FutureFocus

Ohio Journal of Health, Physical Education, Recreation, and Dance

OAHPERD

Spring/Summer 2012

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Future Focus is the official biannual publication of the Ohio Association for Health, Physical Education, Recreation and Dance. *Future Focus* is a refereed journal, and manuscripts are blindly reviewed by the writer's peers unless otherwise noted (e.g., columns from OAHPERD officers, continuing special sections such as "Best Practices" and "The Coaching Toolbox"). Manuscript guidelines and submission dates are detailed on the inside back cover.

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Quarter-page ad	$75.00
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Steve Mitchell

Moving Forward, Leading the Way

Hello everyone, and I hope the spring semester is progressing well. As we move towards the end of the school year I find myself reflecting on how far the Ohio AHPERD has come in recent years, and I truly believe that we are leading the way in several important regards.

First, as an association we are extremely well managed in large part due to the work of our management company, Accent on Management. The spring has seen a change in personnel in that regard with Dawn Kennedy taking over from Peggy Blankenship as our Executive Director. Peggy will remain with Accent in a somewhat reduced role as she spends more time with her young family, a difficult decision but one which we all support and applaud. Peggy, thanks so much for your work in steering OAHPERD over the past few years to the point where the ship is sailing smoothly leaving us able to chart a course ahead. And welcome Dawn; we know the transition will be seamless and that we will continue to function efficiently and effectively. For everyone's information, OAHPERD is the only state association managed by a professional management company, one example of how we are leading the way

There are projects on which we are moving forward. OAHPERD members have been key players in the facilitation of assessment training workshops aimed at preparing PE teachers to implement the required Physical Education Evaluation beginning in fall 2012. These workshops have been taking place statewide throughout the late winter and spring, and have been well attended. (A review of these workshops appears on pages 8–9 in this issue.) Here is another example of Ohio leading the way. Having, in 2007, been the 48th state in the nation to approve academic content standards for physical education, beginning in 2012–2013 Ohio will be **the only state in the nation** with a fully functioning K–12 standards-based assessment system, in which student achievement data is systematically collected and reported to the State Department of Education, resulting in inclusion on the school report card. We should have no doubt that this is a significant achievement and I would like to take this opportunity to encourage all readers to make sure their colleagues and administrators are fully informed and ready to implement the system in the fall. While there will no doubt be some growing pains, I am confident that these will be temporary and will decrease as time goes on.

Other initiatives on which we are moving forward include writing a grant to the Ohio Department of Education to fund a working group to write a model PE curriculum, continuing to advocate for the adoption of Health Education standards in Ohio (this in collaboration with the American Heart Association and the Buckeye Healthy Schools Alliance), and thinking outside the box regarding our annual convention offerings. So these are times of progress, with plenty to be pleased about but plenty remaining to be accomplished. Let me take this opportunity to wish everyone a restful, but productive, summer.

Steve Mitchell

Association News

Dawn Kennedy, CAE, OAHPERD Executive Director

When you first saw my picture and name, I bet the first thought that came to mind was, "She's not Peggy. Where's Peggy?"

You are correct, I am not Peggy. My name is Dawn Kennedy and I am **the new Executive Director of OAHPERD**. Since, for most of you, this is the first time seeing my picture or hearing my name, please let me introduce myself. I am a Certified Association Executive with more than fifteen years association management experience. I am familiar with conventions, member education, advocacy, board relations, governance, finance and membership. My entire career has been in the association management field and I am excited to be a part of the dynamic team that is OAHPERD.

"What happened to Peggy?" is probably your next thought. Peggy is still here. She is just taking on a different role at Accent on Management, your association management company. She is helping with this transition and will be available to answer any questions I might have. That makes my job a *lot* easier!

Many of you often have contact with Heather Ormiston and she is also still here, and will still be your contact on daily inquiries, convention registration and website issues.

So what can I do for OAHPERD? What will my focus be? My plan is to work with the OAHPERD Board of Directors and Membership Coordinator, Lettie Gonzalez, to grow your membership. You have a great association and we need to make sure that Health, Physical Education, Recreation and Dance professionals from all levels, all across the state, know that you are working for them and that they need to be a part of this organization.

I also plan to continue to build on the great convention you have in December. I am excited to be a part of the 83d Annual Convention and I look forward to meeting you all in Columbus, December 5–7, 2012. I am looking forward to some great educational sessions and fun networking events.

Heather and I will continue to work together to ensure your website remains timely and that you are notified of opportunities and issues that could affect how you do your job.

My job as your Executive Director is to work with your board to make your association the best it can be. So if you have a question or suggestion, please drop me a line at: **Dawn@AssnOffices.com**.

Thank you and I look forward to working with everyone!

Dawn

Advocate! Educate! Participate!

OAHPERD

Save the Date

83d OAHPERD Annual Convention

December 5–7, 2012
Greater Columbus Convention Center

Presentation submissions are now being accepted for this annual event. To submit an abstract, go to **www.ohahperd.org**. All abstracts will be reviewed and considered for inclusion after the June 1st deadline.

For more information on the annual convention and other offerings from OAHPERD, contact Dawn Kennedy at **Dawn@AssnOffices.com** or at 614-221-1900.

Ohio Teachers Receive 2012 AAHPERD Jump Rope For Heart/Hoops For Heart Grant

Marla Thomas, Hoops for Heart State Coordinator

Melissa McCarthy and Fiona Connor-Kuntz were selected to receive one of ten national grants given annually by AAHPERD. To be eligible to receive the grant, applicants must coordinate a Jump Rope For Heart event or a Hoops For Heart event during the previous year, and submit a brief paper, lesson plan and sample budget.

Melissa, OAHPERD Jump Rope For Heart Coordinator and Physical Education Teacher at Cassingham Elementary in Bexley, Ohio, wrote the grant after learning more about the grant at an OAHPERD Convention Grant Writing Session. She realized it was not as complicated as she originally thought. Fiona teaches at the Gearity Professional Development School in University Heights, Ohio. Fiona was also inspired to write the grant after attending the same grant session. She feels it is the "perfect grant because it pays for professional development and equipment."

Melissa purchased pedometers with her grant. She already uses pedometers during physical education class. The additional purchased pedometers serve as an enrichment beyond the classes. "My goal is to have students check out a pedometer and use it at home for a week. With obesity becoming such a national issue any activity time needs to be celebrated. Using a pedometer can help an entire family spend quality time together."

Fiona intends to purchase Insta Pulse Heart Rate Monitors to bolster the heart education piece of her Jump Rope For Heart unit/event and to keep the heart education thread running throughout her curriculum. These wand monitors will enable her to quickly and efficiently teach and monitor heart rates during a variety of movement activities in all of her physical education classes.

2012 JRFH HFH AAHPERD Grant recipients

Congratulation Melissa and Fiona for receiving the 2012 AAHPERD JRFH/HFH Grant!

Both ladies encourage you to apply for the grant! They agree that, "It's much easier than we thought!" To learn more information on the grant, attend the AAHPERD JRFH/HFH Grant Session at the 2012 OAHPERD Convention or go to the website at **www.aahperd.org/jump or www.aahperd.org/hoops**.

