

Application of a Preventive Training Program Implementation Framework to Youth Soccer and Basketball Organizations

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Context: Preventive training programs (PTPs) can reduce injury rates and improve neuromuscular control and sport performance. However, PTPs must be implemented correctly and consistently over time for athletes to benefit. Coaches represent the best long-term option for implementing PTPs. Youth athletes are at the optimal age for developing good habits before maturation. Although frameworks have been proposed to guide implementation efforts, little is known regarding the feasibility and real-world context of PTP implementation at the youth sport level.

Objective: To evaluate the application of the 7-Step framework for promoting implementation of a preseason PTP workshop.

Design: Descriptive epidemiology study.

Setting: Youth soccer and basketball organizations.

Patients or Other Participants: Organizations with at least 1 team of athletes aged 8 to 14 years were invited to participate in a free preseason coaches' education workshop on PTP implementation.

Intervention(s): The 7-Step framework was used to guide PTP education and implementation for each organization. Personnel

at organizations that agreed to participate attended a single preseason workshop for coaches. Research staff were available as a resource throughout the season but did not actively implement or monitor the PTPs.

Main Outcome Measure(s): Retrospective evaluation of each organization's completion of steps 1 through 5 of the 7-Step framework.

Results: A total of 62 youth soccer ($n = 40$) and basketball ($n = 22$) organizations were invited to participate. Twelve organizations completed steps 1 through 4 and steps 5a through 5d. The highest drop-off rate occurred during step 1, "Establishing Administrative Support." No organization completed all components of steps 1 through 5.

Conclusions: To better understand how to successfully promote PTP adoption, we must identify the implementation steps that may present the most challenges. Because the highest drop-off rate was seen during the initial step, establishing administrative support and strengthening initial engagement are necessary to improve PTP implementation.

Key Words: injury prevention, coach education, youth sport

Key Points

- All organizations that developed an interdisciplinary team completed a train-the-trainer educational workshop.
- Time and organizational infrastructure were identified by organizations as the primary barriers to implementing the teachings of the coaches' workshop.
- Establishing administrative support had the highest rate of participation drop-off, so efforts should be made to strengthen engagement and foster initial "buy in."

Lower extremity sport-related injuries, such as anterior cruciate ligament sprains, lead to short-term and long-term health and financial consequences.^{1,2} Primary injury prevention is essential for youth athletes because a history of injury is the number-one risk factor for sustaining a musculoskeletal injury.³ Fortunately, exercise-based neuromuscular training used as a warm-up before athletic activity, often called a *preventive training program* (PTP), has been shown to reduce lower extremity

musculoskeletal injury rates by 65% to 85%.^{4–6} For best practices, PTPs should incorporate balance, agility, flexibility, strengthening, and plyometric exercises.⁷ Whereas studies of PTP effectiveness have primarily focused on female or older athletes, targeting youth athletes for PTP implementation will ensure that healthy habits and body control are developed during the formative sport years. Youth sport coaches represent the most viable long-term option for delivery of PTPs, and coach-delivered PTPs can

effectively reduce the injury risk for their athletes.^{8,9} Although injury rate and injury risk reduction depend on PTP dosage and fidelity,^{10–12} only about 20% of high school-level coaches used PTPs and presumably even fewer used PTPs at the youth sport level.¹³ Therefore, we must improve the dissemination of PTP information so that youth coaches willingly adopt and implement these programs.

To improve replication and dissemination, frameworks to guide PTP implementation and streamline reporting have been proposed.^{14–17} One example, the Reach Efficacy Adoption Implementation Maintenance Framework (RE-AIM) was designed to improve the application of health interventions in real-world contexts.¹⁴ Each of the 5 domains (Reach, Efficacy, Adoption, Implementation, and Maintenance) provides context to consider when structuring implementation efforts. A separate framework, 7-Steps proposed by Padua et al,¹⁷ provides guidance for real-world development and implementation of PTPs. The 7-Steps addresses a wide range of implementation steps, including the initial stages of gaining organizational support, tailoring the PTP itself and strategies to address organization-specific implementation concerns, and long-term maintenance considerations. Whereas the RE-AIM framework improved the translatability of health interventions, the 7-Steps specifically guides PTP implementation. Unfortunately, a review of the application of the RE-AIM framework¹⁸ in PTP research showed reporting gaps with respect to the adoption and maintenance of PTPs. Similarly, an investigation of the 7-Steps in youth sport interventions revealed limited information on obtaining administrative support and developing an interdisciplinary team.¹⁹ Collectively, this indicates a paucity of information on the initial stages of the PTP implementation process. Understanding how different organizations adopted and initially implemented PTPs could greatly improve the translatability of PTPs to different settings.

