Fitness Testing and Match Performance in NCAA Division III Women's Lacrosse

Original Research

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Abstract

Introduction: NCAA women's lacrosse is an intermittent, high-intensity sport requiring a blend of aerobic capacity, anaerobic power, and sport-specific skills. While previous research has established fitness profiles for collegiate athletes, the direct relationship between physical testing metrics and match performance in Division III (DIII) programs remains under-explored. This study aimed to report fitness data for a DIII women's lacrosse team and examine correlations between athleticism and in-game statistics.
Methods: Twenty-one female DIII lacrosse athletes (height 166.2±3.4 cm; body mass 68.8±11.1 kg) underwent fitness testing during the 2025 season. Assessments included twenty- and thirty-yard sprints (using infrared timing gates) and a countermovement jump (CMJ) on dual force plates. Match performance data, including goals, assists, ground balls, and starts, were collected over a 19-game season. Pearson's correlation coefficients (r) were used to analyze relationships between fitness and performance variables.
Results: Significant correlations were observed between physical metrics and match performance (r=0.43–0.73, p<0.05). Thirty-yard sprint times and estimated top speed significantly correlated with games started, ground balls, and free position goals. CMJ metrics, specifically jump height, relative propulsive power, and modified reactive strength index (mRSI), demonstrated the strongest relationships, particularly with shots, goals, and turnovers. Stature showed no significant relationship with performance.
Conclusion: Sprint and CMJ metrics are moderate-to-strong predictors of match performance in DIII women's lacrosse. These findings suggest that prioritizing relative power and acceleration may enhance on-field efficacy, providing coaches with objective benchmarks for roster decisions and talent identification.

Key Words: linear speed, countermovement jump, talent identification.

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Introduction

Since the 2000-2001 season, women's lacrosse has been the fastest growing National Collegiate Athletic Association (NCAA) women's sport [1]. As of 2020, NCAA Division III hosted more than twice as many teams as Division I and Division II combined, 292 versus 118 and 111, respectively [1]. The rapid growth of the sport and the prevalence of athletes at the Division III level have warranted a need to continually study this group. NCAA women's lacrosse is an intermittent high-intensity sport requiring components of aerobic and anaerobic fitness and sport-specific skills [2-4]. Sprint speed, agility, strength, power, and aerobic and anaerobic capacities are important components of physical fitness in lacrosse [2-4]. NCAA women's lacrosse is a field sport played 12-a-side (goalkeeper included) with 15-minute quarters, a 90-second shot clock, and continuous substitutions [5]. Players are categorized by positions with overlapping roles: attackers, midfielders, defenders, and goalkeepers [3]. Attackers have a primary role to score and assist goals, generally operating in the opposing defensive zones. Midfielders are required to play both offensive and defensive roles, covering high volumes of distance and facilitating play. Defenders have a primary role of neutralizing opposing attack efforts and goalkeepers primarily defend the goal.

As of the 2024 NCAA women's lacrosse season (Division I, II, and III), the equivalent financial aid available is higher in Division I than in Division II and financial aid is not permitted in Division III [6-8]. Current research suggests that NCAA Division I athletes have superior physical fitness characteristics compared to NCAA Division II and Division III athletes [9-11]. Previous research on collegiate lacrosse has largely reported on fitness testing and external workload characteristics and trends [2-4,12,13]. Furthermore, research has investigated such differences based on position and starting status [3,12,13]. In a study comparing physical performance characteristics in NCAA Division III women's lacrosse, it was reported that there were no significant differences between starters and non-starters in any fitness test (p>0.05) [3]. Among these tests were a 1RM bench press, 1RM back squat, countermovement jump (CMJ), Wingate Anaerobic Test, 30-second resisted sprint, direct open-circuit spirometry VO_2max test (Åstrand treadmill protocol), forty-yard sprint, T-drill, and pro-agility test [3]. It has been noted that research differentiating starters from non-starters using fitness testing does not consider coaching recruitment and lineup preferences based on physical characteristics and skills [13]. Therefore, comparisons between starters and non-starters using fitness testing should also discuss the role of coaching preferences and untested skill differences, particularly when unexpected cases occur (e.g. a slower player as a key starter).

