

## Financial and Management Barriers to Safety Education in Youth Sports in the United States

By Amy S. Eperthener\*

*A problem exists with the lack of mandated health and safety training for youth sport coaches in the United States. Youth sport organizations rely heavily on volunteers to staff their programs, and lack of education leaves coaches unprepared to handle health and safety situations that arise. This study explored current practices in safety education for youth sport coaches in northwestern Pennsylvania. Youth sport coaches and administrators at three sites were interviewed. The results of the study showed an overall lack of consistency in health and safety education in the region. Youth sport coaches whose sport has a governing body or with additional coaching experiences had more health and safety education than those who did not. Administrators cited concerns that additional required training would deter volunteers from coaching, citing financial and management barriers. The coaches unanimously indicated additional education would not deter them from coaching. The participants viewed health and safety education as important and valuable for youth sport coaches to possess, as it increases the overall safety of youth sports.*

**Keywords:** youth sports, coach education, sports injuries, sports administration, injury prevention

### Introduction

Youth sports in the United States lack mandated and comprehensive health and safety training for youth sport coaches. Each organization that sponsors youth sports decides their coaching standards and any health and safety training they wish to require, as no minimum or universal requirements existed to become a youth sport coach (National Federation of State High School Associations 2020). Many youth sport coaches volunteer or are parents of participants and do not have any formal or informal coaching training (Merkel and Molony 2012). They lack the knowledge and skills of the sport itself, as well as how to handle the physical needs of youth participating in athletics (Quain 1989). This problem impacts youth athletes, parents, coaches, and youth sports administrators because youth coaches were not prepared to handle various health and safety issues associated with sports participation. More than 40 million children participate in organized community athletic programs in the United States each year (DiFiori et al. 2014, Glang et al. 2010, Swanson 2020). Parents trust that those responsible for youth sport

---

\* Associate Faculty/Assistant Athletic Trainer, Edinboro University, USA.

programs have training to handle common injuries as well as weather emergencies such as lightening.

Physical activity is very important to many aspects of a child's development, yet participation is not without risk. The role of the youth sport coach is important in ensuring a safe athletic experience for young athletes. Despite the need for youth coaches to have such training to maintain the safe participation of young athletes, currently "no mandated national coaching education program exists in the United States for youth sports" (McLeod et al. 2011, p. 213). Because youth sports administrators and programs relied heavily on volunteer coaches, previous training or competence may not be a high priority when hiring coaching staff personnel (Quain 1989).

Millions of children participate in athletic activities through local parks and recreation departments, churches, YMCAs, and private athletic companies. Each organization offering youth sports opportunities have an obligation to provide "adequate coaching and medical supervision" (McLeod et al. 2011, p. 212). Given the lack of universal minimum requirements to become a youth sports coach, individual youth sports organizations determined their coaching criteria (National Federation of State High School Associations 2020). Some required their coaches to have a current first aid/CPR card while others had no minimum standards of training or education.

Research has documented a lack of first aid knowledge among youth coaches (Albrect 2009, Valovich-McLeod et al. 2008). Preventing and minimizing the negative impact of athletic injuries begins with having educated and prepared coaches (Valovich-McLeod et al. 2008). Injuries sustained while participating in recreational athletics have resulted in 2.6 million children being treated in emergency departments per year (Youth Sports Safety Alliance 2013), with an estimated healthcare cost of two billion dollars (Merkel and Molony 2012). The 2014 Youth Sport Safety Summit showed concussion rates for 8-13 year olds playing organized team sports doubled (Bakhos et al. 2010) and 47% of heat-related injuries reported occurred in youth athletes (Nelson et al. 2011). While participating in sports will never be completely risk free of injury, having a coach who is prepared to identify and handle common athletic injuries would significantly increase the overall safety of youth sports in the United States.

