Relationships Between Perceived Readiness and Countermovement Jump Performance in NCAA Division I Men's Basketball Players

John R. Harry[1], Katie Harris[1], Anton Simms[1], Mia Hite[1]

[1]Department of Kinesiology & Sport Management, Texas Tech University, Lubbock, TX

Introduction & Purpose

- The countermovement jump (CMJ) is often used to estimate athletes' adaptations to training or other related interventions

- It is generally accepted that an athlete's readiness, influenced by a multitude of factors, fluctuates from day-to-day

- However, the level of readiness at the time of testing is often ignored, which could have implications on CMJ outcomes when assessing athlete adaptation

- We examined the relationship between perceived readiness and CMJ performance in basketball players, using two common CMJ styles: with arm swing and without arm swing
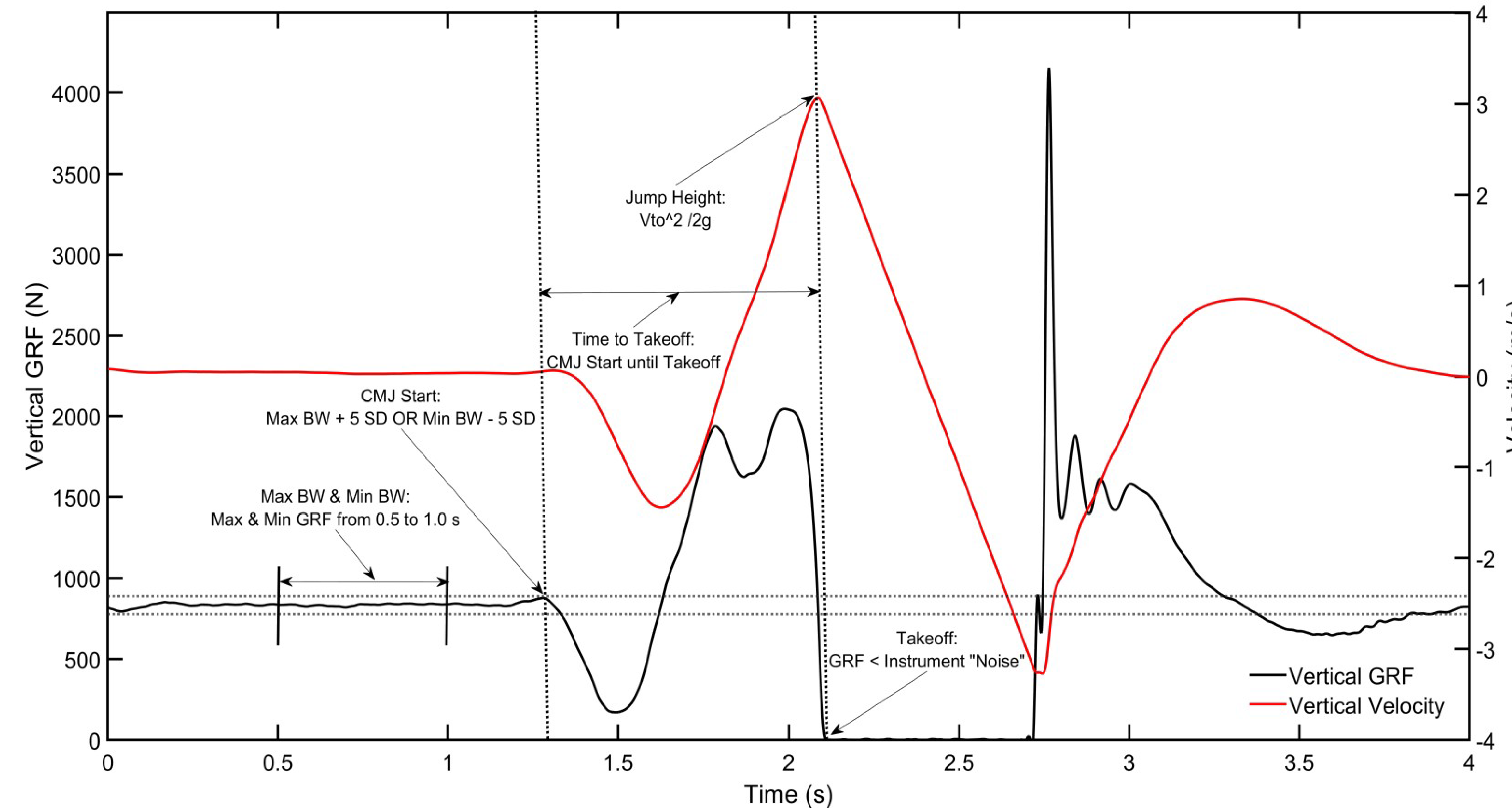
Methods

- Thirteen NCAA Division 1 men's basketball players completed CMJ tests on two days separated by 3 to 11 days depending on the athlete

- Each athlete was asked to determine their level of readiness prior to testing using a custom 16-point visual-analog scale (1 [full readiness] to 16 [no readiness])

- Three CMJ trials were recorded for each athlete with and without arm swing (hands on hips), for a total of 66 trials with arm swing and 110 trials without arm swing across athletes

- Ground reaction force data (GRF) were recorded using a dual force platform system sampling at 1000 Hz

- The CMJ was deconstructed to the time between the start of the countermovement and takeoff (Figure 1)

- Dependent variables were jump height and time to takeoff (Figure 1)

- Correlation coefficients ($\pm$ 0-0.1< trivial < small 0.3 < moderate 0.5 < large < 0.7 < very large 0.9) were used to demonstrate the relationship between perceived readiness and jump height or TTT ($\alpha = 0.05$)

