Introduction

This document outlines the main findings and key points of a recently concluded research project which aims to provide the basis for an evidence-based and sport-specific classification system for IBSA Judo. This is a key requirement of judo's inclusion on the Paralympic programme. All International Federations must ensure they meet the International Paralympic Committee's Athlete Classification Code to remain in the Paralympic Games. This is why IBSA embarked on the biggest and most comprehensive research project into classification in judo in the sport's history.

Work started in 2016. Independent researchers from the Vrije Universiteit Amsterdam - Dr. David Mann, Associate Professor and Kai Krabben, MSc, PhD Candidate – led the project.

For the last four years the research team have attended competitions, analysed data, carried out tests and experiments and surveyed hundreds of athletes, coaches, classifiers and referees to ensure the recommendations they made are based on facts and evidence as well as the collective experiences of the judo community. Their findings and recommendations will mean big changes for IBSA Judo in the future.

This document aims to summarise the key points and how IBSA is responding. The main purpose of the consultation is to ask everyone involved with IBSA Judo, whether they are an athlete, coach, IBSA member, national federation, classifier or referee, to share their feedback.

Background

Like many other Para sports, the classification system in judo has developed over time as it has become a global sport. Because of the visually demanding nature of grip fighting in judo, in IBSA Judo athletes start with a grip on their opponent already in place. This helps to make the sport less visually demanding and was thought to make the sport fairer for people who are completely blind. Therefore all eligible athletes in B1, B2 and B3 could compete against each other and that has been the case for some time.

In 2015, the International Paralympic Committee published the latest version of its Athlete Classification Code. This code was developed over two years after wide consultation with the IPC membership, classifiers and experts. The Code details how International Federations must deliver classification.

Shortly after the new Code was published the IPC introduced a new process for evaluating and deciding which sports should be on the Paralympic programme. Every four years sports must now apply to be on the Paralympic programme. The process includes a clear requirement for International Federations to show that they have evidence-based and sport-specific classification systems that meet The Code's requirements.

In early 2016 IBSA also noted the outcomes of: *Expert consensus statement to guide the evidence-based classification of Paralympic athletes with vision impairment: a Delphi study* carried out by scientists at Vrije Universiteit Amsterdam[1].

IBSA reviewed this preliminary research and decided later in 2016 to appoint a research team from the Vrije Universiteit Amsterdam to carry out the research and make recommendations for classification in judo. This would cover investigating the impact that different visual impairments had on performance in judo. In turn the researchers would be able to establish if the current minimum impairment criteria and classification system were correct, and if the testing used during classification appointments was appropriate and effective.

About the Vrije Universiteit Amsterdam and research team

The Vrije Universiteit Amsterdam is the official IPC Classification Research and Development Centre for Athletes with Vision Impairment.

The research for IBSA Judo was funded by IBSA and led by Kai Krabben and David Mann. Kai Krabben, MSc, is a PhD Candidate at the Faculty of Behavioural and Movement Sciences, Motor Learning and Performance. He is a sport scientist and judo coach.

Dr. Mann is the Director of the IPC Classification Research and Development Centre for Athletes with Vision Impairment and an Associate Professor at the Faculty of Behavioural and Movement Sciences, Motor Learning and Performance. He is an optometrist and sport scientist.

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[1] *Expert consensus statement to guide the evidence-based classification of Paralympic athletes with vision impairment: a Delphi study (*https://www.ibsasport.org/documents/files/136-1-Classification-of-VI-Paralympic-athletes---Ravensbergen.pdf), H J C (Rianne) Ravensbergen, D L Mann and S J Kamper, 2016, British Journal of Sports Medicine

What has happened to date?

After IBSA published details of the research project in 2016[2] Dr. David Mann and Kai Krabben began their work.

Dr. Mann presented on the progress of the project at the IBSA General Assembly in Cluj Napoca, Romania, in 2017. In 2019 the first results and early recommendations were presented in a special session to the IBSA General Assembly in Fort Wayne, USA by Dr. Krabben. The judo community was also invited to attend.

The final results and recommendations, which can be found on the IBSA website by clicking here or at https://www.ibsasport.org/sports/files/1193-General-IBSA-Judo-Classification-Research---Final-Results-and-Recommendations.pdf, were then published in mid-2020.

