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Patterns and Factors Associated with Escalated Care Following Sports Injuries in U.S. Emergency Departments: A Secondary Analysis of the 2025 National Electronic Injury Surveillance System

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ABSTRACT:

Background: Evidence spanning youth and adult sports injuries is needed to prioritize prevention and emergency-care resources.

Objective: To describe sports-injury patterns and identify factors associated with escalated emergency department (ED) care.

Methods: We conducted a cross-sectional analysis of the 2025 National Electronic Injury Surveillance System. We identified sports-related ED visits using prespecified activity codes. The survey design was used to estimate national totals and 95% confidence intervals (CIs). A survey-weighted multivariable logistic model estimated adjusted odds ratios (aORs) for transfer, admission, observation, or death.

Results: Among 73,839 sampled visits, the national burden was 2.66 million (95% CI 2.20–3.12 million). Patients aged 10–17 years accounted for 40.5% of visits, and males for 65.4%. Team and ball sports contributed 48.9%; lower-extremity injuries (30.5%) and other or unspecified diagnoses (37.0%) were most frequent. Escalated care occurred in 5.9% (95% CI 4.5–7.3%) of visits with known disposition. Associations included age 65 years or older (aOR 4.52, 95% CI 3.50–5.84), male sex (1.61, 1.50–1.74), equestrian or climbing sports (3.63, 2.60–5.06), fracture (48.94, 32.99–72.60), and documented alcohol involvement (2.13, 1.37–3.32).

Conclusion: Sports injuries generated substantial ED use, while escalation risk was concentrated in older adults, selected sport categories, and clinically severe injury patterns. Prevention should combine high-volume youth and team-sport measures with severity-focused strategies for older and equestrian or climbing participants.

INTRODUCTION

Sport and exercise participation has been shown to have cardiovascular, metabolic, psychological and social benefits throughout the life course when undertaken regularly (Bull et al., 2020; Eime et al., 2013). Those benefits are accompanied by an injury burden that can impact participation, schooling, employment and health-related quality of life. Sport and exercise are a significant cause of medically attended injuries among children and adolescents in population studies, and a large number of direct costs are associated with emergency and inpatient care (Finch et al., 2014; Harmon et al., 2018; Ryan et al., 2019). Surveillance should therefore not just measure the number of events but also differentiate between high-volume activities and those linked to clinically relevant situations.

Age, sex, sport, exposure, setting and case definition have a strong influence on the epidemiology of sports injury. The surveillance studies in the adolescent population are consistent and show a high burden in organised and leisure activity, although the proportion of sprains, fractures, head injuries and other diagnoses varies depending on maturity and level of participation (Costa E Silva et al., 2017; Prieto-González et al., 2021; Räisänen et al., 2018). Sport-specific studies have been conducted and shed light on the significant risks associated with basketball, baseball, cheerleading, racquet sports, skiing, combat sports and exercise training (Andreoli et al., 2018; Lee et al., 2025; Mao et al., 2023; Trofa et al., 2019; Weiss et al., 2021; Xu et al., 2021; Yendluri et al., 2024). However, studies have sometimes employed different populations, denominators, and definitions of outcomes, making comparisons across the full range of sports and ages difficult.

Emergency department (ED) surveillance can provide a complementary perspective as it captures acute injuries serious or concerning enough to warrant hospital evaluation. Previous ED research has found that sports injuries have increased in volume, that there have been disruptions in sports injuries during the coronavirus disease 2019 (COVID-19) pandemic, and that there is a significant burden of traumatic brain injuries, ankle injuries, and activity-specific trauma (Olij et al., 2020; Sabbagh et al., 2022; Sarmiento et al., 2019; Shah et al., 2016; Waltzman et al., 2020; Wiersma et al., 2018). However, national analyses are often conducted for one sport, one anatomic region or one age group. A contemporary all-age comparison, with a common classification and clinically meaningful disposition outcome, can help guide prevention and ED preparedness.