Sasha Taylor, JPC Committee (middle) with AAHPERD Grant Recipients Fiona Kuntz (left) and Melissa McCarthy (right)

Interesting Heart Facts

Melissa McCarthy, Ohio Jump Rope For Heart Coordinator

Many Jump Rope and Hoops for Heart events are either completed for the year, or very close to being completed. Over the years, I have received the following interesting heart facts from The American Heart Association to share with my students:

- Cardiovascular disease is the #1 cause of death of women and men in the United States.
- Even at rest, the heart muscle works twice as hard as the legs of a sprinting man.
- People that suffer from gum disease are twice as likely to have a stroke or heart attack. Brushing and flossing your teeth can keep your heart healthy.
- CPR was developed by researchers funded from The American Heart Association.
- Between 5–10 million students in the US are obese. The percentage of children and teens defined as merely overweight has more than tripled since the early 1960s.
- The economic cost of obesity in the United States in 2000 was about $117 *billion*.
- In one day your blood travels about 12,000 miles—that is four times the distance across the United States.
- Jump Rope and Hoops for Heart reach more than 7 million students in over 30,000 schools with messages about the importance of physical activity, good nutrition and avoiding tobacco.

Are your students counted in the 7 million that raise funds for research by The American Heart Association? Is your school one of the 30,000 schools that participate and receive new equipment from US Games based on how much is donated? If so, congratulations and keep up the great work! Your school and student participation is making a difference in the fight against heart disease and stroke! If you have not held an event and have questions about how to do so for next school year, please feel free to contact me: **Melissa.mccarthy@bexleyschools.org**

Your donations, no matter how large or small, ***Make a Difference!***

Students take Leadership to New Heights

Heather Dixon, OAHPERD Student Liaison

Students that have shown emerging leadership abilities were chosen to attend the 2012 OAHPERD Student Leadership Retreat at Ohio University on March 11–13, 2012. Six universities were represented at the event from across all of Ohio. The students were given opportunities to demonstrate how to be a leader through various challenging activities, such as high and low ropes courses, physical activities and group projects. Mr. Frank Ross taught the group in African-American cultural dances and Holly Nesbitt led the students in a fast-paced Zumba session. On the last day of the retreat, the students slowed it down as they brainstormed convention ideas and how to get students in their majors at their universities more in touch with OAHPERD. This action-packed weekend brought to light the OAHPERD Student Division's growth and commitment to our goal of increasing student involvement in the organization. Pictures from the weekend can be found on our group's Facebook page "OAHPERD Student Division," courtesy of Jim Cook, OAHPERD Trustee and Executive Director of the Midwest District.

Of Note from OAHPERD Past-President

Cindy Meyer

Lucille Burkett

Career Achievement Award—Lucille Burkett

Lucille Burkett, OAHPERD retiree, recently received a Career Achievement Award from The Ohio State University College of Education and Human Ecology. I have known Ms. Burkett since 1970, when she first interviewed me for the position of physical education teacher at Shaker Heights City School in Shaker Heights, Ohio. From that very first meeting, I have respected Lucy's commitment to all that is right in education, and especially her tremendous efforts to improve the quality of physical education and athletics for all.

At Shaker Heights City Schools Ms. Burkett served from 1952 through 1986 as teacher, coach and Director of Health, Physical Education and Staff Development. Her title does not begin to describe the impact that she has had on teachers, students and programs within the district and community. Numerous young and "seasoned" professionals can attribute career success to Lucy's persistent mentoring. She required us to be committed to the profession, open-minded in pursuit of knowledge, and compassionate in our decision-making. The Lucille M. Burkett Award, established to honor her contributions during her thirty-three years of service to Shaker Schools, continues her legacy. This scholarship is awarded annually to outstanding female athletes.

Ms. Burkett's contributions were not limited to Shaker Heights City Schools. She served both state and national professional organizations. In 1966, Lucille Burkett received the OAHPERD Meritorious Award. In 1980 she received the American Alliance for Health, Physical Education, Recreation and Dance Honor Award for her dedicated service to the profession. Ms. Burkett served as Chair for the Division of Girls and Women's Sport and continues to contribute to the National Association for Sport and Physical Education. At times it is difficult to clearly define the impact of one professional on issues such as Title IX. However, Ms. Burkett's unique perspective encouraged coaches and administrators to examine more closely the impact of girls' participation not only in athletics, but also in a wide range of intramural activities.

It is not only her contribution to teaching, coaching and the profession that make Lucille Burkett an excellent candidate for recognition. She continues to be a model and a mentor for teachers, students and athletes, and is an outstanding representative of The Ohio State University and the profession.

Editor's Comments

Bob Stadulis

An interesting anomaly in the current issue is that the two refereed articles have authors with names very similar, that is, Morgan Patten and Beth Patton. Both articles focus on "practice." Morgan's contribution provides the reader with important information and resources concerning arthritis. Practitioners are provided website references to CDC approved programs that can aid clients with arthritis. From a more personal point of view, those of us of "senior" status can also profit from some of Morgan's suggestions and resources.

Beth Patton and Jennifer Gorecki team up with an elementary school physical education specialist, Amy Stine, and they share their attempt to do **action research** concerning the collaboration in instruction and learning between physical education and another school subject, mathematics. Since becoming editor five years ago, I have tried to promote our excellent Ohio practitioners to share their "best practices" with OAHPERD members via publication in *Future Focus*. Patton and Stine represent one of the best examples of the type of scholarship we want to encourage. Theirs is a collaboration between a public school teacher and a university faculty member doing applied research.

Such research does not require the rigorous application of design and analysis principles seen in more classic experimental studies (although I would certainly encourage using good design and analysis in any research effort). It is my hope that others in the state will consider undertaking similar attempts at action research and that the effort they make is presented at our state convention and/or submitted to *Future Focus* so that colleagues can learn from each other. And remember that research grants are available to aid such research efforts (see page 23).

Mike Sheridan's "Coaching Toolbox" column nicely fits the theme of this issue, that is, best practice as informed by good research. *Future Focus* has published many articles and columns in which NASPE physical education standards have been topics. In this issue's coaching feature, Mike focuses upon coaching standards.

The Editorial Board has said goodbye to a long-time member, Laurie Bell of Ohio Northern University. Laurie represented the dance area on the Editorial Board. Efforts are underway to have a replacement named in time to participate in the reviews for the 2012 Fall/Winter issue. Many thanks are expressed on behalf of OAHPERD for Laurie's many years of excellent service to the association.

I also must say goodbye to Peggy Blankenship as she will no longer serve as OAHPERD's Executive Director. Peggy has been just a wonderful presence and aid to the preparation and production of each *Future Focus* issue. She provided consistent timely and thoughtful responses to my questions and requests—she will be missed. Dawn has a great model to emulate and I look forward to working with her.

RES

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Academic Content Standards and Evaluation: Assessing the Regional Training Workshops

Lisa Lyle Henry
Physical Education Consultant, Ohio Department of Education

This past June, SB 210 was signed into law. One component of this legislation is to establish a measure of student success in meeting the benchmarks contained in the Physical Education Academic Content Standards.

The State Board of Education adopted the following National Association of Sport and Physical Education (NASPE) standards in December 2007 and benchmarks and indicators on June 8, 2009. *Ohio's Academic Content Standards in Physical Education* are made up of six standards:

STANDARD 1: Demonstrates competency in motor skills and movement patterns needed to perform a variety of physical activities.

STANDARD 2: Demonstrates understanding of movement concepts, principles, strategies and tactics as they apply to the learning and performance of physical activities.

STANDARD 3: Participates regularly in physical activity.