This was a retrospective study to evaluate the application of a framework after dissemination efforts for PTPs across youth sport organizations. Despite progress in reporting evidence-based PTP implementation strategies,^{15,20} sometimes implementation fails.²¹ Although researchers^{17,22,23} have proposed frameworks to guide dissemination efforts, widespread implementation is complex—what makes sense for one population may be unrealistic or ineffective in a different setting. To better understand the circumstances surrounding successful PTP implementation, we must identify areas within a given framework that may be more challenging for youth sport organizations specifically. To our knowledge, no authors have researched the application of the 7-Steps at the youth level of American recreational sports.

Therefore, the primary purpose of our study was to evaluate the application of 1 implementation framework, the first 5 steps in the 7-Steps program,¹⁷ in American youth soccer and basketball organizations to identify which steps were most limiting. A secondary purpose was to characterize barriers to and facilitators of each of the first 5 steps in the 7-Steps. Answering this big-picture question will help us to profile future dissemination and implementation interventions in youth sport. We hypothesized that developing an interdisciplinary team (a component of step 2) would be the most challenging factor for organizations to

complete due to the current lack of information in this area in the implementation literature.^{18,19} This is a novel approach to exploring how an implementation framework may apply across different organizations. Our aim was to advance the understanding of PTP dissemination and implementation at the youth sport level.

METHODS

A total of 62 youth soccer and basketball organizations for athletes between the ages of 8 and 14 years and within 50 miles of the university were contacted by a member of the research team (H.J.R.) via e-mail to participate in our study. Each organization was offered a free preseason education workshop for coaches on PTP strategies. Workshops were marketed as “training preparation for sport” to encompass both the injury-prevention and performance-enhancement objectives of PTP implementation. To fulfill the 2 purposes of this study, we recorded the entire process of engaging with these organizations from initial contact via e-mail to follow-up after the workshops. Purpose 1 was completed by tracking the number of organizations that completed each step of the 7-step process, whereas purpose 2 involved periodic reflections throughout the study.

Appraisal With the 7-Step Model: Dimension Items Checklist

The research team initiated the 7-Steps to streamline implementation efforts across organizations. After each organization's sport season (10 ± 2 weeks), we used an operationalized dichotomous (yes/no) screening checklist¹⁹ (Table) to evaluate each organization's level of completion of each step in the 7-Steps framework. The primary investigator (PI; H.J.R.) was responsible for communicating with the organizations, planning workshops, and following up throughout the duration of the study. The PI kept e-mail records and took notes during each point of engagement with organizational stakeholders. Steps 1 through 5 of the implementation framework were applied to all organizations that were initially recruited. The fidelity of PTP implementation was not evaluated during the season; therefore, steps 6 and 7 were not applied. Two researchers (H.J.R., L.J.D.) evaluated each organization's level of completion on the basis of planning notes and experience with the organization. The 2 researchers were able to reach a consensus on each step for each organization.

Step 1: Establish Administrative Support

Sport organizations were invited via e-mail to participate in a free, brief preseason education workshop delivered on-site to their organization's coaches. E-mail addresses were located via the organization's Web site, and all listed administrative personnel (eg, president, vice-president, director of coaching, team parents) were included on the initial e-mails. If an organization did not respond to the initial e-mail, the PI sent follow-up e-mails at least 2 more times within a month of the initial e-mail, for a maximum of 1 e-mail per week. Efforts were also made to contact organizations via phone if the administrative leadership did not respond to e-mails.

Table. Implementation Operational Definitions and Percentage of Organizations That Completed Each Subcomponent

