



RESEARCH REPORT



2019

The Center for Sport Science at US Lacrosse (the “Center”) serves as a national hub for the study of health, performance, and safety in lacrosse. Created in 2016, the Center is devoted to research, education, collaboration, policy development, and best practice guidelines that benefit the safety and wellness of lacrosse players and organizations.

The Center seeks to expand and elevate initiatives that US Lacrosse has been committed to since its creation in 1998. Combined, the Center and US Lacrosse have granted over \$1.5 million in health-related research funding since 1998, to improve the well being of lacrosse participants at all levels of play.

Dr. Bruce Griffin serves as the Director of the Center, with members of US Lacrosse’s Sport Science and Safety Committee serving in an advisory role. The Center looks to continue its’ growth and success with the recent addition of a Research Coordinator and a SafeSport Program Manager.



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The ability of the Center for Sport Science to fund new research and safety initiatives is driven by the generous support of our donors and members. Please consider making a tax-deductible gift to help us further elevate and improve game safety and to enrich lives through lacrosse.

TITLE:

Team Talk: Developing and Evaluating a Peer-Based Mental Health Intervention in Youth Lacrosse

INVESTIGATORS:

M. Blair Evans, Assistant Professor, Department of Kinesiology, Penn State University; Matthew Vierimaa, Assistant Professor, School of Kinesiology, Acadia University, Canada [Formerly: Assistant Professor, Utah State University]; Stewart Vella, Senior Research Fellow, School of Psychology, University of Wollongong, Australia

PURPOSE:

We conducted this study to develop and evaluate an intervention delivered within adolescent sport teams to promote understanding of sport psychology and mental health, while also fostering supportive relationships among teammates. We targeted athletes' awareness about how to identify mental health problems in others, and resources or strategies to seek help – areas of knowledge that represent mental health literacy. In addition to developing the intervention, our aims were to: (a) evaluate feasibility of the intervention [i.e., is it designed to reach the population of interest and be effective, while being widely adopted in clubs?], and (b) explore the extent that the intervention resonated with athletes.

WHAT IS KNOWN ABOUT THIS TOPIC:

Many adolescents experience mental health problems like anxiety and depression. These problems early in life have a long term impact because they influence quality-of-life and reduce the likelihood of attaining developmental milestones. Facing a need to promote mental health, sport is valuable because it is such a widespread activity and because young athletes can develop supportive relationships with teammates, coaches, and parents. Indeed, recent studies reveal that young athletes, parents, and coaches see value in promoting mental health within their sport organizations.

One recent large-scale intervention successfully promoted mental health literacy through sport, delivered through sport organizations in Australia. The Ahead of the Game Project involved education related to mental health literacy that was delivered to adolescent male athletes, along with parents and coaches. Results revealed that youth who received the program reported increases in wellbeing, mental health literacy, and intentions to seek help. One component of this intervention involved workshops with teams to focus on mental health literacy and supporting others – this was the starting-point for Team Talk.

WHAT THIS STUDY HAS DONE:

We designed the Team Talk intervention through consultations with competitive lacrosse coaches and through a pilot with members of five competitive lacrosse teams of females from 13 to 17 years of age ($n = 55$). The resulting intervention included three main 'components' delivered during 1-hour workshop sessions within teams: (a) a survey where athletes described what was 'unique' about their team [i.e., team identity], (b) an information session introducing sport psychology, followed by mental health literacy information focused on awareness of anxiety and depression, and (d) discussion involving the team identity and strategies to support teammates.

We conducted the intervention with members of seven competitive club lacrosse teams, along with three teams of athletes involved in other competitive sports ($n = 115$; 64% female; Mean age = 15.70 years \pm .80). In addition to survey responses directly following the intervention, we conducted follow-up interviews with athletes, parents, and coaches. During Winter, 2020, we will conduct intervention sessions with additional teams and complete analyses of survey and interview responses.

