

Original Article

Understanding Safety in Women's Sports: A Study of Female Athletes' Perceptions in Delhi NCR

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Abstract - Women's safety in sport is an under-researched but urgent concern, especially in the Indian context, where structural inequities, power imbalances, and institutional deficits are prevalent in the daily lives of women athletes. The current study focused on five key areas of safety for female athletes in the Delhi NCR region, including physical infrastructure and facility safety, peer/team environment safety, staff/coach conduct, travel/commute safety, and perceived reporting mechanisms. The study sought to examine the overall safety perceptions of women athletes in various sports settings, identify areas of vulnerability, and determine which of the structural and interpersonal factors are most important in predicting overall perceptions of safety. The study was conducted on 75 active female athletes from the Delhi NCR region of various sports types, various levels of competition, various training locations, and various age groups. The data gathered was collected by a structured self-administered questionnaire with 39 items in the 5 domains based on purposive sampling with Google Forms. All subscales were found to have high internal consistency (Cronbach's alpha values varied from .88 to .96). Data were analyzed using independent samples t-tests, Mann-Whitney U tests, Pearson correlations, and multiple linear regression. Results showed that there were statistically significant differences between safety perceptions by sport type, coach gender, and training time. Team sport athletes expressed significantly greater safety perceptions than individual sport athletes in each of the three areas: physical infrastructure, travel, and reporting mechanism. In addition to physical infrastructure, peer environment, and travel safety, staff and coach conduct came out as the strongest predictor of reporting mechanism perception, with 73% of the variance in the regression model. The time of training was significantly correlated with travel safety and commute safety, and coach gender was significantly correlated with staff behavior. These results indicate that safety experienced by women athletes is a multi-dimensional and structurally-conditioned phenomenon. The study adds to evidence-based institutional reform in Indian sport and highlights the need for creating standardised safety protocols, holding coaches accountable, and providing easy reporting mechanisms so that women have the opportunity to run in sport respectfully and without fear.

Keywords - Women's Safety, Perceptions Of Safety, Female Athletes, Travel Safety, Reporting Mechanisms.

1. Introduction

1.1. Background of the Study

Women continue to live in public, professional, and institutional settings where their safety is not guaranteed all over the world. Women's everyday experiences are shaped by gender-based abuse, harassment, and unequal power arrangements, which perpetuate structural injustices that restrict self-assurance, independent mobility, and equal participation (UN Women, 2023). Because of the particular structural and interpersonal dynamics that characterise athletic situations, these vulnerabilities do not go away when women participate in sports; rather, they frequently get worse (Hurst et al., 2025). Physical proximity, high-trust relationships between coaches and athletes, frequent travel to remote training places, and individualised systems where power resides in the hands of a small number of people are all characteristics of sporting environments (Kirsty Forsdike &

Giles, 2024). These circumstances foster settings where boundaries are easily blurred and where misbehaviour, threats, and abuse are more likely to occur.

The subject of women's safety in sports has received extraordinary attention in the last 10 years. Major international incidents have shown how common harassment and abuse can be in sports systems. Structural flaws at several institutional levels were exposed by the USA Gymnastics abuse scandal, in which team physician Larry Nassar physically assaulted over 150 female athletes while disguising his actions as medical treatment (Mountjoy et al., 2022). Abuse persisted for decades because coaches, administrators, and sports authorities frequently disregarded or dismissed allegations (Tak et al., 2024). The controversy demonstrated how putting medals, prestige, and stable institutions ahead of athletes' welfare may create settings where crime is accepted.



In 2023, similar trends surfaced in India when a number of notable female wrestlers accused Brij Bhushan Sharan Singh, the former president of the Wrestling Federation of India, of sexual harassment (Hurst et al., 2025). Their claims brought to light the structural and cultural obstacles that Indian athletes encounter when trying to report abuse, such as intimidation, fear of career retaliation, the absence of independent complaints committees, and the substantial political protection enjoyed by senior officials (Sebastian, 2025). These relationships highlight how athletes' voices can be silenced and reporting discouraged by the concentration of power within sports federations.

Members of the French women's national football team drew awareness to the ways power may be used as a weapon in sports with high performance by voicing concerns about abusive behaviour, psychological abuse, and unethical conduct by coaching staff (Welle, 2023). Athletes explained how a culture of fear, silence, and reverence for authority allowed misbehaviour to go unpunished (Kirsty Forsdike & Giles, 2024). When taken as a whole, these instances from three distinct continents show that harassment and abuse in sports are systemic issues influenced by culture, structural authority, and institutional rigidity rather than individual occurrences.

This trend is not restricted to the three continents referred to above. Shim Suk-hee, a two-time Olympic gold medalist, claimed that her national team coach Cho Jae-beom sexually abused her on 22 occasions over a period of over three years from 2014, when she was aged 17. Cho's revelation prompted other female judoka, taekwondoka, and wrestlers to speak out against their male coaches, and is believed to have led to the conviction of a greater number of men who were accused of sexual assaults on female athletes. The case confirmed that the problem of harassment and abuse in sport is not isolated to the United States, France, or India, and highlighted how cultural norms, structural authority, and institutional rigidity are the root causes of the issue across all countries, sports, and levels of sport (Kennedy, 2021).

