + Single TK amputation with the use of prostheses (177 points)
- Double amputation BE +Single amputation TK with the use of a lower prosthesis (177 points)
- Double BK amputation with the use of prostheses + Single AE amputation without the use of upper limb prosthesis (174 points)
- Single amputation AK, no prosthesis, may have a stump support (183 points)
- Comparable impairments:
- Multiple impairments (e.g. amputation with brain damage), but fluently movement and control of the bike.
- Limited ROM of the hip or know such that a functional full revolution of the crank is no possible. In this case, the radius of crank must be limited to 0 cm.

Ad 9: Cycling Class C 3

Neurological

Poor to fair

- Hemiplegic with spasticity Grade 3, lower limb more involved
- Monoplegic, spasticity grade 3 in single lower limb
- Moderate Diplegic, lower spasticity Grade 2 in both legs
- Moderate athetoids or ataxic

Co-ordination

Poor to fair (C3)

- Independent by getting off / on bike, but with athetoid or dystonic movements

Abilities

- Poor to fair (5-6 points): limited function

Amputation, Impairment as described in 2b 2 "poor to fair"

- Single AE amputation, no prosthesis +Single BK amputation with the use of prosthesis (114 points)
- Single TK amputation with the use of a prosthesis + Single BE amputation (150 points)
- Single amputation TK, with the use of prosthesis (123 points)
- Double amputation BK, with the use of prostheses (120 points)

- Comparable multiple impairments with a tested point score between 110 and 159 points.

Ad 10: Cycling Class C 4

Neurological

Fair

- Hemiplegic with spasticity Grade 2, lower limb more involved
- Mild to moderate Diplegic, lower spasticity Grade 1 in both legs
- Mild to moderate athetoids

Co-ordination:

Fair:

- Independent by getting off/on bike with slight athetoid or dystonic movements

Abilities:

- Fair (3-4 points): slight limited function

- Limited ROM of the hip or knee such that a normal functional full revolution of the crank is not possible. In this case, it is the cyclist's option to shorten the crank to the optimal size.

Amputation , Impairment as described in 2b 2 “fair”:

- Single amputation BK with the use of prosthesis + Single BE amputation with or without the use of prosthesis (87 points)
- Single amputation BK, with the use of prosthesis (60 points)
- Double amputation BE with or without the use of a prosthesis that allows as much functional contact as possible to the handlebar (54 points, exception in refer to the points)

- comparable multiple impairments with a tested point score between 60 and 109 points.

Ad 11: Cycling Class C 5

Neurological

Fair to normal

- Major and minor neurological signs
- Minimally affected diplegic with spasticity grade 1 or 1+
- Truly ambulant hemiplegic with spasticity grade 1 or 1+
- Monoplegic and minimal athetoids
- Possible loss of function by uncoordinated hands or one leg

Co-ordination

Fair to normal

- Very slight signs of inco-ordination on the bike (not normal function)

Abilities

- Fair to normal (0-2 points): mostly functional but not normal, major and minor signs

Amputation, Impairment as described in 2b 2 “fair to normal”

- Single amputation AE, with or without prosthesis, no functional grip (54 points)
- Single amputation BE with the use of a prosthesis

- Minimal disability: Amputation of all fingers and thumb (through MCP) or amputation of more than half foot (forefoot). In the case of a single AE-, BE-amputation or a single upper limb dysmelia, the minimal impairment is met if all fingers and the thumb of one hand is missing through the MCP joint or other impairments who are equivalents, without a functional grip. As a proof of the loss of functional grip, the affected athlete will not be able to operate handlebar mounted gear and brake levers with the affected or impaired limb.

Ad 12: Tandem Class B

- Blind & Visual Impaired (VI) (B1, B2, minimal handicap B3 according the IBSA rules)

TESTING PROCEDURE (BICYCLE, TRICYCLE)

2a - Neurological Impairments, congenital or acquired brain injury
2b - Amputations
2c - Incomplete Tetra- and Paraplegics and those with locomotors impairments

2a 1. Neurological tests

For spasticity, athetosis, ataxic and mixed forms, by standing, running, and by bench tests, to assess the impairment level.

