EVIDENCE-BASED CLASSIFICATION - CURRENT BEST PRACTICE

Based on:
Tweedy, S.M. (2009), Appendix C - Assessing Extent of Activity Limitation Resulting from Impairment: In IPC Athletics Classification Project for Physical Impairments: Final Report - Stage 1, Tweedy, S.M., and Bourke, J. (Ed.) IPC Athletics, Bonn (pp. 74-6)
The above document can be retrieved from the IPC website (sports – IPC Athletics – Classification)

THE MODEL

The purpose of a Paralympic Sport classification system is to minimise the impact of impairment on the outcome of competition, so that the athletes who succeed in competition are those with best, anthropometry, physiology and psychology and who have enhanced them to best effect (training hard, quality coaching).

In order to achieve this purpose, the concept of sport classes aims to classify athletes according to the extent of activity limitation resulting from the impairment. In other words, place athletes into classes according to how much their impairment affects core determinants of sport proficiency or how much their impairment impacts on performance. Ideally the methods used to assess and classify impairments should be reliable and be based on research indicating how much impairments of varying type, location and severity impact on the core activities of the sport (i.e. Athletics: running, jumping, throwing and wheelchair pushing).

This ideal approach is called an evidence-based system of classification and is defined by 2 main components:
- the system has a clearly stated purpose (to promote participation in sport by people with disabilities by minimising the impact of impairment on the outcome of competition); and
- empirical evidence indicates that the methods used for assigning class will achieve the stated purpose (objective, reliable methods for measuring both of the core constructs – impairment and activity limitation).

For more detail on evidence-based classification, the reader is referred to the IPC Position Statement 'Background and Scientific Rationale for Classification in Paralympic Sport', which is part of
CURRENT BEST PRACTICE – ASSESSING ACTIVITY LIMITATION RESULTING FROM IMPAIRMENT

Currently such research permitting true evidence based classification (as defined) does not exist. This research is needed and has been initiated in a number of Paralympic Sports. In the absence of research evidence, the current best practice for estimating the extent of activity limitation resulting from impairment requires experts in classification to assess four key areas:

a. Impairment(s) – these tests include, but are not limited to:
   1. manual muscle test scores for individual movements (e.g., elbow flexion, elbow extension), assessment of hypertonia at different joints, residual limb length and range of movement for athletes with physical impairment;
   2. assessment of static and dynamic visual acuity, visual field, motion detection, contrast sensitivity, and colour vision in athletes with visual impairment; or
   3. testing of sport intelligence (generic name for component of intellectual functioning or cognition that relate to performance, such as response process, manner and content; executive functioning; and attention/concentration) for athletes with intellectual impairment.

b. Novel activities – these are new activities to the athlete which reflect the impairment related testing of the athlete and are unlikely to have been practiced by the athlete in the usual course of training for their sport. For example:
   1. foot tapping tasks, hand rubbing, isolated finger flexion/extension, static balance exercises in athletes with physical impairment;
   2. general orientation and object-discrimination tasks in athletes with visual impairment; or
   3. memory, visualization reaction time, spatial orientation tasks in athletes with intellectual impairment.
c. **Practiced activities** – these are activities which incorporate elements of strength, range of movement, coordination, intellectual functioning and/or any other sport-specific demands which are highly likely to have been practiced by the athlete in the course of training for their sport. For example:

1. assessment of wheelchair rugby players would include dynamic warm-up routines, ball catch and throw drills, wheelchair maneuverability and exercises;
2. assessment of goalball players would include audio-spatial orientation;
3. assessment of intellectual impaired table tennis players would include items such as service return, return to target skills, player positioning with respect to the table.

d. **Training history and other personal and environmental factors affecting how well the athlete will do the activity** - this will include questions about frequency and duration of training, periodization of training, coaching standard (e.g., coach qualifications), use of sports medicine / sports science services. Other factors such as athlete age and gender may also be relevant.

These areas of assessment are usually reported in most classification assessment sheets. However the relative importance of each of these areas of assessment varies according to the impairment type/s being assessed and the needs and demands of the sport.

When classifying e.g. amputation, leg length difference and short stature, measurement of impairment alone is usually sufficient, because these impairments are not training responsive – for example, the residual limb of a unilateral lower-limb amputee does not increase in length in response to training. Because they are not training responsive, an athlete who has trained hard cannot alter their impairment measure and be placed into a less impaired class. Because there is no risk that an athlete’s class can be influenced by training there is no need for tests that provide an indication of how well-trained an athlete is;

However in many cases assessment of impairment alone is not sufficient, for one or both of the following reasons:
Evidence indicates that some of the impairments may be exacerbated by disuse, inactivity or poor training. If impairment measures are training responsive, an athlete measured in an untrained state will have a more severe impairment measure than they would in a trained state, creating the possibility that they would be placed into a more impaired class when untrained, and a less impaired class when trained. If this occurred, it would defeat the purpose of classification, which aims to reward athletes for hard training;

Athletes do not have an impairment profile that fits exactly with a single class profile. For example an athlete may have a combination of impairment types, such as impaired muscle power and impaired range of movement; or a topographical distribution of impairment that does not fit a class profile, such as often occurs with brain injury, incomplete spinal cord injury, spina bifida or polio.