STANDARD 4: Achieves and maintains a health-enhancing level of physical fitness.

STANDARD 5: Exhibits responsible personal behavior and social behavior that respects self and others in physical activity settings.

STANDARD 6: Values physical activity for health, enjoyment, challenge, self-expression and/or social interaction.

Educators from across Ohio participated in the drafting of the Physical Education Evaluations.

Regional Training Events

During the first five months of the 2012, 32 regional training events were offered to support the implementation of the Physical Education Evaluation. These four-hour-long sessions focused on SB 210 and the report card indicator, how to conduct the evaluation, and reporting data through EMIS to the Ohio Department of Education. Approximately 1,650 participants attended the various workshops with an average attendance of 52 participants per session.

A survey was conducted at the conclusion of each session to provide feedback. Currently, 820 surveys have been completed. Using a 5-point Likert-like scale, the respondents assessed each item (N = 10) from "Strongly Agree" to "Strongly Disagree." Training session participants were also given the opportunity to share comments and suggestions.

Results

Respondents perceived every training session assessment statement positively. Presentations were seen as "well organized, clear, focused on essential information and easy to follow" (89.7% strongly agreed or agreed), with the facilitators "able to transmit knowledge... in an effective, engaging manner"(87.9% strongly agreed or agreed). As indicated by figure 1 (assessment statement #8), almost 80% of the participants felt that the training increased their ability to "implement the evaluation instrument in my classroom/setting." Additional statements (selected) and participant responses are presented in the figures (see next page).

Qualitative analysis of the respondents' comments and suggestions were both positively reinforcing as well as instructive for future efforts. A typical comment was, "I thought the training session answered a lot of questions about the evaluation instrument." Others found the session to be "extremely informative" and hoped the training meeting was not "the last opportunity we will have to meet and discuss as the process is implemented."

Conclusion

The training meetings concerning physical education evaluation were judged to be very successful by the participants. Hopefully, as implementation of evaluation instrument occurs, the process will be a success also. Additional questions or comments should be directed to:

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Fax: 614-387-0421
lisa.henry@ode.state.oh.us

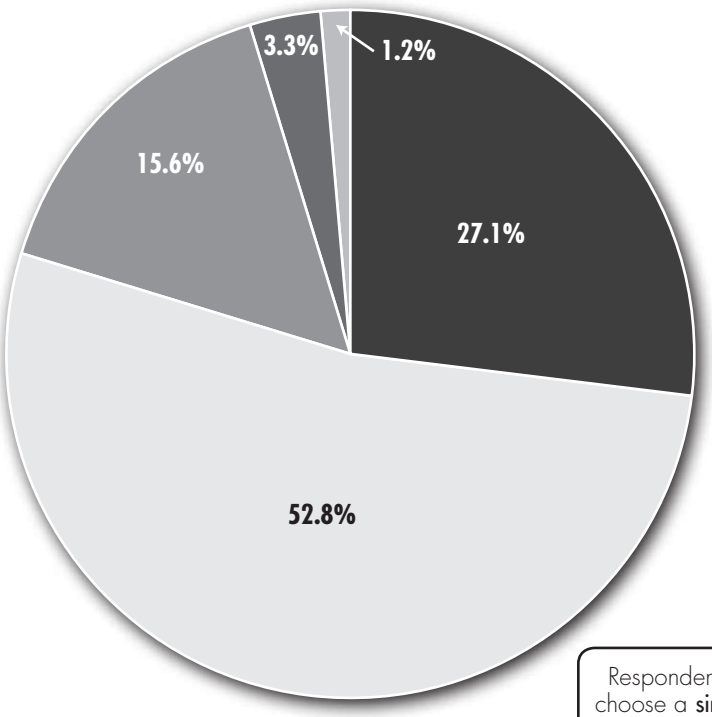


Figure 1: My capacity to implement the evaluation instrument in my classroom/setting has increased as a result of this meeting.

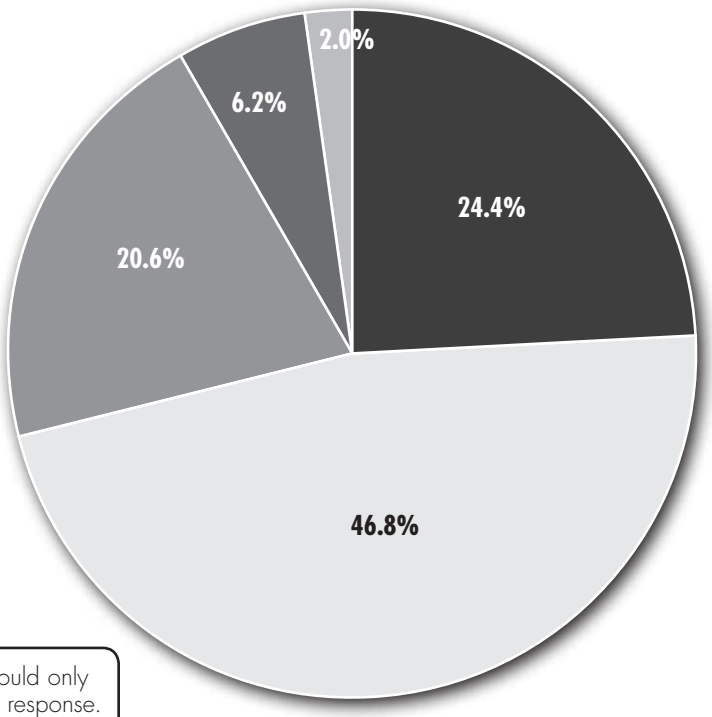
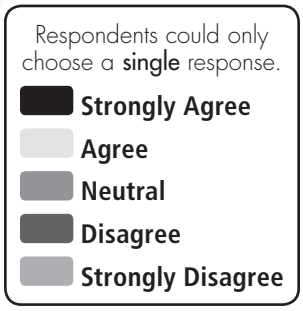


Figure 2: The video clip showed me a process that I can replicate in my classroom to use the evaluation instrument and power point in my evaluation process.



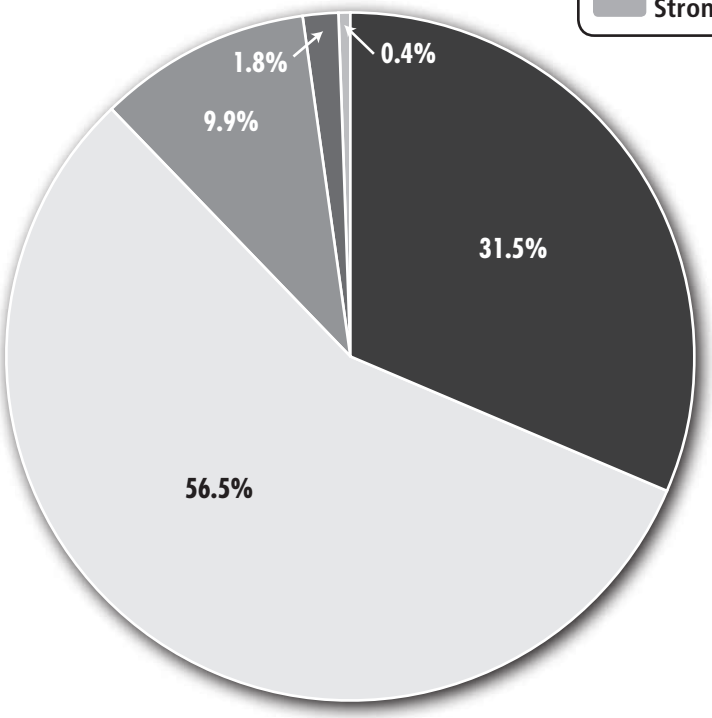


Figure 3: There were ample opportunities throughout the presentation to process the information for understanding.