Building on these worldwide trends, this study examines female athletes' everyday safety experiences in regular training environments rather than only during significant incidents (Gaedicke et al., 2021). The study intends to comprehend how female athletes interpret safety, evaluate danger, and navigate circumstances where boundaries between acceptable and inappropriate conduct are frequently blurred by focussing on the larger ecosystem of exposure, social behaviour, and athletic workplace culture.

1.2. Infrastructure and the Cost of Ensuring Safety

It takes much more than just physical training facilities to ensure the safety of female athletes. It requires that a thorough safeguarding infrastructure be established and integrated into the regular operations of sports organisations (Tak et al.,

2024). Secure accommodations during competitions, precise travel guidelines, CCTV-monitored training facilities, verified and qualified coaches, the availability of female physiotherapists and support personnel, easily available reporting channels, and transparent disciplinary procedures (Hurst et al., 2025) are examples of safety-oriented systems. However, many sports organisations put performance infrastructure, such as gear, travel plans, and training technology, over safety precautions, often using staffing or budgetary restrictions as an excuse.

While bigger and more elite institutions frequently fail due to institutional laziness, a lack of oversight, or a belief that success and image outweigh the need for transparent control structures, smaller clubs and local academies may not have the financial means to implement formal safety systems (Tak et al., 2024). This disparity highlights a significant disconnect between organisational priorities and the ideal of athlete protection.

According to research by Zach et al. (2024), organisational standards have a significant impact on how athletes perceive and accept possibly inappropriate behaviour. Athletes may start to see harassment and breach of boundaries as a typical aspect of the competitive environment if institutions fail to provide adequate protection or specify behavioural boundaries.

The distinctions between misconduct, training intensity, and discipline are blurred by the normalisation of such behaviour. This emphasises even more how important it is to integrate safety-focused infrastructure at every level of sports, from amateur to professional.

In addition to increasing danger, the lack of strong structural safeguards creates an atmosphere in which athletes are unsure of what constitutes a breach, unsure of whom to complain to, and frequently afraid of the repercussions of speaking up (Kirsty Forsdike & Giles, 2024). Harassment becomes more difficult to recognise, more challenging to confront, and simpler to ignore in the absence of steady investment in safety infrastructure.

1.3. Do Harassment Cells and Reporting Committees Actually Work?

While many athletic organisations claim to have athlete welfare offices, sexual harassment cells, or Internal Complaints Committees, their actual effectiveness is seriously doubtful. Due to worries about committee availability, lack of privacy, or committee membership made up of people with close ties to the school or coaching staff, female athletes often hesitate to report misconduct, according to research from university sport settings (Fasting, Brackenridge & Sundgot-Borgen, 2001). These studies show how reporting processes frequently operate more as symbolic policies than as active protection systems, with participants describing institutional reactions as delayed, arrogant, or supportive of the accused.

Real-world sporting situations reflect these mechanisms' shortcomings. Athletes in the Indian wrestling protests claimed that officials who had direct allegiance to the accused disregarded, postponed, or reviewed their complaints (Bekker & Posbergh, 2021). Many were concerned that reporting would have an impact on their future employment, training possibilities, or selection. Similarly, survivors from USA Gymnastics disclosed that, despite serious and persistent accusations, they had repeatedly filed reports over a number of years without receiving any significant institutional response (Kirsty Forsdike & Giles, 2024). These trends imply that reporting committees frequently protect the organization's reputation rather than athlete safety, resulting in systems where formal procedures are in place but not followed or trusted.

A crucial question at the heart of this research is raised by these institutional flaws: do current sports reporting channels actually safeguard athletes, or do they just give the impression of protection? Designing successful safeguarding frameworks requires an understanding of athletes' experiences with these systems.

1.4. Intersectionality, Policy, and the Psychological Toll of Unsafe Sporting Environments

Although gender is the primary focus of the discourse on safety in sport, the unidirectional approach to studying gender would be inadequate to capture how other social identities interact with gender to make it more prone to experiencing insecurity in sport for many women. In the Indian context, research on inclusive sport has suggested that it is not possible to talk about exclusion and unsafety without also taking into account issues related to caste, class, sexuality, and region, because these are overlapping social determinants that influence the opportunities and barriers that are experienced within sport. (Mountjoy et al., 2022). This is especially relevant to caste, for women at the bottom of the caste, class, and gender hierarchy often experience the scourge of violence in multiple ways, and violence itself is a weapon of social control in a society where caste is still a determinant of access to resources and institutional protection in India, as existing scholarship has noted (Mountjoy et al., 2022). These multiple vulnerabilities are exacerbated by the lack of effective policy implementation: While the Prevention of Sexual Harassment (POSH) Act, 2013 is a law that requires sports organisations to set up Internal Complaints Committees (ICCs) for addressing complaints of sexual harassment, many National Sports Federations (NSFs) in India continue to operate without such committees despite the legal mandate, and this means that athletes have no social capital to turn to when a harassment complaint is made (Willson et al., 2025), with no functional mechanism available for escalation (Trilokinath Maurya, 2024). In this respect, comparative policy analysis indicates that this may not be a necessary aspect of safeguarding systems: Australia has established a National Integrity Framework (Willson et al., 2025) where

organisations have a specific reporting duty as well as independent complaint management systems which have led to increased complaints disclosed and disciplinary steps taken, whereas India (Kumar, 2026) continues to rely on internal committees that may be biased (Seth & Dhillon, 2020). In addition to the structural and institutional, the psychological impact of unsafe sporting environments is well documented. Harassment and abuse in sport have been associated with anxiety, depression, post-traumatic stress disorder, eating disorders, substance misuse, and ideation around suicide among those affected. In particular, psychological abuse, even when it may be sanctioned as part of sporting culture as a means to improve performance, has been shown to be a highly significant predictor of eating disorders and self-harm symptoms in athletes, casting doubt on any notion that psychological forms of abuse are less likely to have a negative impact than sexual and physical abuse (Team, 2026). This overlapping complexity of social identity, policy design, and psychological impact means that substantive protection of women in sport can never be achieved through a 'one size fits all' approach, but must address overlapping and compounding vulnerabilities across the various cohorts of female athletes.

