TODAY’S AGENDA

1. Introduction evidence-based classification
2. Timeline classification research judo
3. Summary of preliminary findings
4. Explanation of main studies
CURRENT VI CLASSIFICATION

Visual acuity (logMAR units)

- VF < 20 degrees radius
- VF < 5 degrees radius

Sport classes

Minimum impairment criteria

Visual acuity (logMAR units)
Each para-sport should develop a **sport-specific** system of classification based on scientific evidence examining the relationship between impairment and performance in that sport.
IPC CLASSIFICATION RESEARCH & DEVELOPMENT CENTRES

Physical Impairment
University of Queensland
Australia

Intellectual Impairment
University of Leuven
Belgium

Vision Impairment
Vrije Universiteit Amsterdam
Netherlands
IPC CLASSIFICATION RESEARCH & DEVELOPMENT CENTRES

R&D across all VI sports

- VI Swimming
- VI Judo
- VI Snow sports
- VI Shooting
- VI Athletics
- 5-a-side Football

Vision Impairment
Vrije Universiteit Amsterdam
Netherlands
GENERAL APPROACH

STEP 1: Expert consultation
athletes, coaches, administrators, referees, classifiers

STEP 2: Measure vision on tests relevant to the sport

STEP 2: Measure ability on sport-specific tests of performance

STEP 3: Establish the impact of impairment on sport-specific performance
Expert consultation
Panel of 18 VI judo representatives
Discuss specific needs for new VI judo classification system

Data collection & analysis
2017-2018
50 VI athletes tested at international IBSA judo competitions
52 able-sighted judo athletes tested in simulation studies

Preliminary results
2018 – 2019
Reported to representatives of IBSA / IPC / VI judo
Presented at IBSA GA Fort Wayne

Final results
2019 - 2020
Additional analyses
Final report and recommendations

Implementation
2020 - 2021
Implementation of new classification system
SPORT CLASSES

STUDY 1:

ONE SPORT CLASS?

SHORT SUMMARY
What is impact of vision impairment on judo performance?

Consequently, how should judokas with vision impairment be classified for competition, so that the impact of impairment on performance is minimised?
MAIN ADAPTATION: STARTING POSITION

Able-sighted judo

VI judo
VI JUDO EFFECTIVELY ONLY HAS ONE SPORTS CLASS

- Athletes are classified as B1, B2 or B3 as in most VI sports
- But in VI judo competition, all athletes compete against each other
DIFFERENT STUDY DESIGNS

1. **Expert consultation (Delphi)** – collect opinions from VI judo community
2. **Simulation study 1** – simulate low vision in able-sighted judo athletes
3. **Simulation study 2** – simulate blindness in able-sighted judo athletes
4. **Database study** – large scale analysis of existing classification and competition data
5. **Main study** – collect data on impairment and performance during VI judo events
SUMMARY OF PRELIMINARY FINDINGS

1. Clear need to change the current classification criteria
   > Impact of impairment on outcome of competition not yet minimised
   > Findings supported by both expert opinions and research studies

2. Results suggest to split VI judo in two classes
   > Athletes with and without functional vision (e.g., “functionally blind” and “partially sighted”)
   > Further analyses ongoing to decide optimal cut-off between classes

3. Results suggest more impairment is needed to qualify to compete in VI judo
   > No impact on able-sighted performance for impaired visual acuity simulated at current MIC
   > Further analyses ongoing to decide how much the MIC for visual acuity should shift
   > Research into an MIC for visual field is still ongoing
SPORT CLASSES
STUDY 1: ONE SPORT CLASS?

EXPERT CONSULTATION
Aim: establish specific needs of a sport-specific classification system for VI judo

Participants

- 18 experts in VI judo
- From across the world
- Three rounds of online surveys
EXPERT CONSULTATION
AIM OF CLASSIFICATION

Does the current classification system in VI judo fulfil the aim to *minimise the impact of impairment on the outcome of competition*?