We therefore analysed the complete 2025 U.S. National Electronic Injury Surveillance System (NEISS) to (1) estimate the national ED burden and describe demographic, sport, diagnostic, anatomical, and location patterns; (2) quantify the proportion requiring escalated care; and (3) identify independent factors associated with escalation. We hypothesized that older age, male sex, higher-energy sport categories, fractures or internal injuries, axial or multisystem involvement, and alcohol documentation would be associated with higher odds of escalation. Jaiswal (2025)

METHODS

Study design and reporting

This cross-sectional secondary database study used the complete 2025 NEISS annual file. Reporting was guided by the Strengthening the Reporting of Observational Studies in Epidemiology statement and the STROBE extension for sport injury and illness surveillance (Bahr et al., 2020; von Elm et al., 2007). The unit of analysis was an ED visit, not an individual athlete.

Data source and study period

NEISS is maintained by the U.S. Consumer Product Safety Commission (CPSC) and uses a stratified probability sample of approximately 100 U.S. hospitals with 24-hour EDs and at least six beds. Each record includes a statistical weight for national estimation together with stratum and primary sampling unit identifiers. We used visits treated from 1 January through 31 December 2025, downloaded from the CPSC archived annual-data repository on 25 July 2026 (U.S. Consumer Product Safety Commission [CPSC], 2026a, 2026b).

Cohort definition

Records were eligible when any of the three product fields contained a prespecified code denoting participation in a sport or exercise activity. The code set was defined before analysis from the January 2025 NEISS coding manual (CPSC, 2025) and covered team and ball; fitness, weight training, and athletics; racquet, target, and precision; gymnastics, dance, and cheerleading; winter and skating; aquatic; combat; equestrian and climbing; and other or unspecified sports. Transport devices, playground equipment, camping, fishing, motorized recreation, and structure-only pool or trampoline codes were excluded because athletic participation could not be established consistently. When multiple eligible codes were present, the first eligible product field defined the sport category. The complete code map is provided in Supplementary Table S1. Records coded as no injury were excluded. Jayswal (2025)

Variables and classifications

Age was converted to years using the NEISS infant coding convention and grouped as 0–9, 10–17, 18–34, 35–54, 55–64, or 65 years and older. Sex was classified as female, male, or other/unknown. Primary diagnoses were grouped as strain or sprain; fracture; contusion or abrasion; laceration, puncture, or avulsion; concussion or internal injury; dislocation; and other or unspecified diagnosis. Body-part codes were collapsed into lower extremity, upper extremity, head and neck, trunk and pelvis, and multiple/systemic/unspecified regions. Treatment location was grouped as sports or recreation place, school, other public property, home, street or highway, or other/unknown. Alcohol involvement was considered present only when explicitly coded; absent and unknown values were combined because non-documentation could not be distinguished from true absence.

Outcome

The primary outcome was escalated care, defined a priori as transfer to another hospital, hospital admission, observation admission, or death. Routine treatment and release was the comparison outcome. Visits with an unknown disposition or departure before evaluation were excluded from outcome analyses. A sensitivity definition counted transfer, inpatient admission, or death as escalation while treating observation as non-escalated.

Statistical analysis

Unweighted counts describe sampled records. National totals, proportions, and 95% confidence intervals (CIs) were estimated with CPSC weights and Taylor-linearized variances that accounted for NEISS strata and hospital clusters. Estimates based on fewer than 20 sampled cases or fewer than 1,200 estimated visits were considered potentially unstable and were not emphasized, consistent with CPSC guidance (CPSC, 2026b).

A survey-weighted multivariable logistic regression model estimated adjusted odds ratios (aORs) and 95% CIs for escalated care. Prespecified covariates were age group, sex, sport category, diagnosis group, body region, treatment location, and alcohol involvement. Reference categories were age 18–34 years, female sex, team and ball sports, strain or sprain, lower extremity, sports or recreation place, and no or unknown alcohol involvement. The model used weighted pseudo-likelihood estimation and a stratum-centred, hospital-clustered sandwich covariance matrix. Complete-case analysis was used for age and sex; all other covariates retained explicit other/unknown categories when needed. Weighted variance-inflation factors assessed collinearity. The sensitivity model used the narrower outcome definition but otherwise identical methods.