Although analyses are ongoing, initial results identify promising aspects of the intervention. For instance, athletes (along with parents and coaches) saw value in promoting mental health literacy and discussing team identity. For example, one athlete described how her teammates were (previously) unlikely to provide

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support when recognizing other team members we not their normal selves, or when they were struggling in performance: “A lot of times girls push it away and are like “I’m sure [she is] fine. Like, with the technology, we’re not used to doing it. A lot of the time when we have important conversations with people it’s over text, and a lot of people aren’t used to that face-to-face talk ... It means we’re not used to it or confident.” When asked what they enjoyed most about the session, the most commonly-identified component involved brainstorming strategies for athletes to support one-another.

There were also challenges related to delivering sessions within teams, including: [a] poor reach of the intervention (e.g., low recruitment rate) and [b] lacking adjustment of intervention content to adapt to athletes’ existing knowledge. Feedback from participants – along with results from the previous Ahead of the Game project – highlight that there may be additional value in targeting other important individuals surrounding athletes (e.g., parent or coach training) or integrating additional tools to deliver information (e.g., mobile applications).

HOW THE STUDY PLANS TO PROCEED:

We will use insights from this project when working to improve feasibility – shaping the strategies used within teams before delivering the intervention in a larger-scale trial in lacrosse and other sports. We will also create an online toolkit based on findings from this study, posted publicly for leaders in clubs to lead team sessions with their groups along with printable resources related to mental health for athletes.

WHY THIS MATTERS TO US LACROSSE:

National governing bodies for sport have been key partners with researchers when developing innovative strategies to promote widespread health in domains ranging from injury prevention to preventing abuse. Considering psychological wellbeing as a key component of athlete development, this research has implications for retaining athletes and promoting psychologically safe team environments. Studies like this one will identify key ways to efficiently promote mental health literacy – a level of understanding that is required to integrate mental health literacy into existing programming or to create recommendations for clubs.

What Would You Do?
Your teammate is not themselves. You notice they are disengaged from training, and they talk about feeling really low and not being able to snap out of it

What Should You Do?

How about them?

- Be willing to talk. Ask how they are.
- Listen closely.
- Ask if they have spoken another person (parent, coach, counsellor).
- Suggest possible sources of help.
- Check in with them regularly.
- Discuss what you know with a coach or other responsible person.

How about you?

- Discuss your feelings with trusted other
- Use available resources.
- Remember you are not alone.

MENTAL HEALTH MATTERS!

● AWARENESS ● KNOWLEDGE ● ATTITUDE ●

The Team Talk Workshop
Sport psychology seminar for sports teams

PennState
Team Talk
Developing and evaluating a peer-based mental health intervention in youth lacrosse

TITLE:

Continuation of the Lacrosse Study Tracking Injuries and Concussions in Kids (LAX-STICK)

INVESTIGATORS:

Shane V. Caswell, PhD, ATC, George Mason University; Zachary Y. Kerr, PhD, MPH, The University of North Carolina at Chapel Hill

PURPOSE:

Lacrosse is one of the fastest growing team sports in the United States. Substantial research has focused on understanding the epidemiology of injury among athletes at the collegiate and high school competitive levels. However, data at the youth level is limited. This prospective observational study describes the epidemiology of sport-related injury experienced by male and female youth (8U–14U) lacrosse players.

Previously funded by NOCSAE, LAX-STICK has proven to be very successful and continues to provide much needed information regarding youth lacrosse injuries to US Lacrosse and the medical community. Data from this project has resulted in peer-reviewed publications, and was presented at the US Lacrosse Sport Medicine Symposium in January 2017. Continuing this research has allowed researchers to observe changes over time in injury patterns among youth lacrosse players and evaluate the effectiveness of new interventions designed to improve player safety.

