

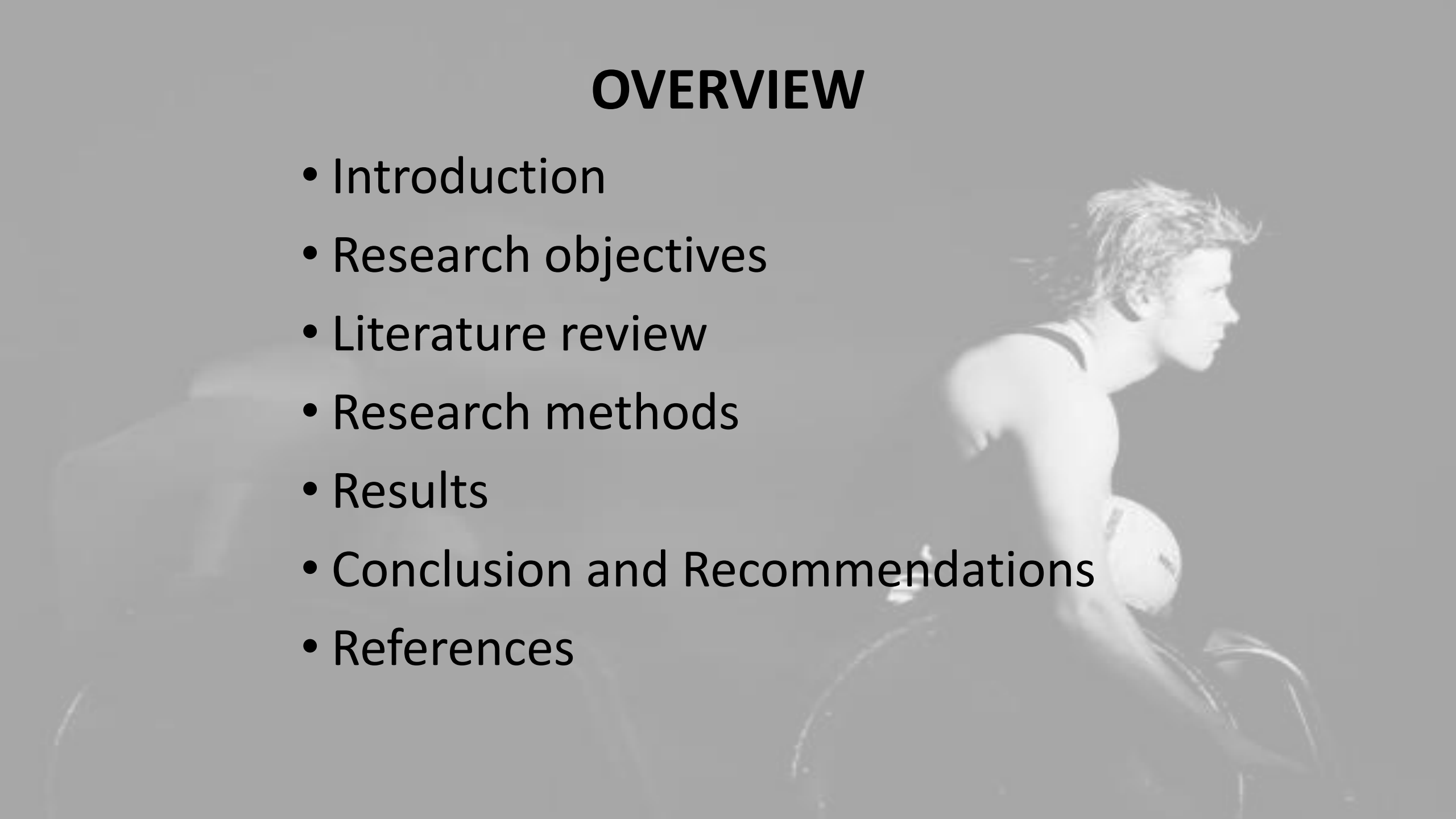
INTRA-AND INTER-RATER RELIABILITY OF MANUAL MUSCLE TESTING IN THE NEW HAND CLASSIFICATION OF WHEELCHAIR RUGBY