"Currently, no single entity oversees governance for all youth sports. As a result, uniformity in safety policies and procedures across organizations is lacking" (Huggins et al. 2017). A number of national organizations encouraged and promoted various levels of health and safety training for coaches. The National Action Plan for Sports Safety highlighted the need for coaches to be educated on such topics as cardiac events, neurological injuries, environmental and exertional conditions, and dietary/substance-induced conditions (Youth Sports Safety Alliance 2013). The National Athletic Trainers' Association (2013) suggested youth sport coaches be credentialed if their state, conference or league requires it, as this ensures that coaches have some background knowledge in the sport they are coaching. Additional recommended safety measures included requiring youth sport coaches to: obtain certification in first aid, cardiopulmonary resuscitation or CPR, and use of an automated external defibrillator or AED, know the signs and

symptoms of both heat illness and concussions, and have an emergency plan in place (Casa et al. 2012, National Athletic Trainers' Association 2013). The National Association for Sport and Physical Education set domain two of their coaching standards and benchmarks as safety and injury prevention, ensuring coaches be knowledgeable about injury prevention, responding in an emergency, heat illness, and concussions (National Association for Sport and Physical Education 2013). Best practices for youth sports include emergency action plans as well as education for leaders and coaches in the areas of emergency plans, sudden cardiac arrest, brain injury, exertional heat stroke, preexisting medical conditions, environmental conditions (lightning safety) and medical services (Huggins et al. 2017). These recommendations have not trickled down into action for youth sports coaches and administrators.

Evidence indicated the need for mandated health and safety training in youth sports (Albrect 2009, Andersen et al. 2002, Barron et al. 2009, Binkley et al. 2002, Council on Sports Medicine and Fitness & Council on School Health 2011, DiFiori et al. 2014, Gregory 2013, Huggins et al. 2017, Mickalide and Carr 2012, National Athletic Trainers' Association 2013, National Association for Sport and Physical Education 2013, Shimon 2013, Valovich-McLeod et al. 2008, Witkowski 2013, Youth Sports Safety Alliance 2013). Youth sport provider models varied greatly across the country, from organizations with full time staff to those comprised completely of parent volunteers (Pardis 2014). Many educational programs existed to meet this need, either comprehensive programs or programs focused on specific health and safety issues. Despite the need for youth coaches to have such training to maintain the safe participation of young athletes, currently "no mandated national coaching education program exists in the United States for youth sports" (McLeod et al. 2011).

There is no lack of available and convenient programming for youth sport coaches (American Heart Association 2020, American International Group 2020, American Orthopaedic Society for Sports Medicine 2014, Centers for Disease Control and Prevention 2019, Human Kinetics 2020, National Center for Sports Safety 2017, Sports Safety International 2020a, 2020b, USA Football 2020, US Sports Academy 2015, Walsh et al. 2013). While sport specific requirements by leagues vary, basic health and safety information is readily available for youth sports organizations to utilize to educate their coaches, thus providing a safer playing environment.

Gorse (2010) was the first author to address health and safety issues within youth baseball organizations. Since then, his study has not been replicated using other youth sports, especially those available to female youth athletes. No additional studies have specifically looked at youth sports with regard to coaching education or included both coach and administrator perspectives within the same study. This study investigated current practices in health and safety education for youth sport coaches. The youth sport coaches' and administrators' experiences with health and safety-training requirements was also investigated.

The purpose of this qualitative multi-site case study was to explore

current practices in health and safety education for youth sports coaches in northwest Pennsylvania. The study was designed to gain a deeper understanding of the current health and safety requirements for youth sport coaches. The experiences of youth sport coaches and youth sport administrators was examined to identify areas of improvement in the education and preparedness of youth sport coaches to handle common health and safety issues associated with sport participation.

## **Methodology**

This multi-site case study relied upon interviews with the participants and a review of formal site documents to capture the personal experiences of youth sport coaches and administrators. Participants' beliefs about their experiences and the interaction of multiple perspectives (coaches and administrators), combined with analysis of coaching handbook/policy manual provided a broad picture of current practices and attitudes regarding health and safety training in youth sports in the Northwestern Pennsylvania area.

