## FROM A TO Z IN CLASSIFICATION RESEARCH

<table>
<thead>
<tr>
<th>A</th>
<th>Athlete Classification Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Best-practice implementation</td>
</tr>
<tr>
<td>C</td>
<td>Sir Philip Craven</td>
</tr>
<tr>
<td>D</td>
<td>Delphi study</td>
</tr>
<tr>
<td>E</td>
<td>Evidence based</td>
</tr>
<tr>
<td>F</td>
<td>Functions and structures</td>
</tr>
<tr>
<td>G</td>
<td>Governing Body</td>
</tr>
<tr>
<td>H</td>
<td>Health condition</td>
</tr>
<tr>
<td>I</td>
<td>Intentional misrepresentation</td>
</tr>
<tr>
<td>J</td>
<td>John Bourke (athletics)</td>
</tr>
<tr>
<td>K</td>
<td>Klassification (OK we don't know...)</td>
</tr>
<tr>
<td>L</td>
<td>Legitimate</td>
</tr>
<tr>
<td>M</td>
<td>Misrepresentation</td>
</tr>
<tr>
<td>N</td>
<td>Number of classes</td>
</tr>
<tr>
<td>O</td>
<td>Observation in competition</td>
</tr>
<tr>
<td>P</td>
<td>Andrew Parsons</td>
</tr>
<tr>
<td>Q</td>
<td>Questions</td>
</tr>
<tr>
<td>R</td>
<td>Research</td>
</tr>
<tr>
<td>S</td>
<td>Sport specific</td>
</tr>
<tr>
<td>T</td>
<td>Sean Tweedy</td>
</tr>
<tr>
<td>U</td>
<td>Understanding</td>
</tr>
<tr>
<td>V</td>
<td>Peter van de Vliet</td>
</tr>
<tr>
<td>W</td>
<td>Wheelchair racing</td>
</tr>
<tr>
<td>X</td>
<td>Xavi Gonzalez</td>
</tr>
<tr>
<td>Y</td>
<td>Yves Vanlandewijck</td>
</tr>
<tr>
<td>Z</td>
<td>Zorry, we gave up</td>
</tr>
</tbody>
</table>
From A to Z in Classification Research

How to Initiate Sport-Specific Classification Research (and minimise disasters later on!)

David Mann
Associate Professor
IPC Classification R&D Centre for Vision Impairment
Vrije Universiteit Amsterdam
HOW TO PERFORM CLASSIFICATION RESEARCH

Figure 7.1  Schematic representation of research required for the development of evidence-based systems of classification. The boxes with the solid outlines (Steps 1–5) are essential. The boxes with dashed outlines (QA1–QA3) are not essential to every research program, but are generally important quality assurance (QA) measures.
International Paralympic Committee position stand—background and scientific principles of classification in Paralympic sport

S M Tweedy, Y C Vanlandewijk

Review

International Paralympic Committee (IPC) and International Blind Sports Federation (IBSA) Joint Position Stand on the Sport-Specific Classification of Athletes with Vision Impairment

David L. Mann, H. J. C. Ravensbergen

Chapter 7

Research needs for the development of evidence-based systems of classification for physical, vision, and intellectual impairments

Sean M. Tweedy, David Mann, Yves C. Vanlandewijk

Watch this space…
Figure 7.1  Schematic representation of research required for the development of evidence-based systems of classification. The boxes with the solid outlines (Steps 1–5) are essential. The boxes with dashed outlines (QA1–QA3) are not essential to every research program, but are generally important quality assurance (QA) measures.
HOW TO PERFORM CLASSIFICATION RESEARCH

Step 1: Identify sport and impairment type(s)

Step 2: Develop model of determinants of sport performance

Step 3a: Develop measures of impairment

Step 3b: Develop measures of (determinants of) performance

Step 4: Assess the impairment-performance relationship

Step 5: Determine minimum impairment criteria and class profiles
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How can we leverage the expertise of para-athletes, coaches, and classifiers to initiate classification research?
Judo: Does the current classification system fulfil its aim?