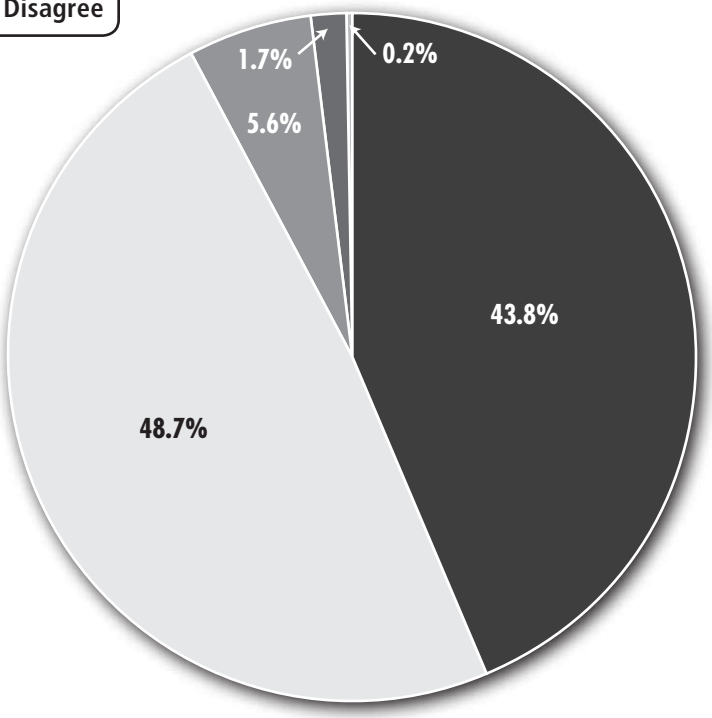


Figure 4: The facilitator addressed questions posed about the material presented.

Updating Your Coaching Toolbox:

Bridging the Gap Between Coaching Research and Practice

What is this column all about?

This column is the eighth in a series of articles in *Future Focus* written for coaches by a coach. The goal of this column is to provide information to coaches about recent research related to coaching in a user-friendly format. With this in mind, the author will briefly review a recent research article from a professional journal, critique it, and offer practical applications for coaches to use in their everyday coaching. It is the author's intent to encourage a realistic bridging of coaching science to coaching practice through discussions of realistic applications of research. This column will be written with coaches as the intended audience with the following assumptions:

1. Some coaches are interested in applying recent research from coaching science to their coaching.
2. Most coaches do not have easy access to professional journals that provide scholarly research on coaching science, nor do many coaches have time to read, understand, and digest articles in these publications.
3. Many of the scientific articles are written in a language that is appropriate for scholarly (academic) publications, but many of the writings are difficult to understand, thus making the application of the results to coaching practice difficult.

"Bridging the Gap between Coaching Research and Practice" is intended to offer coaches access to recent research in an easy-to-use set-up so that coaches may apply this knowledge to their coaching. If coaches also learn how to dissect and analyze research from reading this column, then this would be beneficial. Questions, comments, or suggestions about current and/or future articles and topics are welcomed at **msheridan@tvschools.org**.

NASPE's National Sport Coaching Standards: Encouraging standards-based coaching practice

By Michael P. Sheridan

In 1995, the National Standards for Athletic Coaches (NSAC) were developed by the National Association for Sport and Physical Education (NASPE, 1995). There were 37 standards grouped into eight domains that identified the specific scientific and practical competencies that administrators, coaches, athletes and parents should expect from coaches at all levels. Subsequently, in 2006, this initial publication was expanded to reflect 40 standards in eight domains. While this newer second edition has been published for more than six years, it is likely that many coaches are unaware of the NSAC published by the National Association of Sport and Physical Education (NASPE, 2006). The following are some examples of the standards and benchmarks listed in Domain 4 on the website published by the American Alliance for Health, Physical Education, Recreation, and Dance (2012).

Domain 4 — Growth and Development

Standard 18: Provide athletes with responsibility and leadership opportunities as they mature.

Sport provides an atmosphere for trial and error through practice and competition. Sport also allows opportunity for athletes to be challenged by additional responsibility. Through these opportunities, athletes learn how to deal with conflict, engage in problem solving, and seek positive resolutions. The coach should engage athletes in opportunities that nurture leadership and teamwork that can be learned on the field and exhibited in life.

Benchmarks:

- Teach and encourage athletes to take responsibility for their actions in adhering to team rules.
- Design practices to allow for athlete input and self-evaluation.
- Communicate to athletes their responsibility in maintaining physical and mental readiness for athletic participation and preparation for competition.

- Encourage athletes to practice leadership skills and engage in problem solving.
- Provide athletes with different tools to manage conflict.
- Provide specific opportunities for athletes to mentor others.

The publication states that coaching education programs should use these standards to construct curriculum for training coaches including volunteer coaches, minorities, women and coaches with a disability. Compared to the first edition, the second edition lists fewer competencies under each standard. Instead, benchmarks are listed which highlight important areas under each standard. Furthermore, the second edition provides a narrative and detailed explanation of each standard. The body of knowledge that is presented in the NSSC can be applied to every level of coaching. The emphasis in this publication is on the basic knowledge required of coaches at each level of professional development to allow for growth from novice to a highly skilled professional. Unfortunately, there is little evidence available which assesses how well coaches know these standards. Therefore, the authors (Blom, Wininger, Zakrajsek, & Kirkpatrick, 2010) of the article that is reviewed for the current column sought to provide an initial assessment of coaches' knowledge of the coaching standards developed by NASPE. The purpose of the reviewed article was to examine high school coaches' perceived knowledge related to the NSSC, continuing education, and sources of feedback. Following a brief review of the research, the practical applications for coaches based upon the findings outlined in the article will be provided.

Article Review

Blom, L. C., Wininger, S., Zakrajsek, R., & Kirkpatrick, K. (2010). Coaches' perceived knowledge of the National Standards for Sport Coaches: Insights into coach development. *Journal of Coaching Education, 3*(3), 19–36.

The purpose of this study was to examine high school coaches' perceived knowledge related to the NSSC, continuing education, and sources of feedback. Information was gathered from surveys returned from 162 male and female team sport coaches from Mississippi and Kentucky. Four main findings emerged: 1) coaches perceived themselves to be above average in all 40 standards; 2) there were no significant differences between states of Kentucky and Mississippi for perceived knowledge in any domain; 3) a difference in perceived knowledge based on years of coaching was found for "Domain 5: Teaching and Communication;" and 4) coaches reported most frequently using assistant coaches, themselves, athletic directors, and athletes as sources of coaching feedback. Eight-two percent of the participants were male. Of the coaches, 84 coached boys' sports, 61 coached girls' sports, and 15 coached both girls and boys. Eighty-five percent (138/162) of the surveys returned reported full-time teaching status. The coaches who returned the survey represented the sports of baseball, softball, basketball, football, volleyball, boys and girls basketball and boys and girls soccer. Coaching experience ranged from 1 to 40 years (M = 11.83, SD = 8.31). More specifically, 30.4% of the coaches had less than six years of experience, 19.6% had 6–10 years, 31% had 11–20 years, and 19% had more than 20 years. The authors found that coaches desired more training in the following areas:

The purpose of the reviewed article was to examine high school coaches' perceived knowledge related to the NSSC, continuing education, and sources of feedback.