WHAT IS KNOWN ABOUT THIS TOPIC:

Youth lacrosse players (male and female, 14U) total 447,213 athletes in the United States (“US Lacrosse Participation Survey”, 2017). There is limited data regarding the epidemiology of sport-related injuries experienced by boys and girls youth lacrosse players. Over the 2015 and 2016 seasons, 10 youth lacrosse leagues (among Indiana, Massachusetts, Michigan, South Carolina, and Virginia) were observed for data collection of sport-related injuries (Kerr et. al, 2018). Of 1090 boys’ lacrosse players (U9, U11, U13, and U15), 241 total injuries were observed, resulting in an overall injury rate of 12.7/1000 athlete exposures. If we consider time-loss (TL) injuries, the injury rate reduced to 2.2/1000 athlete exposures. With 408 girls’ lacrosse players participating in the study, 59 total injuries were observed, resulting in an overall injury rate of 8.7/1000 athlete exposures. Considering TL injuries only, the injury rate was 1.6/1000 athlete exposures. Additional research is needed to better understand the etiology and prevention of youth lacrosse-related injury. Given that participation in youth lacrosse is continually increasing, it is imperative to continue and increase data collection efforts to better ascertain injury incidence estimates.

WHAT THIS STUDY HAS DONE:

This study employed a five-season observational cohort design. Youth lacrosse data originated from one large youth lacrosse leagues in Virginia. During the 2015–2019 seasons, 1,436 boys’ and 723 girls’ lacrosse players participated in this study. On-site athletic trainers (ATs) reported injury data from games and practices into a single injury documentation application called the Injury Surveillance Tool (IST). All ATs received standardized training in the use of the IST. Injuries and exposures were reported for surveillance purposes. The ATs completed detailed event reports on each injury that they evaluated. After initially inputting injury data, the ATs could return to view and update the data as needed over the course of a season, such as when a player returned to sports participation. In addition, ATs also provided the number of players participating in each game and practice.greater understanding on how to keep players engaged, and continue to increase participation.

WHY THIS MATTERS FOR US LACROSSE:

The analysis of data from these five seasons of tracking injuries will ultimately help US Lacrosse and its stakeholders analyze rules that have been previously implemented to make the game safer and determine if additional rules need to be amended or added in order to progress the game of lacrosse towards a safer format.

TITLE:

U.S. Center for SafeSport (Two-Part Study)

Phase I Title: Who is Listed on the US Center for SafeSport's Centralized Disciplinary Database? Demography and Beyond

Phase II Title: Examining the USCSS's Centralized Disciplinary Database: Perspectives of Users and Stakeholders

INVESTIGATORS:

Elizabeth J. Letourneau, PhD, Johns Hopkins Bloomberg School of Public Health; Rebecca L. Fix, PhD, Johns Hopkins Bloomberg School of Public Health

PURPOSE:

Phase I of this project will allow us to describe who is subjected to disciplinary measures, the reasons for discipline (type of infraction, age of/relationship to victim) and the information that is publicly available about violators (frequency of specific sanctions, characteristics of violators by sport and by state). An additional aim of Phase I is to look for patterns in the data that might help inform the future development of prevention strategies. For example, we will test if certain types of sexual misconduct appear to be associated with certain sports. This aim will involve reviewing the cases of all violators who are included on the contemporaneous registry (the database that is searchable by name, sport, or location and that currently extends back to March 2017) and identifying and examining the incident report(s) linked with each violator case.

Phase II of this project will entail collection of data on the extent of centralized database usage, reasons for use of the database, and perceptions of the database. To obtain this information, five sets of interviews will be conducted with U.S. Sports NGB stakeholders to accomplish the three study aims. In the first round of interviews, we will conduct semi-structured phone interviews with twenty adult staff members drawn from among the 50 U.S. Sports NGBs and local affiliated organizations who have previously accessed the centralized disciplinary database to report concerning behavior and/or to assess the fitness of current or potential employees or volunteers. Interview questions will focus on (1) how they became aware of the USCSS centralized disciplinary database and the permeation of this awareness among their Sports NGB colleagues, (2) policies governing the use of the USCSS centralized disciplinary database in the context of new and/or existing hires or volunteers, (3) the conditions under which they have (or would) utilize the centralized disciplinary database, (4) their perceptions of the quality, utility, and accessibility of the centralized disciplinary database, and (5) the fairness of the information provided by the centralized disciplinary database to victims and violators. A final open-ended question will solicit suggestions for improving the centralized disciplinary database and related procedures.