The current classification rules can be found at https://www.ibsasport.org/documents/files/182-1-IBSA-Classification-rules-2018.pdf

How was the research carried out?

Overall the project has involved six different studies including data and results analysis, experiments and gathering expert opinion.

1. Expert consultation

A panel of current and former visually impaired athletes, coaches, and administrators completed a series of surveys to provide guidance for the research.

2. Impairment-performance relationship

Across five different research studies, data was gathered to understand the relationship between vision impairment and judo performance. These studies aimed to establish evidence-based minimum impairment criteria as well as sport class criteria.

These were:

- Minimum impairment criteria (two studies)
  These studies aimed to establish the least severe level of vision impairment that would decrease performance in sighted judo, i.e. when both judokas start the fight without a grip in place. The results of these studies led to recommendations for new evidence-based minimum impairment criteria for IBSA Judo.
- Sport class criteria (three studies)
  These studies aimed to establish how vision impairment impacts performance in the Paralympic form of judo, i.e. when both judokas start the fight with their grip in place. The results of this study led to recommendations for new evidence-based sport class criteria for IBSA Judo.

[2] IBSA published details of the research project on its website at https://www.ibsasport.org/news/1033/ibsa-funds-fellowship-for-sight-classification-research

The tests and techniques used by the research team included:

- Grip-fighting exchanges between sighted judoka carried out under IJF rules
- The introduction of different mock vision impairments to advanced, sighted judoka
- Eye-tracking technology to assess where athletes look during a match
- Blindfolded matches where matches started with a grip in place (as currently happens in IBSA judo)
- A review of current classification data and results over seven years
- Analysis of the types of throws used during the Paralympics by athletes with different degrees of visual impairment

Researchers also carried out studies to establish the best combination of measures to include in classification for IBSA Judo.

Results of the research

The IBSA Judo Classification Research Project is the biggest and most comprehensive analysis of classification ever undertaken in the sport.

Lasting around four years, the key findings are:

1. Having a visual impairment does impact on sport performance in judo, even when starting a match with the grip in place according to IBSA judo rules.
2. 2. Within the current system, the most severely impaired athletes are disadvantaged when competing against those with a less severe impairment.

As a result the researchers recommend:

1. Athletes competing in the Paralympics and other sanctioned competitions should compete in one of two classes– one for athletes who are partially sighted and one for athletes who are blind. The class for blind athletes would be for those with visual acuity worse than 2.5 logMAR.

2. The minimum impairment criteria for visual acuity should be altered to 1.3 logMAR for athletes who are partially sighted. However it should be relaxed for visual field to 30 degrees radius in both eyes. These new criteria are conservative benchmarks based on the research outcomes.

3. Both visual acuity and visual field tests may be required for the determination of eligibility to compete (i.e. for the minimum impairment criteria). Visual acuity should be the only test required to determine in which sport class an eligible judoka should compete.

4. Vision testing should be conducted on both eyes rather than the best eye alone.

The research will allow IBSA to introduce an evidence-based minimum impairment criteria and sport class criteria to meet the requirements for the IPC Athlete Classification Code and therefore support the inclusion of judo on the Paralympic programme.

How IBSA is responding

It is clear that the classification system for IBSA Judo needs to be updated to ensure it is based on firm scientific evidence. It is also important to recognise it must be sport specific in order to remain on the Paralympic programme. In addition, the research has been carried out by a group of experts independent from any organisations or interests. Taking all of this into account, IBSA believes that the recommendations made by the research team must be implemented in full.

IBSA appreciates that the new system will have an impact on athletes, members and federations. We are committed to helping everyone in the best possible way, and will be providing a package of materials so that national teams can support athletes as they transition into different sports or careers if needed. In addition we want to involve the entire judo community in designing the new system around the recommendations.

IBSA has created an *IBSA Judo Classification Implementation Committee* to take this work forward.