- **Standard 13:** Teach and encourage proper nutrition for optimal physical and mental performance and overall good health *(Domain 3)*; response frequency = 32
- **Standard 24:** Teach and incorporate mental skills to enhance performance and reduce sport anxiety *(Domain 5)*; response frequency = 24
- **Standard 11:** Identify and address the psychological implications of injury *(Domain 2)*; response frequency = 23

These findings suggest that coaches feel less prepared in their training of using mental skills and in developing physical conditioning programs for their athletes.

Applying Research Findings to Coaching

Several of the results of the reviewed study are interesting. For example, it was discovered that coaches perceived themselves to be "above average in all standards." This finding may be the result of the sample that was surveyed. For example, a large number of the coaches in this sample were also teachers, suggesting that many had prior training as professional educators. However, it is confusing that of the 121 respondents who claimed to be full-time teachers only 56% reported possessing a teaching license. If coaches are trained as educators, then they may perceive that they also possess minimum coaching competencies. There are similarities in the standards that are expected of both coaches and teachers. For example, in the Ohio Standards for the Teaching Profession (Ohio Department of Education, 2012b), Domain 5 states: "Teachers create learning environments that promote high levels of learning and achievement for all students." Similarly, the NSSC standard for coaches for "Domain 5; Teaching and Communication" states that coaches should "create a positive coaching style while maximizing learning and enjoyment. Emphasis should be placed on individualizing instruction, empowering communication and using good management techniques in designing practices." The competencies listed in each of these domains are almost identical, except that in one case, the competencies are for teachers in a classroom whereas in the other case, the requirements are for coaches designing a practice. These similarities imply that coaching and teaching are alike. It is possible that the coaches surveyed by the investigators believed that their perceptions of being above average in all of the domains could be related to the similarities in their training that they undertook to become teachers. If this is true, then the NSSC for coaches should be made available to all coaches (as the teaching competencies for teachers are made available for all education professionals). Currently, in order to read in depth about the NSSC coaching competencies, one must buy the publication from AAHPERD, whereas teaching competencies are available free online through the Department of Education. If coaches are expected to maintain minimum levels of competence, then they should be aware of those competencies without having to pay for them!

> Coaches should ask themselves these questions: "How did the course help me improve? What learning objectives were met? What further educational opportunities are available to further professional growth?"

Twenty-four percent (38/159) of the coaches in the investigation indicated that they had received some formal training as coaches through a practicum or coaching internship. The most frequently cited method of continuing education mentioned by the coaches was reading a coaching-related book, watching a video, and/or attending a professional conference. Coaches were least likely to have taken a college coaching course; only 27% completing a college coaching course in the last 10 years. The investigation reported that coaches in Kentucky are required to take formal coaching education course produced by the National Federation of High Schools (NFHS) in addition to passing rules training, CPR and first aid courses. However, the article reports that coaches in Mississippi are only encouraged to take a formal coaching education course and that there are no incentives for completing, nor are there punishments for not completing, the course. By contrast, in Kentucky, coaches who do not meet the minimum requirements can be suspended from their positions until the expectations are met. In this way, Ohio coaching education requirements are very similar to the expectations that the Kentucky High School Athletic Association has for its coaches. Ohio coaches (grades 7–12) are expected to obtain an ODE Pupil Activity Supervisor permit, complete training in first aid and CPR and complete a National Federation of High Schools Coaching Education course.

The Fundamentals of Coaching course that is mandated through the Ohio Athletic Association (Ohio High School Athletic Association, 2012) is a one-shot course that is a valuable starting point for creating a base of knowledge for coaches. However, a systematic follow-up assessment needs to be conducted to evaluate how well the learning objectives were met. For example, how does one know if coaches learned the material and that it made a difference in their coaching? Aside from

several anonymous endorsements from coaches listed on the OHSAA website, to date nothing has been published which indicates that the learning objectives of the course were met (Ohio High School Athletic Association, 2009). How can coaches use the information that reportedly is learned in the course? Coaches associations in the state should press the OHSAA to follow up and systematically evaluate how well the course was received and if the learning objectives were met. If coaches are expected to pay for the course and are required to complete the course in order to coach, then coaches should know what they are getting for their money. For example, coaches should be asking themselves these questions: "How did the course help me improve as a coach? What learning objectives were met? If this is the only one-shot course that is available for continuing professional development, then what further educational opportunities are available to further coaches' professional growth?" For coaches to take these courses seriously, these questions should be posed and addressed. If the authors (Blom et al., 2010) of the reviewed research article found that coaches desired more training in using mental skills and in developing physical training programs, why would these professional development opportunities not be made available to coaches? If coaches in the state of Ohio share similar needs as the coaches detailed in Blom et al.'s research (2010), then governing bodies should strive to meet these needs by providing accessible, affordable, professional development opportunities in these areas.

In Blom et al.'s (2010) research, the authors discovered that, in order to obtain feedback about their coaching performance, coaches used assistant coaches, athletic directors, themselves, and their athletes. At first glance, these results seem understandable; however, more investigation is needed. For example, if head coaches seek feedback from their assistant coaches about their coaching performance, then are assistant coaches likely to give an honest evaluation of their superior's performance without worrying about how it might affect their own job security? The same predicament could be true of coaches seeking feedback from their athletes. Will athletes provide honest feedback about their coaches' performance without worrying about how it might affect their status on the team or playing time? Would the feedback that coaches receive from their assistant coaches and athletes be reliable? Would this feedback be valid? Do coaches seek anonymous written feedback to provide a fair assessment of their coaching performance? For example, an athlete who does not play as much might provide more negative feedback than an athlete who is a starter. Therefore, coaches should develop a system that allows for anonymous written feedback of their performance and then develop a manner to reflect on the data that they collect to make objective evaluation their coaching performance. Next year (2012–2013), in the State of Ohio, physical education teachers are being asked to collect, report and use data to drive their teaching practices and to meet state standards (Ohio Department of Education, 2012a). Coaches should strive to apply the same evidence-based coaching approach to their practice. Coaches should seek feedback from their athletes in a manner which helps them direct their coaching practices so that they are meeting both the needs of their athletes and developing competencies in their

TABLE • 1

Suggested strategies to help coaches increase their coaching competencies

1. Coaches (and athletic administrators) should press their state coaching associations to ask the State Athletic Association to develop systematic assessment of training courses that coaches are required to complete. Formal, systematic assessment will show if the stated learning objectives of the course have been (or are being) met. The results of this assessment should be published and provided to coaches and administrators. If the learning objectives of the course are not fully being met, the course should be revised and updated so that coaches' stated areas of need and interest are met.
2. Each year, choose one specific standard (and associated benchmarks) of the National Standards for Sport Coaches to improve upon and plan a strategy to meet that need. For example, coaches may desire more training in Domain 5 Standard 24: "Teach and incorporate mental skills to enhance performance and reduce sport anxiety." Coaches might complete an online sport psychology course for coaches or attend a clinic on applied sport psychology.
3. Collect data from athletes (and assistant coaches) to assess their coaching performance. Using the National Standards for Sport Coaches as a guide, coaches should develop surveys which can be given to athletes to assess the coaches in one or two of the areas outlines by the NSSC. Then, coaches can identify areas where they are strong and areas of need and develop a plan to improve in these areas. Just as teachers use data to inform their teaching, coaches should use objective data to inform their coaching.
4. Coaches should ask their State Coaching Associations to push the OHSAA to adopt the National Standards for Sport Coaches as the guide for developing coaching competencies and create a plan to help coaches meet these competencies. Then the NSCC should be made available as a free online resource.

own areas of need. However, this process would also mean that states would have to adopt the NSSC as their guide for coaching standards. In Ohio, this adoption would have to come from the OHSAA. Then, just as ODE has made the teaching standards available as a free online resource, the NSCC ought to be available as a free online resource instead of as a paid publication. Table 1 provides suggested strategies to assist coaches in increasing their coaching competencies.