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**Why not?**

1. Unfair that blind and partially sighted athletes compete together.
2. Additional measures of visual function might be needed.
3. More VI might be needed to qualify to compete.
4. The potential for intentional misrepresentation undermines fair competition.
## ASPECTS OF VISUAL FUNCTION

<table>
<thead>
<tr>
<th>Measure of visual function</th>
<th>Important enough to include in VI judo classification research</th>
<th>Not important enough to include in VI judo classification research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual acuity</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Visual field</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Motion perception</td>
<td>71%</td>
<td>29%</td>
</tr>
<tr>
<td>Dynamic visual acuity</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>Light sensitivity</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>Depth perception</td>
<td>64%</td>
<td>36%</td>
</tr>
<tr>
<td>Ocular coordination</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>Contrast sensitivity</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>Colour vision</td>
<td>19%</td>
<td>81%</td>
</tr>
</tbody>
</table>
- Which visual functions best predict judo performance?
- Vision test battery developed to test all visual functions of interest
EXPERT CONSULTATION

TESTS OF INTENTIONAL MISREPRESENTATION

Consistency on the existing test of visual acuity

Electrophysiological testing

Gaze tracking

Testing in virtual reality
SPORT CLASSES
Should VI judo be split into more than one class?

- Yes: 78%
- No: 22%

Should there be a separate class for blind judokas?

- Yes: 78%
- No: 22%
SPORT CLASSES
ANALYSIS OF COMPETITION RESULTS

IBSA Judo WC 2014

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th>Medals</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>45</td>
<td>20%</td>
</tr>
<tr>
<td>B2</td>
<td>103</td>
<td>47%</td>
</tr>
<tr>
<td>B3</td>
<td>72</td>
<td>33%</td>
</tr>
<tr>
<td>Totaal</td>
<td>220</td>
<td>100%</td>
</tr>
</tbody>
</table>

IBSA Judo WC 2015

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<td>68</td>
<td>32%</td>
</tr>
<tr>
<td>Totaal</td>
<td>212</td>
<td>100%</td>
</tr>
</tbody>
</table>

Odds ratio (likelihood of winning a medal)

B1

B2

B3
SPORT CLASSES
EXPERIMENTAL STUDY

- 24 able-sighted judokas
  - Simulation matches under VI judo rules
  - Compete against same opponent sighted and blindfolded
  - Performance: number of scores in 3 minutes

![Image A](image1.png)

![Image B](image2.png)

<table>
<thead>
<tr>
<th>Number of scoring throws</th>
<th>Sighted</th>
<th>Blindfolded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>1.5</td>
</tr>
</tbody>
</table>

* indicates a significant difference.

![Bar chart](chart.png)
What is the relationship between different measures of VI and judo performance?
SPORT CLASSES - MAIN STUDY

RESULTS

- Results of 47 athletes analysed
- Visual acuity best predictor of performance
- Other tests do no add anything on top of VA
- Main difference between functionally blind and partially sighted athletes
SPORT CLASSES – MAIN STUDY

VISUAL ACUITY

More common among athletes

Split point

Poorer vision
SPORT CLASSES
CONCLUSIONS

- Multiple studies suggest to split VI judo into two classes
- Athletes with and without functional vision supporting judo performance
- Further analyses ongoing to decide optimal cut-off between classes
SPORT CLASSES

STUDY 1

ONE SPORT CLASS?

MINIMUM IMPAIRMENT CRITERIA
The minimum impairment criteria for judo:

- should be **less severe**, allowing some to compete who are currently not eligible
- should **stay as they are**
- should be **more severe**, excluding some athletes who are currently eligible to compete
The minimum impairment criteria are defined as the minimum level of impairment that has an impact on performance in that sport.
MINIMUM IMPAIRMENT CRITERIA

APPROACH

Able-sighted judo

VI judo
“Gripping is one of the most important and fundamental judo skills”
– Jimmy Pedro, Olympic medallist
MINIMUM IMPAIRMENT CRITERIA

STUDY DESIGN

- 28 able-sighted judo athletes (brown or black belt)
- Competing in pairs in short grip fighting exchanges
- Simulated impaired visual acuity with Bangerter foil attached to swimming goggles
RESULTS: PERFORMANCE

Baseline performance

Better performance

Poorer vision

Current MIC

NEW MIC
CONCLUSION

- Results suggest current MIC for VA is too mild
- More severe impairment needed to be eligible to compete in VI judo
- Additional analysis in progress to determine how much the MIC should shift
- Additional work to set a MIC for visual field is in progress
SUMMARY OF MAIN FINDINGS

1. Clear need to change the current classification criteria
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TIMELINE

2016
- Panel of VI judo representatives
- Discuss specific needs for new VI judo classification system

2017-2018
- 50 VI athletes tested at international judo competitions
- 52 able-sighted judo athletes tested in simulation studies

2018-2019
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- Additional analyses
- Final report and recommendations

2020-2021
- Implementation of new classification system