Implementation Step ^a	No. (%) ^b
Step 1. Establish Administrative Support	
1a. Did the research team explain the negative outcomes of injury? (<i>lack of athlete availability, decreased athletic performance, long-term disability, high reinjury risk</i>)	28 (45.9)
1b. Did the research team explain the positive outcomes of injury prevention programming? (<i>reduce injury risk, enhance athletic performance, increase athlete availability</i>)	28 (45.9)
1c. Did the research team formally receive permission from the organization to implement the preventative training program?	21 (34.4)
Step 2. Develop an Interdisciplinary Team	
2a. Did the research team involve key stakeholders (<i>coaches, organizational administrators, parents, athletes, sports medicine staff</i>) in the design of the PTP?	18 (29.5)
2b. Did the research team involve key stakeholders (<i>coaches, organizational administrators, parents, athletes, sports medicine staff</i>) in the implementation plan of the PTP?	18 (29.5)
Step 3. Identify Barriers & Solutions	
3a. Were logistical (<i>organizational infrastructure, locations, resource availability, capacity</i>) barriers and solutions identified?	18 (29.5)
3b. Were time (<i>program & session duration</i>) barriers and solutions identified?	18 (29.5)
3c. Were the organization's personnel (<i>number of staff available, staff's background/professional education</i>) barriers and solutions identified?	18 (29.5)
3d. Were environmental (<i>training locations, surfaces, equipment availability</i>) barriers and solutions identified?	18 (29.5)
Step 4. Develop an Evidence-Based PTP	
4a. Is the program evidence based?	18 (29.5)
4b. Is the program solutions oriented? (<i>ie, improve biomechanics, enhance performance, provide warm-up, decrease muscle soreness</i>)	18 (29.5)
4c. Is the program scalable? (<i>ie, Do all components of the program need to be executed in order for it to be effective? Is program effectiveness maintained if intervention is adapted to meet the needs of the target population?</i>)	18 (29.5)
Step 5. Train the Trainers and Users	
5a. Was the effectiveness of the preventive training program explained to the trainers and users?	12 (19.7)
5b. Was the injury prevention program aligned with organizational goals (<i>player safety, reduce organization injury rates, enhance athletic performance</i>)?	12 (19.7)
5c. Were trainers' and users' knowledge, attitudes, and beliefs regarding injury prevention evaluated?	12 (19.7)
5d. Were trainers' and users' self-efficacy assessed and addressed? (<i>ie, trainers and users believe they are able to effectively teach and deliver the PTP</i>)	12 (19.7)
5e. Were trainers and users provided with regular feedback on their delivery and execution of the preventive training program?	0 (0)
Step 6. Preventive Training Program Fidelity Control	
6a. Was program implementation fidelity assessed?	Not evaluated
6b. Was continuous quality improvement feedback provided based on program fidelity assessment findings?	Not evaluated
Step 7. Exit Strategy	
7a. Were objective criteria for achieving high-fidelity implementation established?	Not evaluated
7b. Was a goal-oriented exit strategy established? (<i>ie, organization has achieved $\geq 90\%$ compliance with markers of program implementation fidelity for at least 2 months</i>)	Not evaluated
7c. Was implementation fidelity reassessed to ensure retention and maintenance after implementation support has been withdrawn for an extended period of time (<i>ie, >6 months</i>) after initial training?	Not evaluated

Abbreviation: PTP, preventive training program.

^a Presented in their original format.

^b Total = 61.

If an organization responded to the communication efforts, the research team organized a preliminary meeting between the PI and at least 1 organizational liaison to complete step 1. The organizational liaison could be any league administrator, such as an owner, president, coaching director, or league parent. The person filling this position varied according to the hierarchical structure of the organization during the preseason. We tried to conduct preseason meetings 1 to 2 months before the start of the season. However, many organizations did not want to meet to discuss and plan coach workshops until they had confirmed all their coaches. Therefore, many preseason meetings occurred 1 to 3 weeks before the start of the season. At this 30- to 45-minute meeting, the PI and liaison discussed (1) what PTPs are and how PTPs compare with other warm-up strategies; (2) the benefit of PTPs for

reducing the injury risk and injury rate and improving sport performance, specifically in a youth athlete population; and (3) the research study objectives and what procedures the organization could expect throughout the season. Other objectives of this meeting were to identify potential dates for the preseason coaches' education workshop on PTPs for each organization, discuss logistical concerns associated with implementing the preseason workshop, and identify other stakeholders who should be involved in the planning and implementation process moving forward. From there, the PI and interdisciplinary team worked to solve any identified concerns.

Step 2: Develop an Interdisciplinary Team

Once an organization volunteered to participate in the study, the PI worked with the organization during the initial

meeting to create an interdisciplinary team. The initial liaison served as the primary point of contact for the remainder of the study unless, after the first meeting, the initial liaison realized that other administrators within the organization were better suited to manage communication from that point forward. Once the interdisciplinary team was identified, the PI contacted the members via e-mail, provided the same information that was discussed at the preseason meeting, and confirmed their interest and involvement. Interdisciplinary team members were essential to communicating with the coaches and organizing the workshops.