In total, it was reported by Enemark-Miller et al. that the physiological profile of NCAA Division I women's lacrosse players is comparable to women's basketball, soccer, and track sprinters [2]. While it may be acceptable to selectively compare fitness testing results between these sports, there is still a need to distinguish and develop fitness characteristic data in women's lacrosse. This is evidenced by significant differences reported in external load demands between women's lacrosse, field hockey, and soccer (p<0.05), field sports that are seemingly similar [15]. For example, Kuhlman et al. reported that lacrosse players covered more sprint distance and distance between 75-90% max speed and had a higher player load per minute compared to soccer and field hockey (p<0.001) [15]. This reflects that women's lacrosse players operate at relatively greater sprint loads, further emphasizing the sport's demand for sprint speed characteristics. Within lacrosse, positional differences in competitive match external loads have been explored [12-13]. In NCAA Division I women's lacrosse, Devine et al. reported that midfielders traveled a greater distance at high-intensity speed and a greater percentage of total distance at such speed compared to defenders (p<0.05) [12]. Defenders also performed fewer sprints and high-intensity decelerations compared to attackers and midfielders (p<0.05) [12]. This indicates that positional demands generate differences in workloads, which may hold true for fitness testing. In support of this, Hoffman et al. reported that attackers were 15.7% heavier than midfielders, and attackers demonstrated higher mean and peak power in the Wingate Anaerobic Test than midfielders and defenders, and defenders demonstrated a 10.3% higher 1RM back squat than midfielders (p<0.05) [3].

When considering a traditional 4-year collegiate career for women's lacrosse, it has been reported that athletes' external workloads nearing the end of their careers either increased or remained near team average, and their variation in workload decreased [13]. This reveals that relatively older players are likely to assume greater match responsibilities coinciding with consistent workloads. Therefore, starting status may be influenced by age or year with disparity between programs.

While research on fitness testing and external workload has suggested that there are distinct characteristics that translate to lacrosse performance, to the best knowledge of the authors, there is a gap in literature on the relationships between fitness testing and match performance in collegiate women's lacrosse. Previous research has investigated these relationships in rugby sevens and (15-a-side) rugby union [16-17]. Among international (n=18) and provincial (n=22) rugby sevens players, ten- and forty-meter sprint time was negatively correlated with attack-based stats of defenders beaten and line breaks (r=0.41-0.51) [16]. Additionally, body weight and weighted CMJ peak power was positively correlated with contact-based stats of attacking and defending rucks (r=0.34-0.59) [16]. These results suggest that fitness characteristics influence proficiency in rugby sevens performance [16]. In rugby union, similar analyses were performed for 510 players and 296 matches [17]. Overall, due to the limited physical fitness heterogeneity of elite rugby players, there were numerous small-moderate correlations between fitness testing and match performance, with the strongest correlation being between twenty-meter sprint time and evasion among forwards (r=-0.39) [17]. It is possible that such heterogeneity also exists in NCAA Division III women's lacrosse. Given the statistical power of the data despite the multitude of small-moderate correlations, it was reported that there was clear evidence that fitness characteristics also influence proficiency in rugby union [17]. Knowledge of relationships between fitness and match variables can guide coaches and strength and conditioning professionals with improving individual and team match performance.

The purpose of this study was to report fitness testing data for an NCAA Division III women's lacrosse team and explore relationships between fitness testing and match performance. Due to the importance of sprinting speed and lower-body power in women's lacrosse, it was hypothesized that sprint and CMJ metrics would demonstrate statistically significant relationships with match performance metrics.

Methods

A retrospective observational correlational study was used. The researchers used a de-identified database with subject-aligned data for descriptive information, fitness testing, and match performance. In exploring relationships, descriptive information and fitness testing variables were treated as independent variables and match performance variables were treated as dependent variables. The fitness tests and variables of interest were selected based on the physical characteristics and external workload demands reported in NCAA women's lacrosse [2,12,15]. Individual match performance variables investigated in this study were listed on the university's athletic website. This study was approved by the University Institutional Review Board.