This study used semi-structured interviews, through an interview guide to identify the experiences and feelings of youth sport coaches and administrators regarding health and safety education in youth sports. In addition, coaching handbooks/policy manuals were analyzed to gain a better understanding of current practices. Three distinct sites were selected to show unique aspects and perspectives of youth sports settings such as differences between non-profit and private business youth sports opportunities. Site 1 was managed by a private entity with municipal support. Site 2 was managed by a private company, and Site 3 was a local non-profit organization.

## *Participants*

The participants in this study included youth sport administrators and coaches at each of the sites, as they differ in their roles within youth sports organizations. One youth sports administrator from each site, and two youth sport coaches from each site were interviewed, for a total of nine participants. All administrators were male. Fifty percent of coaches were male and 50% were female. Inclusion criteria for participants included the site youth sports administrators and any youth sport coach affiliated with each site. Site administrators agreed to assist in accessing all youth sport coaches within their organization for potential study participation. No exclusion criteria existed for participants in this study.

## *Data Collection*

Interviews were conducted using an interview guide. The semi-structured guide was created by the researcher based on the available literature on the topic of coach education in youth sports, and was reviewed by a panel of three experts in the field of youth sports to establish content validity of the interview questions.

Document analysis was selected as an additional data collection tool to gain the in-depth understanding necessary in case study methodology (Yin 2014). Data was gathered through analysis of each site's coaching handbook/policy manual. This objective source of data assisted the researcher in corroborating emerging themes from the participant interviews and identify specific characteristics of each site (Yin 2014). A checklist was created by the researcher based on the literature.

### *Procedures*

The researcher generated a list of potential sites offering youth sports in the northwest Pennsylvania region. After receiving Institutional Review Board approval, youth sports administrators at each site were contacted and provided written approval to participate in the study.

Administrators at each of the data collection sites were contacted to schedule an interview at convenient time, location, and setting appropriate for recording the session. The participant signed the informed consent form and the interview was performed and recorded for transcription. The researcher followed the interview guide to ensure consistency of questions asked of the participant groups (administrators and coaches). Each recorded interview was transcribed verbatim to provide the most accurate account of data for analysis. Participants provided an email address in order to receive a written transcription of the interview. This member checking allowed participants to make corrections and verify the accuracy of the data collected during their interview. The coach interviews followed the same procedure as described above. Interview transcripts, upon approval by each participant for accuracy, were coded for common responses. Finally, the researcher obtained a photocopy or electronic copy of the site's coaching handbook/policy manual for review and analysis.

### *Data Analysis*

The interviews were hand coded by the researcher to identify themes as they related to the study's research questions. Each site's coaching handbook/policy manual was analyzed using the document checklist. The documents were reviewed for specific health and safety content identified in the literature as best practice.

### *Results*

Two first order themes emerged from the findings that explained the current landscape of coach education in youth sports: business barriers and gaps in knowledge. Each first order theme was made up of supporting second order themes. The supporting themes for business barriers included sufficient staffing and sport governing bodies. The supporting themes for gaps in knowledge included concussion education and handling emergencies. The

themes that emerged were also used in identifying answers to the research questions. The participants have been given aliases to protect their confidentiality.

### Current Practices

Coach interviews revealed scarce efforts to require health and safety education for youth sport coaches in the northwest Pennsylvania region. Volunteer coaches were not required to have any health and safety training or certifications, except a background check. Paid coaches were required to have first aid/CPR/AED certification. In addition, sports with governing bodies, such as USA Gymnastics and USA Swimming, required additional education for coaches of that specific sport. Youth sport coaches with additional experience or coaching positions outside of youth sports had additional health and safety training required by the high school or collegiate leagues. All youth sport coaches in this study identified areas of weakness where they wished for additional education and training. The coaches also were unanimous in their feelings that additional health and safety education requirements would not deter them from volunteering to coach youth sports.

The majority of administrators in the study identified concussion awareness, sudden cardiac arrest, risk management, and knowledge of safe playing conditions and education as key for their youth sports coaches. Administrators also cited requirements of the individual sports' governing bodies, such as USA Swimming and USA Gymnastics, as both essential and necessary knowledge and skills.