All tests were two-sided with $\alpha = 0.05$. Because the model evaluated a prespecified set of descriptive associations rather than confirmatory causal effects, p values were not multiplicity-adjusted and are interpreted with effect sizes and CIs. Analyses were performed in Python 3.12.13 with pandas 2.2.3, NumPy 2.3.5, and SciPy 1.17.0. Analysis scripts are available from the corresponding author on reasonable request. Kumari (2025)

Ethics

This study used publicly available, deidentified surveillance records and involved no participant contact. Ethics committee approval and informed consent were therefore not applicable.

RESULTS

Cohort and national burden

There were 410,201 sampled ED records in the 2025 file. Of these, 73,839 met the sports or exercise code definition and were included in descriptive analyses (Fig. 1). They represented an estimated 2,661,761 U.S. ED visits (95% CI 2,204,865–3,118,657). There were 72,734 visits for regression out of a total of 72,757 visits with a known disposition, and 23 of these had no age or a sex category other than female or male.

Demographic and injury patterns

The age group 10-17 years had 40.5% of the weighted visits, and age group 18-34 years had 25.0% of the visits, with 65.4% of visits being for males (Table 1). The highest weighted percentage was for team and ball sports (48.9%), followed by fitness, weight training and athletics (23.2%). The top individual activities included exercise without equipment (estimated 374,685 visits), basketball (362,922), football (311,174) and soccer (263,172).

The most common injuries were to the lower extremity (30.5%), upper extremity (26.3%) and head and neck (23.4%). Other or unspecified diagnosis (37.0%), strains or sprains (19.3%), fractures (16.9%) and concussion or internal injury (10.1%) were the other categories. Fracture was the most common diagnosis for sport-category profiles of winter/skating sports and equestrian/climbing sports. At the same time, trunk/pelvis was the most common region for fitness/athletics, racquet/precision, and equestrian/climbing sports (Table 2).

Emergency department outcomes

Among visits with known disposition, an estimated 5.9% (95% CI 4.5–7.3%) required escalated care and 94.1% were treated and released. Unadjusted escalation was highest in equestrian/climbing sports (20.0%, 95% CI 15.7–24.3%) and racquet/precision sports (14.2%, 95% CI 7.2–21.1%), whereas team and ball sports had the largest absolute burden but a lower escalation proportion (2.9%, 95% CI 2.3–3.5%; Fig. 2).

Factors associated with escalated care

The adjusted model converged, represented 4,160 escalated-care events, and showed no concerning collinearity (maximum weighted variance-inflation factor 2.40). Compared with patients aged 18–34 years, odds of escalation increased for ages 35–54 years (aOR 1.35, 95% CI 1.14–1.61), 55–64 years (2.83, 2.23–3.61), and 65 years or older (4.52, 3.50–5.84), while ages 10–17 years had lower odds (0.74, 0.59–0.91). Male sex was associated with higher odds than female sex (1.61, 1.50–1.74; Table 3).

Relative to team and ball sports, the strongest sport association was observed for equestrian/climbing activities (aOR 3.63, 95% CI 2.60–5.06). Fitness/athletics, racquet/precision, gymnastics/dance/cheer, winter/skating, aquatic, and other/unspecified sports also had higher odds, whereas combat sports did not differ. Diagnosis was the dominant clinical correlate: fracture had an aOR of 48.94 (95% CI 32.99–72.60) relative to strain or sprain, and concussion/internal injury had an aOR of 25.38 (14.99–42.96). Trunk/pelvis (2.60, 2.13–3.18) and multiple/systemic/unspecified injuries (7.08, 5.49–9.13) were also associated with escalation relative to lower-extremity injuries. Documented alcohol involvement doubled the odds (2.13, 1.37–3.32).

Sensitivity analysis

When observation was treated as non-escalated, 3,867 events remained. Associations were materially unchanged: the aORs were 4.38 (95% CI 3.29–5.84) for age 65 years or older, 1.59 (1.48–1.72) for male sex, 3.58 (2.49–5.15) for equestrian/climbing sports, 51.93 (34.34–78.54) for fracture, and 2.13 (1.37–3.32) for alcohol involvement (Supplementary Table S2).