Participants

Thirty-two athletes from an NCAA Division III women's lacrosse team supplied data for this study, of which the data from twenty-one athletes were used for correlation analysis (height, 166.2±3.4 cm; body mass, 68.8±11.1 kg). Due to the differences in match demands of the goalkeeper position compared to attackers, midfielders, and defenders, goalkeepers were omitted from the correlation analysis [12,15]. Additionally, players who missed multiple games due to injury were removed from the study. Players that only participated in practice were also removed. Due to those qualifiers, of the 30 total players assessed, the data from 21 players were analyzed. All 21 players completed all the fitness tests and had no missing data. Fitness testing and match performance data were recorded during and throughout, respectively, the 2025 NCAA women's lacrosse season.

Procedures

Fitness Testing Session

A thirty-yard sprint and a (hands-on-hips) CMJ were tested in a single session between games 9 and 10 of the 19-game 2025 NCAA women's lacrosse season. Testing was conducted outdoors immediately prior to a Monday afternoon practice. Subjects did not have any scheduled lacrosse and weightlifting activity in the 48 hours prior to testing. First, the team performed a 15-minute dynamic warmup identical to their normal practice warmup. Subjects were randomly split into 2 groups of 15 for testing. One group performed the thirty-yard sprint first and the other performed the CMJ first. After both groups finished their respective tests, they switched and performed the other test. The warmup and fitness tests were performed under the supervision of a Certified Strength and Conditioning Specialist.

Thirty-Yard Sprint

The thirty-yard sprint was run on the team's home field with an artificial turf surface. Times were measured using the Brower TCi infrared timing gate system (Brower Timing Systems, Draper, UT, USA), with splits at twenty yards and thirty yards. A tape measurer was used to position the timing gates at the start, twenty yards, and thirty yards. Manufacturer guidelines were followed for timing gate height and distance between timing gates. Subjects wore cleats when performing the sprint. Subjects were instructed to start from a forward-facing split stance and begin on their own when ready. Two trials were performed with a 4-minute rest between trials. Twenty-yard and thirty-yard times were recorded by the Brower TCi System were handwritten after each trial. The average of the two trials was used in this study. Variables of interest were twenty-yard sprint time, thirty-yard sprint time, and average speed from twenty to thirty-yards (20-30yd $mi \cdot hr^{-1}$). Use of timing gate splits beyond twenty meters to estimate top speed in team field sports has been supported in literature [18-19]. Estimation of top speed through a ten-meter split time has shown to significantly underestimate top speed compared to criterion radar ($p<0.05$), although agreement between such methods appeared to be strong [19].

Countermovement Jump

The CMJ was tested on a concrete surface using a dual force plate system (Hawkin Dynamics, Westbrook, ME, USA) with a sampling frequency of 1,000 Hz. A test administrator demonstrated the CMJ with hands-on-hips, cueing to jump as high and fast as possible. All subjects had at least 2 familiarization sessions with the CMJ. Subjects were instructed to practice the CMJ movement prior to trials, after which they performed two maximal effort CMJs with minimal rest between trials. If subjects did not perform the movement correctly (e.g. uncontrolled landing), that trial was discarded and an additional trial was performed. The average of the two trials was exported for analysis. Variables of interest were jump height, average propulsive force, average relative propulsive force, average propulsive velocity, average propulsive power, average relative propulsive power, modified reactive strength index (mRSI), and weight.