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OVERVIEW

- Introduction
- Research objectives
- Literature review
- Research methods
- Results
- Conclusion and Recommendations
- References



INTRODUCTION (1-3)



INTRODUCTION (CONT.) ³⁻⁵⁾

IPC
CLASSIFICATION
CODE



Identify eligible
impairments for that
sport

Describe methods of
assessment so that impact of
the impairment on the
activity is proven thus
**METHODS MUST BE BASED
ON EVIDENCE**

INTRODUCTION (CONT.) (3-5)

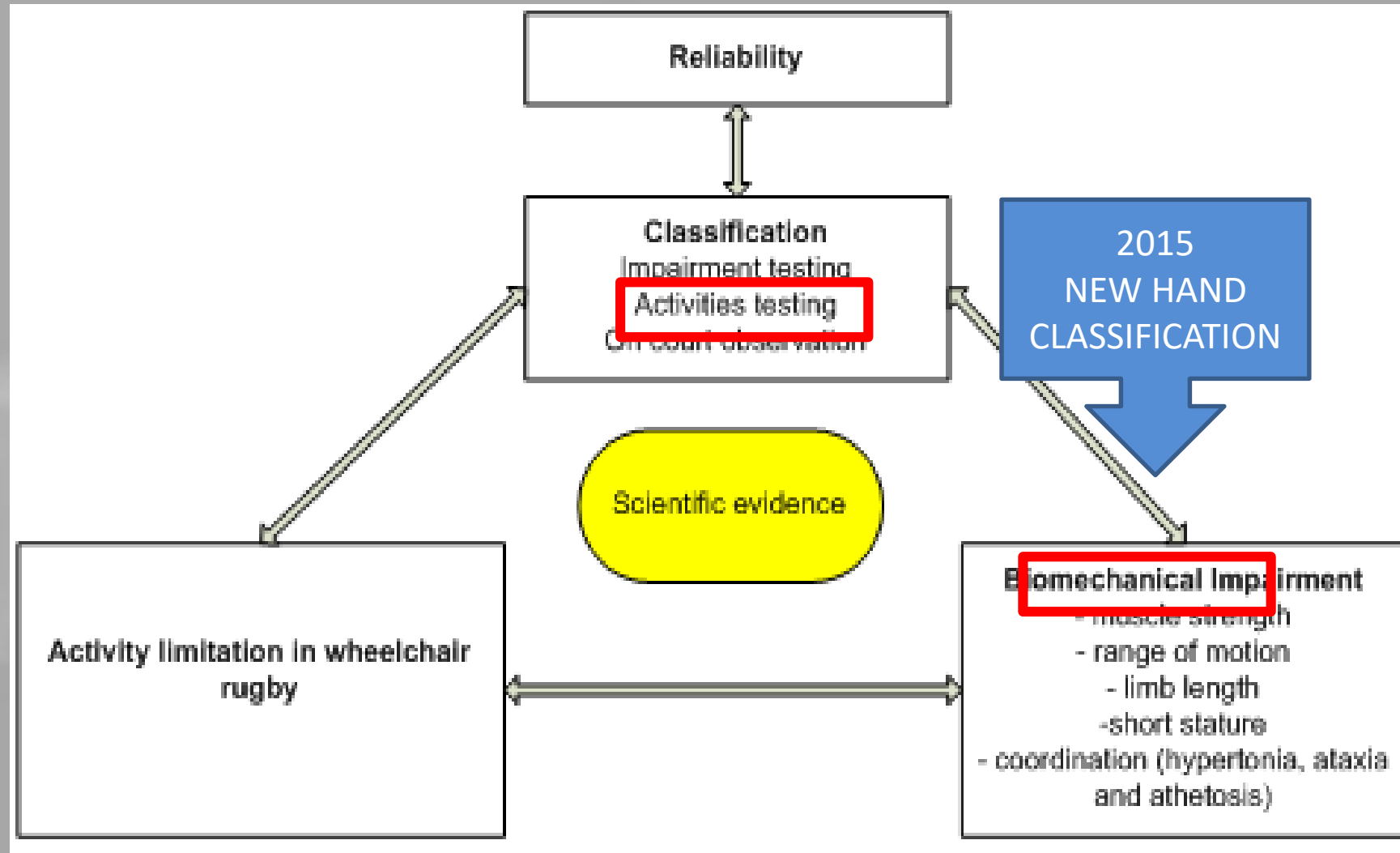
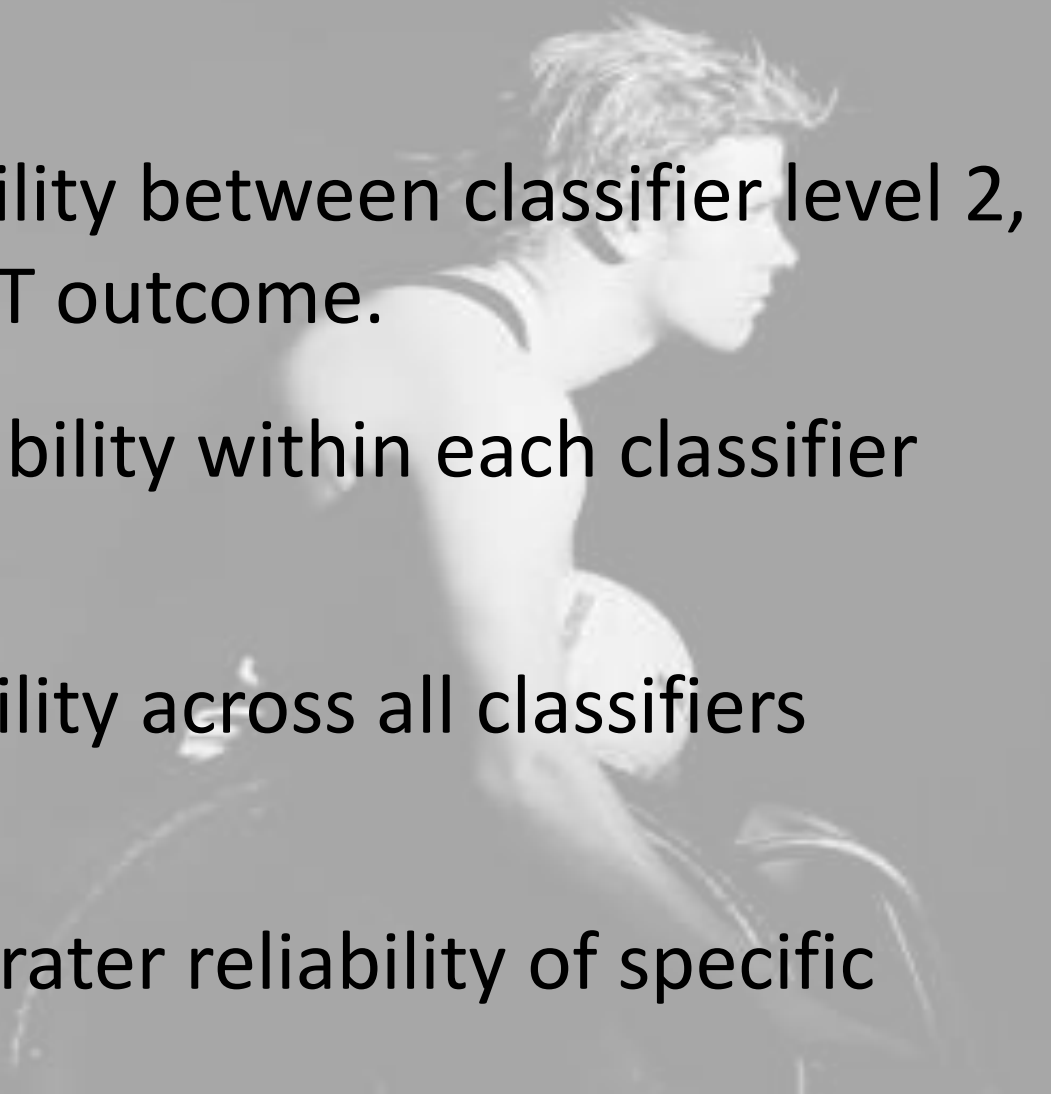