DISCUSSION

An estimated 2.66 million visits in 2025 for sports and exercise injuries were seen in this national ED surveillance study. The distribution was located in adolescents, males, and team or ball sports, and volume and clinical severity were not congruent. Equestrian/climbing and racquet/precision activities had much higher unadjusted escalation proportions than team and ball sports. Older age, male sex, multiple sport categories, severe diagnosis, axial or multisystem involvement, and documentation of alcohol were all associated with escalation after adjustment for injury and context. This calls for a dual approach to prevention: population-level measures for high-volume youth and team sports, and severity-focused measures for older adults and higher-consequence activities.

The high rate of ED presentations among adolescents is in line with the high levels of participation-related injury burdens in school-age and adolescent surveillance studies (Harmon et al., 2018; Prieto-González et al., 2021; Räisänen et al., 2018). As children grow, the type of injury could change due to developmental changes in body size, coordination, competition level and exposure (Costa E Silva et al., 2017). Team sports and ball sports led the national count, with basketball, football, soccer, baseball, and other sports in the United States. Prior research shows a significant number of lower extremity injuries in basketball and a growing number of upper extremity injuries in youth baseball, and even lower-profile games like kickball have been shown to cause preventable pediatric injuries (Andreoli et al., 2018; Pirruccio et al., 2019; Trofa et al., 2019).

The most prevalent anatomical pattern (lower extremity injury) was followed closely by upper extremity injury, which is consistent with ED and athlete surveillance. Although ankle sprains are common and costly, ED series have a different severity and access profile than athletic-training datasets (Shah et al., 2016; Wiersma et al., 2018). Other studies that highlight how a less common diagnosis can have disproportionate treatment consequences are those on tendon rupture, clavicle fracture, and sternoclavicular dislocation (Lemme et al., 2018; Sandler et al., 2023; Twomey-Kozak et al., 2022). Our other/unspecified diagnostic group is a reminder that surveillance classifications compress heterogeneous ED documentation and that the adjusted association should not be interpreted as a single pathological mechanism.

Nearly 25% of visits were for head and neck injuries, highlighting the ongoing importance of concussion recognition and follow-up. National studies indicate that there are differences in sports- and recreation-related TBI trends by contact sport, age, race, and health-care utilization, and that action sports are an additional burden of pediatric concussion (Feletti et al., 2020; Lyons et al., 2019; Sarmiento et al., 2019; Waltzman et al., 2020). When diagnosis was added to the adjusted model, the association with head/neck location was no longer a proxy for escalation, while concussion and internal injury were strongly associated. This separation enables the coding of both anatomy and pathology, and not one or the other.