Very poor (T1, C1)
- Severe Hemiplegia, spasticity grade 4 in lower and upper limb
- Severe Diplegia, lower spasticity Grade 4 in both legs
- Severe athetosis or ataxic
- Severe locomotor dysfunction, can be mixed pattern (athetoid, spasticity or ataxic)
- Poor functional strength in trunk, and / or in all extremities
- Dynamic control and synchronization is poor
- Trunk rotation is very poor to poor
- Balance for cycling is very poor to poor (may use a tricycle)
- Athletes may require assistance with mounts and starts

Poor (T2, C2)
- Hemiplegic, spasticity grade 4, lower limb more involved
- Moderate to severe Diplegic, lower spasticity Grade 3 in both legs
- Moderate to severe athetoids or ataxic

Poor to fair (C3)
- Hemiplegic with spasticity Grade 3, lower limb more involved
- Monoplegic, spasticity grade 3 in single lower limb
- Moderate Diplegic, lower spasticity Grade 2 in both legs
- Moderate athetoids or ataxic

Fair (C4)
- Hemiplegic with spasticity Grade 2, lower limb more involved
- Mild to moderate Diplegic, lower spasticity Grade 1 + to 2 in both legs
- Mild to moderate athetoid

Fair to normal (C5)
- Major and Minor signs
- Minimally affected diplegic with spasticity grade 1
- Truly ambulant hemiplegic with spasticity grade 1
- Monoplegic and minimal athetoids
- Possible loss of function by no coordinated hand movement or one leg movement

2a 2. Coordination

Coordination will be tested on and off a bicycle. Cyclist with neurological impairment will be classified only by a functional profile as defined as follows:

Very poor (C1)
- Getting off / on a bike difficult, need assistance
- Very poor walking
- Sitting on saddle without support of the handlebar is not possible (Tricycle)
- Cycling in standing position is not possible (Bi- and Tricycle)
- Severe limitation of pedalling cadence

Poor (C2)
- Problems in getting off / on bike may need assistance
- Poor walking
- Limitation of pedalling cadence
- Standing off the saddle for just a short time, problems with cycling in walking speed.

Poor to fair (C3)
- Independent by getting off / on bike, but with athetoid or dystonic movements
- Almost normal walking with dystonic or athetoid movements

Fair (C4)
- Independent by getting off/on bike with slight uncontrolled movements
- Normal walking with very slight dystonic or athetoid movements

Fair to normal (C5)
- Very slight signs of no co-ordination on the bike (not normal function)
- Normal walking

2a 3. Abilities
0 points for normal ability
1 point for limited ability

- Starting
- Steering
- Shifting
- Braking
- Deceleration before and acceleration out of a turn
- Pedalling co-ordination
- Power Transmission on crank
- Speed control
- Standing position
- Aerodynamic position

- Very poor (9-10 points): C1, T1
- Poor (7-8 points): C2, T2
- Poor to fair (5-6 points): C3
- Fair (3-4 points): C4
- Fair to normal (0-2 points): C5

A summary of all tests above will result the appropriate class.

2b Amputations

2b 1. Measuring of amputation
- AK (above knee)
- BK (below knee)
- AE (above elbow)
- BE (below elbow)
- TK (through knee)
- Combinations

2b 2. Impairments

Very poor (class C1), > 210 points.
- Single amputation of leg, AK, and arm, AE or BE, on same side or diagonal, with no use of a prosthesis (237p)
- Double TK amputation with the use of prostheses (246p)
- Double amputation BE + Single amputation AK, no prosthesis (237p)
- Single AK amputation + Single BE amputation with the use of prosthesis (210p)

Poor (class C2), 160-209 points.
- Single AE amputation with or without use of prosthesis + Single TK amputation with the use of prostheses (177 points)
- Double amputation BE +Single amputation TK with the use of a lower prosthesis (177 points)
- Double BK amputation with the use of prostheses + Single AE amputation without the use of upper limb prosthesis (174 points)
- Single amputation AK, no prosthesis, may have a stump support (183 points)