1.5. Power, Authority, and Interpersonal Behaviour in Sport

Due to the inherent hierarchical nature of sport, athletes' training, opportunity, and advancement are mostly controlled by coaches, administrators, and senior authorities. When left unchecked, this power disparity can foster an atmosphere that is conducive to boundary violations, emotional manipulation, and coercion. Because defying authority puts their immediate athletic career at jeopardy, athletes, especially younger, dependent, or emerging ones, often put up with inappropriate behaviour.

Brackenridge's (1997) conceptual approach emphasises how relationships based on trust, reliance, and intimate physical contact can give rise to abuse in sports. Misconduct becomes ingrained in the training culture when athletes internalise negative behaviours as discipline, mental toughness, or standard practice. The French women's football problem serves as an example of how management structures that put authority preservation ahead of player wellbeing may silence entire teams due to deeply ingrained power relations (Bekker & Posbergh, 2021).

Past research on athlete safety, which includes studies stemming from high-profile issues such as the Nassar scandal, the protests over the Indian wrestlers' allegations of sexual assault by coach Nambi Narayanan, and allegations of sexual assault by coach John Terry in the French women's football team, is largely focused on the absence of sexual harassment or abuse from coaches and officials. This is undoubtedly a crucial aspect, but it is not the only one that would define the athlete's sense of security. Instead, this study defines safety as a multi-faceted construct, which includes physical infrastructure, peer and team environment, staff and coach

conduct, travel and commute safety, and confidence in reporting mechanisms. All dimensions of safety are important to athletes' daily experiences, but are not typically measured systematically and together.

It was an intentional choice to focus on Delhi NCR, as the region is known to be highly vulnerable in public areas and has numerous training areas, from private academies and school premises to stadiums and government-run sporting complexes, where issues of gender vulnerability can be compared within a manageable geographic context. Previous studies in this area in India have focused mainly on the experiences of elite-level athletes, at the national level, who are media stars, while the daily experience of athletes at the school, district, and state level are relatively under-researched and under-represented in the literature.

This study adds the systematic, domain-specific, and quantitative data which has been lacking in most literature to date. It reveals patterns of vulnerability, including structural and institutional vulnerability, which have not been identified in single-factor studies when a sport's level of safety is examined by simultaneously comparing various sport types, coach gender, training time, age group, and competitive level, providing sports academies and policy makers with a more detailed and evidence-based basis for targeting safeguarding interventions.

2. Materials and Methods

2.1. Aim and Objectives of the Study

The current study aimed to evaluate the safety perceptions of female athletes in different sports in the Delhi NCR region in various sports environments, considering differences in sports type, level, gender of the coach, and the time of training. The study aimed to detect potential areas of vulnerability, identify variations in safety practices between team and individual sport athletes, and assess the importance of various aspects of safety (physical infrastructure, interpersonal behaviour, coach/staff behaviour, transportation/commuting, and reporting) on the overall perception of safety. The study not only produced empirical results but also aimed to highlight the inadequacies of institutional safety protocols at various levels and age groups in Delhi NCR and to provide data-driven analysis that can be used to inform the accountability frameworks, awareness-raising initiatives, and policy-making by sports organizations. The importance of this research is that it would contribute to the larger agenda of discussions being had nationally on women's roles in sport, their retention, and their equality.

Specific objectives of the study were to investigate the differences in athletes' perceptions of safety depending on the time of day when they train; to analyse the differences in safety perception across the types of sports played (individual versus team sports) and to identify areas of relative strength and relative vulnerability in the data; to examine the

interrelationship between the various safety perception domains by correlational analysis; and to examine the differences in safety perception according to age group within the sample.

2.2. Participants

In this present research, a total of 75 female athletes from the Delhi NCR region were considered as a sample. Most of the respondents (76%) lived in Delhi, 16% in Gurgaon, and the rest elsewhere in the NCR. When asked about the level of competition, 44% of respondents competed at the school level, 25.3% competed at the state level, and 16% competed on the national level for their sport. As for the type of sport, 73.3% of these were team sports and 26.7 % were individual sports. Among those who had been involved in sport for a number of years, 41.3% had participated for 1-3 years, 29.3% for 5 or more years, and 18.7% had participated for 3-5 years. The primary training sites were: private academies (41.3%), school/college facilities (37.3%), stadiums or government sports centres (10.7%), and public sports complexes (8%).