Age showed a graded association with escalation after control for sport and injury pattern. Lower physiologic reserve, comorbidity, medication use, and fragility may increase the consequence of acute trauma in older adults. The high unadjusted escalation proportion in racquet/precision sports may partly reflect the older age profile of tennis and pickleball participants described in prior ED surveillance (Nhan et al., 2018; Weiss et al., 2021). The male association persisted after adjustment, but should not be generalized to every injury mechanism: sex effects vary across sports and diagnoses, as shown for anterior cruciate ligament injury and sports-related lumbar trauma (Cheng et al., 2021; Chia et al., 2022).The highest adjusted sport association was for equestrian/climbing activities. Falls from height, impact energy, delayed rescue, and axial loading offer reasonable explanations, and equestrian literature reports fractures and other significant orthopaedic trauma in all age groups (Loder et al., 2024; Young et al., 2015). Similarly, winter sports also demonstrated higher odds, aligning with the pediatric skiing patterns, and exercise settings were a significant absolute burden with distinct strength training and head/neck hazards (Lee et al., 2025; Sharma et al., 2024; Yendluri et al., 2024). The injury patterns found in combat sports were not distinct from those in team and ball sports and highlight that escalation depends on the interplay between exposure, diagnosis, body region, and participant (Mao et al., 2023). The findings have implications on three levels. Youth leagues and schools are encouraged to have neuromuscular warm-up, technique, workload, equipment and concussion-response programs in place. Randomized and systematic-review evidence supports structured warm-up and multimodal prevention, and implementation and adherence determine real-world effectiveness (Faude et al., 2017; Soligard et al., 2008; van Reijen et al., 2016; Vriend et al., 2017). Second, risk assessments before participation, fall and impact mitigation and clear emergency-action plans are warranted for older participants and equestrian, climbing, winter and selected exercise settings. Third, diagnosis and body region should be used together in ED triage and discharge pathways; fracture, internal injury, trunk/pelvis involvement, multisystem patterns and documentation of alcohol use are indicators of patients who are more likely to need hospital-level care. Several strengths are worth highlighting. The most recent full-year NEISS file was analyzed with a common all-age case definition, national survey design variables, prespecified clinical categories, adjusted and sensitivity models, and reproducible analytical procedures. It also distinguished between absolute burden and escalation proportion, thus not assuming that the most frequent sport is the most severe. At a larger scale, the standardized reporting and context-aware surveillance enhance the translation of epidemiology into prevention (Bolling et al., 2018; Bahr et al., 2020; Hulme & Finch, 2015). There are also limitations to the study. NEISS collects product- or activity-related injuries treated in sampled EDs but does not collect data on injuries treated in primary care, urgent care, athletic training rooms, or without medical intervention, and it does not include participation or exposure denominators. Thus, estimates are for the number of ED visits and not for the incidence per athlete-hour. Sport identification is based on coded product fields and can fail to identify some miscoded sports or to identify a sport visit if multiple codes are present. The use of broad diagnostic and anatomical groups, particularly other/unspecified groups, adds heterogeneity. Escalation is NOT a validated injury-severity scale, and local admission thresholds may differ. Alcohol consumption is most likely underreported. Race/ethnicity, comorbidity, protective equipment, competition level, mechanism, and narrative details were not modelled. Some categories may still be subject to residual confounding and sparse-event bias, and the cross-sectional design only allows for association, not causation. Lastly, the addition of equestrian and climbing enhances model stability but obscures within-category differences. Future studies should be conducted with ED surveillance tied to participation denominators, validated narrative coding or natural-language methods, and tests of whether the identified high-risk combinations predict resource use beyond disposition. It is especially relevant to conduct separate analyses of equestrian and climbing activities, older-adult sport, and observation practice. Future research should assess whether targeted prevention decreases severe outcomes without deterring the health benefits of safe sport participation.

CONCLUSION

In 2025, there were an estimated 2.66 million U.S. ED visits for sports and exercise injuries. Adolescents, males, and team and ball sports represented the highest volume, while escalated care focused on older adults and those participating in selected higher-consequence activities. The diagnosis and body region were paramount: fractures, concussion/internal injury, trauma to the trunk/pelvis, and multisystem patterns were most clinically associated. These findings are relevant to prevention strategies that include youth and team-sport reach, and targeted protection, emergency planning and triage for older participants and equestrian, climbing, winter and exercise settings.

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TABLES

Table 1 Demographic, clinical, and contextual characteristics of sports-injury ED visits, 2025 NEISS

Characteristic	Unweighted n	National estimate, n (95% CI)	Weighted % (95% CI)
Age group, years			
0-9	9,029	240,779 (171,461–310,097)	9.0 (7.2–10.9)
10-17	36,051	1,076,997 (881,352–1,272,642)	40.5 (37.1–43.9)
18-34	14,469	666,578 (535,575–797,581)	25.0 (22.1–28.0)
35-54	7,113	334,229 (270,082–398,375)	12.6 (11.0–14.1)
55-64	2,603	123,760 (93,748–153,772)	4.6 (3.9–5.4)
65+	4,572	219,386 (148,885–289,886)	8.2 (6.4–10.0)
Sex			
Female	25,160	919,128 (753,612–1,084,644)	34.5 (33.4–35.7)
Male	48,658	1,741,822 (1,446,039–2,037,605)	65.4 (64.3–66.6)
Primary diagnosis			
Strain or sprain	13,600	514,830 (432,979–596,680)	19.3 (17.7–21.0)
Fracture	13,537	449,943 (375,555–524,331)	16.9 (15.9–17.9)
Contusion or abrasion	5,341	202,756 (169,200–236,312)	7.6 (6.9–8.4)
Laceration, puncture, or avulsion	4,195	157,671 (127,428–187,914)	5.9 (5.4–6.5)
Concussion or internal injury	8,112	269,516 (221,977–317,054)	10.1 (9.3–10.9)
Dislocation	2,148	81,943 (68,704–95,181)	3.1 (2.7–3.4)
Other or unspecified diagnosis	26,906	985,103 (765,261–1,204,945)	37.0 (34.0–40.0)
Body region			
Lower extremity	22,443	811,375 (677,653–945,098)	30.5 (29.2–31.8)
Upper extremity	19,878	700,468 (588,359–812,577)	26.3 (25.2–27.4)