Step 3: Identify Barriers and Solutions to PTP Implementation

Coaches attended a 45- to 75-minute preseason workshop on PTP implementation. The workshop had a general framework of (1) background education on PTPs, (2) hands-on training, and (3) a question-and-answer session to address barriers and concerns.

The background education segment reviewed the negative effect of sport injury, the positive benefits associated with PTPs, and an overview of the vital role feedback plays in training. During the hands-on training, the same PTP was used across organizations as the first example during each workshop (Appendix). The PTP was developed on the basis of efficacious warm-up strategies for youth soccer athletes.²⁴⁻²⁶ Coaches demonstrated each of the exercises in the PTP under the supervision of the research team. Coaches also practiced providing peer corrective movement feedback during each of the exercises. Further details of this process are described in “Step 5: Train the Trainers and Users.”

During the question-and-answer portion, barriers to day-to-day PTP implementation at both the organizational and team levels were addressed. Coaches were encouraged to consider how the PTP would fit in their team culture and to ask questions. The research staff discussed possible solutions and shared contact information in case additional barriers or problems manifested throughout the season and the coaches wanted further support.

Step 4: Develop an Evidence-Based PTP

Although the education workshop reviewed a specific, evidence-based PTP (Appendix), we discussed with coaches that no “one-size-fits-all” or single best PTP had been identified. We emphasized that evidence-based programs should incorporate multiplanar activities encompassing flexibility, agility, balance, strengthening, and plyometric exercises while teaching athletes proper movement control. During the workshop, we discussed ways to progress and regress each exercise in the program as well as alternatives for each exercise category (eg, agility, plyometric). After the workshop, coaches used or tailored the standardized PTP as needed for their own teams and circumstances.

Step 5: Train the Trainers and Users

The review of background information lasted approximately 10 to 15 minutes. For the hands-on training, coaches were divided into smaller groups of 3 to 5 coaches,

depending on attendance, to allow the research team to engage more closely. Workshop attendees performed exercises from the model program in a dynamic manner, followed by a gradual run and recovery jog back to the starting position. This facilitated an understanding of how the program prepares athletes for sport performance. The research team reviewed the fundamental mechanics of double-legged squats, single-legged squats, and cutting tasks and then applied those principles to the exercises in the standard PTP. We encouraged the coaches to practice the exercises themselves and then give feedback to another coach. In addition, we discussed with the coaches ways to convey this information to involve assistant coaches, team parents, or team captains (or a combination of these) in leading the PTP. This section of the workshop varied in timing depending on the size of the organization and level of engagement of the coaches.

Step 6: Preventive Training Program Fidelity Control and Step 7: Exit Strategy

Steps 6 and 7 were not evaluated in this study.

Data Analyses

To address the primary purpose of this study, which was to evaluate the application of the 7-Steps across organizations, the PI evaluated each step for the 62 organizations and corroborated results with a second researcher (L.J.D.) using a standardized checklist (Table). Each step had an overall theme and was then divided into subcomponents. If the 2 researchers did not agree on a step, another member of the team served as the tie breaker. Frequencies were calculated to evaluate the application of the 7-Steps by different youth sport organizations.

To address the secondary purpose of characterizing barriers to and facilitators of the first 5 steps, the PI monitored organizations throughout the implementation process. Questions used to drive descriptions were (1) Who was (were) the key stakeholder(s)? (2) What role(s) did the stakeholder(s) play in the organization? (3) What, if any, barriers to workshop implementation were encountered? (4) What, if any, were the respective solutions to those barriers?

RESULTS

A total of 62 youth soccer ($n = 40$) and basketball ($n = 22$) organizations were invited to participate. For each organization, we retrospectively evaluated the level of completion of steps 1 through 5 within the 7-Steps framework (Table and Figure 1). Overall, 12 organizations (19.4%) completed steps 1 through 4 and step 5a through 5d (Figure 2).

Step 1: Establish Administrative Support

Of the 62 organizations, 28 (45.2%) completed step 1a and 1b (Table), which involves reviewing the negative outcomes of injury and positive benefits during the first administrative meeting. After the initial meeting between the liaison and research team, a drop-off occurred at step 1c (Receiving Formal Support), and only 21 of the 62 organizations (33.9%) implemented the workshop for the