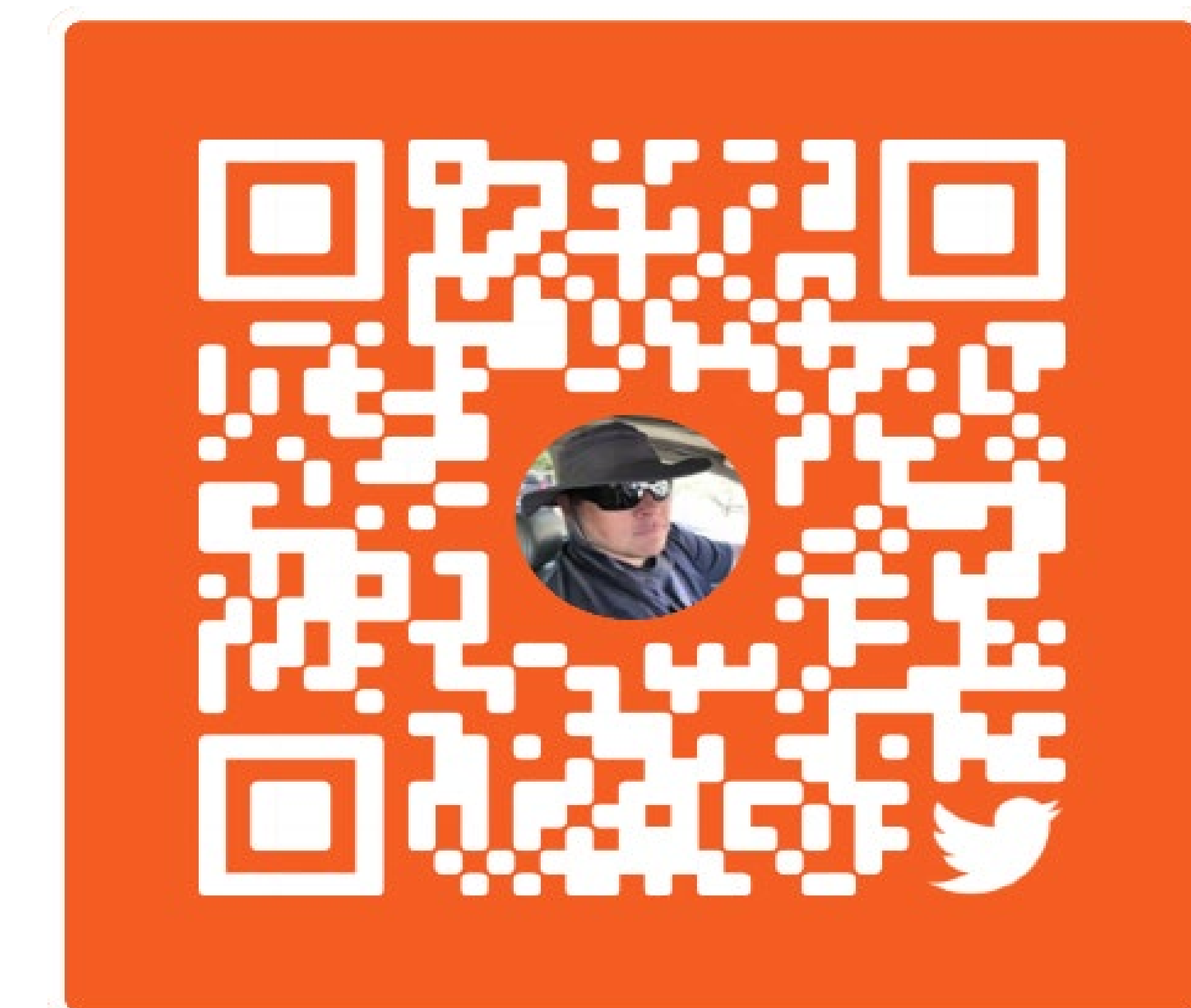**Figure 1.** Exemplar representation of the CMJ showing how the dependent variables were obtained.

Table 1. CMJ performance and perceived readiness results across all players and test sessions.

Variable	Jump Height (m)				Time To Takeoff (s)			
	Mean ± SD	CV%	r	p	Mean ± SD	CV%	r	p
CMJ No Arm Swing	0.36 ± 0.05	14.1	-0.26	0.01	0.78 ± 0.15	19.1	-0.01	0.89
CMJ Arm Swing	0.46 ± 0.06	13.9	-0.14	0.28	0.95 ± 0.19	19.9	-0.16	0.21
Perceived Readiness	3.94 ± 3.23	82.1	N/A	N/A	3.94 ± 3.23	82.1	N/A	N/A

Notes – CV%: coefficient of variation; *r*: correlation coefficient for the relationship with perceived readiness; *p* statistical probability that the relationship with perceived readiness was due to random chance.

Results

- Summarized results shown in Table 1

- For CMJs without arm swing, a small-significant relationship ($r = -0.26$; $p = 0.01$) was detected between perceived readiness and jump height, while the relationship between perceived readiness and TTT was trivial ($r = 0.01$; $p = 0.89$)

- For CMJs with arm swing, the relationships between perceived readiness and jump height and TTT were trivial-to-small and non-significant (jump height: $r = -0.14$; $p = 0.28$; TTT: $r = -0.16$; $p = 0.21$)

Conclusion & Practical Applications

- Lesser perceived readiness for training was significantly associated with reduced jump height

- However, a significant association was observed only for CMJs performed without arm swing

- The time required to perform the CMJ with and without arm swing was not associated with athlete's perceived readiness

- Strength and conditioning professionals should account for athlete readiness when conducting CMJ tests where arm swing is prohibited

- Without accounting for athlete readiness, practitioners may be inclined to conclude that their athletes failed to demonstrate targeted training adaptations with respect to the CMJ

Connect with me on Twitter

Connect with our Lab on Twitter