Characteristic	Unweighted n	National estimate, n (95% CI)	Weighted % (95% CI)
Head and neck	18,158	622,546 (513,278–731,813)	23.4 (22.5–24.2)
Trunk and pelvis	11,065	436,768 (343,194–530,342)	16.4 (15.0–17.8)
Multiple, systemic, or unspecified	2,295	90,604 (58,332–122,877)	3.4 (2.6–4.3)
Treatment location			
Sports or recreation place	43,634	1,440,466 (1,150,434–1,730,497)	54.1 (49.4–58.8)
School	6,091	219,283 (170,744–267,823)	8.2 (6.8–9.7)
Other public property	1,999	87,428 (67,188–107,669)	3.3 (2.7–3.9)
Home	2,747	117,903 (86,176–149,629)	4.4 (3.4–5.4)
Street or highway	292	11,195 (6,946–15,444)	0.4 (0.3–0.6)
Other or unknown	19,076	785,486 (603,718–967,254)	29.5 (24.8–34.2)
ED disposition (known disposition only)			
Treated and released	68,593	2,470,183 (2,047,369–2,892,997)	94.1 (92.7–95.5)
Escalated care	4,164	155,256 (106,470–204,043)	5.9 (4.5–7.3)

Note. CI confidence interval, ED emergency department, NEISS National Electronic Injury Surveillance System. National estimates incorporate weights, strata, and hospital clusters. Escalated care comprises transfer, admission, observation, or death. Age was missing in 2 records; sex was coded other/unknown in 21 records.

Table 2 Sports-injury burden, leading clinical pattern, and escalated-care proportion by sport category

Sport category	n	National estimate, n (95% CI)	Cohort %	Leading diagnosis / body region	Escalated care, % (95% CI)
Team and ball	39,347	1,301,285 (1,088,380–1,514,191)	48.9	Other/unspecified / Lower extremity	2.9 (2.3–3.5)
Fitness, weights, athletics	14,913	616,531 (486,015–747,047)	23.2	Other/unspecified / Trunk and pelvis	10.2 (7.6–12.8)
Racquet, target, precision	2,278	99,757 (71,058–128,456)	3.7	Other/unspecified / Trunk and pelvis	14.2 (7.2–21.1)
Gymnastics, dance, cheer	4,002	127,627 (101,303–153,950)	4.8	Other/unspecified / Lower extremity	4.3 (3.3–5.4)

Sport category	n	National estimate, n (95% CI)	Cohort %	Leading diagnosis / body region	Escalated care, % (95% CI)
Winter and skating	3,620	159,643 (105,298–213,988)	6.0	Fracture / Upper extremity	8.4 (5.8–11.0)
Aquatic	3,401	128,133 (85,504–170,763)	4.8	Other/unspecified / Head and neck	5.9 (4.2–7.7)
Combat	3,173	115,256 (93,921–136,591)	4.3	Other/unspecified / Upper extremity	2.7 (2.0–3.5)
Equestrian and climbing	1,024	48,536 (36,326–60,746)	1.8	Fracture / Trunk and pelvis	20.0 (15.7–24.3)
Other or unspecified	2,081	64,993 (53,909–76,077)	2.4	Other/unspecified / Lower extremity	4.9 (2.9–6.9)

Note. CI confidence interval. Leading diagnosis and body region are based on weighted counts within each sport category. Escalated-care percentages exclude visits with unknown disposition or departure before evaluation.