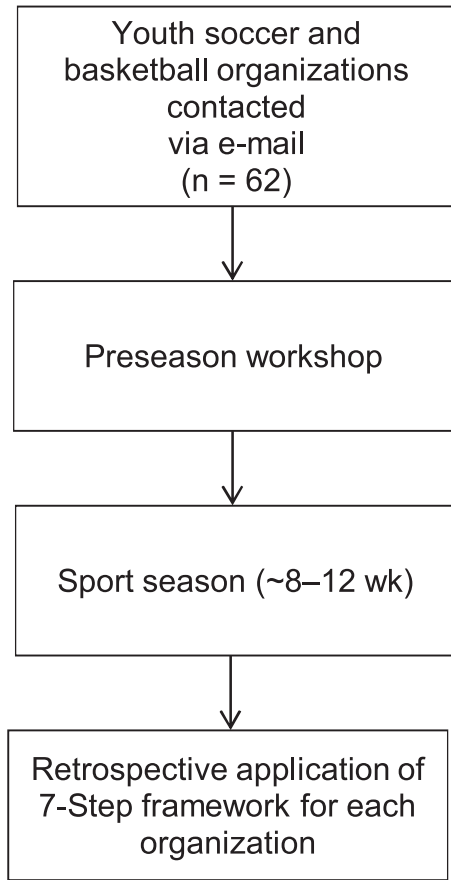


Figure 1. Flowchart of study procedures.

PTPs. Key factors for workshop implementation were time and organizational infrastructure. These concerns were identified by the interdisciplinary team before the workshop.

Step 2: Develop an Interdisciplinary Team

Before the workshop, only 18 of the 62 organizations (29.0%) developed an interdisciplinary team. The interdisciplinary teams varied among organizations but predominantly consisted of an organizational administrator, such as a club president or coaching director, as well as an active team parent or team coach.

Step 3: Identify Barriers and Solutions

The discussion of barriers to and solutions for PTP implementation was embedded within the workshop, so each of the 18 remaining organizations completed all components of step 3. The most common questions during the workshop were related to the amount of time to complete the warm-up, exercise diversity, and program modifications.

Step 4: Develop an Evidence-Based PTP

During the workshop, we encouraged coaches to use any evidence-based PTP strategy that would work best for their team's culture and ability levels, but we distributed a standardized PTP for youth athletes. Therefore, all 18 remaining organizations completed all subcomponents of step 4.

Step 5: Train the Trainers and Users

Of the 62 organizations, 12 (19.4%) completed 4 of the 5 components in step 5. No organization completed component 5e.

DISCUSSION

The primary purpose of our study was to evaluate the application of the Padua 7-Steps framework¹⁷ in American youth soccer and basketball organizations. A large drop-off was seen at step 1a (completed by 28/62 organizations [45.2%]), "Establishing Administrative Support," as well as at step 2a (completed by 18/62 organizations [29.0%]). Our secondary purpose was to characterize barriers to and facilitators of each of the first 5 steps. In step 1, time and organizational infrastructure were identified by organizations as the primary barriers to implementing the coaches' workshop.

Step 1: Establish Administrative Support

Step 1, "Establishing Administrative Support," had the largest drop-off. Of 62 organizations contacted, only 28 responded. Donaldson et al²⁷ experienced research challenges when planning an implementation strategy with community Australian football because the volunteer culture of the leagues made preseason planning and

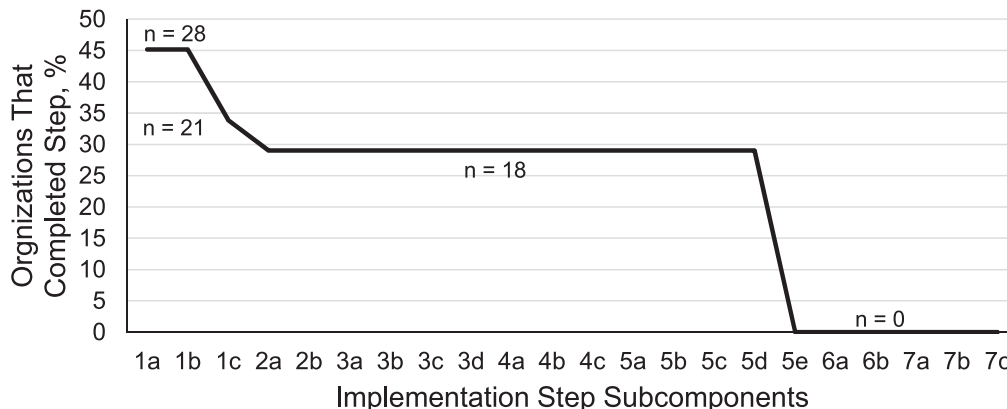


Figure 2. Percentage of organizations that successfully completed each implementation subcomponent.