2.3. Instrumentation

A questionnaire was prepared based on five domains comprising of 39 items to assess the safety perception of women athletes in Delhi NCR, namely Physical Infrastructure and Facility Safety (10 items); Peer and Team Environment Safety (6 items); Staff and Coach Conduct (9 items); Travel and Commute Safety (4 items); and Perceptions of Reporting Mechanisms (10 items). The internal consistency reliability of the five subscores was evaluated using Cronbach's alpha, and all subscores had good to excellent internal consistency reliability (.88 to .96).

2.4. Data Collection Procedure

The data were gathered using a self-administered online questionnaire, which was provided through Google Forms. A purposive sampling technique was used to ensure that the sample included only those who had the following selected inclusion and exclusion criteria: females who were active athletes and currently training in Delhi NCR. Athletes from other parts of India were specifically excluded in order to be geographically specific and contextually relevant. The questionnaire was tailored to collect demographic data and direct domain-specific perceptions on safety so that it is in line with the social contexts around sports in which women participate in Delhi NCR.

2.5. Ethical Considerations

Informed consent was obtained from all participants before participating. The participants were assured of the confidentiality of their responses and told that the participation was completely voluntary and that if they wished to withdraw at any time without penalty, they would be able to do so. If possible, permission was taken from relevant clubs, coaches, or institutional contacts to gain access to participants. The data set did not include personally identifiable information that was gathered or stored.

3. Results

Table 1. Shows Demographic Characteristics of Participants (N = 75)

Variable	Category	n	%
Age Group	14–18	40	53.3
	19–23	12	16.0
	24–29	6	8.0
	30–35	1	1.3
	35–40	3	4.0
	41–55	12	16.0
	Above 55	1	1.3
Type of Sport	Team Sport	55	73.3
	Individual Sport	20	26.7
Years of Participation	<1 year	8	10.7
	1–3 years	31	41.3
	3–5 years	14	18.7
	5+ years	22	29.3
Primary Training Location	Private academy	31	41.3
	School/College facility	28	37.3
	Public sports complex	6	8.0
	Stadium/Government centre	8	10.7
	Other (golf club/virtual)	2	2.7
Time of Training	Morning	22	29.3
	Afternoon	16	21.3
	Evening	35	46.7
	Night/Late night	2	2.7
Transport Availability	Yes	33	44.0
	No	42	56.0
Current Coach Gender	Male	58	77.3
	Female	17	22.7
Exposure to Male Coach (ever)	Yes	70	93.3
	No	5	6.7

The sample comprised 75 participants, with a majority in the 14–18 age group (53.3%), followed by smaller but comparable proportions in the 19–23 and 41–55 age ranges (both 16.0%). A substantial proportion of participants were engaged in team sports (73.3%), with fewer participating in individual sports (26.7%). In terms of experience, the largest group reported 1–3 years of participation (41.3%), followed by those with more than five years of experience (29.3%), indicating a mix of relatively early-stage and experienced

athletes. Training primarily took place in private academies (41.3%) and school or college facilities (37.3%), with fewer participants training in public or government-run facilities. Most participants reported training during the evening (46.7%), followed by morning (29.3%) and afternoon sessions (21.3%). Regarding access to logistics, a greater proportion of participants reported no access to transportation facilities (56.0%) compared to those who did (44.0%). The sample was predominantly coached by male coaches (77.3%), with relatively fewer participants reporting female coaches (22.7%). Notably, 93.3% of participants reported prior experience with a male coach. Overall, the sample reflects a young, predominantly team-sport-oriented group of female athletes, with varied levels of experience, limited transport access for a substantial proportion, and strong exposure to male coaching environments.

Table 2. Shows Internal Consistency Reliability of the Safety Perception Scale

Scale	No. of Items	Cronbach's α	Corrected Item–Total Correlation Range
Physical Infrastructure & Facility Safety (PI&FS)	10	.92	.57 – .84
Peer & Team Environment (P&TE)	6	.88	.50 – .76
Staff & Coach Conduct (S&CC)	9	.96	.67 – .92
Travel & Commuting Safety (T&CS)	4	.90	.72 – .83
Perceptions of Reporting Mechanism (PORM)	10	.96	.73 – .88

*Note. α = Cronbach's alpha. All values represent internal consistency estimates for each subscale.

Internal consistency reliability was assessed for all five safety perception subscales using Cronbach's alpha. As shown in Table 2, all scales demonstrated good to excellent reliability, with alpha coefficients ranging from .88 to .96, exceeding the conventional threshold of .70. Specifically, the Physical Infrastructure and Facility Safety ($\alpha = .92$), Staff and Coach Conduct ($\alpha = .96$), Travel and Commuting Safety ($\alpha = .90$), and Perceptions of Reporting Mechanism ($\alpha = .96$) scales exhibited excellent internal consistency, while the Peer and Team Environment scale ($\alpha = .88$) demonstrated good reliability. Corrected item–total correlations across all scales ranged from .50 to .92, indicating that individual items were adequately to strongly associated with their respective constructs. Importantly, no items fell below the commonly

accepted cutoff of .30, suggesting satisfactory item discrimination throughout. Further examination of Cronbach's alpha if an item was deleted indicated that removal of any individual item did not result in a meaningful improvement in reliability for any scale. This supports the retention of all items

and suggests that each contributes construct-relevant variance. Overall, these findings indicate that the measurement instrument demonstrates robust internal consistency across all domains, supporting its suitability for subsequent inferential analyses.