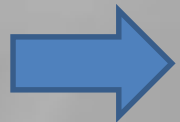
Figure 1: Basic principles of evidence based classification according to IPC classification code and IPC position stand

RESEARCH OBJECTIVES

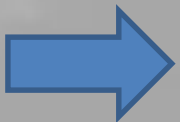
1. To determine the intra-rater reliability of each classifier regarding MMT outcome.
 2. To compare the intra-rater reliability between classifier level 2, level 3 and level 4 regarding MMT outcome.
 3. To determine the inter-rater reliability within each classifier level regarding MMT outcome.
 4. To compare the inter-rater reliability across all classifiers regarding MMT outcome.
 5. To determine the intra-and inter rater reliability of specific muscles tested.
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RESEARCH METHODS

- Observational, cross-sectional design with convenience sampling^(9, 13)
- All the active international WCR classifiers -2015
- Electronic questionnaire as a measurement tool ⁽¹³⁾



Biographic information



Videos

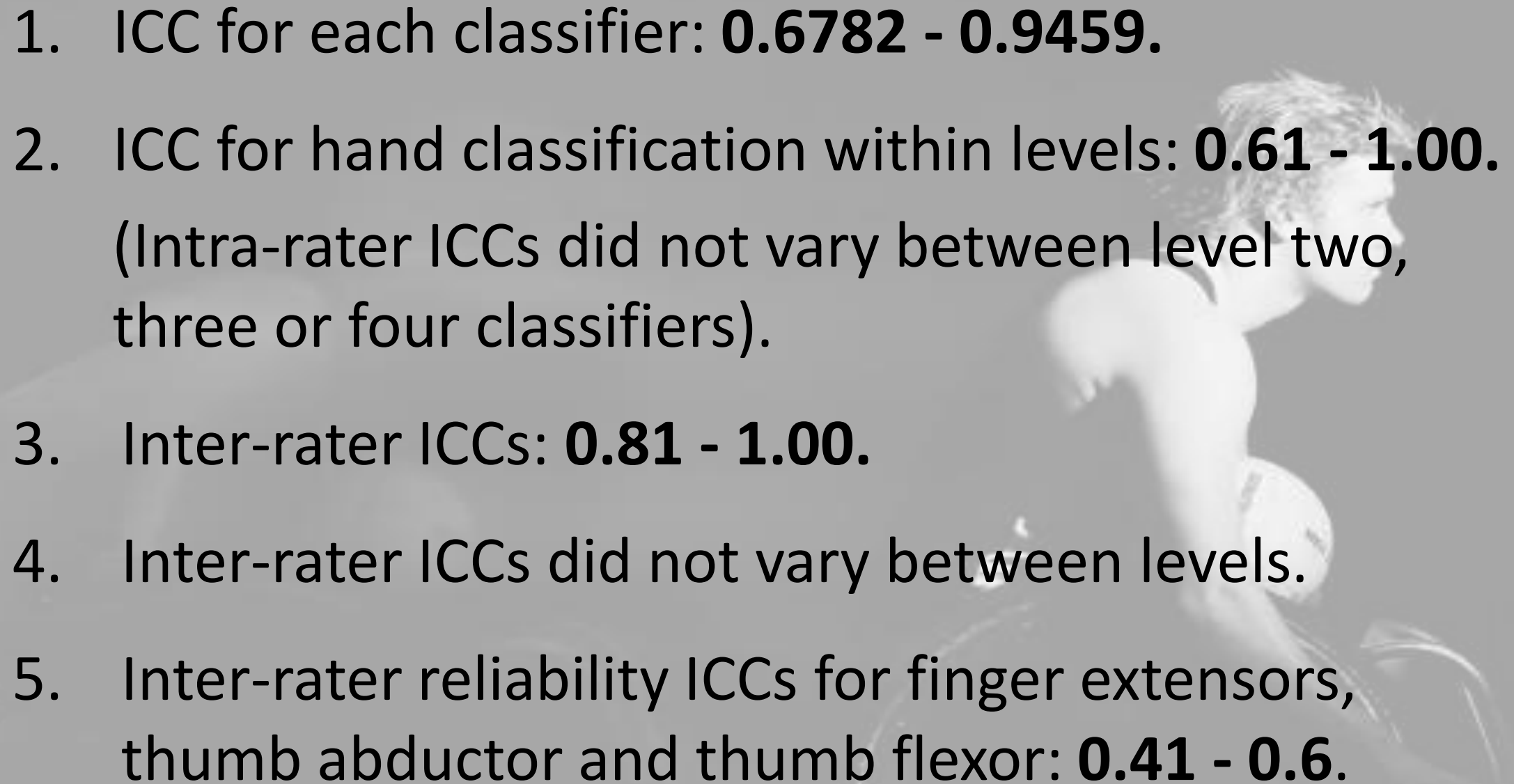
- Pilot study

RESULTS

- Strength of agreement explained by Landis and Koch (1977)

Numeric value	Descriptive statistics
0.0 – 0.2	Slight
0.21 – 0.4	Fair
0.41 – 0.6	Moderate
0.61 – 0.8	Substantial
0.81 – 1.00	Almost perfect

RESULTS (CONT.)

1. ICC for each classifier: **0.6782 - 0.9459.**
 2. ICC for hand classification within levels: **0.61 - 1.00.**
(Intra-rater ICCs did not vary between level two, three or four classifiers).
 3. Inter-rater ICCs: **0.81 - 1.00.**
 4. Inter-rater ICCs did not vary between levels.
 5. Inter-rater reliability ICCs for finger extensors, thumb abductor and thumb flexor: **0.41 - 0.6.**
- 

RESULTS (CONT.)