WHAT IS KNOWN ABOUT THIS TOPIC:

To improve the searchability and usability of records of sexual misconduct, U.S. Center for SafeSport (USCSS) created a single online portal that both enables the reporting of sexual misconduct and that provides sexual misconduct records searchable by violator name, location, and/or sport. The USCSS centralized disciplinary database seeks to improve consistency in reporting sexual misconduct and in providing information on sexual misconduct violators across all U.S. sports NGBs. Additionally, information sharing that 1) may assist in preventing repeat violators from obtaining new positions and 2) seeks to enhance the ability of individuals to protect themselves or youth athletes by improving awareness of individuals with past sexual misconduct is promoted by the USCSS sexual misconduct centralized disciplinary database. However, the extent to which the USCSS centralized disciplinary database achieves these objectives has yet to receive systematic scholarly investigation.

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WHAT THIS STUDY HAS DONE:

The research team and US Center for SafeSport have developed and agreed upon a study timeline. The research team received IRB approval to conduct both phases of the proposed study. The research team traveled to meet with the US Center for SafeSport staff in August 2019. A factsheet about sex offender registration, particularly juvenile sex offender registration, was developed by the research team for US Center for SafeSport in September 2019, to share with policy makers. Surveys to be conducted with stakeholders have been developed.

HOW THE STUDY PLANS TO PROCEED:

Once the updated centralized database is being used, which is scheduled to happen in early November 2019, Phase I of the study can be completed. Regarding Phase II of the study, the research team members are planning on traveling to the US Center for SafeSport in early December 2019 to conduct focus group interviews with NGB stakeholders.

WHY THIS MATTERS FOR US LACROSSE:

US Lacrosse and the US Center for SafeSport are invested in using a centralized database that ensures the safety of children while avoiding harm to individuals affected by the database. In addition, a new or updated centralized database is about to go live on the US Center for SafeSport's website. The research team includes experts on sex offender registration and notification practice evaluation and will provide US Lacrosse and the US Center for SafeSport with detail on who is using the database, how it is being used, and best practices moving forward. In addition, via data obtained from users of the centralized database, the current study will inform internal policies and practices.



Athletic Trainers from The University of Lynchburg. The Effect of Lacrosse Protective Equipment on Cardiopulmonary Resuscitation and Automated External Defibrillator Shock

TITLE:

The Effect of Lacrosse Protective Equipment on Cardiopulmonary Resuscitation and Automated External Defibrillator Shock

INVESTIGATORS:

Thomas G. Bowman, PhD, ATC; Richard J Boergers, PhD, ATC; Monica R Lininger, PhD, ATC

PURPOSE:

Determine time to first chest compression and first AED shock in two equipment conditions: Condition 1: removal of helmet while initiating CPR over the shoulder pads followed by shoulder pad retraction and AED application; Condition 2: removal of helmet and removal of shoulder pads followed by CPR and AED application.

WHAT IS KNOWN ABOUT THIS TOPIC:

Lacrosse is a collision sport with the potential for catastrophic injury. Recently, participation rates have increased dramatically, especially at the youth level, increasing the odds of catastrophic injury and the need for acute lifesaving care. In the event of an acute cardiac event, on-field equipment removal is suggested, although it remains unknown how lacrosse equipment removal may alter time to first chest compression and time to first AED shock.

WHAT THIS STUDY HAS DONE:

Thirty-six athletic trainers were placed in pairs to provide two rescuer CPR interventions in a simulated cardiac emergency. Participants completed a total of 8 trials in groups of two rescuers (2 access techniques X 2 shoulder pad types X 2 participant roles) on a simulation manikin. How the study plans to proceed: we have submitted abstracts for presentation of the results at the 2020 National Athletic Trainers' Association Annual Meeting. We are finishing up manuscripts and plan to have them submitted for publication review before the end of January 2020.

