Inter-rater reliability of the new classification system for Para Va'a

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Para-va'a

- Outrigger
- Originates from French Polynesia
- Ama and single blade paddle

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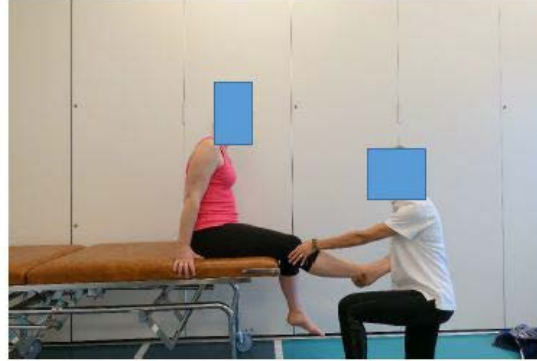
Development of Para Va'a classification system

- Forward leaning trunk position + trunk rotation + leg movement = key kinematic factors during Va'a paddling (Rosén et al. 2019).
- Develop classification tests for evaluating trunk and leg function medically and technically.
- Examine relationship between classification tests and movement on the ergometer.

Classification tests

Trunk test (6 tasks)   **Leg test (14 tasks)**   **On-water test (3 tasks)**

All tasks scored on a 0-2 point scale

Para-v...m

VL1

VL3

TOKYO 2020
PARALYMPIC GAMES

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New Para Va'a classification system

✓ Evidence-based

• Reliable?

Purposes

- To examine the inter-rater reliability (IRR) of the new Para Va'a classification system by examining the IRR in the:
  - overall class allocation,
  - total score of the trunk, leg and on-water tests and,
  - individual tasks in the trunk, leg and on-water tests.

Method – participants

- 3 international medical classifiers,
- 3 international technical classifiers,
- 12 para va'a athletes (8 males, 4 females) with different types of impairments from 4 countries.

Method – protocol

- Detailed classification manuals created for each test.

- Classifiers received classification manuals 4 weeks prior to data collection.

- 2 days data collection.

- Athletes classified by each classification team in all three tests.

- Classifier teams blinded to the scores of other classier teams

Method - statistical analyses

- Two-way random, absolute agreement, single-measures intraclass correlation coefficient (ICC) calculated for overall class and total scores.

- Fleiss kappa and percentage of total agreement calculated for individual tasks.

ICC results

		95% Confidence Interval (CI)		F Test with True Value 0			
	ICC	Lower bound	Upper bound	Value	df1	df2	Sig
Trunk test	0.91	0.78	0.97	39.15	11	22	<0.001
Leg test	0.99	0.97	1.00	225.00	11	22	<0.001
On-water test	0.95	0.77	0.97	28.44	11	22	<0.001
Class allocation	1.00	-	-		11	-	-

Trunk test tasks

Task	Overall Fleiss kappa (95% CI)	% agreement
Flexion	0.75 (0.52-0.98)	75 %
Extension	0.31 (0.10-0.54)	33 %
Right rotation	0.62 (0.36-0.87)	58 %
Left rotation	0.62 (0.36-0.88)	67 %
Right side shift	0.73 (0.47-0.98)	75 %
Left side shift	0.82 (0.57-1.10)	83 %

Leg test tasks

Joint	Side	Task	Overall Fleiss kappa (95% CI)	% agreement
Hip	Right	Flexion	0.91 (0.67-1.15)	92 %
		Extension	0.82 (0.58-1.10)	83 %
	Left	Flexion	0.91 (0.67-1.15)	92 %
		Extension	0.91 (0.68-1.15)	92 %
Knee	Right	Flexion	0.89 (0.65-1.14)	92 %
		Extension	1.00 (0.76-1.24)	100 %
	Left	Flexion	1.00 (0.76-1.24)	100 %
		Extension	1.00 (0.76-1.24)	100 %
Ankle	Right	Plantar flexion	1.00 (0.67-1.33)	100 %
		Dorsiflexion	1.00 (0.67-1.33)	100 %
	Left	Plantar flexion	0.55 (0.27-0.83)	83 %
		Dorsiflexion	0.55 (0.30-0.81)	83 %
Leg press	Right		0.88 (0.64-1.13)	92 %
	Left		1.00 (0.76-1.24)	100 %

On-water test tasks

Task	Overall Fleiss kappa (95% CI)	% agreement
Trunk flexion	0.47 (0.17-0.77)	58 %
Trunk rotation	0.42 (0.15-0.69)	50 %
Leg movement	0.91 (0.67-1.15)	92 %

Discussion

- Excellent reliability for total scores and class allocation (Cichetti 1994).

- Small discrepancies between classifiers were seen on an individual task level but did not affect the overall class allocation.

- Low Fleiss kappa and high percentage of total agreement indicate a skewed distribution of scores.

- Lowest reliability in the trunk extension task in the trunk test and the two trunk tasks in the on-water tests.

- Reliability can increase if task descriptions in classification manuals are made more clear (Altmann et al. 2013).

Conclusion

- It can be expected that a Para Va'a athlete will be allocated to the same class regardless of which classifier team conducts the classification in the new evidence-based classification system for Para Va'a.

Acknowledgements