IBSA Judo Classification Implementation Committee

Name	**Background/role**	Country
Robert Fenton	IBSA Vice President and Chair of the IBSA Judo Classification Implementation Committee	Canada
Jose L Doria	IBSA Chief Classifier with more than 20 years experience in visual impairment classification.	Portugal
Ludwig Krabbe	IBSA Chief Classifier with more than 20 years experience in visual impairment classification.	Germany
Jane Blaine	Chair of the IBSA Swimming Committee and Chief Executive of the Canadian Blind Sports Association with many years of experience of classification and VI sports.	Canada
Janos Tardos	Sport Technical Director of the IBSA Judo Committee	
Jaime Roberto Bragança	Judo coach	Brazil
Päivi Tolppanen	Judo coach and former B3 athlete, later becoming B2. Paralympian.	Finland
Andrzej Sadej	Judo coach and former athlete. IJF European Championships bronze medallist.	Canada
Szandra Szogedi	Judo coach and former athlete. General Secretary of the Jamaica Judo Association. IJF African Championships bronze medallist.	Jamaica
Nicolina Pernheim	Current B1 judoka, European bronze medallist and multiple Paralympian	Sweden

The Implementation Committee is responsible for:

- Examining the final results of the research and thinking of situations which might arise during implementation, taking into account the principles of fair play and the code
- Advising the IBSA Executive Board on the best way to manage the process
- Composing judo-specific classification rules
- Consulting with the IBSA membership and judo community and ensuring all groups are kept informed
- Working out the implementation with regards to timing, events and classification procedures
- Completing any other judo classification implementation tasks which may be assigned to the working group

What happens next?

The Implementation Committee members are classifiers, athletes, coaches and officials who will be responsible for taking the findings of the research to the next stage. One of their main tasks is understanding how the changes will impact the judo community and creating a plan for how the changes can be introduced.

Anyone involved with IBSA Judo can take part in the consultation process in the following ways:

- Taking part in group calls organised on Zoom with athletes, coaches, referees and classifiers where any comments, questions and concerns will be recorded and fed into the implementation plan.
- Send an email to (feedback@ibsasport.org) with comments and questions.

The new evidence-based and sport-specific classification system in judo will then be introduced in time for the Paris 2024 Paralympic Games, but not before Tokyo 2020. A detailed timeline will be published once the Implementation Committee has completed their tasks and gathered the views of all the groups involved.

Zoom calls

The sessions will include Dr. Mann and Dr. Krabben, the Chair of the Implementation Committee and its other members. The calls will feature an overview of the results and methods of the research followed by an open Q&A with members of the research team. Here participants can make comments and ask questions about the research or its benefits and impact. Discussions will then be held about implementation and the new classification rules.

When: 25 September, 2020 03:00PM CET

Register in advance for this meeting:

https://us02web.zoom.us/meeting/register/tZYudO2rrz8qGNMHtZr_7oDsjoRXmTJfruWc

When: 2 October, 2020 03:00PM CET

Register in advance for this meeting:

https://us02web.zoom.us/meeting/register/tZItd-yqpzMvEtQISVnof8pxR0WmuwMuJO17

When: 9 October, 2020 03:00PM CET

Register in advance for this meeting:

https://us02web.zoom.us/meeting/register/tZwvd-iqrzstH9NpuHfvp5IfZsscbTMPSDfj

To ensure that the community is involved throughout the process, a second set of Zoom sessions will be held to consult on the draft classification rules. The dates for these will be organised and announced once a first draft of the new classification rules are prepared by the Implementation Committee. IBSA expects that this will be by the end of 2020.

Key questions answered

Why does the research recommend two sport classes?

The findings of the studies clearly suggest that judokas with more vision have an advantage within the current system and therefore warrant splitting the athletes into separate sport classes.

This research project and others have consistently found this to be the case across multiple studies involving both athletes with visual impairments as well as sighted athletes. The researchers observed that the degree of impairment impacts overall success rates in competition, number of scoring throws made and even type of throws athletes favoured. All these analyses suggested a split into at least two classes.

Yet the results were less conclusive where to make the best split.

The researchers therefore conducted two follow-up analyses to gain additional understanding about the impact of impairment on performance.

1. Match-level analysis - analysing the outcome of individual matches between judokas with different degrees of vision impairment

2. Technical profiles – analysis and comparison of the types of throwing techniques used by athletes with different degrees of visual impairment during the Rio 2016 Paralympic Games.

These additional analyses pointed towards 2.5 logMAR as the most optimal point to split IBSA judo into two classes. The researchers even explored the possibility of a three-class system, but concluded two classes seem sufficient to minimise the impact of impairment on performance while maximising competitiveness.