WHY THIS MATTERS FOR LACROSSE:

This study provides evidence for leaving the shoulder pads in place to provide immediate advanced care to patients wearing lacrosse equipment in order to hasten time to first chest compression. The American Heart Association advocates for expedient performance of high quality chest compressions and early AED intervention to improve patient outcomes during cardiac emergencies. Equipment can be removed after the first round of compressions without altering time to first AED shock. Further, high quality chest compressions can be accomplished over chest protectors that meet the new commotio cordis standard. These results help guide clinical practice for athletic trainers managing catastrophic incidents, thus improving safety of lacrosse athletes at the youth, collegiate, and professional levels.

Collecting data at youth lacrosse tournaments provides injury data from one of several settings where a youth lacrosse player is at risk for injury. Certified athletic trainers are able to document injuries at these tournaments in a systematic way that provides quality information for researchers and decision makers at US Lacrosse to improve the safety of the sport. Findings from this research will help provide data driven evidence on the most common types of injuries occurring at youth lacrosse tournaments. Tournament providers can use this data to be better prepared to treat injuries and to provide opportunities to reduce the occurrence of injury.

TITLES:

Youth Lacrosse Injury Surveillance Program (YISP) & Youth Player Experience Survey (Survey)

INVESTIGATORS:

Lisa Hepburn, PhD, MPH; Andrew E. Lincoln, ScD, MPH, MedStar Sports Medicine Research Center

PURPOSE:

YISP: (1) To collect and analyze youth lacrosse injury data and to describe the type and frequency of injuries that occur to youth lacrosse players. (2) To gain a better understanding of injury mechanisms in lacrosse game play. (3) To gain a better understanding of game play scenarios associated with injuries in youth lacrosse. (4) To describe trends over time in youth lacrosse injuries.

Survey: The goal was to learn more about the youth lacrosse player experience, including how participation patterns, coaching, costs, and injuries influence both the player and their family's perspective on lacrosse.

WHAT IS KNOWN ABOUT THIS TOPIC:

YISP: In a previous study of boys' youth lacrosse tournament injuries, concussions were the most common injury (33%) followed by contusions (20%) and minor ligament injuries (12%). The highest number of injuries occurred to the head and neck, followed by the lower extremity. The most common mechanism of injury was body-to-body contact (collisions), followed by stick impacts. No data on girls' youth lacrosse tournament injuries had been previously collected.

Survey: There are no published studies, to date, about this topic.

WHAT THESE STUDIES HAVE DONE:

YISP: Youth lacrosse tournament providers who participate in the US Lacrosse Tournament Sanctioning program were recruited to participate in the injury data collection efforts in the summer and fall of 2018 and 2019. Together, they represent almost 100 youth lacrosse tournaments throughout the United States. Tournament providers received a mailing in the spring that included an introductory letter, data collection forms, tournament summary forms and instructions on how athletic trainers staffing their events should fill out the forms and return them to US Lacrosse. Tournaments were conducted throughout the summer and fall of 2018 and 2019.

Survey: Two online surveys were created using the Tonic for Health online survey platform. One survey was designed for parents of former youth lacrosse players and specifically asks questions about why their child stopped playing lacrosse. The second survey was designed for parents of current youth lacrosse players. Both surveys ask questions related to the following concepts: time engagement, cost of team membership, training and travel, other sports played, injuries occurred while playing lacrosse, and coaching experience. Both surveys were sent via email to a large representative sample of US Lacrosse members in October 2018.

WHY THIS MATTERS FOR US LACROSSE:

Understanding what affects the quality of the youth lacrosse experience for both the youth player and their family is important to US Lacrosse. Player experience is related to multiple factors including coaching, opportunity to play, costs related to participation, injuries, and the required time commitment at various levels of play. By investigating the influence of these factors on the youth lacrosse experience, US Lacrosse will gain a greater understanding on how to keep players engaged, and continue to increase participation.