Table 3 Survey-weighted multivariable associations with escalated ED care

Factor/category	Adjusted OR	95% CI	p value
Age group, years			
18–34	Reference	—	—
0-9	1.00	0.77–1.30	0.999
10-17	0.74	0.59–0.91	0.006
35-54	1.35	1.14–1.61	<0.001
55-64	2.83	2.23–3.61	<0.001
65+	4.52	3.50–5.84	<0.001
Sex			
Female	Reference	—	—
Male	1.61	1.50–1.74	<0.001
Sport category			
Team and ball sports	Reference	—	—
Fitness, weight training, and athletics	1.59	1.39–1.81	<0.001

Factor/category	Adjusted OR	95% CI	p value
Racquet, target, and precision sports	1.66	1.32–2.07	<0.001
Gymnastics, dance, and cheerleading	1.45	1.17–1.79	<0.001
Winter and skating sports	1.71	1.29–2.28	<0.001
Aquatic sports	1.53	1.23–1.90	<0.001
Combat sports	0.98	0.75–1.28	0.880
Equestrian and climbing sports	3.63	2.60–5.06	<0.001
Other or unspecified sports	1.63	1.17–2.28	0.004
Primary diagnosis			
Strain or sprain	Reference	—	—
Fracture	48.94	32.99–72.60	<0.001
Contusion or abrasion	3.06	1.99–4.70	<0.001
Laceration, puncture, or avulsion	8.52	5.01–14.48	<0.001
Concussion or internal injury	25.38	14.99–42.96	<0.001
Dislocation	14.82	9.10–24.14	<0.001
Other or unspecified diagnosis	8.45	5.40–13.22	<0.001
Body region			
Lower extremity	Reference	—	—
Upper extremity	0.32	0.25–0.40	<0.001
Head and neck	0.59	0.45–0.78	<0.001
Trunk and pelvis	2.60	2.13–3.18	<0.001
Multiple, systemic, or unspecified	7.08	5.49–9.13	<0.001
Treatment location			
Sports or recreation place	Reference	—	—
School	0.76	0.59–0.96	0.024

Factor/category	Adjusted OR	95% CI	p value
Other public property	1.13	0.88–1.44	0.348
Home	0.93	0.75–1.15	0.507
Street or highway	1.13	0.65–1.97	0.658
Other or unknown	0.94	0.80–1.10	0.423
Alcohol involvement			
No or unknown	Reference	—	—
Yes	2.13	1.37–3.32	<0.001

Note. CI confidence interval, ED emergency department, OR odds ratio. Model n = 72,734 with 4,160 escalated-care events. Escalated care includes transfer, admission, observation, or death. The model incorporated survey weights and stratum-centred, hospital-clustered sandwich standard errors. p values are two-sided.