Match Performance

Match performance data from the 2025 NCAA women's lacrosse season was referenced from the university's athletic website. Individual statistical totals from all 19 games were included for analysis. Variables included games played, games started, goals, assists, points, shots, shots on goal, free position goals, free position shots, ground balls, draw controls, turnovers, and caused turnovers. Points are measured as the sum of goals and assists. Free position goals and shots are specifically within the offensive critical scoring area. Free position is awarded to the team of the player fouled anywhere on the field [5]. There are differences in free position rules within the critical scoring area above the extended goal line, where free position shots occur [5]. If a foul occurs within 8 meters of the goal circle (above the extended goal line), free position is awarded at the nearest spot to the 8-meter arc or the hanging hash [5]. If a foul occurs beyond 8 meters within the critical scoring area (above the extended goal line), free position is awarded at the nearest spot to the 12-meter fan [5]. Generally, position players are not allowed to obstruct the goal or be within 2-4 meters of the player awarded free position [5]. Ground balls are measured by either loose or legally forced ground balls taken into possession by a player. Draw controls are awarded when a player or team successfully gains possession following a draw. In the draw control, two opponents are set up along the center line, with their sticks parallel to the ground, above hip level, and held back-to-back so that their sticks are between the ball and their defending goals [5]. After an official secures the ball and setup, on the whistle, opponents draw their sticks up and away from the starting position so that the ball achieves a flight greater than head-level, and opponents attempt to secure possession [5]. Caused turnovers are when a defensive player steals the ball from an offensive player and possession changes teams [5].

Statistical Analyses

All analyses were performed on SPSS for Windows (version 29.0; IBM, Chicago, IL, USA). Descriptive statistics (mean ± *SD*) for the variables measuring stature and physical fitness were calculated for all players (n=32), as well as by position group. Next, a correlation analysis was performed to explore relationships between the assessments of stature, fitness and match performance. Match performance data was taken from the website of the athletic department of the participating athlete's university. The match performance statistics analyzed were games played, games started, goals, assists, points, shots, shots on goal, free position goals, free position shots, ground balls, draw controls, turnovers, caused turnovers, and fouls. Significance levels were set at $p < 0.05$. The match data was complete, meaning there was no missing data.

Results

Descriptive statistics of the population are presented in Table 1. Of the 21 participants in the study, nine played the attack position, seven were midfielders, and five were defenders.

Table 1. Descriptive statistics.

Group	Number	Height (cm)	Weight (kg)
All	21	166.2±3.4	68.8±11.1
Attack	9	168.2±2.7	74.7±13.1
Midfielder	7	164.3±3.0	63.0±6.7
Defense	5	165.1±3.8	66.4±8.0

Data are means ± SD.

The first correlation analysis explored the relationship between stature (height, weight) and match performance. The results in their entirety are presented in Table 2. There were no statistically significant relationships between measures of stature and in game performance. However, height trended towards having a significant, negative relationship with both draw controls (r=-0.42, p=0.055) and ground balls (r=-0.38, p=0.088). This indicates that shorter players may be more successful at picking up the loose balls during a game.

Table 2. Height, weight and in-game performance.

Match Performance Statistical Category	Height (cm)		Weight (kg)	
	r	*p*	*r*	*p*
Games Played	-0.32	0.157	-0.13	0.586
Games Started	-0.09	0.707	-0.11	0.637
Goals	-0.27	0.233	-0.11	0.643
Assists	-0.06	0.786	0.03	0.895
Points	-0.21	0.352	-0.07	0.778
Shots	-0.22	0.336	-0.09	0.711
Shots on Goal	-0.26	0.262	-0.11	0.646
Free Position Goals	-0.37	0.096	-0.25	0.273
Free Position Shots	-0.32	0.157	-0.22	0.349
Ground Balls	-0.38	0.088	-0.27	0.239
Draw Controls	-0.42	0.055	-0.31	0.173
Turnovers	-0.23	0.318	-0.02	0.919
Caused Turnovers	-0.25	0.278	-0.29	0.200
Fouls	-0.30	0.194	-0.28	0.224