As education has changed to require that teachers conduct their teaching from a standards- and evidence-based approach, so too will the coaching profession be likely to change. A writing team of dedicated professionals has worked diligently to produce and identify a thorough and detailed set of competencies for coaches. Thus, there is in place a set of expectations of the knowledge that coaches should possess in the areas of content, pedagogy, and practical information. However, if it is true that in order to continue their professional development that few coaches take college classes (Blom et al., 2010), then how will coaches become aware of the NSSC? Unless state associations adopt these standards and benchmarks as their guide to coaching competence, it is unlikely that these standards will be communicated to coaches. Furthermore, valid assessment tools need to be developed to measure the effectiveness of the standards. If athletic directors are charged with evaluating their coaching staffs, then the NSSC is a great tool to use! However, valid and reliable assessments for each of the standards need to be developed as does a method to collect data reliably. Just as the Ohio Department of Education (Ohio Department of Education, 2012a) recently produced an assessment tool to help physical education teachers assess and collect data on the standards that they are supposed to be teaching (see article on pages 8–9), a similar tool needs to be created to assess how well coaches meet the NSSC coaching standards. In this way, coaches can eventually apply a more evidence-based approach to their coaching and start to use data of their coaching performance (not just wins / losses) to drive their coaching practices.

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Keep Moving: Eliminating Barriers to Physical Activity for People with Arthritis

By Morgan Patten

This article provides information concerning evidence-based physical activity programs for persons with arthritis. A brief overview of arthritis types and symptoms is provided. The benefits of physical activity for the arthritic person are identified. Barriers to physical activity for the person with arthritis are shared followed by ways to overcome these barriers. Six CDC approved programs are then referenced.

Arthritis is the leading cause of disability in the United States, and with over 50 million Americans affected, it is also one of the most prevalent chronic diseases (Hootman, Brault, Helmick, Theis, & Armour, 2009). In Ohio, almost one-third of the adult population has arthritis (Behavioral Risk, 2009).

While there is no cure for arthritis, there are many effective treatments. One key method to slow disease progression and reduce the pain associated with arthritis is regular physical activity. Despite the benefits of regular exercise, many people with arthritis are not physically active, often due to concerns that exercise will aggravate their arthritis or increase their pain. This paper will explore the benefits of physical activity for people with arthritis and provide information about fitness programs designed specifically for people with the disease.

Arthritis Types and Symptoms

The word arthritis originally comes from Latin, meaning "joint inflammation." In public health and in this article, arthritis is used as a term to describe more than 100 conditions that affect joints and connective tissue. Symptoms vary widely depending on the type of arthritis, but arthritis typically results in severe pain, swelling, and stiffness surrounding joints. Because it would be impractical to discuss each form of arthritis, this article will focus on osteoarthritis and rheumatoid arthritis, two of the most common forms of arthritis.

Osteoarthritis, which is sometimes called degenerative joint disease, affects 26.9 million Americans and is the most common form of arthritis (Lawrence et al., 2008). In joints affected by osteoarthritis, the cartilage, a firm tissue that cushions and protects bones at the joints, breaks down, resulting in pain, stiffness and other complications. The causes of osteoarthritis are not entirely known, but wear and tear, injury, and overuse can all contribute. Although osteoarthritis is more common among older adults, it is important to recognize that this disease is not a normal part of the aging process, and there are steps that can be taken—including exercise—that can delay or mitigate the impact of osteoarthritis.

Rheumatoid arthritis is an autoimmune condition that is estimated to affect about 1.5 million Americans (Helmick et al., 2008). About twice as many women as men have rheumatoid arthritis, and it is typically diagnosed between 30 and 60 years of age, although it can begin at any age (Helmick et al., 2008). In rheumatoid arthritis, the synovial membrane, which is the lining of the joints, becomes inflamed, leading to pain, stiffness, and swelling around the joint. A variety of medications are available to treat the disease, but exercise and other self-management strategies are still important for combating the pain and potential disability associated with the condition.

For both osteoarthritis and rheumatoid arthritis, the Centers for Disease Control and health care professionals recognize exercise as key to managing the condition (Arthritis and Physical Activity, 2010). However, for many years, it was believed exercise would further damage the joints of people with arthritis, and the myth that it is necessary to "rest" joints to alleviate arthritis pain persists today. In fact, inactivity can not only worsen joint pain and stiffness, but disuse of joints can greatly decrease range of motion or cause the joint to set in a single position. Regardless of a person's fitness level, exercise is a key component of disease management.

Benefits of Physical Activity

The benefits of exercise are well-documented, and range from improved mood to better cardiovascular health. For people with arthritis, exercise offers additional benefits. Moderate-intensity exercise can lead to "significant improvements in pain, physical function, quality of life and mental health and delayed onset of disability" (Physical Activity Guidelines, 2008). Strengthening the bones and muscles surrounding joints can also help support the joint. As a result of these benefits, the U.S. Department of Health and Human Services (USDHHS) recommends all adults, including people with arthritis, engage in moderate-intensity activity for at least 150 minutes each week (Physical Activity Guidelines, 2008). While not everyone will be able to achieve that level of activity, it is important to note that any activity is better than none.

Promoting exercise for people with arthritis is also important because many have an increased risk of other chronic diseases. Two-thirds of Ohioans with heart disease also have arthritis, and over half of Ohioans with diabetes have arthritis as well (Behavioral Risk, 2009). A recent study sponsored by the CDC found that people who have both diabetes and arthritis are significantly less likely to exercise than those with diabetes but without arthritis (Bolen et al., 2008). Similar findings were discovered when comparing physical activity among people with heart disease and arthritis (Brady et al., 2009). If people with chronic illnesses are less likely to exercise because of their arthritis, it may not only worsen their arthritis but it may also reduce their ability to manage their other conditions.

Barriers to Physical Activity

Despite the importance of physical activity in combating arthritis, many people with arthritis don't engage in the recommended amount of exercise. In Ohio, 18 percent of adults with arthritis report they are inactive, compared to only 8 percent of adults without arthritis (Behavioral Risk, 2009). These self-reported measures may result in overestimating actual activity levels. In fact, one study found that, when measured objectively, 40 percent of men and 56.5 percent of women with osteoarthritis were inactive (Dunlop et al., 2011). These findings mean that about half of people with arthritis engage in no moderate-intensity physical activity.