Table 3. Independent Samples t-Test Comparing Individual and Team Sport Athletes on Safety Perception Domains

Variable	Group	n	M	SD	t	df	p	Cohen's d
Physical Infrastructure & Facility Safety	Individual Sport	20	32.60	7.39	-3.51	73	.001	0.92
	Team Sport	55	39.24	7.17				
Peer & Team Environment Safety	Individual Sport	20	21.15	4.15	-1.72	73	.090	0.45
	Team Sport	55	23.35	5.12				
Staff & Coach Conduct	Individual Sport	20	33.85	7.04	-1.48	73	.144	0.39
	Team Sport	55	36.87	8.10				
Travel & Commute Safety	Individual Sport	20	13.25	3.24	-2.02	73	.047	0.53
	Team Sport	55	15.15	3.70				
Reporting Mechanism Perception	Individual Sport	20	32.45	8.10	-2.48	73	.016	0.65
	Team Sport	55	37.85	8.45				

*Note. Equal variances assumed for all analyses. M = mean; SD = standard deviation.

An independent sample t-test was conducted to examine differences in safety perception between individual sport and team sport athletes across multiple domains. There was a significant difference in physical infrastructure and facility safety scores between individual sport athletes (M = 32.60, SD = 7.39) and team sport athletes (M = 39.24, SD = 7.17), $t(73) = -3.51, p = .001, d = 0.92$, indicating a large effect size. Similarly, team sport athletes reported significantly higher travel and commute safety (M = 15.15, SD = 3.70) compared to individual sport athletes (M = 13.25, SD = 3.24), $t(73) = -2.02, p = .047, d = 0.53$, as well as higher perceptions of

reporting mechanisms (M = 37.85, SD = 8.45) than individual sport athletes (M = 32.45, SD = 8.10), $t(73) = -2.48, p = .016, d = 0.65$, both reflecting moderate effect sizes. However, no significant differences were found between the two groups for peer and team environment safety, $t(73) = -1.72, p = .090$, or staff and coach conduct, $t(73) = -1.48, p = .144$. Overall, these findings suggest that team sport athletes perceive greater safety in structural and institutional aspects of their sporting environment, while interpersonal safety perceptions remain comparable across sport types.

Table 4. Shows the Independent Samples t-Test Comparing Safety Perception Domains by Coach Gender

Variable	Group	n	M	SD	t	df	p	Cohen's d
Physical Infrastructure & Facility Safety	Male Coach	58	38.36	7.36	1.88	73	.065	0.52
	Female Coach	17	34.41	8.56				
Peer & Team Environment Safety	Male Coach	58	23.19	4.92	1.40	73	.167	0.39
	Female Coach	17	21.29	4.92				

There was no statistically significant difference in perceived physical infrastructure and facility safety between participants with male coaches (M = 38.36, SD = 7.36) and those with female coaches (M = 34.41, SD = 8.56), $t(73) = 1.88, p = .065, d = 0.52$. Although the effect size was moderate, the difference did not reach statistical significance. Similarly, no significant differences were observed in peer and team environment safety based on coach gender. Participants

with male coaches (M = 23.19, SD = 4.92) and those with female coaches (M = 21.29, SD = 4.92) reported comparable perceptions, $t(73) = 1.40, p = .167, d = 0.39$, indicating a small-to-moderate effect size. Overall, these findings suggest that coach gender does not significantly influence athletes' perceptions of safety in relation to physical infrastructure or peer and team environment, despite moderate effect size trends favoring those with male coaches.

Table 5. Shows the Independent Samples t-Test Comparing Athletes With vs Without Transport Access

Variable	Group	n	M	SD	t	df	p	Cohen's d
Travel & Commute Safety	Yes	33	15.03	4.34	0.82	73	.417	0.19
	No	42	14.33	3.05				

An independent sample *t*-test was conducted to examine whether access to transport was associated with differences in travel and commute safety perceptions among athletes. The results indicated that there was no statistically significant difference in travel and commute safety scores between athletes who reported having transport access (M = 15.03, SD

= 4.34) and those who did not (M = 14.33, SD = 3.05), $t(73) = 0.82, p = .417, d = 0.19$. The effect size was small, suggesting a negligible practical difference between the two groups. Overall, these findings suggest that access to transport does not significantly influence athletes' perceptions of travel and commute safety.

Table 6. Shows the Independent Samples t-Test by Time of Play

Variable	Group	n	M	SD	t	df	p	d
Physical Infrastructure & Facility Safety	Evening/Night	37	38.49	6.83	1.12	73	.265	0.26
	Morning/Afternoon	38	36.47	8.55				
Peer & Team Environment Safety	Evening/Night	37	23.35	4.69	1.02	73	.311	0.24
	Morning/Afternoon	38	22.18	5.19				
Travel & Commute Safety	Evening/Night	37	15.65	3.34	2.43	73	.018	0.56
	Morning/Afternoon	38	13.66	3.74				
Reporting Mechanism Perception	Evening/Night	37	37.81	8.34	1.39	73	.169	0.32
	Morning/Afternoon	38	35.05	8.82				

An independent sample *t*-test was conducted to examine whether time of play (evening/night vs. morning/afternoon) was associated with differences in safety perception domains. There was no statistically significant difference in physical infrastructure and facility safety between athletes who played during the evening/night (M = 38.49, SD = 6.83) and those who played during the morning/afternoon (M = 36.47, SD = 8.55), $t(73) = 1.12, p = .265, d = 0.26$, indicating a small effect size. Similarly, no significant difference was observed for peer and team environment safety, with evening/night players (M = 23.35, SD = 4.69) and morning/afternoon players (M = 22.18, SD = 5.19) reporting comparable perceptions, $t(73) = 1.02, p = .311, d = 0.24$, reflecting a small effect size.