- Yes: 17%
- Partially: 22%
- No: 83%
"At the heart’ is about fostering a culture within the Paralympic Movement that lives the values of being athlete-centred. It goes far beyond words on paper and the use of the term “athlete-centred” as a buzz word that, at times, is thrown around but not well understood or fostered among athletes and within organisations."
EXPERT CONSULTATION ALLOWS YOU TO...
FUTURE-PROOF YOUR RESEARCH

“You used the wrong measures of impairment”

“You used the wrong measures of performance”

Involve athletes and other key stakeholders from the start of the research process
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IDENTIFY YOUR SPORT
FIVE-A-SIDE FOOTBALL

Partially sighted football

Visual acuity (logMAR units)

Blind football

Oliver Runswick Poster #132 Tomorrow 16:00
“Sport-specific classification for football 5-a-side”
### Identify Your Impairment Type

<table>
<thead>
<tr>
<th>Impairment Type</th>
<th>Physical</th>
<th>Impairment Type</th>
<th>Physical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hf, At, Ath</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD, RoM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LLD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Activity          | Archery | Athletics | Boccia | Para-canoe | Para-cycling | Equestrian | Football 5-a-side | Football 7-a-side | Goalball | Judo | Para-triathlon | Powerlifting | Rowing | Sailing | Shooting | Swimming | Table tennis | Volleyball (sitting) | Wheelchair basketball | Wheelchair fencing | Wheelchair rugby | Wheelchair tennis | Alpine skiing | Ice Sledge Hockey | Nordic skiing | Para-snowboard | Wheelchair curling |
|-------------------|---------|-----------|--------|------------|-------------|------------|-------------------|-------------------|----------|------|--------------|--------------|-------|---------|----------|----------|-----------|---------------------|---------------------|-------------------|-----------------|----------------|----------------|---------------|---------------|----------------|----------------|----------------|----------------|
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Survey 1: Please list any components of performance in swimming that might be:

<table>
<thead>
<tr>
<th>Negatively impacted by VI</th>
<th>Unaffected by VI</th>
<th>Improve with VI</th>
</tr>
</thead>
</table>

Survey 2: Which of the following aspects of performance are negatively impacted by vision impairment?

<table>
<thead>
<tr>
<th>Aspect of performance</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaction time to start signal</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Direction of the dive</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Deciding when to initiate a turn</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Navigation within the lane</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>
DEVELOPING A MODEL OF SPORT PERFORMANCE
VI SWIMMING

Aspect of swim race

Start
Clean swim
Turn
Finish

Determinants of performance with vision impairment

Direction of the dive
Navigation within the lane
Deciding when to initiate the turn
Timing the final stroke

Using allowed length underwater
Monitoring position of competitors
Using allowed length underwater
Maintaining high speed into the finish
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DEVELOPING MEASURES OF IMPAIRMENT
VISION TEST BATTERY

Vision tests

- Visual acuity
- Visual field
- Motion perception
- Contrast sensitivity
- Colour perception
- Eye movements
- Visual stability
- Visual search
- Visual reaction time
- Sensitivity to light
<table>
<thead>
<tr>
<th>Measure of visual function</th>
<th>% panel who think that measure is relevant for classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth perception</td>
<td>92%</td>
</tr>
<tr>
<td>Light sensitivity</td>
<td>71%</td>
</tr>
<tr>
<td>Contrast sensitivity</td>
<td>67%</td>
</tr>
<tr>
<td>Motion perception</td>
<td>67%</td>
</tr>
<tr>
<td>Dynamic visual acuity</td>
<td>58%</td>
</tr>
<tr>
<td>Ocular stability</td>
<td>50%</td>
</tr>
<tr>
<td>Ocular coordination</td>
<td>44%</td>
</tr>
<tr>
<td>Colour vision</td>
<td>42%</td>
</tr>
</tbody>
</table>
TESTING DEPTH PERCEPTION
TESTING DEPTH PERCEPTION
IMPAIRMENT-PERFORMANCE RELATIONSHIP