### Best Practice Implementation

Evidence from this study indicated only 1 of the 3 youth sports organizations in this study had a coaching manual/policy handbook. Having a coaching manual/policy handbook does not guarantee that best practices are being implemented. However, if a site was performing best practices as determined at the literature on youth sports safety, a coaching manual/policy handbook would best provide each youth sport coach with the education requirements and policies for reporting injuries, accessing emergency medical care, concussion and heat illness protocols, and emergency actions plans specific to each sport venue. The two sites that did not have a coaching manual/policy handbook relied predominately on volunteer coaches, with the exception of paid swim coaches.

The site with a coaching handbook shared an electronic copy with the researcher for analysis. The handbook is updated annually and provided to all coaches at the facility for reference. The coaching manual/policy handbook included many, but not all, of the health and safety topics noted in the literature as being necessary information for youth sport coaches. All coaches at this site are paid employees and are required to maintain first aid/CPR/AED certification; however, this was not specifically indicated in the handbook. The manual lacked a concussion policy or protocol, including knowledge of signs and symptoms and return to participation criteria or policies. It also lacked any mention of heat illness, perhaps because this sport only occurs inside.

The manual included many key aspects of an emergency action plan; however, it was incomplete and not organized as a standalone plan. A list of phone

numbers to access the fire department, emergency medical services, and the police was provided. Incident report forms were included in the document, as well as how and when to contact the athlete's parents in the event of an injury. Other health and safety information such as a list of signs and symptoms of musculoskeletal injuries, splinting techniques, and using first aid skills was presented. With regards to overuse injuries, the handbook included skill progression sheets and suggestions for adjusting the teaching methods to the student's skill level. To improve safety, the manual suggested not leaving the athletes unattended, using proper cushioning for equipment and checking and ensuring equipment readiness prior to beginning practice.

### Health and Safety Education Experiences

The swimming and gymnastics coaches in this study were required by their governing bodies to have specific education. The other coaches were not required to have any health and safety education or training to coach youth sports for the organizations where data was collected. One coach completed first aid/CPR/AED certification, as well as the Concussion Wise and Cardiac Wise courses due to additional coaching responsibilities in interscholastic sports.

All administrators in this study cited background clearances as a safety measure. Two sites required the coaches to pay for their background clearances. The third site has only paid coaches, and covers the cost of their employees' background clearances. Sam, who works at a non-profit, noted it is an administrative challenge to educate all the coaches about what clearances they need and how to get them. He attempted to accomplish this through coaches' meetings prior to the start of the season, but found it to be difficult to get coaches to attend the meetings. He then has to follow-up with those who could not attend to get them caught up, saying "it takes a lot of communication." Dan had a different experience with clearances. He owns and operates a gymnastic center. He reported frustration when saying

"Pennsylvania has a state mandate. We have our Act 33/34 clearances, and then we got stricter with that and added the fingerprint test and such. But that's a duplicate of USA Gymnastics because USA Gymnastics is doing a national one. It's putting the cost back on the consumer and back on the business. I have to have double certificates that say the same thing."

Administrators interviewed in this study discussed the potential benefits of requiring additional education and training for the youth sport coaches in their organization. They believed it would benefit the youth athlete participants because the overall environment would be safer and the coaches would be better equipped to handle injury situations. Conversely, the administrators also identified three barriers to requiring additional education for their youth sport coaches. These barriers included their heavy reliance on volunteer coaches, the increased time commitment from the coaches to obtain and maintain certifications, the additional costs of such education programs.

*Sufficient Staff*

The youth sport administrators interviewed indicated serious concerns that requiring additional education for their youth sport coaches would negatively impact their ability to staff their programs. Matt noted that his organization runs using over 300 volunteer coaches. He questioned his ability to be able to replace them if coaches were given additional requirements. Sam echoed similar concerns at his organization. They rely heavily on volunteer coaches to run his youth sport programming. He said

“Coaches are just interested in coming in and coaching. They are great. They amaze me at how good they are with the kids. But, I think we’d lose a lot of them if there were more hoops to jump through.”