However, a statistically significant difference was found for travel and commute safety. Athletes who played during the evening/night (M = 15.65, SD = 3.34) reported significantly higher safety perceptions compared to those who played during the morning/afternoon (M = 13.66, SD = 3.74), $t(73) = 2.43, p = .018, d = 0.56$, indicating a moderate effect size. No significant difference was found for reporting mechanism perception between evening/night players (M = 37.81, SD = 8.34) and morning/afternoon players (M = 35.05, SD = 8.82), $t(73) = 1.39, p = .169, d = 0.32$, with a small effect size. Overall, these findings suggest that time of play is associated with differences in perceived travel and commute safety, but not with other safety perception domains.

Table 7. Shows Mann–Whitney U Test Comparing Safety Perceptions by Coach Gender

Variable	Group	n	Median	Mean Rank	U	z	p	r
Staff & Coach Conduct	Male Coach	58	38.50	40.87	326.50	-2.12	.034	0.24
	Female Coach	17	35.00	28.21				
Reporting Mechanism Perception	Male Coach	58	36.50	40.19	366.00	-1.61	.107	0.19
	Female Coach	17	34.00	30.53				

*Note. Median reported due to the non-parametric test. *r* = effect size.

A Mann–Whitney *U* test was conducted to examine differences in safety perception domains based on coach gender. For staff and coach conduct, there was a statistically significant difference between athletes with male coaches and those with female coaches, $U = 326.50$, $z = -2.12$, $p = .034$, $r = 0.24$. Athletes with male coaches (median = 38.50, mean rank = 40.87) reported significantly higher perceptions of staff and coach conduct compared to those with female coaches (median = 35.00, mean rank = 28.21). The effect size indicates a small to moderate effect. In contrast, for reporting

mechanism perception, there was no statistically significant difference between athletes with male coaches (median = 36.50, mean rank = 40.19) and those with female coaches (median = 34.00, mean rank = 30.53), $U = 366.00$, $z = -1.61$, $p = .107$, $r = 0.19$. The effect size was small, suggesting a minimal practical difference between the groups. Overall, these findings suggest that coach gender is associated with differences in perceived staff and coach conduct, but not with perceptions of reporting mechanisms.

Table 8. Shows Mann–Whitney U Test Comparing Staff and Coach Conduct by Time of Play

Variable	Group	n	Median	Mean Rank	U	z	p	r
Staff & Coach Conduct	Evening/ Night	37	38.00	39.99	629.5	-0.78	.433	0.09
	Morning/ Afternoon	38	36.00	36.07				

The results indicated that there was no statistically significant difference between athletes who trained during the evening/night (median = 38.00, mean rank = 39.99) and those who trained during the morning/afternoon (median = 36.00, mean rank = 36.07), $U = 629.50$, $z = -0.78$, $p = .433$, $r = 0.09$.

The effect size was small, suggesting a negligible difference between the groups. Overall, these findings indicate that the time of play does not significantly influence athletes' perceptions of staff and coach conduct.

Table 9. Pearson Correlations Among Safety Perception Domains

Variable	1	2	3	4	5
1. Physical Infrastructure & Facility Safety	—				
2. Peer & Team Environment Safety	.57**	—			
3. Staff & Coach Conduct	.68**	.69**	—		
4. Travel & Commute Safety	.73**	.48**	.62**	—	
5. Reporting Mechanism Perception	.76**	.63**	.79**	.70**	—

*Note. $N = 75$. ** $p < .001$.

Pearson correlation analysis revealed significant positive relationships among all safety perception domains. Physical infrastructure and facility safety were strongly correlated with reporting mechanism perception ($r = .76, p < .001$), travel and commute safety ($r = .73, p < .001$), and staff and coach conduct ($r = .68, p < .001$), indicating that better infrastructure is associated with higher perceived safety across institutional and environmental domains.

Staff and coach conduct showed the strongest overall association with reporting mechanism perception ($r = .79, p <$

$.001$), suggesting that trust in authority figures is closely linked to confidence in formal reporting systems. Peer and team environment safety was moderately correlated with other domains, with the weakest relationship observed with travel and commute safety ($r = .48, p < .001$).

Overall, the results indicate a cohesive pattern in which different dimensions of safety perception are interrelated, with institutional factors such as infrastructure, coaching conduct, and reporting mechanisms demonstrating particularly strong associations.

Table 10. Shows Multiple Linear Regression Predicting Reporting Mechanism Perception (N = 75)

Predictor	B	SE B	β	t	p	95% CI for B
Constant	-1.89	2.93	—	-0.65	.520	[-7.73, 3.95]
Physical Infrastructure & Facility Safety	0.32	0.11	0.29	2.83	.006	[0.09, 0.55]
Peer & Team Environment Safety	0.15	0.15	0.08	0.97	.337	[-0.16, 0.45]
Staff & Coach Conduct	0.46	0.11	0.42	4.15	< .001	[0.24, 0.68]
Travel & Commute Safety	0.44	0.22	0.19	1.99	.051	[-0.00, 0.89]

*Note. $R = .86, R^2 = .73, \text{Adjusted } R^2 = .72. F(4, 70) = 47.70, p < .001$. B = unstandardized coefficient; SE = standard error; β = standardized coefficient.