Better swimming performance

Turn distance from wall

Log error in depth perception

Poorer depth perception
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DEVELOPING A MODEL OF SPORT PERFORMANCE
VI SWIMMING

Start
- Direction of the dive
  - Using allowed length underwater

Clean swim
- Navigation within the lane
  - Monitoring position of competitors

Turn
- Deciding when to initiate the turn
  - Using allowed length underwater

Finish
- Timing the final stroke
  - Maintaining high speed into the finish
ASSESSING SWIMMING PERFORMANCE
POSITION IN LANE
POSITION IN THE LANE
IMPAIRMENT-PERFORMANCE RELATIONSHIP

Mean distance from centre of lane (m)

Visual acuity (logMAR)

Poorer vision
PRACTICAL TIPS
PUBLISHING YOUR EXPERT CONSULTATION

Path to publication

Which journal?

Leap into the unknown

It may not be your career-defining paper, but it could lay the groundwork for your career-defining change to society.
Define what it is to be an ‘expert’ and try to balance:

- Location
- Sport role
- Gender
- Congenital and acquired impairments

Don’t identify the panel alone – the International Federation is your best friend!
ACKNOWLEDGEMENTS

International Paralympic Committee
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International Blind Sports Federation
This project is supported by a Research Grant awarded by the International Blind Sports Federation.

Agitos Foundation
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Rianne
Ravensbergen
HOW TO PERFORM CLASSIFICATION RESEARCH

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Judo: Does the current classification system fulfil its aim?

- Yes: 17%
- Partially: 22%
- No: 83% (61%)

Minimum 15-20 experts

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Everyone’s view counts equally</td>
<td></td>
</tr>
</tbody>
</table>
• Model as basis of symposium
  • Position stand vs book chapter
  • Model and simplified model – walk through
  • Who will cover what

• Expert consultation
  • Why do it?
    • IPC’s athlete-centred view
    • Helps to future-proof your research (wide appetite for change until change happens)
    • Uncover hidden gems
  • Ways to consult experts

• Model Step 1 – Identify sport and impairment type(s)
  • Sport – 5-a-side football
  • Impairment type(s) - tennis

• Model Step 2 – Develop theoretical model of the determinants of sport performance
  • Swimming model and our approach

• Model Step 3 – Develop measures of impairment and performance
  • Impairment
    • Choosing from measures of impairment
    • Depth perception
  • Performance
    • Swimming position in lane
    • Grip performance in judo

• Delphi tips
  • Setting up an expert panel
  • Publishing your expert consultation
DEVELOPING A MODEL OF SPORT PERFORMANCE
VI SWIMMING

Start
- Direction of the dive
- Using allowed length underwater

Clean swim
- Navigation within the lane
- Monitoring position of competitors

Turn
- Deciding when to initiate the turn
- Using allowed length underwater

Finish
- Timing the final stroke
- Maintaining high speed into the finish

Time for start (0-5m)
- Underwater distance

Time for clean swim
- Position in lane

Time for turn (5m in-and-out)

Time for finish (5-0m)
- Overall race time
EXPERT CONSULTATION ALLOW YOU TO…
UNCOVER HIDDEN GEMS TO UNDERSTAND YOUR SPORT
DEVELOPING A MODEL OF SPORT PERFORMANCE
SWIMMING
Should we ask our experts what they think the classification system should be?

No a-priori ideas

It has almost always been very close (so far)
EXPERT CONSULTATION ALLOW YOU TO...

PARK YOUR SCIENTIFIC EXPECTATIONS AT THE DOOR
THERE IS A WIDE APPETITE FOR CHANGE (UNTIL CHANGE COMES…)

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