TITLE:

The Effect of Helmets on Injury and Player Perceptions in High School Girls' Lacrosse

INVESTIGATORS:

Daniel Herman, MD, PhD; Andrew Lincoln, ScD; Heather Vincent, PhD; Shane Caswell, PhD, ATC; Patricia Kelshaw, MS, ATC

PURPOSE:

With growing concerns regarding the long-term implications of concussions and other injuries, there has been significant debate regarding the risks and benefits of using helmets in girls' lacrosse. It is crucial that we understand the effect of helmet use so that evidence-based safety policy decisions can be made. The goals of the study are to evaluate differences in concussion and musculoskeletal injuries between helmeted and non-helmeted high school girls' lacrosse players, and to compare player, coach, and referee attitudes and perceptions regarding helmet use and game play among helmeted and non-helmeted high school girls' lacrosse players.

WHAT IS KNOWN ABOUT THIS TOPIC:

Concerns regarding concussion and other injuries have led to significant debate within the lacrosse community regarding the use of protective equipment such as helmets. Opponents cite a lack of evidence supporting the use of helmets for preventing sports-related concussion. Opponents also fear that the use of helmets may paradoxically increase the risk of concussion via a "Gladiator Effect." This theorized effect describes both a decreased level of caution during play on the part of a helmeted player, as well as an increased level of aggressiveness of play by opponents against that player. Proponents for the use of helmets in girls' lacrosse indicate that protective headgear is warranted as helmets may be particularly well-suited to limit linear forces, which are associated with the most common mechanism of concussion injury in the sport (ball or stick hitting a player). Proponents also noted that very little evidence of a "Gladiator Effect" related to helmet use has been demonstrated in the literature.

Our research team has pilot injury data for the three years prior to and three years after the implementation of a headgear mandate in Florida in 2015 using an athletic trainer driven electronic medical record system. The post-mandate period had significantly greater frequency of concussions compared to the pre-mandate period (6 in 3984 athlete-games vs. 17 in 4277 athlete-games; $p=0.033$). The post-mandate period also had a significantly greater frequency of musculoskeletal injuries (9 vs. 27, $p=0.005$). While these results should be treated with caution as the protective headgear used was not the current ASTM standard, the results do indicate that the use of greater amounts of protective headgear in girls' high school lacrosse may result in an elevated risk of injury. Our research team also has pilot data regarding head impact biomechanics in helmeted and non-helmeted players. 35 athletes participated during 18 games in 2016 (no headgear worn) and 15 in the 2017 lacrosse seasons (ASTM standard). All participants were instrumented with wearable sensors to measure game-related impacts. Negligible differences were found between the two conditions in peak linear acceleration and peak rotational velocity. The results suggest that the ASTM standard headgear may not actually reduce forces from stick and ball impacts. Furthermore, impact rates were the same between the two seasons, suggesting that a "gladiator effect" did not occur with helmet use. Finally, our research team has pilot data regarding player attitudes prior and subsequent to the use of this headgear in the same team during the 2017 season. The results indicated a perception that opponents may play more aggressively towards helmeted players when wearing the headgear. It is also worth noting that anecdotal reports from the coaches associated with this team were adamant regarding their perception that opposing players were more aggressive towards their team with the use of helmets compared to prior non-helmeted season.

TITLE:

The Effect of Helmets on Injury and Player Perceptions in High School Girls' Lacrosse

WHAT THIS STUDY HAS DONE:

Aim 1: We received injury data reporting from 74 high school athletic trainers during the 2019 girls lacrosse season, including 26 from Florida (helmeted) and 48 outside of Florida (non-helmeted), for a total of approximately 116k player-exposures (practices and games).

Aim 2: We have constructed a Redcap-based survey instrument for each category inclusive of players, coaches, and referees. Outreach methods including advertisements to the membership of US Lacrosse have yielded 70 player, 152 coach, and 211 referee survey responses.