Assumptions for multiple regression were assessed prior to analysis. Visual inspection of residual plots indicated approximate normality and homoscedasticity. The Durbin–Watson statistic (1.85) suggested independence of errors. Multicollinearity diagnostics showed acceptable tolerance and VIF values, indicating no multicollinearity concerns. Therefore, multiple linear regression analysis was conducted.

A multiple linear regression analysis was conducted to examine whether physical infrastructure and facility safety, peer and team environment safety, staff and coach conduct, and travel and commute safety predicted reporting mechanism perception. The overall model was statistically significant, $F(4, 70) = 47.70, p < .001$, explaining 73% of the variance in reporting mechanism perception ($R^2 = .73, \text{adjusted } R^2 = .72$). This indicates a strong model fit. Among the predictors, staff and coach conduct emerged as the strongest significant predictor ($\beta = .42, t = 4.15, p < .001$), indicating that higher perceptions of coach conduct were associated with higher perceptions of reporting mechanisms. Physical infrastructure and facility safety were also significant predictors ($\beta = .29, t = 2.83, p = .006$), suggesting that better infrastructure is associated with greater confidence in reporting mechanisms. In contrast, peer and team environment safety was not a significant predictor ($\beta = .08, t = 0.97, p = .337$). Travel and

commute safety showed a marginal effect ($\beta = .19, t = 1.99, p = .051$), indicating a trend toward significance but not meeting conventional thresholds. Overall, these findings suggest that institutional and authority-related factors (coach conduct and infrastructure) play a more critical role in shaping perceptions of reporting mechanisms than peer-related or travel-related factors.

4. Discussion

The results of the present study show that there is a statistically significant difference in the safety perceptions of individuals across various domains among the women athletes in Delhi NCR, based on the variables of sport type, coach gender, and the time the sport is played. These findings collectively indicate that safety, in the eyes of female athletes in an Indian sporting environment, is not monolithic or a standalone experience, but rather a multi-layered, socially constructed experience that is contingent upon the structural conditions under which women participate in sport. These findings extend to three main domains. In the physical infrastructure and facility safety domain, the individual and team sport athletes note a statistically significant difference, with team sport athletes generally feeling much safer in this domain. This reflects the fact that team sports are increasingly being organized through sport academies and playing centres

with regular sports facilities and monitoring. In these environments, women are more likely to train in areas that they feel are physically safe and predictable. By contrast, individual sport athletes are more likely to find themselves in a more complex and informal environment (Parsons et al., 2025) without the institutional structure that would otherwise provide an assurance of physical protection. This is indicative of a larger inequity between the way sporting opportunities are organised for women in different sports (Cooky, 2023). There were also statistically significant differences between the perceptions of team sport athletes and individual sport athletes with respect to their travel and commute safety. The protective effects of institutional membership extend beyond the training ground: when sport participants are affiliated with a sport institution, the transport to and from sport becomes available, as does a peer escort, reducing the sense of the journey to and from the sport being precarious. The distinction holds immense significance in Delhi NCR (Oboudi et al., 2026), where gendered vulnerability in public space is well documented for women. Without this, individual sport athletes face greater risks due to the worries of self-reliant travel. The perceptions of reporting mechanisms also differed significantly by sport type, with team sport athletes reporting greater confidence in formally reporting an issue if they had concerns about safety. This implies that reporting is not a neutral institutional aspect, but is highly connected to the culture of one's sporting context. Athletes in less formalized settings may feel that their concerns cannot be reported or are unlikely to be addressed, which can lead to an inability to express legitimate concerns and may result in unsafe environments (Kirsty Forsdike & Giles, 2024). However, the peer and team environment safety domain did not reveal any significant differences between groups, indicating that interpersonal safety dynamics in athletic peer groups are more likely to be experienced in a similar manner across contexts. It remains to be seen whether this is a true indication of equivalence or an accepted norm of interpersonal conflict in sport (Kaul & Shrivastava, 2017), so further qualitative research is warranted. Staff and coach conduct were found to be one of the most influential aspects of safety. There was a statistically significant difference between coach gender, with athletes coached by male coaches indicating higher perceptions of professional conduct. It should be taken with a "pinch of salt"; this is not necessarily a result of coaching quality but of wider institutional contexts where coaches work (The Tribune, 2022). Male coaches are more likely to be a part of a well-resourced organization with standards of behaviour and oversight, while female coaches are more likely to be working in less structured organisations, without these safeguards. (Kaul & Shrivastava, 2017). Interestingly, only for travel and commute safety, time of play was a statistically significant variable as evening and night athletes perceived greater safety with travel than morning and afternoon athletes, which can be explained by the fact that the night training sessions are usually held at supervised centres that have a formal arrangement for transportation as compared to the

morning and afternoon sessions where this may not be the case (Borrueco et al., 2022). In summary, the results suggest that this is a cumulative and systematic phenomenon: a woman who feels unsafe in one area is probably feeling unsafe in all others. Structural reforms such as better facilities, accountability mechanisms for coaches, and reporting are essential for women to be able to participate in sport in a dignified and fear-free manner.