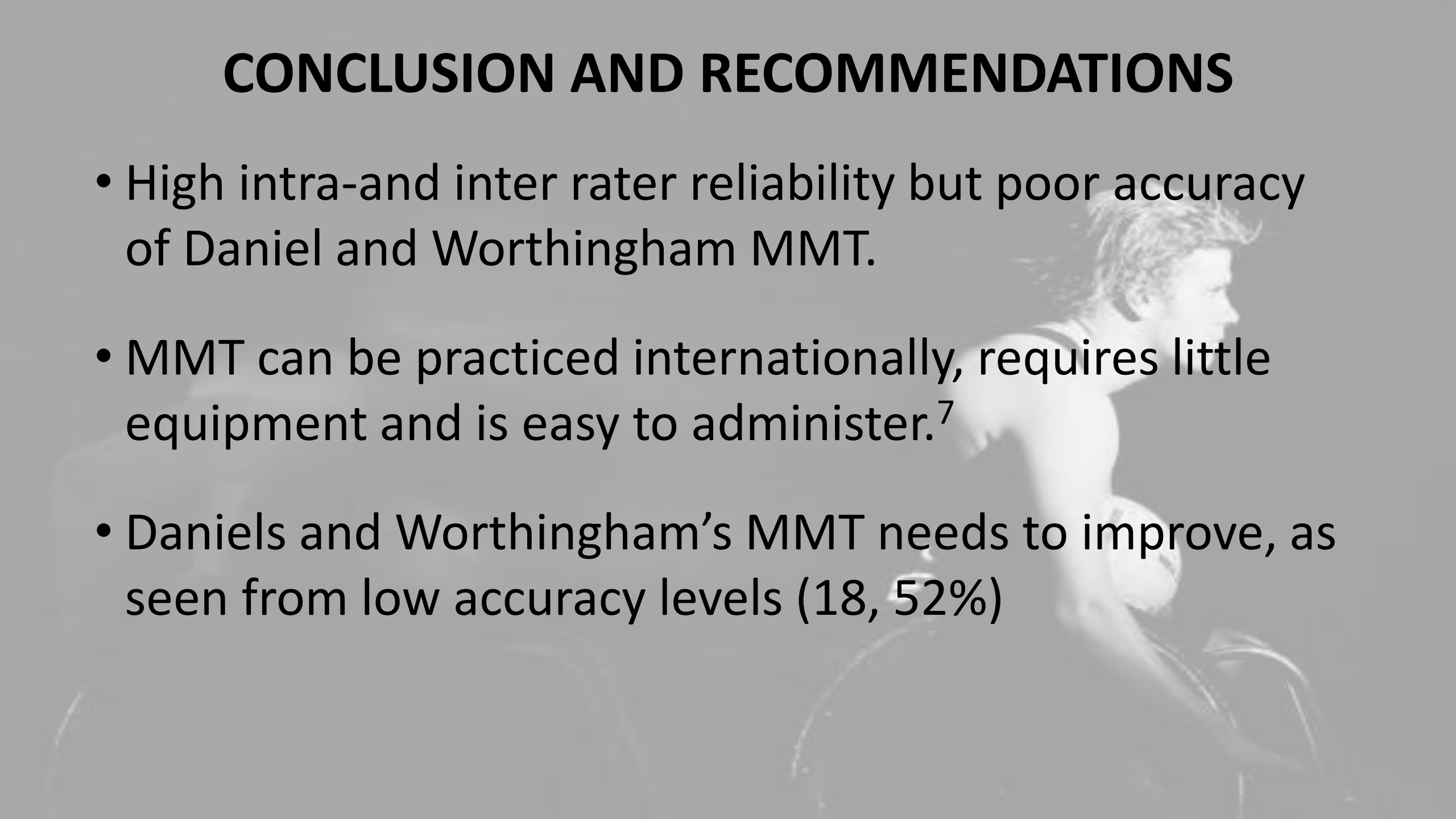
Accuracy was low, with most accurate classifier scoring **63%** and the least accurate raters scoring **37%**.