HOW THE STUDY PLANS TO PROCEED:

Aim 1: We have additional funds from both US Lacrosse (grant awarded in 2019) and from the National Operating Committee for Standards on Athletic Equipment for extending the study to include the 2020-2021 seasons. The goal would be to have as many as 230 high school seasons of reported data. We are sensitive to the importance of this data to help inform different organizations and individual coaches, parents, and athletes. As such, the investigator team has started to have internal discussions regarding the possibility of releasing/presenting interim results after the 2020 season in the event that we continue data collection through the 2021 season. The timing of this will likely depend in part on Datalys and their timeline for data review and finalization for the 2020 season; discussions are ongoing. Ultimately, the results for the completed study would be submitted for publication in a journal of significant standing/impact factor in the sports medicine sphere. Possible targets may include the American Journal of Sports Medicine, Medicine and Science in Sport and Exercise, or the British Journal of Sports Medicine.

Aim 2: We are currently working to increase those numbers through outreach efforts via the National Athletic Trainers Association, by which emails targeted to NATA members at high schools with girls lacrosse will instruct them to distribute the survey links to their team coaches and parent/player contact list. Furthermore, we have developed a lacrosse coach contact database using public information by which we plan to reach out to coaches for survey responses directly. Finally, we will be working to distribute this survey to referee organizations to help increase the number of responses for that category. This additional level of outreach is scheduled to take place in March of 2020 when rosters will be set for high school teams in most states. The results for the completed study would be submitted for publication in a journal of prominent standing in the sports medicine sphere. Possible targets may include the Journal of Athletic Training, Clinical Journal of Sports Medicine, or Sports Health.

WHY THIS MATTERS FOR US LACROSSE:

This will be the first large-scale study to assess the direct effect of helmet use on player safety and perceptions of safety and game play in girls' lacrosse. The question of the utility and risk/benefit of using helmets in this game is currently a very hot topic with a significant level of passionate opinion fueling an intense debate among many lacrosse communities; unfortunately, there is very little evidence available to help inform these debates and provide direction. The information obtained from this study will be critical for the development of evidence-based player safety policies for girls' lacrosse at the personal, local, regional, and national levels.



Find more research from the US Lacrosse Sport Science & Safety Committee and others on our web-based bibliography...

US LACROSSE RESEARCH BIBLIOGRAPHY

<https://www.uslacrosse.org/sites/default/files/public/documents/safety/Bibliography-May2019.pdf>

FIT TIPS

PERFORM. PROTECT. PREVENT.



HALF TIME

20 toe touches



**OUT OF BOUNDS/
CHANGE OF POSSESSION**

2 squats



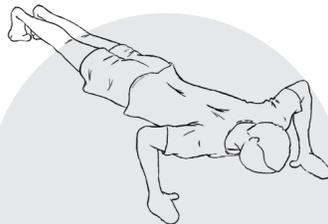
TIMEOUT

5 Side lunges
(each leg)



"YARD SALE"

5 single-leg glute
bridges (each leg)



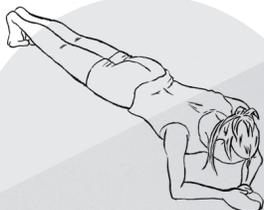
GOAL

2 push-ups



"OFF THE PIPE"

10 glute bridges



TAKEAWAY

20-second plank



GOAL SAVED

5 sit-ups



PENALTY/FOUL

1 burpee

LEARN MORE AT [USLACROSSE.ORG/SAFETY/INJURY-PREVENTION-CONDITIONING](https://uslacrosse.org/safety/injury-prevention-conditioning)

Check your surroundings before performing these exercises

START SAVING ON DONJOY PRODUCTS BY JOINING THE CLUB AT [BETTERBRACES.COM/JOINTHECLUB](https://betterbraces.com/jointheclub) USING CODE **USL131**



MISSION

As the sport's national governing body, US Lacrosse provides national leadership, structure and resources to fuel the sport's growth and enrich the experience of participants.

USLACROSSE.ORG