5. Conclusion

In the present study, five areas of safety: physical infrastructure and facility safety, peer and team environment safety, staff and coach conduct, travel and commute safety, and reporting mechanisms were studied in terms of female athletes' perceptions of safety in the Delhi NCR region. The results indicate that the experience of being safe in sport is not a straightforward and consistent one, but rather a multi-faceted phenomenon influenced by the institutional context, type of sport, gender of the coach, and the timing of sporting participation for women. Consistently, safety perceptions were higher for team sport athletes compared to structural domains, and staff/coach conduct was the most predictive factor of reporting mechanism perception, highlighting the importance of the role of authority figures in influencing whether athletes feel safe to report. The data form a picture of conditions and conditions of a woman's training, which are inequitable.

The importance of this research is that it is based on the real-life experience of women's sports, as opposed to the news-making reality. The problems of grassroots and developing athletes in cities such as Delhi are largely unrecorded and under-analysed, whereas international abuses have received attention at the high-level. The findings of this research can offer sports organisations, policy makers, and institutions with empirical and domain-specific information on their perception of safety to inform their understanding of where structural gaps exist and which populations are most vulnerable.

The results indicate that the condition of inadequate facilities, informal coaching environments, and lack of accessible complaints mechanisms are not independent issues, but are cumulative and systemic, leaving women without protection or recourse. In terms of practice, the study suggests that sports institutions in India engage in focused introspection of their approach and practice in regard to the safety of athletes. Access to infrastructure, coach accountability measures, formalized transport, and accessible reporting systems are not just ancillary issues but fundamental to allowing women to enjoy sport with dignity, confidence, and equality. This study adds to a growing mass of evidence to support the notion that opportunity alone is not enough for the retention of women in sport; that they must feel safe in the sport, and that this sense of safety must be structurally supported and not left to chance or individual goodwill.

5.1. Limitations of the Study

- The present study was conducted with a sample of 75 female athletes from the Delhi NCR region, which may limit the generalizability of the findings to athletes from other regions of India or from differing cultural, institutional, and infrastructural contexts. Future research employing larger and more geographically diverse samples would enhance the external validity of the findings.
- The study relied exclusively on self-report questionnaire data, which may be susceptible to response biases such as social desirability and apprehension regarding anonymity, particularly for sensitive topics related to coach behavior, staff conduct, and reporting mechanisms. Such biases are common in research examining interpersonal and institutional safety perceptions.
- The cross-sectional nature of the study restricts interpretation to a single point in time and does not permit conclusions regarding changes in safety perceptions over time. Athletes' perceptions may vary in response to evolving coaching practices, institutional policies, competitive environments, or personal experiences. This limitation pertains to the research design rather than the measurement instrument itself.
- The sample primarily comprised athletes aged 14–18 years who trained predominantly in private academies and school-based facilities and were largely coached by male coaches. Consequently, the sample may not adequately represent older athletes, athletes training in government-supported institutions, or those competing at higher professional or elite levels within the broader Delhi NCR sports context.
- Although the quantitative design facilitated systematic comparison across participant groups, it did not capture the depth and complexity of athletes' lived experiences. Future studies employing qualitative or mixed-method approaches may provide greater insight into the interpersonal, emotional, and contextual dimensions of perceived safety and reporting behavior.
- Additionally, certain demographic and contextual variables were consolidated into broader analytical categories for statistical purposes. While this approach supported the feasibility of analysis, it may have reduced the ability to detect nuanced differences within specific subgroups.

5.2. Future Recommendations

Future research should include larger and more geographically diverse samples across multiple regions of India, including Tier 2 and Tier 3 cities, where sporting infrastructure and institutional support systems may differ substantially from metropolitan contexts. Such comparative investigations would improve the generalizability of findings

and provide a more comprehensive understanding of the safety environment experienced by female athletes across varied sporting settings in India.

The integration of qualitative methodologies, such as in-depth interviews and focus group discussions, alongside quantitative survey measures, is also recommended. A mixed-methods approach would allow researchers to better contextualize athletes' perceptions of safety and reporting behavior, particularly in domains involving interpersonal relationships, institutional trust, and lived experiences that may not be fully captured through numerical responses alone.

Longitudinal research designs following the same cohort of athletes over time would further strengthen understanding of how safety perceptions evolve in response to changes in coaching personnel, institutional policies, competitive environments, and personal experiences. Such designs would also permit stronger inferences regarding the directionality and development of the relationships identified in the present study.

Future investigations should additionally examine institutional safeguarding practices across different types of sports and competitive levels. Comparative analyses of sports facilities, grievance redressal systems, transportation arrangements, and coach oversight mechanisms may help identify structural disparities influencing athletes' perceptions of safety.

In particular, coach accountability systems, safeguarding awareness, and the institutional contexts within which coaches operate warrant closer examination, as coach-related variables emerged as significant predictors of perceptions regarding reporting mechanisms in the present study. This may be especially relevant in less formalized sporting environments where supervisory structures are limited.

Further research should also prioritize the inclusion of athletes from underrepresented and marginalized backgrounds, including those from rural communities, lower socio-economic groups, and sports with limited institutional visibility or support. Examining the intersection of gender with social, economic, and regional factors would contribute to a more nuanced understanding of vulnerability, access to support systems, and safety experiences within the Indian sporting context.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this paper.

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