communication difficult. We experienced similar difficulties while conducting this study, particularly in our initial contacts before the start of the season. Workshop advertisements were as appealing and accommodating as possible: the workshop was described as a free, brief preseason coaches' education workshop that would take place on a day and time and at a location that was most convenient for the majority of the coaches in the organization. A possible limitation of this implementation effort was that the perceived value of a free workshop may have negatively affected choice behavior and thus deterred participation. If an organization had paid for the workshop, perhaps attendance and follow-up would have been greater because the organization had become financially invested. However, despite efforts to offer free, low-maintenance training for coaches, multiple attempts to initiate communication, and our research group's existing professional relationships with many sport organizations in the area, the response rate was only 45.2%. A more top-down approach, including mandates from state or national organizations, might have improved the preliminary "buy in" for promoting PTP implementation in an organization. Yet during this specific season, the state of Connecticut had just adopted the US Soccer and US Youth Soccer recommendations regarding heading and suspected concussions and had also transitioned to a different age-grouping system with a focus on small-sided games. Many organizations were focused on implementing those policy changes, which may have negatively affected initial interest as they were processing and prioritizing new mandates.

Furthermore, multiple levels of influence undoubtedly affect PTP implementation. The individual athlete's and coach's knowledge, attitudes, and behaviors interact with the overall sport organization's environment. When top-down approaches, such as mandates or laws, are not possible, interventions may need to take a bottom-up approach and first address the individual factors that can cause an intervention to succeed or fail.

For the organizations that did respond, several barriers to workshop implementation were discussed during the initial meeting. A main barrier was time. We made every effort to keep the workshop as efficient as possible, maintaining a 45- to 75-minute time limit depending on how many coaches were present and how long the question-and-answer session at the end of the workshop lasted. Whereas content was the same across organizations, scheduling of the workshops differed. Organizations tried to maximize coach attendance at the workshop according to their administration's perceptions of coach personalities and availability. We relied on the interdisciplinary team to know the best method of planning a workshop for their coaches. Some organizations asked that the preseason workshop coincide with another organization-specific event, such as uniform distribution. In that case, the organization had previously struggled to identify a day that worked for all of their coaches and stated that scheduling would be a major barrier to attendance. However, another organization wanted the workshop to be held independently to avoid overlapping with other meetings or preseason tasks because it would be too overwhelming for their coaches to dedicate that much time. In this case, the organization's administration knew that more coaches would attend if the

proposed duration of an event was shorter with a very specific agenda.

Preseason communication was difficult to facilitate, and other time-related barriers were present. For example, 1 organization was proactive in scheduling the preseason workshop and had high attendance; yet in other instances, the organizations scheduled so far in advance that several coaches had not yet been identified. In another example, a basketball organization reported high levels of interest among coaches, but preseason occurred amid the winter holidays (late November to late December), and the workshop had low attendance due to poor weather and holiday-related commitments. Each organization has its own culture and time constraints,²⁸ so once communication is established, flexibility and offering multiple workshops may better accommodate coaches' schedules.

Step 2: Develop an Interdisciplinary Team

Of the 28 organizations that responded to the initial offer for the free, locally delivered preseason coaches' education workshop, only 18 organizations created interdisciplinary teams to collaborate in planning the workshops. The hierarchical structures within organizations differed dramatically; thus, the makeup of the interdisciplinary teams and the workshop planning was different among organizations. The most common top-down structure was an administrator who also served as volunteer coach. Only 1 soccer organization (the only elite-level organization evaluated) had administration independent of the coaching staff. Only 1 organization had a parent volunteer who did not coach but who organized the workshop initiative and mobilized coaches through daily e-mail reminders in the week leading up to the workshop. Another organization had paid coaches rather than volunteers, and the organization's owner facilitated reminders to coaches. The diversity of adult roles and responsibilities speaks to the need for adaptable frameworks that can be as flexible as the organizations we seek to work beside.

Youth sport and its volunteer cycle may only allow for very narrow windows of opportunity for establishing contact and implementing training workshops. To overcome this potential barrier, contact efforts should begin 1 to 2 seasons before the target season to identify an interdisciplinary team that will be available through that season. Similarly, it may be beneficial to engage different stakeholders, such as parents who coach and those who do not coach, organization administrators who coach and those who do not coach, and athletes, to attend the workshop. Implementing a workshop involving people in diverse roles may enhance the motivating factors and perspectives, thereby potentially increasing coach adoption and compliance. Although previous researchers have not evaluated the influence of parents at workshops, Steffen et al²⁹ found it useful to include athletes as demonstrators during the workshop. Future investigators should include multiple stakeholders and evaluate the effect of their attendance on the adoption and long-term maintenance behaviors of PTPs.