The next correlation analysis looked for relationships between match and maximum sprint performance. The complete results are located in Table 3. Twenty-yard sprint time displayed significant negative relationships with games started (r=-0.49, p=0.026), free position goals (r=-0.45, p=0.041), free position shots (r=-0.43, p=0.049), ground balls (r=-0.51, p=0.017), and caused turnovers (r=-0.46, p=0.038). Thirty-yard sprint time displayed significant negative relationships with games started (r=-0.50, p=0.021), free position goals (r=-0.49, p=0.024), free position shots (r=-0.47, p=0.033), ground balls (r=-0.54, p=0.012), draw controls (r=-0.44, p=0.049), caused turnovers(r=-0.49, p=0.025), and fouls (r=-0.45, p=0.039). The strongest relationships between any of the sprinting related measures and match performance came from calculating the speed in miles per hour averaged during the twenty-to-thirty yard portion of the sprint. This serves as an approximation of top speed reached during a sprint. Free position goals (r=0.55, p=0.009) and ground balls (r=0.57, p=0.007) both had a significant positive relationship with 20-30yd mi·hr^{-1} achieved. A significant positive relationship was observed for 20-30yd mi·hr^{-1} and games started (r=0.051, p=0.019), free position shots (r=0.51, p=0.018), draw controls (r=0.51, p=0.020), caused turnovers (r=0.54, p=0.012), and fouls (r=0.50, p=0.021).

Table 3: Speed and in game performance.

Match Performance Statistical Category	20yd Sprint		30yd Sprint		20-30yd speed	
	r	*p*	*r*	*p*	*r*	*p*
Games Played	-0.21	0.367	-0.25	0.271	0.35	0.125
Games Started	-0.49*	0.026	-0.50*	0.021	0.51*	0.019
Goals	-0.39	0.080	-0.40	0.074	0.40	0.075
Assists	-0.10	0.664	-0.07	0.768	0.00	1.000
Points	-0.31	0.170	-0.31	0.179	0.28	0.217
Shots	-0.40	0.070	-0.41	0.068	0.39	0.079
Shots on Goal	-0.40	0.069	-0.41	0.063	0.41	0.065
Free Position Goals	-0.45*	0.041	-0.49*	0.024	0.55**	0.009
Free Position Shots	-0.43*	0.049	-0.47*	0.033	0.51*	0.018
Ground Balls	-0.51*	0.017	-0.54*	0.012	0.57**	0.007
Draw Controls	-0.41	0.068	-0.44*	0.049	0.51*	0.020
Turnovers	-0.43	0.053	-0.43	0.052	0.41	0.063
Caused Turnovers	-0.46*	0.038	-0.49*	0.025	0.54*	0.012
Fouls	-0.42	0.061	-0.45*	0.039	0.50*	0.021
**Correlation is significant at the 0.01 level						
*Correlation is significant at the 0.05 level						

The final correlation analysis performed was between match and CMJ performance. Full results are shown in Table 4. Several individual CMJ metrics displayed significant relations. Jump height displayed a significant positive relationship with games played ($r=0.59$, $p=0.005$) and started ($r=0.58$, $p=0.006$), goals ($r=0.64$, $p=0.002$), points ($r=0.56$, $p=0.008$), shots ($r=0.65$, $p=0.001$), shots on goal ($r=0.65$, $p=0.001$), free position goals ($r=0.64$, $p=0.002$) and shots ($r=0.67$, $p=0.001$), ground balls ($r=0.63$, $p=0.002$), turnovers ($r=0.64$, $p=0.002$), and caused turnovers ($r=0.59$, $p=0.005$). Jump height also had a significant positive relationship with draw controls ($r=0.52$, $p=0.017$) and fouls ($r=0.45$, $p=0.041$). Average relative propulsive force displayed a significant relationship with free position goals ($r=0.52$, $p=0.016$) and free position shots ($r=0.48$, $p=0.027$). Average propulsive velocity had the strongest statistical relationships with match performance of any CMJ metric. Games played ($r=0.63$, $p=0.002$), games started ($r=0.56$, $p=0.008$), goals ($r=0.69$, $p=0.001$), points ($r=0.60$, $p=0.004$), shots ($r=0.71$, $p<0.001$), shots on goal ($r=0.71$ $p<0.001$), free position goals ($r=0.70$ $p<0.001$), free position shots ($r=0.69$ $p=0.001$), ground balls ($r=0.61$, $p=0.003$), draw controls ($r=0.59$, $p=0.005$), and turnovers ($r=0.73$ $p<0.001$) were significant at the 0.01 significance level, while caused turnovers ($r=0.49$, $p=0.023$), was significant at the 0.05 level. Average propulsive power had significant positive relationships with shots ($r=0.45$, $p=0.043$) and turnovers ($r=0.53$, $p<0.001$). Average relative propulsive power had several significant positive relationships with match performance statistics. These include goals ($r=0.59$, $p=0.005$), shots ($r=0.60$, $p=0.004$), shots on goal ($r=0.61$, $p=0.003$), free position goals ($r=0.67$, $p=0.001$), free position shots ($r=0.66$, $p=0.001$), and turnovers ($r=0.63$, $p=0.002$). It also had significant positive relationships for games played ($r=0.49$, $p=0.024$), points ($r=0.49$, $p=0.024$), ground balls ($r=0.54$, $p=0.012$), and draw controls ($r=0.54$, $p=0.011$). Lastly, modified reactive strength index had significant positive relationships with goals ($r=0.64$, $p=0.002$), shots ($r=0.64$, $p=0.002$), shots on goals ($r=0.66$, $p=0.001$), free position goals ($r=0.68$, $p=0.001$), free position shots ($r=0.67$, $p=0.001$), and turnovers ($r=0.65$, $p=0.001$). mRSI also had a significant positive relationship with points ($r=0.54$, $p=0.012$), ground balls ($r=0.49$, $p=0.023$), and draw controls ($r=0.53$, $p=0.013$).

