Results

The obtained discriminant function was significant ($p<0.001$; Eigenvalue=1.56; Wilk’s Lambda=0.391; Canonical Correlation=0.78; Chi-squared=35.68) and it classified correctly 95.7% of the teams in AB and II teams. The variables which best contributed to discriminate AB and II teams were: fouls (SC=0.499); 3PS scored (SC=0.474); 3PM missed (0,369) and FT-scored (SC=0.352). The obtained centroid for II-teams was -1.071 and for AB-teams was 1.392; consequently the cut point was set at 0.1605. The classification equation was obtained using non-typed coefficients and a D-value was calculated for each team when game-related statistics were introduced in the equation. $D \text{ Value}= 2PS \times 0.109 + 2PM \times -0.028 + 3PS \times 0.15 + 3PM \times 0.013 + FTS \times 0.051 + FTM \times -0.44 + OR \times -0.009 + DR \times -0.021 + ASS \times -0.111 + FO \times 0.08 + ST \times 0.014 + BLK \times 0.045 - 3,142$ If D-value $> 0.1605$ the team is classified as AB-team, if D-Value $< 0.1605$ the team is classified as II- team.

Conclusions

Although, according to the Classification Code, eligibility systems for II-sports require pre-competition tests and individual tests, this new approach allows a team specific game analysis. The development of this function has two important implications for future research in the development of eligibility systems in II-basketball. The first implication is that this function evidences the differences in game statistics between II and AB teams. The second implication is that, in the future, discriminant analysis will let us develop reliable functions to classify teams but also athletes from a multifactorial perspective.

Keyword(s): Eligibility systems, intellectual disability, INAS, IPC

References: International Paralympic Committee (IPC), International Federation for sport for para-athletes with an intellectual disability (INAS), KU Leuven and Spanish Ministry of Economy and Competitiveness (project number DEP2012-33649).

Elbow flexors-extensors muscles torque and velocity performance in high level wheelchair basketball players

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Introduction

During propulsion, the elbow showed alternating flexion/extension patterns (Rao et al., 1996). The movement dynamics in wheelchair basketball (WB) are specifically related to handling the wheelchair in sprinting, bracking, turning and blocking. The ability to accelerate the wheelchair from standstill will be determinate by several components, such as explosive strength and propulsion technique (Vanlandewijck et al., 2001).

Purpose

To analyse the elbow torque and the relationship with the speed of the WB players in a specific test of performance and to identify the differences in elbow torque between dominant side (DS) and non-dominant side (NDS).

Methods

12 men, WB players of the Spanish National Team took part in: a) 2 series of 15 m speed test with passing and braking, and b) 2 isokinetic test of the flexors and extensors elbow muscles. Speed performance were measured in real time by a laser system, Biolasersport® (Ferro, 2012; Ferro & Floria, 2010) at 2000 Hz. Average velocity (Vm) and maximum velocity (Vmax) were measured in five sections (0 -3 m, 3-5 m, 5-7.5 m, 7.5-15 m), and the braking distance (Db) after 15 m. During test, WB players had to run at maximum speed, to brake and to pass the ball in the distances of 5 m and 7.5 m, again to get the maximum velocity until 15 m and, finally, to brake in the minimum distance. Peak torque (PT) was analyzed with dynamometer isokinetic Biodex® Multi-Joint System - PRO (Biodex Corp., Shirley, NY). The isokinetic test was performed in the seated position with the shoulder placed in shoulder abduction at 45º. The angular velocities tested were 60º/s and 150º/s for both elbows. A paired student’s t-test and Spearman correlation were used with significance level at p<.05. The intraclass correlation coefficient (ICC) for all the velocity variables were 0.80 to 0.89.

Results

DS and NDS extensor at 150º/s and, NDS extensor and DS flexor at 60º/s, presented significant correlation in the Vmax in 0-3 m and 7.5-15 m, and in the Vm in 0-3 m. At 150º/s, DS and NDS extensor also showed correlation with the Vm in 7.5-15 m and DS extensor in 5-7.5 m in both Vm and Vmax. In DS flexor at 150º/s had correlation with Vmax in 7.5-15 m and with Vm in 0-3 m. Regarding DS extensor at 60º/s, there were correlation with Vm in 0-3 m and 7.5-15 m (p<.05). There was significant difference in flexor elbow at 60º/s between DS and NDS (77.25 ± 17,27 vs 68.33 ± 13,52 Nm, respectively; p=.007).
Conclusions

Flexors and extensors elbow muscles could contributed to gain speed in a 15 m velocity test in WB players, highlighting that the PT at 150°/s of elbow extension showed correlation with more sections of the test. Asymmetry in elbow flexion PT at 60°/s in the torque applied by DS and NDS was indicative of imbalance in the flexor muscles. We suggest that force training should be increased in WB players, and also, to work on compensate DS and NDS.

Keyword(s): Sprint test, peak torque, force muscle, kinematics

References:

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The development of a novel sports medicine clinic for young para-athletes: focus on injury prevention

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The medical needs of para-athletes are often overlooked when considering the development of best practices for clinical care and injury prevention. When compared to the general athlete population, elite para-athletes frequently experience delays in care and substandard access to sports medicine services. Additionally, care is often fragmented, with poor communication between medical providers and team coaching staff. As a result, young para-athletes are at risk for developing chronic, progressive injuries that ultimately may impact upon function and quality of life.