*Time Commitment*

The youth sport administrators were also concerned about the additional time commitment for coaches with requiring additional health and safety training. Sam noted his coaches’ busy work and home schedules, in addition to attending coaches’ meetings, team practices, and events. He felt requiring a full day first aid/CPR/AED course would be asking the coaches to commit additional personal time and that it could deter some from continuing to coach. Matt noted similar concern, given his large coaching staff. With over 300 coaches in his organization, he saw additional training as an increased time commitment for the coaches and for the program staff to keep track of their completion.

*Cost*

The final business barrier to emerge from the data was the cost associated with additional required training for youth sport coaches. This barrier was identified by both coaches and administrators in the study. Walt, a youth sport coach, believed that if coaches were required to pay for their education, it would limit the number of people willing to volunteer. Sam, the non-profit administrator, said

“Cost would be a negative impact, if it increased cost. Being a non-profit, we are giving out scholarships, we are breaking even on these things. If it was mandated and we had to pay for it, it would be a problem. They [coaches] would have to pay for it, or we have to pay for it.”

Data collected in this study showed concerns from youth sport administrators and coaches that requiring background clearances, the additional time commitment of health and safety training, and the cost associated with additional training would negatively impact an organization’s ability to acquire sufficient volunteers to coach their youth sport teams. These findings are associated with the theme of business barriers.

In the interviews, coaches were asked if more education was required or mandated in order for them to coach youth sports, would it deter them from

coaching and why. The coaches (paid and volunteer) unanimously answered that additional education requirements would not deter them from coaching youth sports. They provided various explanations for their response. The coaches want additional training to be required because it would improve their comfort level with handling injuries and emergencies. Walt, who coaches his child's team, said he complete whatever process was necessary to continue to do that. Kathy indicated that she is motivated by wanting to share her love of soccer and work with kids, so she would continue to coach even with additional requirements. Donnie indicated his overall passion for the sport of gymnastics and that additional education requirements would not diminish his desire to work within the sport. Gwen, a swim coach, said "mandatory minimums are there for safety. Physical safety, personal safety, and legal safety." These responses counter the concerns from administrators in the first theme (business barriers) that additional education would limit the staff of coaches, especially volunteers.

### *Gaps in Knowledge*

#### Concussion Awareness

Coaches and administrators cited various levels of previous concussion training, yet all felt that more education would be beneficial. Matt, an administrator, felt that coaches are responsible for maintaining safe playing conditions, which can differ per sport. Coaches at this organization are not required to have concussion education.

Coaches in this study felt concussion training should be required and renewed often due to the changing knowledge and standards of care. Carrie discussed how the management of concussions has changed drastically since she was an athlete. She also noted that concussions are included in her USA Gymnastics education courses, but not to the extent or as detailed as she wants to feel comfortable. Walt discussed a concern about mishandling a concussion and causing the child additional harm or delaying recovery.

One administrator and one coach cited concussion training they have completed to coach at the interscholastic level as appropriate and adequate. It included an online program they complete annually. Tom, a youth sports coach, went on to explain how this outside education on concussion management has trickled into his coaching at the youth sports level. He explained

"If I did not have that [outside] training, there could have been some issues that could have happened over the last five or six years with my son at (site). I wouldn't know how to act. I knew how to react. Speaking of one example, a kid got hit with a baseball. So I immediately called mom, told her what to do. She didn't think anything –oh he will be fine. We texted back and forth. I told her 'You really should take him to the ER.' Low and behold, he did have a concussion. Having that training outside was huge. Any other (site) coach would have just called mom or dad and never followed up with it. It makes a big difference, especially in the safety of the child, which is first and foremost no matter what."