Table 4. CMJ and in-game performance.

Match Performance Statistical Category	Jump Height		Avg Propulsive Force		Avg Propulsive Force (Relative)		Avg Propulsive Velocity		Avg Propulsive Power		Avg Propulsive Power (Relative)		mRSI	
	r	p	r	p	r	p	r	p	r	p	r	p	r	p
Games Played	0.59**	0.005	0.09	0.708	0.30	0.179	0.63**	0.002	0.34	0.133	0.49*	0.024	0.42	0.058
Games Started	0.58**	0.006	0.05	0.845	0.23	0.321	0.56**	0.008	0.29	0.209	0.43	0.050	0.36	0.108
Goals	0.64**	0.002	0.13	0.581	0.38	0.086	0.69**	0.001	0.42	0.061	0.59**	0.005	0.64**	0.002
Assists	0.33	0.145	0.07	0.772	0.03	0.900	0.33	0.146	0.23	0.324	0.20	0.377	0.25	0.268
Points	0.56**	0.008	0.11	0.625	0.28	0.216	0.60**	0.004	0.37	0.098	0.49*	0.024	0.54*	0.012
Shots	0.65**	0.001	0.15	0.516	0.38	0.086	0.71**	0.000	0.45*	0.043	0.60**	0.004	0.64**	0.002
Shots on Goal	0.65**	0.001	0.13	0.561	0.39	0.077	0.71**	0.000	0.43	0.052	0.61**	0.003	0.66**	0.001
Free Position Goals	0.64**	0.002	0.05	0.825	0.52*	0.016	0.70**	0.000	0.33	0.143	0.67**	0.001	0.68**	0.001
Free Position Shots	0.67**	0.001	0.07	0.776	0.48*	0.027	0.69**	0.001	0.35	0.119	0.66**	0.001	0.67**	0.001
Ground Balls	0.63**	0.002	-0.05	0.837	0.36	0.113	0.61**	0.003	0.21	0.352	0.54*	0.012	0.49*	0.023
Draw Controls	0.52*	0.017	-0.10	0.672	0.40	0.074	0.59**	0.005	0.13	0.566	0.54*	0.011	0.53*	0.013
Turnovers	0.64**	0.002	0.25	0.276	0.43	0.052	0.73**	0.000	0.53*	0.014	0.63**	0.002	0.65**	0.001
Caused Turnovers	0.59**	0.005	-0.13	0.565	0.25	0.266	0.49*	0.023	0.10	0.674	0.43	0.052	0.37	0.101
Fouls	0.45*	0.041	-0.19	0.415	0.12	0.590	0.35	0.124	-0.02	0.947	0.27	0.244	0.16	0.489
**Correlation is significant at the 0.01 level														
*Correlation is significant at the 0.05 level														