Across all classifiers 18, 52%



CONCLUSION AND RECOMMENDATIONS

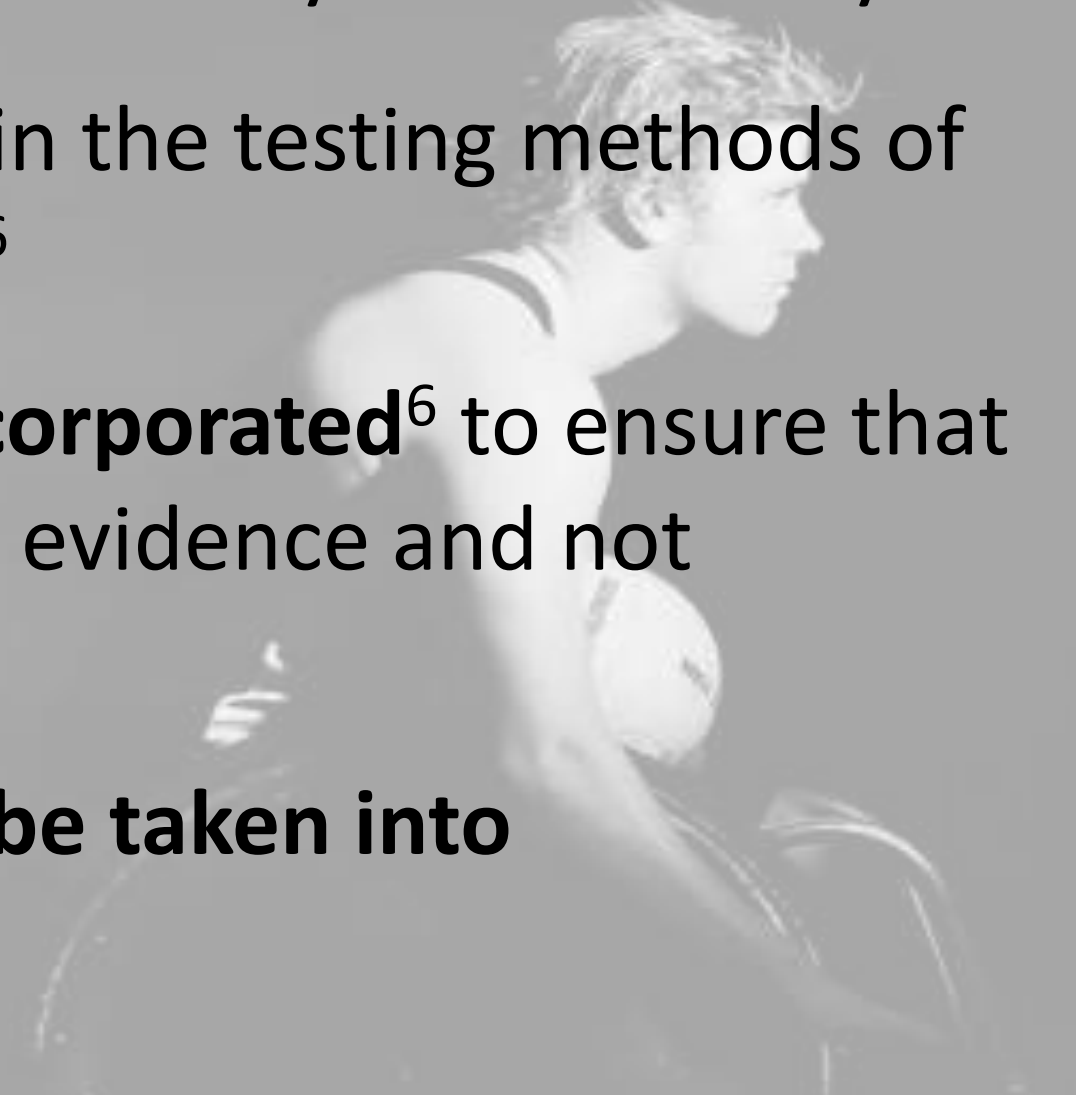
- High intra-and inter rater reliability but poor accuracy of Daniel and Worthingham MMT.
- MMT can be practiced internationally, requires little equipment and is easy to administer.⁷
- Daniels and Worthingham's MMT needs to improve, as seen from low accuracy levels (18, 52%)



CONCLUSION AND RECOMMENDATIONS (CONT.)

Methods that can improve the accuracy and reliability:

- 1. Detailed practical training** in the testing methods of Daniels and Worthingham.⁶
- 2. New research has to be incorporated⁶** to ensure that WCRC is based on scientific evidence and not examiner experience.¹⁰
- 3. The limited ROM needs to be taken into consideration** during MMT.