### Handling Emergencies

The coaches in this study cited various aspects of first aid as being important to their job, including handling blood safely, having access to a first aid kit with the appropriate supplies, and knowing when to apply ice to an injury. Kathy wished she had more knowledge about asthma. She said she is unsure how hard to push them during conditioning if they begin to have difficulty breathing. Kathy also identified concerns with food allergies. She has experienced young athletes with specific food allergies that have affected the team regarding snacks and getting exposure to the allergen from teammates. Tom, who also coaches at the interscholastic and collegiate levels, noted that he uses first aid skills required for other coaching positions the most often when he is coaching youth sports for this organization. He said he was thankful he had the previous training because he was able to put it to use with his youth athletes when they became injured.

Sport specific rescue techniques were reported by coaches as necessary training for youth sport coaches. Gwen, the youth swim coach, shared that while her position requires being a certified coach through USA Swimming, it does not require her to have lifeguarding or water safety instructor certification. She felt that water rescue techniques, such as backboarding a victim in the water, would be helpful to learn and practice. Donnie, a gymnastics coach, also indicated the importance of sport specific rescue techniques. He said

They make us do a safety certification. Several things they do there. Mainly, the best one I think they do there is a video of rescue efforts for pit safety. So if you have a gymnast who lands on their head or neck, you know how to get them out properly.

### **Discussion**

The theme of business barriers included factors such as sufficient coaching staff and the role of governing bodies. Both participant groups voiced issues surrounding the dependence on volunteer coaches by youth sports organizations. They expressed concerns that volunteer coaches would not be willing to go through the training and may reconsider volunteering, putting a strain on the organizations to get enough coaches to support programming. In addition, participants in this study noted the time commitment required to complete health and safety education as a concern. Administrators were nervous the time to complete training programs may deter their volunteer coaches from coaching. However, all coaches interviewed in the study were willing to complete health and safety training. The coaches in this study cited specific examples of injury situations where they did not feel adequately prepared to help. All six of the coaching participants indicated that mandated health and safety education would not deter them from coaching youth sports.

Another theme that emerged was gaps in current knowledge and skill related to health and safety in youth sports, as identified by participants. These gaps included concussion knowledge and handling emergencies. All coaches interviewed in this study had previous coaching experience. Health and safety education courses

could use this previous life experience as a learning resource to provide education and skills specific to scenarios they have experienced or will likely experience.

These findings in this study suggest significant room for improvement and consistency in health and safety education for youth sport coaches across the region. Youth sport administrators are not aware of the health and safety education opportunities available for little or no cost. There is a clear disconnect between youth sport administrators and their coaches regarding requiring health and safety training. Administrators felt additional health and safety training would be beneficial to the coaches, athletes, and organization as a whole, but cited concerns that it would deter youth sport coaches from volunteering their time and services. The youth sport coaches in this study were unanimous that additional education requirements would not deter them from coaching. Therefore, administrators should be able to require additional health and safety education, even of their volunteer coaches, without the burden of the additional cost for the organization or loss of staff.

The findings also suggest a need for policy manual/coach handbooks to be created, distributed, and updated annually. Having such documents available to youth sport coaches would streamline the dissemination of important information and provide guidance on how to handle specific situations that may arise.

While these findings may not surprise professionals in the field, these discrepancies between best practice and actual implementation have not been previously documented in the literature. In addition, areas of improvement were noted that can significantly improve safety education in youth sports. For example, the misconception that additional education would deter coaches from participating is essential knowledge to bridge the gap. Coaches were clear they would prefer additional education to not having any requirements.

## **Limitations**

This study was localized to one county in one state, and represent only a fraction of the youth sports organizations in the region. The small participant sample may not accurately represent health and safety education practices at similar youth sports sites in the region, state, and nation. These factors limit the generalizability of the study's results; however, the results are consistent with studies in the relevant literature.

The methodology and participant selection utilized in this study may have limited the accuracy of the data collected. Participants were not representative of coaching any particular youth sport and not screened for years of coaching or administrative experience or if they coached their own child.