FIGURES

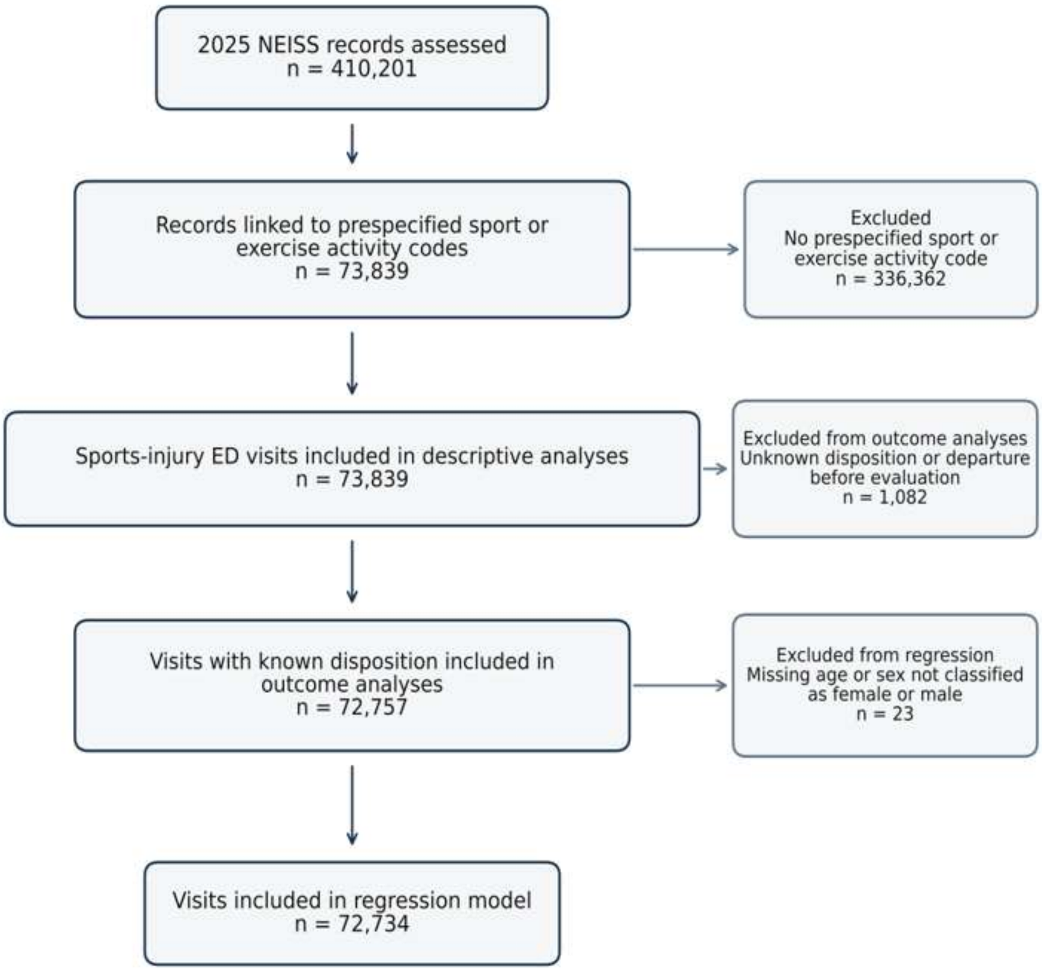

Fig. 1 Study selection for the 2025 NEISS sports-injury cohort. ED emergency department, NEISS National Electronic Injury Surveillance System

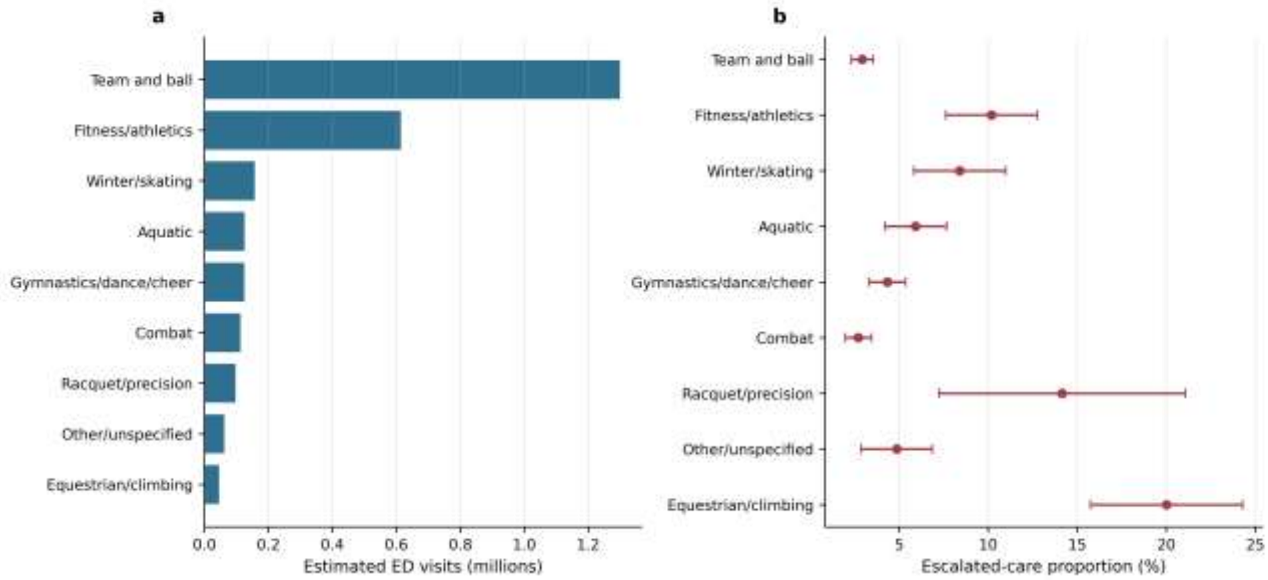

Fig. 2 Weighted sports-injury burden and escalated-care outcomes by sport category. a National ED visit estimates. b Percentage requiring transfer, admission, observation, or resulting in death; points show estimates and bars show 95% confidence intervals