Performance determinants and classification in paracanoe

av

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Akademisk avhandling

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Abstract:

Valid classification systems are vital for Paralympic sports in order to minimise the impact of impairment on sports performance. To achieve valid classification, each Paralympic sport must develop evidence-based classification systems by examining the impact of impairment on key performance determinants. The aim of this thesis was to examine the impact of impairment on key performance determinants in para va’a and para kayak. Additional aims were to examine the reliability of the para va’a classification system and the validity of the para kayak classification system.

In studies I and III, three-dimensional (3D) kinematic data from the arms, trunk and legs as well as force from the paddle was collected. Ten non-impaired va’a and 44 para va’a athletes participated in study I and 10 non-impaired kayak and 41 para kayak athletes participated in study III. In study II, three international classifier teams, each comprised of a medical and technical classifier, classified 12 para va’a athletes using the new trunk, leg and on-water classification test batteries and class allocation for para va’a. In study IV, 3D kinematics of the trunk, legs and paddle as well as forces at the footrest, seat and paddle were measured in 17 para kayak athletes with above knee (AK) (n=11) or below knee (BK) (n=6) amputation.

The main findings were:

• If para va’a athletes have full trunk function, the level of leg impairment does not affect the performance in terms of paddling force (Study I).
• The inter-rater reliability of the evidence-based classification system for para va’a was excellent with no discrepancies between the classifier teams in class allocation and minor discrepancies in individual tests (Study II).
• The differences between the three para kayak classes were in line with the definition of the classes in the new evidence-based classification system for para kayak. In addition, no significant correlations were seen between power output and joint variables in trunk or legs for two of the three classes indicating that these classes are valid (Study III).
• Differences between athletes with AK and BK amputation were seen for variables concerning the hip joint. No differences were however seen between the groups in paddle performance variables (Study IV).

In conclusion, this thesis has described how athletes with different impairment differ in key performance determinants for para va’a and para kayak. The results of the thesis also gave indications that the new evidence-based classification system for para va’a is reliable and that the new evidence-based classification system for para kayak is valid in regard to two of the three classes.

Keywords: canoe, outrigger, para sport, disability, impairment, Paralympics, kinematics, kinetics
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