## Conclusions

These findings add to the body of existing literature indicating a need for youth sport coaches in the United States to be better educated on health and safety issues common to athletic participation. Coaches and administrators can address weaknesses and areas of specific concern in knowledge and skills relative to coaching youth sports. Open communication between youth sport administration and coaching staff is essential to identify the education needs of coaches to ensure their comfort in preparedness for injury. Organizations who create education programming can use these findings to find better methods to meet the needs and wants of youth sport coaches and improve marketing their programs to youth sport administrators effectively. The coaches and administrators in this study were not aware of the many free online courses available to them. These courses would meet the educational needs and desires of the coaches and appeal to the administrators as they are easily available and low or no cost. Finally, coach preparation and sport/recreation administration programs can use these findings to adapt their curriculum to better prepare future coaches and administrators regarding health and safety of youth sport activity. Additional focus on emergency action plans, necessary documentation, and limiting liability is needed.

Several avenues exist for future research on this topic. Further investigation should evaluate current practices in youth sport coach education on the state, regional, or national levels. Studies could compare those sports with governing bodies versus those that do not get direction from a national organization. Additional research is needed on the prevalence of policy manuals and emergency preparedness in youth sports.

## References

- Albrecht JM (2009) *A determination of basic first aid qualifications and knowledge among youth sports coaches in organized sport*. Doctoral Dissertation. ProQuest Dissertations and Theses. (Order No. 3360662).
- American Heart Association (2020) *CPR and first aid in youth sports training kit*. Available at: <https://cpr.heart.org/en/cpr-courses-and-kits/cpr-first-aid-in-youth-sports-training-kit>.
- American International Group (2020) *Ahead of the game*. Available at: <https://www.aig.com/business/insurance/group-accident/ahead-of-the-game---aig-us>.
- American Orthopaedic Society for Sports Medicine (2014) *Coaches curriculum toolkit*. Available at: <https://www.stopsportsinjuries.org/STOP/Downloads/Resources/CoachesCurriculumToolkit.pdf>.
- Andersen JC, Courson RW, Kleiner DM, McLoda TA (2002) National athletic trainers' association position statement: emergency planning in athletics. *Journal of Athletic Training* 37(1): 99–104.
- Bakhos L, Lockhart G, Myers R (2010) Emergency department visits for concussion in youth child athletes. *Pediatrics* 126(3): e550–e556.
- Barron MJ, Powell JW, Ewing ME, Nogle SE, Branta CF (2009) First aid and injury prevention knowledge of youth basketball, football, and soccer coaches. *International Journal of Coaching Science* 3 (1): 55–67.