Poor to fair (class C3), 110-159 points.
- Single AE amputation, no prosthesis + Single BK amputation with the use of a prosthesis (114 points)
- Single TK amputation with the use of a prosthesis + Single BE amputation (150 points)
- Single amputation TK, with the use of prosthesis (123 points)
- Double amputation BK, with the use of prostheses (120 points)

Fair (class C4), 60-109 points.
- Single amputation BK with the use of prosthesis + Single BE amputation with or without the use of prosthesis (87 points)
- Single amputation BK, with the use of prosthesis (60 points)

Fair to normal (class C5), 20-59 points.
- Single amputation AE, with or without prosthesis, no functional grip (54 points)
- Single amputation BE with the use of a prosthesis
- Double amputation BE with or without the use of a prosthesis that allows as much functional contact as possible to the handlebar (54 points)

- Minimal disability: Amputation of all fingers and thumb (through MCP) or amputation of more than half foot (Lisfranc line). In the case of a BE amputation or dysmelia at lower limb, minimal disability is met if all fingers and the thumb of

one hand are missing through the MCP joint or other disabilities who are equivalent.

2c Spinal cord injury & Locomotors impairments

Polio, MS, peripheral paralysis, paresis, other neurological conditions, combinations.

2c 1. Muscle Function testing (MFT)

Muscle testing (3-5) (<3 not functional=0).
The muscles should be tested as far as possible in the functional range of motion:

MFT 0-2 = 3
MFT 3 = 2
MFT 4 = 1
MFT 5 = 0

The above score (0-3) will be multiplied by a factor of importance (due to the biomechanical requirements of cycling)

Lower limb:

- Hip flexion (Factor 6) Tested in the range of 60° flexion to 110° flexion
- Hip extension (Factor 10) Tested in the range of 110° flexion to 60° flexion
- Hip abduction (Factor 2) Tested with a half hip flexed leg
- Hip adduction (Factor 2) Tested with a half hip flexed leg
- Knee extension. (Factor 14) Tested in the range of 115° to 30° flexion
- Knee flexion (Factor 7) Tested in the range of 30° flexion to 115° flexion
- Ankle dorsal flexion (Factor 6) Tested in the range of 5° out of neutral position
- Ankle plantar flexion (Factor 6) Tested in the range of 5° out of neutral position
- Supination (Factor 4), Isometric testing
- Pronation (Factor 4), Isometric testing

Max. 183 Points for a lower limb

Upper limb

- Shoulder Abduction (Factor 1)
- Shoulder Adduction (Factor 1)
- Shoulder Extension (Factor 3)
- Elbow extension (Factor 2)
- Elbow flexion (Factor 2)
- Wrist extension (Factor 1)
- Wrist flexion (Factor 1)
- Fingers 2 – 5 flexion (Factor 3)
- Fingers 2 – 5 extension (Factor 1)
- Thumb opposition (Factor 2)
- Thumb extension (Factor 1)

Max. 54 Points for an upper limb

Trunk

- Erector Trunci, lumbal and thoracal (Factor 6)
- Neck extension (Factor 2)
- Serratus Anterior (Factor 1)
- Scapula Adduction (Factor 1)

Max. 30 Points for trunk

2c 2. Test results

Very poor
- more than 210 points

Poor
- between 160 – 209 points

Poor to fair
- between 110 – 159 points

Fair
- between 60 – 109 points

Fair to normal
- between 20 – 59 points

2c 3. Joint mobility

The range of movement for the limbs is defined of the biomechanical requirement for cycling and multiplied by a factor of importance.