The reasons people with arthritis do not exercise are as varied as those for the population as a whole. However, there are several issues specific to people with arthritis. One of the primary concerns many people with arthritis report is that exercise will be painful. In one study of women with arthritis, over half of participants described pain as a barrier to engaging in physical activity and almost 40 percent reported arthritis-related fatigue was a barrier (Gyurcsik et al., 2009). In fact, during exercise, participants will usually experience some discomfort. Many people with arthritis also report they are unsure how to exercise in a joint-safe way and where to access information on fitness strategies and programs for people with arthritis (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2004).

Eliminating Barriers to Exercise with Evidence-Based Programs

Fitness and recreation professionals are uniquely situated to promote increased physical activity among people with arthritis. One key way to do this is to offer programs specifically designed for people with arthritis. While developing and evaluating a program can be time-intensive and costly, programs already exist that can be used by facilities and organizations interested in presenting evidence-based programs without the expense of creating their own.

TABLE • 1

Evidence-based Arthritis Program Websites

Active Living Everyday,	**www.activeliving.info**
Arthritis Foundation Aquatic Program,	**www.arthritis.org**
Arthritis Foundation Exercise Program,	**www.arthritis.org**
Walk With Ease,	**www.arthritis.org**
Enhance Fitness,	**www.projectenhance.org**
Fit and Strong,	**www.fitandstrong.org**

The Centers for Disease Control has approved six evidence-based programs for people with arthritis (Physical Activity Programs, 2011). These joint-safe programs are designed to be low-impact and focus on range-of-motion, endurance, balance, and other important areas of fitness. Each program is led by a certified instructor or coordinator, who usually participates in a day-long training to become certified. The process of training and certifying instructors and facilities varies by program, and Table 1 provides web sites where specific information is available.

These joint-safe classes help to eliminate perceived barriers to exercise that participants may hold, such as concerns that participation will only aggravate their arthritis or increase their pain. Instructors also receive specialized training that helps them to know the best ways to work with their clients. For example, in the Arthritis Foundation Exercise Program training, instructors will learn about the Two-Hour Pain Rule, which states that if participants continue to feel more pain than usual for more than two hours after exercising, they should reduce the intensity of the exercise next time (Arthritis Foundation, 2009). Thus, if a participant experiences lasting pain after exercise, the instructor can encourage a reduction in the duration or intensity of the workout rather than recommending exercise to stop.

Conclusion

Physical activity is integral to reducing the disabling effects of arthritis and improving quality of life for people with the condition. Because fitness and recreation professionals are already involved in promoting exercise, there is great opportunity for them to help encourage people living with arthritis to use physical activity as a tool to manage their arthritis symptoms. In particular, offering evidence-based programs designed specifically for people with arthritis can help to ensure that participants are able to be physically active in a comfortable and safe way. Through utilizing the resource list provided in Table 1, fitness professionals can learn more about becoming certified to teach an evidence-based program that will help to promote mobility for Ohioans with arthritis.

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Refereed Article

Math in Motion: Strategies to Teach Math in Physical Education

By Beth Patton, Amy Stine and Jennifer Gorecki

Children learn in a variety of ways and in a variety of locations. Developing innovative teaching strategies can only bolster children's learning. Since No Child Left Behind (NCLB) swept through the American education system, schools have focused on those core subjects (English, mathematics, etc.) mentioned in NCLB. Accordingly, other subjects (e.g., physical education, music, art) not mentioned in NCLB have been placed in the background. Physical education, however, can serve as a vehicle to strengthen learning in the core subjects. Students can be exposed to new subject material in a setting different from the traditional classroom. The idea of gaining knowledge through movement is backed by research in several disciplines including mathematics and physical education. After reviewing literature concerning the relationship between physical activity/fitness and core subject achievement, a small pilot study will be described. Then several five- to ten-minute activities that were developed from the successful outcomes of a previous pilot unit involving the performance of third grade students from a rural elementary school on multiplication test scores will be shared. These activities can be incorporated into both the classroom and the gymnasium.

As the focus of curriculum has shifted from learning to teaching for standardized-testing, many schools have cut physical education, art, and music in order to devote more time to traditional academic subjects such as math, science and language arts (Wilkins, Graham, Parker, Westfall, Fraser, & Tembo, 2003). Since the inception of No Child Left Behind (NCLB) in 2002, a shift has occurred in the priority of subjects taught in school (Center on Education Policy, 2007). As of 2007, overall instruction time devoted to English, language arts and mathematics had increased 43 percent, with 37 percent of the increase in mathematics. Furthermore, time devoted to other subjects including physical education decreased on average 32 percent (Center on Education Policy, 2007). The results of a study conducted by Wilkins et al. (2003), collected from 547 Virginia elementary school principals completing a survey indicating the time specialists taught art, music, and physical education in their schools, suggested that decreasing time allotted for physical education as well as art and music did not show improved performance on standardized tests in the core subjects.

Collaboration among the classroom and physical education teachers to develop interdisciplinary activities related to the mandated proficiency/standardized testing could supplement the learning process and improve students' performance on the tests. Joint efforts between physical education and other disciplines have existed in the theoretical framework for decades. Piaget's landmark research has set the stage for later research linking movement and acquiring knowledge. The first stages of cognitive development theory as outlined by Piaget are sensorimotor and preoperational (Piaget, 1954). Both of these stages utilize movement as integral building blocks from which more learning can take place. Yet this style of learning is reduced and sometimes altogether abandoned once children enter school when physical education is reduced or eliminated from the curriculum. Contemporary brain activities and curricula such as Brain Gym (Dennison & Dennison, 1993), Brain Dance (Green Gilbert, 2002), and GeoFitness, Incorporated (Mitchell, 2007) foster the interaction of information with the integration of different learning styles while moving. Furthermore, advances in technology

have led to more research on behaviors of the brain and its relationships between movement and learning. John Ratey has completed extensive research on the brain's abilities to make connections. According to Ratey (2008), "When we exercise, particularly if the exercise requires complex motor movement, we're also exercising the areas of the brain involved in the full suite of cognitive functions" (p. 41); this further supports the concept of a direct link between movement and learning.

Review of Literature

The idea of gaining knowledge through an interdisciplinary approach is backed by professional associations and research in several disciplines. In 1989, the National Council of Teachers of Mathematics (NCTM) released its *Curriculum Evaluation Standards for School Mathematics* which stressed the importance of integrating mathematics into other content areas including physical education. The NCTM suggested that math is involved in other subjects and that these other subjects should be embraced as a learning opportunity for math. The National Association for Sport and Physical Education (NASPE) supports this integration of content areas in the *Standards for Initial Programs in Physical Education Teacher Education* (2003). Standard 6.6 states that physical educators will "provide learning experiences that allow students to integrate knowledge and skills from multiple subject areas" (NASPE, 2003, p. 15). Both of these associations promote the use of physical activity and movement as a means of enhancing the learning experience.

Research has also been conducted linking increased physical activity to improved academic achievement. The California Department of Education study involving more than 800,000 students in grades 5, 7, and 9 statewide showed a strong positive correlation between academic achievement in math and fitness (CDE, 2001). In a similar study, the physical fitness levels of 239 3^{d} and 5th graders from four Illinois elementary schools were assessed (Castelli, Hillman, Buck, & Erwin, 2007). Children who scored well on physical fitness assessments typically scored higher on standardized tests for mathematics and reading. Contrary to the aforementioned research, Tremblay, Inman, and Williams found there to be a weak relationship between physical activity levels and standardized test scores in mathematics and reading in a group of sixth grade students (2000). The focus of their research, however, was neither on the use of physical activity to acquire knowledge within the context of physical education nor on the fitness of the children. Instead, this research merely examined the amount of children's physical activity in relation to the scores children obtained on standardized math and reading tests.