- Binkley, HM, Beckett J, Casa DJ, Kleiner DM, Plummer PE (2002) National Athletic Trainers' Association position statement: exertional heat illnesses. *Journal of Athletic Training* 37(3): 329–343.
- Casa DJ, Guskiewicz KM, Anderson SA, Courson RW, Heck JF, Jimenez CC, et al. (2012) National Athletic Trainers' Association position statement: preventing sudden death in sports. *Journal of Athletic Training* 47(1): 96–118.
- Centers for Disease Control and Prevention (2019) *Heads up: concussion in youth sports*. Available at: <https://www.cdc.gov/headsup/youthsports/index.html>.
- Council on Sports Medicine and Fitness & Council on School Health (2011) Climate heat stress and exercising children and adolescents. *Pediatrics* 128: e741–e747.
- DiFiori JP, Benjamin HJ, Brenner JS, Gregory A, Jayanthi N, Landry GL, et al. (2014) Overuse injuries and burnout in youth sports: a position statement from the American Medical Society for Sports Medicine. *British Journal of Sports Medicine* 48(4): 287–288.
- Glang A, Koester MC, Beaver S, Clay J, McLaughlin K (2010) Online training in sports concussion for youth sports coaches. *International Journal of Sports Science & Coaching* 5(1): 1–11.
- Gorse KM (2010) *Leadership in youth baseball: awareness of health & safety issues*. Doctoral Dissertation. Dissertations and Theses.
- Gregory A (2013) Overuse injuries in young athletes. *ACSM Fit Society Page* 15(1): 3.
- Huggins RA, Scarneo SE, Casa DJ, Belval LN, Carr KS, Chiampas G, et al. (2017) The inter-association task force document on emergency health and safety: best-practice recommendations for youth sports leagues. *Journal of Athletic Training* 52(4): 384–400.
- Human Kinetics (2020) *Coach education center*. Available at: [http://www.asep.com/courseInfo/purchase\\_courseinfo.cfm?CourseID=251](http://www.asep.com/courseInfo/purchase_courseinfo.cfm?CourseID=251).
- McLeod TCV, Decoste, LC, Loud KJ, Micheli JL, Parker JT, Sandrev MA, et al. (2011) National athletic trainers' association position statement: prevention of pediatric overuse injuries. *Journal of Athletic Training* 46(2): 206–220.
- Merkel DL, Molony JT (2012) Medical sports injuries in the youth athlete: emergency management. *International Journal of Sports Physical Therapy* 7(2): 242–251.
- Mickalide A, Carr K (2012) Coaching our kids to fewer injuries: youth sports safety research. *Injury Prevention* 18: A130–A131.
- National Association for Sport and Physical Education (2013) *Recommended requisites for sport coaches*. Reston, VA: National Association for Sport and Physical Education.
- National Athletic Trainers' Association (2013) *Keep youth sports safety top of mind: guidelines from the National Athletic Trainers' Association*. National Athletic Trainers' Association.
- National Center for Sports Safety (2017) *PREPARE course*. Available at: <http://www.sportssafety.org/Programs/Prepare>.
- National Federation of State High School Associations (2020) *Interscholastic education*. Available at: <http://nfhslearn.com/courses/26>.
- Nelson NG, Collins CL, Comstock RD, McKenzie LB (2011) Exertional heat-related injuries treated in emergency departments in the U.S., 1997-2006. *American Journal of Preventative Medicine* 40(1): 54–60.
- Pardis L (2014) Parks and recreation's role in the concussion campaign. *Parks & Recreation* 49(9): 42–43.
- Quain RJ (1989) An overview of youth coaching certification programs. *Adolescence* 24(95): 541–547.

- Shimon JM (2013) Youth sport injury prevention is key. *Strategies: A Journal for Physical and Sport Educators* 15(5): 27–30.
- Sports Safety International (2020a) *CardiacWise online education*. Available at: <https://sportsafety.com/coach/cardiacwise/>.
- Sports Safety International (2020b) *HeatWise online education*. Available at: <https://sportsafety.com/coach/heatwise/>.
- Swanson B (2020) *Youth sports participation by the numbers*. Available at: <https://www.activekids.com/football/articles/youth-sports-participation-by-the-numbers>.
- USA Football (2020) *Youth coach membership benefits*. Available at: <http://usafootball.com/coach?context=coaches>.
- US Sports Academy (2015) The coach's role in sport concussion care: developing high school and youth coaches through the concepts of deliberate practice. *The Sport Journal* 24.
- Valovich-McLeod TC, McGaugh JW, Boquiren ML, Bay RC (2008) Youth sports coaches do not have adequate knowledge regarding first-aid and injury prevention. *Applied Research in Coaching and Athletics Annual* 23: 130–146.
- Walsh KM, Cooper MA, Holle R, Rakov VA, Roeder WP, Ryan M (2013) National Athletic Trainers' Association position statement: lightning safety for athletics and recreation. *Journal of Athletic Training* 48(2): 258–270.
- Witkowski KR (2013) Youth sports injuries: ensuring positive outcomes in sports by encouraging key preventative measures in youthful athletes. *Rehab Management*.
- Yin RK (2014) *Case study research: design and methods*. Washington, D. C.: SAGE Publications.
- Youth Sports Safety Alliance (2013) *National action plan for sports safety*. Available at: <http://www.youthsportssafetyalliance.org/sites/default/files/docs/National-Action-Plan.pdf>.