The degree of vision impairment not only influenced the number of scoring throws judokas made during competition, but it also influenced the type of throwing techniques they favoured. Functionally blind athletes predominantly deployed sacrifice throws. Sighted judokas showed more variability in the type of techniques they applied. Leg throws were particularly used more frequently by sighted judokas than those with higher vision loss. In other words, the more visually impaired an athlete becomes, leg throws become less common.

After assessing the visual acuity of the athletes and the types of throws they used, as well as the views of the expert panel, the researchers concluded that this also pointed towards a two-class system being the best.

What tests should classification include in IBSA Judo?

Researchers travelled to the IBSA Judo European Championships in 2017 and IBSA Judo Pan-American Championships in 2018 and recruited 52 athletes to take part in their studies for this part of their research. The visual function of these judoka was tested using a battery of vision tests, which consisted of seven different measures of vision (visual acuity, visual field, contrast sensitivity, motion perception, visual search, depth perception and light sensitivity). Visual function was measured using both eyes together wherever possible. Because visual acuity is currently measured with each eye separately during classification, researchers measured visual acuity both with one eye and with both eyes together. This allowed them to compare the results obtained in this study with analyses based

on classification data. Performance data was gathered from all international competitions that the athletes participated in two years before and after vision testing.

The researchers found that visual acuity correlated strongly to all other visual functions. After controlling for the relationship between visual acuity and performance, there was no relationship between any of the other tests of visual function and the performance of the judokas.

This suggests that the inclusion of additional tests of visual function does not improve the ability to place judokas into 'fairer' classes. No other tests of visual function besides visual acuity are therefore required to determine in which sport class a judoka should compete. This does not mean that other measures of vision such as contrast sensitivity and motion perception are not related to performance in judo. It simply means that if an athlete has poor visual acuity then those other measures of visual function tend to be poor also.

Researchers recommend careful and accurate assessment of visual acuity in those with severe vision impairment in combination with continued monitoring of their performance in future IBSA Judo competitions. They also recommend that tests are carried out on both eyes together, as opposed to the best eye alone.

<u>What impact might moving to two classes have on competition?</u>

At the moment, whilst IBSA works with the judo community on new classification rules and consults with the International Paralympic Committee, it is difficult to say what competition might finally look like under the new system. However it is obvious that more medal events could be needed at IBSA Judo competitions and the Paralympic Games. This is because we are moving from one class where men and women classified as B1, B2 and B3 compete against each other in different weight categories, to two classes. Weight classes will have to be adjusted to properly implement the new classification system to ensure there are enough competitors in each class to hold a viable competition.

As part of discussions with the International Paralympic Committee about the medal event programme for Paris 2024, and after consulting with the IBSA Judo Committee, IBSA will be making an application to the IPC based on the requirements of the new classification system. More details about this will be available shortly.

<u>Why should the minimum impairment criteria be changed?</u>

Researchers conducted two studies to inform the development of an evidence-based minimum impairment criteria for IBSA Judo as well as consulting with the expert panel. In both studies, the participants were sighted, experienced judokas who took part in a series of grip fighting exchanges under IJF rules. Researchers focused on the impact of impairment on grip fighting, which is not only "one of the most important and fundamental judo skills" (Jimmy Pedro, Olympic medallist), but also presumably the most visually demanding aspect of judo. It is therefore the first aspect of judo performance that is expected to be impacted in the presence of vision impairment.

Visual acuity

In the first study, 28 sighted advanced (brown or black belt) judokas competed in a series of grip fighting exchanges. Their vision was temporarily blurred using a series of different blurring foils

fitted into swimming goggles. In each condition, the visual acuity of the judokas was tested. Grip fighting performance was independently rated by both participants to determine who dominated the gripping exchange. A validation check showed that the performance ratings of the participants correlated with those of an expert observer (a member of the research team who holds expertise in judo as a third degree black belt and a national level judo coach).

The results of this study suggest that the current minimum impairment criteria for visual acuity is not severe enough. The results suggested that a new minimum impairment criteria should be set between 1.3 and 1.5 logMAR. The research team on the basis of the findings recommend a new conservative benchmark of 1.3 logMAR, increasing the likelihood that eligible athletes have an impairment that genuinely impacts their ability to compete in sighted judo against fully sighted opponents.