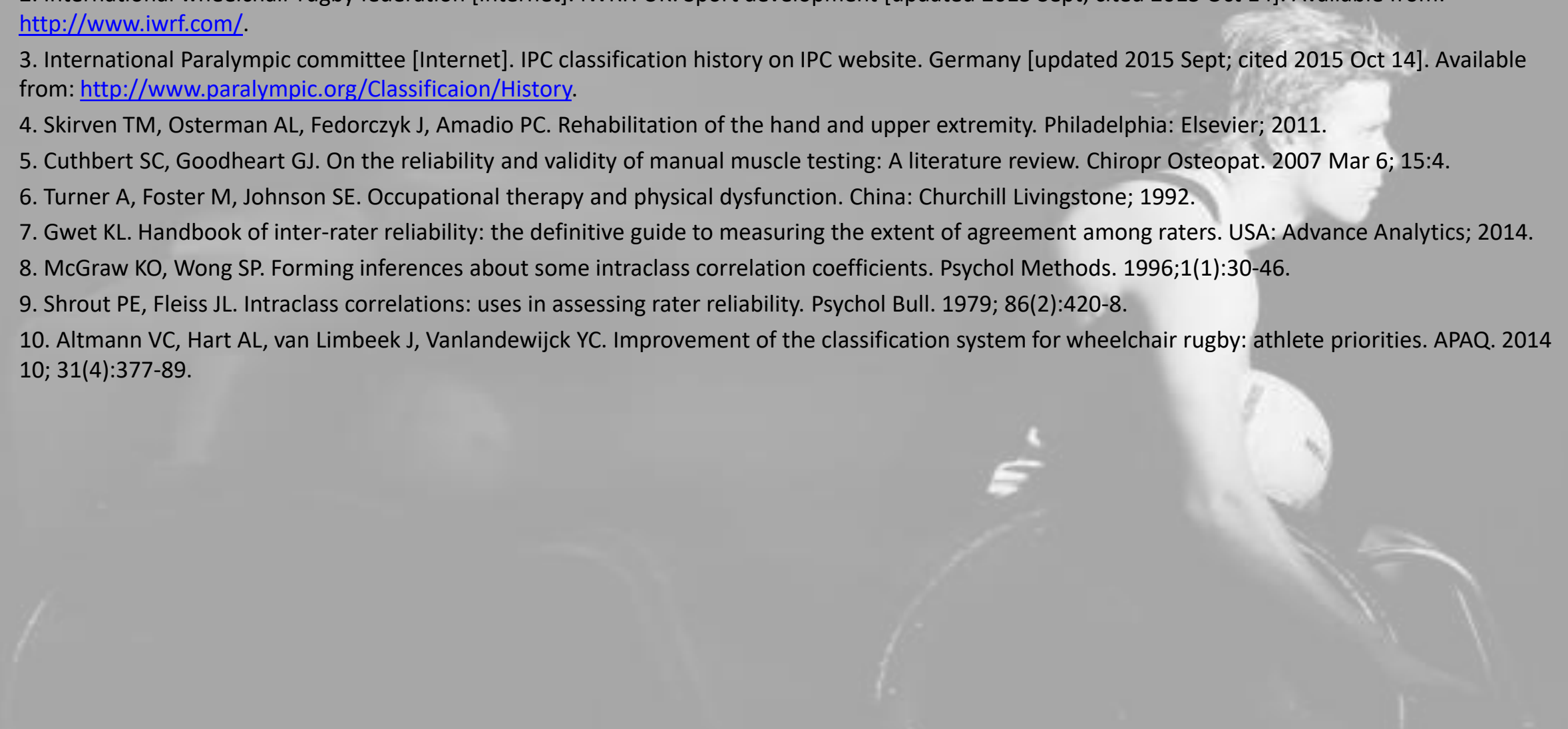


CONCLUSION AND RECOMMENDATIONS (CONT.)

4. **Change the reference ROM:** instead of using the normal anatomical range as the full range of motion, rather use the reference range⁶
5. Daniels and Worthingham **do not use any pluses or minuses.**⁹
6. **MMT wording used on the classification form should be revised.**⁹

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THANK YOU!!!