- **Hip** (restricted extension and flexion) Factor 22

Functional motion between 85° – 135° flexion

0 = 50°
1 = < 50°
2 = < 25°
3 = < 85° out of range of functional motion

- **Knee** (restricted extension and flexion) Factor 22

Functional motion between 50° – 110°

0 = > 60°
1 = < 60°
2 = < 30°
3 = < 50° out of range of functional motion

- **Ankle**

Plantar- / Dorsiflexion: Factor 13

(Restricted joint out of neutral position in both directions)
Functional motion 10° dorsiflexion to 10° plantarflexion (20°)

0 = 20°
1 = < 20°
2 = < 5°
3 = 0° (ankylosis)

Pronation / Supination: Factor 4

0 = normal
1 = restricted
2 = minimal
3 = no function

Max. 183 Points for a lower limb, if complete without function

- **Shoulder** (range of motion in Flexion)

Functional motion between 80° – 120° Flexion

Flexion (Anterior) glenohumeral: Factor 6

0 = 40° (80° - 120°)
1 = < 40° (80° - 120°)
2 = < 20° (80° - 120°)
3 = restricted between 0° – 80° (out of range of functional motion)

- **Elbow** (range of motion): Factor 3

Functional motion between 20° – 80° flexion

0 = 60° (20° – 80°)
1 = 40° (20° – 80°)
2 = 20° (20° – 80°)
3 = 0° – 20° (20° – 80°)
3 = not functional, fixed in position > 80° flexion
2 = almost not functional, fixed in position < 20° flexion

Movement from neutral position to pronation (90°): Factor 1

0 = 90°
1 = 60°
2 = 45°
3 = fixation in supination

- **Wrist**: Factor 1

  Functional movement measurement between 30° dorsiflexion and 30° plantarflexion (60°)

  0 = 60°
  1 = > 20°
  2 = < 20°
  3 = restriction out of functional movement

- **Finger and thumb:**

Functional extension finger, Extension thumb (able to extend to neutral position, able to release handlebar or brake): Factor 2

Yes 0 No 1

Flexion: Factor 5

0 = all fingers and thumb movement, functional full grip
1 = in two fingers in MCP or PIP or in thumb no movement
2 = in three fingers or thumb and one finger no movement
3 = all fingers and thumb no functional grip

Max. of 54 Points for an upper limb if complete without function

Torso, Neck and Head: **Factor 10** max points Torso, Neck and Head: 30

0 = Normal aerodynamic position on bike possible
1 = Normal aerodynamic position possible, but restricted torso (restricted breathing)
2 = Restricted aerodynamic position on bike of cause restricted movement of neck, lower back or torso. In case of limited Hip Flexion count only hip mobility test!
3 = no aerodynamic position possible

- **Leg length difference:** Factor 20 **max points leg length difference: 60**

0 = normal to 7 cm
1 = more than 7 cm to 12 cm
2 = 12 cm to 17 cm
3 = more than 17 cm

Assessment of the muscle test and joint testing

The joint movement and the muscle testing will give a point score. When a function is limited by joint restriction as well as a muscle weakness, the most limited function will count. If a joint or muscle can't be used functional (e.g. a total restricted hip joint who does not allow a functional knee movement, arm with no contact to handlebar) his score is the maximum amount or the whole limb would get the maximum amount. If a lower limb is missing, the cyclist will get the maximum points for missing lower limb. In the case of a single upper limb impairment, the maximum points a cyclist can get is 59 points.

Assessment of the tests:

Minimal disability is 20 Points. 267 Points means at this stage the maximum impairment. The different score of each class is defined in the sport class. For cyclist with head injuries (e.g. neurological impairment) where a point system is not appropriate, a profile as defined in the classes, tested through functional (as far as possible functional) co-ordination tests, will decide the sport class.

- **Muscle strength tests and joint movement tests will give a point score**
- **Neurological tests, Co-ordination tests and Abilities will give a profile**
- **Supports, adaptations and variations to the bicycle may add or reduce a point's score or may change a class.**
- **Observation in practice may alternate the result:**

  General impression of the cyclist
  - athlete position
  - performance

  Adaptations
  - frame
  - brake system
  - pedal system, toe clip position
  - handlebar
  - saddle

  The classifier must be able to assess the cyclist regardless of his equipment and performance. Medical reasons whit significant influence in the athlete position on the bike and his performance can change the athlete class.

Original document in English