Visual field

Because visual field impairments are difficult to simulate, researchers used a different approach to determine the size of the visual field that might be needed for optimal performance in judo. In this study, seven sighted advanced (brown or black belt) judokas wore eye tracking glasses that showed where they were looking whilst performing grip fighting tasks. Researchers also tracked the 3D position of the athlete's head along with their opponent's head and hands to determine the area of visual field that might be required for judo grip fighting.

During the fight for the first grip, participants mostly focused their gaze centrally on their opponent's chest. These findings suggest that athletes made use of the chest as a "visual anchor point", using peripheral (side) vision to monitor the position of the opponents' limbs.

Researchers calculated how wide the visual field would need to be for an athlete to keep the hands of their opponent within view while fixating at the opponent's chest. With a visual field of 20 degrees radius (i.e., the current minimum impairment criteria), an athlete is able to view at least one of the opponent's hands 91 per cent of the time, yet both hands were within view only 29 per cent of the time. This means the athlete might be surprised by an incoming hand outside their visual field 71 per cent of the time, most probably constituting a significant disadvantage in judo.

The research findings suggest that the current minimum impairment criteria for visual field is too severe, meaning that some athletes are currently excluded from IBSA Judo even though their vision impairment is likely to genuinely decrease performance when competing against fully sighted opponents in judo. Researchers therefore recommend a less-severe minimum impairment criteria for visual field of 30 degrees radius.

<u>How do the researchers' recommendations help make a more robust classification system?</u>

The research informs IBSA Judo's aim to establish an evidence-based, sport specific classification system. It is recommended that there should be two sport classes to create more balanced competition.

The research also helps to clarify the process of classification itself. As the researchers note from their discussions with coaches, athletes and classifiers about intentional misrepresentation: "The highest priority of our [expert] panel was to introduce less subjective testing, because current methods rely on athletes to provide their best effort and honest answers." Their findings however

show that the current tests and evidence required are enough to establish if an athlete is eligible, but that some changes could be made to fine tune the approach. In direct response to the research, which took place over four years, modifications have already been made to classifier training. This includes ensuring that classifiers are aware that variability in an athlete's answers could indicate intentional misrepresentation.

Classification centres – dedicated venues where athletes would travel to be classified rather than before competitions – were also mentioned in the research. Whilst this was no doubt the favoured approach of the expert panel, the extra costs for countries and teams as well as for setting-up these facilities and in a way which is accessible for everyone, must be investigated.

Other technologies and techniques were evaluated by the researchers. However they note that these are not yet ready to be implemented.

The Visual Impairment Classification Research Centre in Amsterdam, which is the official hub for classification research in athletes with visual impairments for the Paralympic movement, is continuing its research into how intentional misrepresentation can be detected and minimised.

Do the research outcomes mean that judoka who would be ineligible to compete under these new criteria, but who won medals in the past, should never have been allowed to compete?

Absolutely not. Like all Para sports, IBSA Judo has a classification system that has evolved over many years and it was time for review. This was in response to the International Paralympic Committee's Athlete Classification Code which requires all International Federations to ensure they have an evidence-based, sport specific system. This is also a requirement for each sport's inclusion on the Paralympic Games programme.

All athletes who competed at IBSA Judo competitions – and the Paralympics – did so within the rules and were classified according to the system established at the time. Neither IBSA nor the researchers are suggesting otherwise.

This is also the case for the Tokyo 2020 Paralympic Games – the performances of athletes who will compete there will be just as valid as they have been in the past.

Do the results of the research mean that athletes who might be ineligible in the future do not have a disability?

Again, IBSA is very clear about this: the results of the research are in no way a commentary or reflection on how a visual impairment affects a person's everyday life. The research is only concerned with how a disability effects sport performance in judo.

What will happen to the athletes who may no longer be eligible to compete?

IBSA understands that as a result of the research findings there will be athletes who can no longer compete at IBSA Judo competitions and the Paralympic Games, once they have been classified under the new system. This could of course have a big impact on their lives. IBSA is therefore working with experts from its Medical Committee and the international sports community to provide advice to IBSA members and national federations on how to support these athletes and ensure their wellbeing.

More information and feedback

IBSA welcomes the views of the judo community into the outcomes of the classification research.

Anyone can take part in the Zoom calls or send their comments to feedback@ibsasport.org by 29 October, 2020.

Updates about the consultation and progress in drafting the new classification rules for IBSA Judo will be published on the IBSA website.