> Collaboration among the classroom and physical education teachers to develop interdisciplinary activities related to the mandated proficiency/ standardized testing could supplement the learning process and improve students' performance on the tests.

Research has been conducted on the use of movement gestures to potentially enhance learning and retention of math. Goldin-Meadow, Cook and Mitchell (2009) examined the efficacy of gestures in the learning of mathematical addition problems in third and fourth graders. Their study showed that not only is the act of gesturing important to recall, but the use of correct gestures had the greatest impact on the students' learning. The study also suggests that combining movement increases retention of knowledge and encourages further learning (Goldin-Meadow et al., 2009). Children were given a pretest and only those that did not or could not answer any pretest questions were included in the study. The children involved in this study were then divided into three groups ("correct gesture," "partially correct gesture" and "no gesture") in order to teach a math addition problem solving method. Both groups that used gestures and words to problem solve scored better on the posttest than the group that only used words. Furthermore, the "correct gesture" groups scored the highest of all three groups (Goldin-Meadow et al., 2009).

With respect to enhancing reading skills, Stevanoni and Salmon (2005) suggested that children that utilize instructed gestures may be more engaged in the task at hand than children that do not gesture. The gesturing appears to improve recall. Their study consisted of sixty six- and seven-year-olds divided into four groups, three groups utilizing varying levels of gestures and one without gestures. Each of these groups was instructed to recall a story. The group that used the most gestures was able to recall the most information. All of the groups using gestures recalled more than the group that was not allowed to gesture (Stevanoni & Salmon, 2005).

A Pilot Study for Teaching Math in Physical Education

Based on research on the importance of integration of movement to enhance learning, a six-week pilot unit was designed to incorporate the learning of multiplication tables into the physical education classroom through collaboration between the math and physical education (PE) teachers. The pilot unit consisted of four third grade classes from a rural elementary school. To determine if movement while learning had a positive impact of student math learning, two classes received five- to ten-minute multiplication lessons which incorporated movement during their regularly scheduled physical education class taught by an elementary PE teacher. The other two classes did not receive this additional multiplication movement lesson during their physical education class. Instead, these two classes participated only in regular physical education activities. Outcomes were measured using weekly timed tests of the multiplication tables. The two classes that received the additional multiplication movement lessons scored 2–20% higher on the timed multiplication tests administered at the end of each week by the classroom teacher than the classes not receiving the additional math/movement opportunities. The successful outcomes from the pilot unit led to the inception of a variety of five- to ten-minute teaching activities that can be incorporated into both the classroom and the gymnasium.

Figure 1: GeoMotion© Mat used in Pilot Study.

A Teaching Example

To demonstrate how the concepts reviewed can be applied, a teaching strategy/activity utilizing the GeoMotion© mats will be described. These mats were designed to encourage children to learn math and other academic skills such as colors and the alphabet through movement (Mitchell, 2007). Each mat featured a conceptual image of a telephone keypad with large numbers and letters in a colored, easily distinguishable block (Figure 1). The GeoMotion© mats, however, can easily be substituted with other readily available equipment and materials such as floor tape, poly spots, shoe polish, carpet squares, or laminated poster board to make the desired conceptual image.

During the first week, students familiarize themselves with the layout of the mats (or other equipment) and orient themselves squarely facing the mat and the teacher. The physical education teacher explains and demonstrates the correct hand and foot motions and positions to be used throughout the learning activities. Although the original focus was on multiplication tables, the mats or alternative equipment can be used to teach addition, subtraction, and/or division depending on the grade level. The hand motion for multiplication ("times") involves crossing the arms in front of the body ("make an "X"). The hand motion for "equal" uses the forearms in a position parallel to one another in front of the chest. For the foot positions, the children jump or step to the number presented in the problem. If a double digits number is used, the left foot is placed on the number in the tens column (the first number) and the right foot is placed on the number in the ones column for the second number (Mitchell, 2007). For example, if the answer was "15,"the left foot would be placed on the one and the right foot would be positioned on the five.

Two times three equals six serves as an example of a full multiplication problem given to the students. The children jump to the number "2" placing both feet on the "2" square, make the multiplication sign with arms to form an "X," jump and land with both feet on the number "3"

TABLE • 1

Variations of Learning Activities
Progression of Self Variations
Child works on knees and applies learning the facts utilizing the hands
Child works from a standing position and moves from numbers using his/her feet
Child works from standing position and jumps from numbers
Child uses different body parts (e.g. elbow, knee) in the correct squares to solve multiplication problem
Teacher plays a selection of music and the children follow along utilizing the mat or other appropriate equipment

square, form the equals sign with both arms, and finally jump to the square representing the correct answer, the number "6."

Varying the activities (Table 1) can and should occur throughout the learning sessions so children can use other body parts to touch the numbers such as the hands, elbows, knees, or even their heads. Such changes in required movement provide variety, challenge, entertainment, and a relaxed atmosphere in which to teach, refine, and anchor the learning of the multiplication facts.

Progression

The first week the children are taught the 0, 1, 2, 5 and 10 multiplication facts. These numbers are grouped together because they are considered easy for children to understand and learn at a high success rate regardless of their ability levels. Table 2 outlines the suggested progression of multiplication tables recommended by the classroom math teacher. The order may be modified. During the first week the children are asked to kneel in front of their mat and use their hands to touch the numbers. The children from the pilot study were best able to learn the concepts by first learning gestures with their hands and then progressing to other body parts and positions that allowed for greater movement opportunities such as modified pushups. The physical education teacher gives the children the problems in order and then in the remainder of the activity time mixes up the problems to challenge the children to work at a higher level of thinking.

As the children progress through the weeks, other activities are added as a challenge and to promote further learning. Multiplication tables can be posted on the gymnasium walls as an additional learning tool and music can be incorporated into the lessons. Partnering activities can also be utilized. For example, in week two the children place their mats in a circle, if space is available, facing inward to the center of the gymnasium. The physical education teacher and children review the previously learned multiplication tables. Next, the children are paired up and flash cards are placed in the center of the gym. Partner A chooses whether to kneel or jump to do the problem. Partner A sets up at the mat, Partner B runs (or uses another locomotor skill such as skipping) to the center of the gymnasium, picks a flash card, and holds it up so Partner A sees it. Partner A has five seconds to perform the correct movements as Partner B holds and reads the card. If Partner A gives the correct answer Partner B gives the flashcard to Partner A to return it to the center of the gym and they switch positions in the gymnasium. If the answer is incorrect Partner B verbally gives Partner A the correct answer who then performs the entire problem again with the correct answer. Partners then switch positions and continue the activity with another problem.

TABLE • 2

Suggested progression of multiplication tables	
Week	**Multiplication Table**
1	0, 1, 2, 5, 10
2	9
3	3, 4
4	6
5	7
6	8
7	11, 12

Conclusion

The aforementioned activities are just a sample of the possible collaborative efforts between the math and physical education teachers. Variations of the activities can also be used within the classroom itself if space is available by setting up the mat or alternative equipment for children to use during math class or free time. This allows children to engage in physical activity in more than just the gymnasium and strengthens the interdisciplinary learning experience.

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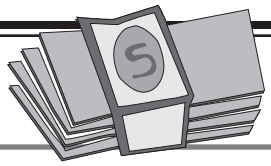

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