Discussion

The primary purpose of this study was to explore relationships between fitness testing and match performance for a NCAA Division III women's lacrosse team. A secondary purpose was to report fitness testing data. In agreement with our hypothesis, metrics of both sprint and CMJ performance demonstrated significant correlations ($r=0.43$-0.73) to metrics of in-game performance ($p<0.05$, $p<0.001$). Therefore, the null hypothesis is rejected. The findings of significant correlations between sprint and CMJ metrics and in-game performance for NCAA Division III women's lacrosse are novel.

In general, these results are in agreement with previous research on the predictive quality of fitness testing on in-game performance in rugby sevens and rugby union [16-17]. The results observed in the present study demonstrated stronger correlations than those overserved in the aforementioned research in professional rugby. As noted by Smart et al., the limited physical heterogeneity in professional rugby may have limited the strength of fitness testing correlations to in-game performance [17]. It is uncertain whether the specificity of physiological demands in NCAA Division III women's lacrosse or a possible difference in population heterogeneity explains the stronger correlations observed in the present study.

Interestingly, CMJ metrics demonstrated stronger correlations to in-game performance compared to sprint metrics. Although the importance of sprint speed characteristics have been emphasized, it seems that the importance of CMJ characteristics deserve similar recognition. Indeed, there is physiological overlap between the mechanisms in sprinting and jumping. In particular, there is a large influence from vertical push off forces during initial acceleration [20]. In the present study, CMJ jump height, average propulsive velocity, average relative propulsive power, and mRSI demonstrated strong correlations to a multitude of in-game performance metrics. The physiological mechanisms related to these metrics certainly display overlap to the vertical push-off component in sprint acceleration. However, this aspect of sprint performance was not directly measured. Still, several in-game performance metrics demonstrated significant relationships to performance in the acceleration phase of sprinting (twenty-yard sprint time). In particular, free position goals and shots require proficiency in sprint acceleration due to the short distance from goal (8-12 meters) and the threat of nearby defenders [4]. When evaluating the CMJ metrics for force and power more closely the relative measures had much stronger relationships to match performance than the averages not scaled to body weight. This may indicate that women's lacrosse players could maximize their on-field performance by prioritizing training to have higher relative force and power outputs, rather than gross outputs in these metrics that would require a higher weight. Also noteworthy, one of the match performance statistics that displayed no statistical relationship with measures of athleticism is assists. This may be an indication that the skills needed to effectively pass and set a teammate up to score are more dependent on tactical knowledge of lacrosse than it is on the physical traits of the players.

The findings from this study support the use of force plate CMJ and thirty-yard sprint in association with in-game performance for NCAA Division III women's lacrosse. Coaches and scouts in NCAA Division III women's lacrosse can reference these testing procedures and similar producible results to help evaluate player performance and guide roster decisions. Due to the possibility of a sample with limited heterogeneity, future research on different NCAA Divisions and professional leagues is recommended to confirm these associations between such tests and in-game performance. However, the physiological mechanisms linking components of the CMJ and sprint to in-game qualities are strong enough to serve as a basis for translating the value of these tests within NCAA Division III women's lacrosse. Additionally, future research on this population would ideally utilize a larger sample size and statistical tools that allow for exploring stronger associations [21]. The use of additional assessments of components of anaerobic and aerobic fitness and body composition may be warranted to determine an optimal and efficient testing battery, although the value of screening baseline fitness for training programming and injury risk is also valuable.

Conclusions

Sprint and CMJ metrics display moderate-to-strong associations with match performance in DIII women's lacrosse. These findings suggest that prioritizing relative power and acceleration may enhance match performance, providing coaches with objective benchmarks for roster decisions and talent identification. Coaches should recognize that recruitment preferences and roster heterogeneity may influence the applicable quality of these tests.

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Conflict of Interest. The authors declare no conflicts of interest.

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