Step 3: Identify Barriers and Solutions

The common concerns during this portion of the workshop were time to complete the warm-up, exercise diversity, and program modifications. During the workshop,

we asked coaches to consider how this PTP would fit into their own team culture and schedule. Frequently raised concerns were time and exercise variety; many coaches commented that they lacked enough time at the beginning of practice to implement the suggested 10-minute PTP. We discussed ways to have the assistant coaches or athletes lead the warm-up, allowing the coach more time to organize the practice.

For exercise variety, we showed progressions and regressions for each exercise to promote team-appropriate activities and offered different ways that soccer and basketball skills could be incorporated into various exercises to increase the time spent handling the ball. Particularly for the basketball athletes, coaches were concerned that the athletes would not want to maintain the plank position with their elbows on the ground because it was painful on the hard court. For this example, we suggested a push-up position as an alternative. We were able to address coaches' unique concerns while maintaining the integrity and purpose of the exercise.

In addition, some coaches expressed concern that their teams used the warm-up time as a social component of practice and that the team did not take the warm-up seriously enough. For these situations, we suggested dispersing the athletes more widely to limit the exercise lines to 1 or 2 people deep. That way, the athletes would be consistently engaged with the warm-up and have less "down time" when they might start to chat or drift off task. These results support previous findings,^{13,20,30} and future authors should continue to evaluate ways to address coaches' concerns—namely, time and emphasizing more sport-specific ball drills—while maintaining an effective strategy.

Step 4: Develop an Evidence-Based PTP

All 18 organizations whose interdisciplinary teams identified barriers and solutions completed all subcomponents of step 4. We developed and provided to all coaches a standardized, evidence-based PTP. This lack of drop-off between steps 3 and 4 highlighted that if an interdisciplinary team communicates with and effectively organizes its personnel, disseminating an evidence-based PTP is not a limiting or challenging next step.

Step 5: Train the Trainers and Users

Previous investigators have shown that coaches' self-confidence may deter them from implementing PTPs. Therefore, the workshop was intentionally designed with a hands-on component during which coaches were able to practice both performing the exercise and giving appropriate feedback cues with our guidance. After the workshop, coaches were encouraged to reach out to us if they had any additional questions. We were available by phone or e-mail; however, few coaches contacted us during the season. Minimal in-season communication was a reflection of the persistent challenges of communicating with coaches during preseason planning, likely due to the dynamic and volunteer-driven environment of youth sport. Future authors should ask coaches for their preferred method of contact to ensure clear, consistent communication. Additionally, organizations could provide more top-down communication from the administrative level and post

information on their Web sites and smartphone applications.

Other researchers^{18,19} who evaluated the application of frameworks to implementation efforts found gaps in the adoption and long-term maintenance of PTPs. A limitation of our study was that we were not able to consider steps 6 and 7, which evaluate the fidelity and long-term maintenance of PTPs, respectively. However, our results for steps 1 to 5 corroborated that initial adoption and establishing the administrative support of the organizations were the most challenging steps.¹⁹ In addition, the initial response to the study was low. We established administrative support in 33.9% of the organizations initially contacted. Widespread youth sport engagement can be challenging because organizations have different preferred methods of contact (eg, e-mail versus telephone) and often a revolving door of volunteers in leadership positions. Although we reached out approximately 2 months before the start of the season, many organizations had not finalized their coaching positions and therefore had other logistic priorities that took precedence over the workshop organization. Future investigators should understand these limitations and be as flexible as possible in both communicating and planning.

This study provides insight into the injury-prevention–dissemination and PTP-workshop–implementation experiences of different organizations in youth sport settings. The study was conducted in a youth sport setting, which presents unique challenges compared with the secondary school setting, in which athletic trainers traditionally work with youth and adolescent athletes. However, athletic trainers in the secondary school setting may seek to implement PTPs with a variety of sports and coaches, and the framework used in this study could be similarly applied. The athletic trainers would need to contact coaches, establish administrative support to ensure mutually beneficial goals, and develop an evidence-based program with a strategy for maintaining implementation long term. In our study, organization-specific barriers needed to be addressed to implement a preseason PTP workshop. Establishing administrative support had the highest drop-off rate, emphasizing the importance of the initial communication and presentation for a PTP workshop. Further research should evaluate more approaches to establishing administrative support to improve PTP implementation.