In instances where impairments may be training responsive or an impairment profile does not exactly fit a class, assessment of impairment alone will not be sufficient to allocate a class. This is not to say that assessment of impairment is not necessary – thorough assessment of impairment is essential in order to make sense of the subsequent activity tests.

However, in addition to impairment tests, assessment of novel physical activities can be used to provide the classification team with an indication of the impact of an athlete’s impairments on movement, independent of training. Performance on these tests can be compared with performance of physical activities which are integral to training for the sport – so called, sports-specific tests.

Athletes who are very well trained would be expected to perform better on sports-specific physical tests than they would on novel physical activities, while athletes who are not well trained would have relatively little difference between sports-specific and novel physical tests, because all tests will be essentially novel. Additionally, both novel and practiced physical activities provide classifiers with an overall impression of how the various components of impairment combine to affect movement.
Assessment of training history and other personal factors help in the assessment of how well trained an athlete is. Used in this way, these various methods of assessment can assist classifiers ensure that athletes are placed in the correct class, whether they are well trained are not.

SPECIAL CASES

Assessment of athletes affected by pain

The classification process comprises a number of tests of impairment as well as motor tasks that aim to reflect how much an impairment will impact on sports performance. The results of these tests are the basis of decision making in classification.

The physical strain an athlete will experience while completing these tests will, in general, be considerably less than the physical strain they will experience when competing in the competitive sports arena. If an athlete experiences pain during classification that alters their performance of these tests, then the results of the tests are not valid and the athlete cannot be assigned a class. Without official classification, athletes cannot compete. It will be up to the classification panel on a decision to declare the athlete ‘Not Eligible’ for that sport either to allow the athlete to present for classification at later date.

Painful conditions which may prevent a classification panel from assigning a class may include temporary musculoskeletal trauma (e.g., strained medial ligament of the knee; immediate post-surgery situations), arthritis and fibromyalgia. Specific attention should be given to athletes that present with psychosomatic complaints and/or hypochondria with physical, visual and/or intellectual impairment as secondary health condition. These athletes typically should not be eligible to compete.

Assessment of athletes with progressive health conditions

Health conditions such as multiple sclerosis, Friedreich’s Ataxia and progressive loss of sight result in impairments of structure and function which are permanent (i.e. they will not completely resolve)
but which may change in severity. Often the rate of change is unpredictable.

When an athlete with a progressive health condition presents for classification, the goal should be to estimate how much activity limitation is caused by the athlete’s impairment in its current state, and class should be allocated on this basis. However the class status that an athlete is assigned should always be Review – that is an athlete with a progressive health condition and an unpredictable prognosis needs to be assessed at forthcoming competition. It is recommended that the sport identifies the timeframe in which such re-assessment should be considered.

**Assessment of impairment athletes who are young, inexperienced or recently injured**

Classification of athletes who are extremely well trained is much easier than athletes who are young, inexperienced or recently injured. This is principally because the impairment profile of an experienced athlete will generally be very stable, and also because classification panels can be confident that when they are assessing such an athlete, any activity limitation observed will be attributable to impairment, rather than to other factors such as lack of conditioning or poor technique for example.

For this reason classification panels should generally be quite conservative when classifying young, inexperienced or recently injured athletes. Caution can be exercised in two ways:

- **Sport Class status** - avoid assigning Confirmed sport class status to athletes who are young, inexperienced or recently injured. The following guidelines are useful in this regard:
  - Athletes with congenital motor disorders or who are injured when they are young should be allocated Review sport class status until they are judged to be skeletally mature;
  - The incomplete paraplegic should be Review sport class status until at least 18 months post injury;
  - The person with a brain injury should be Review sport class status until at least 4 years post injury;
  - New / inexperienced athletes should be Review sport class status until an appropriate training period has been completed (e.g., 6-12 months);
- Athletes with short stature should remain Review sport class status until 18yrs of age.

- When in doubt, assign the less impaired class - when an athlete who is young, inexperienced or recently injured is close to a boarder-line between two classes, the less impaired of the two classes should be assigned and the athlete then observed in competition. If this decision is incorrect, one athlete will be disadvantaged for one competition. However, if the athlete is incorrectly placed into a more impaired class, all competing athletes in that class will be disadvantaged.

**Change in Medical Condition**

Many athletes have interventions that materially alter measures of impairment in order to assist with daily functioning. In instances when an athlete receives such an intervention after they have been classified (e.g., botox to reduce hypertonia; tendon releases; Harrington rods; corrective eye surgery), the athlete is obliged to notify the Head of Classification or Chief Classifier, independent of the sport class status allocated. This rule thus applies to classification of any status – New, Review or Confirmed. Failure to do so may be considered a case of intentional misrepresentation of skills and/or abilities as defined under the IPC Classification Code (section 11).