

Sport Performance Measures in Youth Wheelchair Basketball Athletes

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Introduction

Wheelchair basketball (WCB) is a sport growing in global popularity that provides an adaption of able-bodied basketball for individuals with varying ability (1). Despite similar physiological demands, minimal sport performance testing for youth WCB players has been conducted in comparison to elite WCB players (2,3). This study evaluated baseline sport performance measures for youth WCB players.

Methods

The youth WCB players ($n = 16$; $14.1 \text{ yrs} \pm 2.2 \text{ yrs}$ old, $60.8 \text{ kg} \pm 30.7 \text{ kg}$) completed a testing battery (See Figure 1) including maximal pass, sprinting with a basketball, sprinting without a basketball, T-test, spot-shot, and pick-up test. This testing battery is composed of field tests from previous studies based on five sport-specific WCB skills: power, speed, shooting accuracy, agility, and flexibility (1,2,3). Statistical analyses were performed with SPSS to report descriptive statistics and bivariate correlations between all anthropometric measures and performance measures.

Results

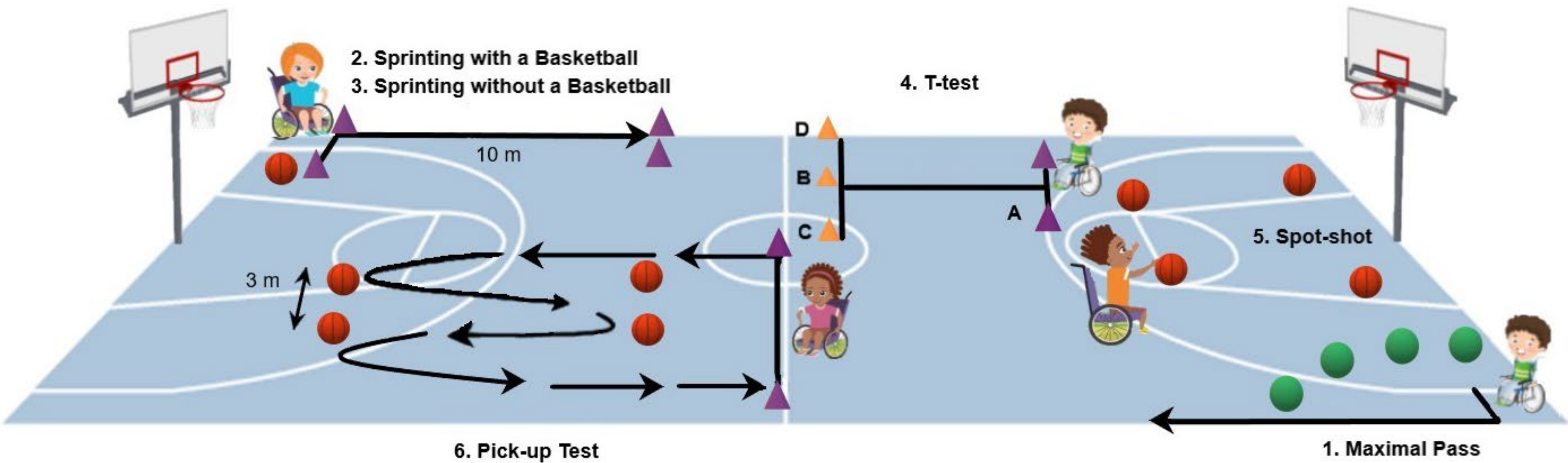
The sport performance testing battery revealed the following baseline values: maximal pass distance ($2.64 \text{ m} \pm 1.07 \text{ m}$), sprinting with a basketball ($4.11 \text{ s} \pm 0.80 \text{ s}$), sprinting without a basketball ($3.43 \text{ s} \pm 0.44 \text{ s}$), agility T-test ($18.88 \text{ s} \pm 2.34 \text{ s}$), spot-shot accuracy (24 points ± 12 points), and pick-up test ($19.27 \text{ s} \pm 5.13 \text{ s}$). Bivariate correlations (See Table 1) revealed significant relationships between sport performance measurements that employed similar skills.

Table 1. Anthropometric and Sport Performance Measures Correlations

Variables	Age (yr)	Wingspan (cm)	Body Weight (kg)	Maximal Pass (m)	Sprint w/ Ball (s)	Sprint w/o Ball (s)	T-Test (s)	Spot-Shot Points
Age (yr)	-							
Wingspan (cm)	0.431	-						
Body Weight (kg)	0.348	0.403	-					
Maximal Pass (m)	0.595*	0.816**	0.591*	-				
Sprint w/ Ball (s)	-0.312	-0.654**	-0.043	-0.659**	-			
Sprint w/o Ball (s)	-0.116	-0.538*	0.178	-0.506*	0.841**	-		
T-Test (s)	-0.283	-0.598*	-0.074	-0.588*	0.809**	0.703**	-	
Spot-Shot Points	0.611*	0.739**	0.548*	0.722**	-0.566**	-0.245	-0.591*	-
Pick-up Test (s)	-0.091	-0.628**	-0.102	0.597**	0.832**	0.785**	0.771**	-0.428

Note. Pearson's two-tailed r values are recorded with significance level indicated by *= $p < 0.05$ and **= $p < 0.01$.

Figure 1. Sport Performance Testing Battery



Note. The orange cones represent court markers and the purple cones represent the timing gate systems. The maximal pass test utilized a 5 kg medicine ball. The distance from cone A to cone B was 9.14 m; cones D and C were 4.57 m apart from cone B. The pick-up test requires the first and third basketballs to be 4 m from mid-court and 6 m from the second and fourth basketball.

Conclusions

Baseline sport performance measures facilitate comparisons between youth and elite players. Incorporating a testing battery enables coaches and players to determine initial skill level, personalize drills, and assess improvement over a season.

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