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UConn: Training Preparation for Sport Warm-Up

Key Points: Land softly, get low, bend your knees

—— Good position —— Bad position

FIELD SET UP

Exercise 10 yards Progressive Run 10 yards Recovery Jog back to Start

Exercise	Description	Cues
<div>Elephant to Flamingo</div>	<ul style="list-style-type: none">▪ Right foot forward with heel on ground and knee straight▪ Squat down on left leg and lean forward, swinging arms down right leg▪ Step up onto right leg, pull left foot to left buttock to stretch left quad.▪ Repeat with opposite leg.	<p>Sit back for “Elephant”!</p>
<div>Forward Lunge</div>	<ul style="list-style-type: none">▪ Lunge forward onto right foot▪ Keep your torso straight and drive your hips towards the ground▪ Rotate arms across chest to stretch back▪ Repeat with opposite leg	<p>Keep your back straight!</p> <p>Toes pointed forward!</p>
<div>Side Lunge</div>	<ul style="list-style-type: none">▪ Lunge sideways onto right leg▪ Sit back and stretch inside of leg▪ Repeat on opposite side	<p>Sit back! Knees behind toes!</p> <p>Toes pointed forward!</p>
<div>Frankensteins</div>	<ul style="list-style-type: none">▪ Straighten one leg in front with heel on the ground▪ Bend at the hips swinging arms down thigh to lower leg▪ Swing arms up as you step forward	<p>Keep your knee straight!</p>
<div>Double Leg Squat > Skips</div>	<p><u>Squat</u></p> <ul style="list-style-type: none">▪ Hands on hips and feet shoulder width apart▪ Squat down like sitting in a chair▪ Repeat 5x <p><u>Skip</u> to next set of cones</p> <p><u>Repeat</u></p>	<p>Squats: Sit back! Knees behind toes!</p> <p>Skips: Land softly!</p>
<div>Core Time</div>	<ul style="list-style-type: none">▪ Push-up position w/ elbows on the ground▪ Keep upper and lower body as straight as possible▪ Hold for 20 seconds.▪ Increase time as athletes improve.	<p>Straight as an arrow! Bring your belly button to your spine.</p>

UCONN: Training Preparation for Sport Warm-Up

Key Points: Land softly, get low, bend your knees

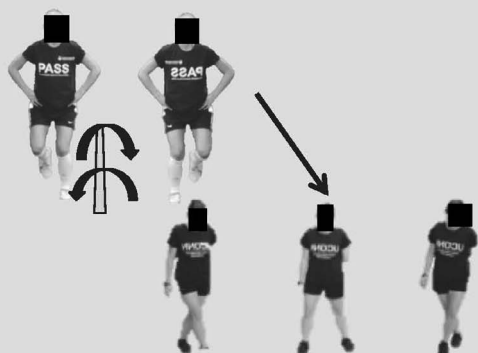
—— Good position —— Bad position

Exercise

Description

Cues

Side Hops -> Carioca/Grapevine



Side Hops

- Hands on hips
- Hop sideways from right foot to left foot
- Land **low**, land **softly**
- Balance for 5 seconds
- Repeat on opposite leg
- Repeat 5x

Carioca/Grapevine

- Carioca/Grapevine down to cones and back.

Side Hops:

Land softly!

Get low!

Toes pointed straight ahead!

Knees behind toes!

Frog Jumps



- Squat down, jump up for max height, repeat 4 times
- Rest for 30 seconds.
- Perform 5 more repetitions.

Land softly!

Get low!

Z Cuts

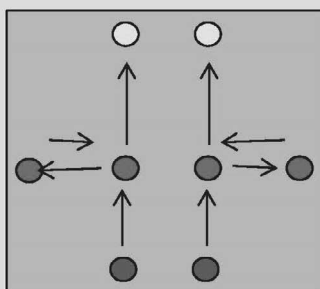


- Run diagonal to the right 3 steps
- Hop off of left leg to land on right leg and balance 5 counts
- Explode!!! in opposite direction.

Keep your chest over your knee!

Toes pointed straight ahead!

T Shuffle Race



- Have athletes divide into two even teams.
- Place cones 10 yards to the outside of the middle cones.

On the coach's start:

- Sprint to the first cone
- Plant, cut, and side shuffle 10 yards
- Plant, cut, and shuffle back 10 yards
- Sprint to end cone
- Sprint back to line and tag the hand of the next person in line.

Keep your chest over your knee

Get low!

Good technique and form are most important!!

^a Presented in its original format.