

# Enhancing Content Literacy in Physical Education

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Physical educators often object when their classes are used as laboratories for reading and writing instruction (O'Brien & Stewart, 1990; Tannehill, Romar, & O'Sullivan, 1994). Yet, their argument that class time should be used solely for movement only serves to perpetuate the myth that physical activity is somehow isolated from the rest of life and, in the case of schoolchildren, from education. If physical performance is to be effective, more than just movement practice is required.

Unfortunately, little is found in the professional literature to help preservice and inservice teachers see the links between physical education and literacy. In fact, until recently, few preservice programs in secondary education required potential physical educators to take courses in language and literacy. This reluctance to include literacy in physical education may be based on confusion about the difference between general literacy skills and content literacy. As McKenna and Robinson (1990) explained,

*Content literacy* can be defined as the ability to use reading and writing for the acquisition of new content in a given discipline. Such ability includes three principal cognitive components: general literacy skills, content-specific literacy skills (such as map reading in the social studies), and prior knowledge of content. (p. 184)

While general literacy skill is the ability to make meaning through reading, writing, visual aids, and reasoning, content literacy in physical edu-

cation means that students can use general literacy skills to acquire knowledge in a specific movement, sport, or fitness context.

The first part of this article introduces some of McKenna and Robinson's (1990) ideas as a framework for analyzing why and how content literacy plays an important role in physical education. The succeeding sections elaborate a number of general and specific instructional strategies that physical educators can use to build both content-learning and general-literacy skills. The final section suggests ways of assessing content literacy based on these instructional strategies.

## Content Literacy in Physical Education

As suggested above, content literacy is often misunderstood by teachers. The following sections attempt to clarify content literacy and its role in physical education.

*Content literacy is content-specific.* To be literate in a content area is not to know that content per se, but to be able to read, write, and think about it as effective means of learning still more about it. Content literacy is not the same as content knowledge (the available knowledge about a particular subject), but prior knowledge of content helps to build content literacy, and vice versa. Even though general literacy skills apply in all content areas, content literacy—knowing how and when to use reading, writing, and thinking skills in a particular subject area—will vary and must be taught explicitly. Content literacy comprises all of the skills needed to develop,

and reflect on content.

*Content literacy is germane to all subject areas, not just those relying heavily on printed materials.* As suggested by McKenna and Robinson (1990), "While the primary presentation may comprise lecture or demonstration rather than reading, and while the principal domain involved may be psychomotor rather than cognitive, content acquisition nevertheless invariably includes an understanding of key concepts and their interrelationships" (p. 185). This understanding can be acquired through a variety of content-oriented literacy strategies. Successful performance in physical education requires critical thinking; students must plan, investigate, reason, strategize, and reflect. They must employ metacognition (thinking about thinking) in order to evaluate their current level of understanding about effective performance, analyze alternative strategies, and improve (Tishman & Perkins, 1995). While this level of engagement does not require reading or writing, multiple avenues of expression can only serve to augment the performer's active participation in the improvement process.

Further, reading and writing provide students with ways to connect their class activities with other aspects of their lives and to take an active role in learning. For example, teachers often verbally provide the rules for a particular game and have the students learn them as they play. However, the students' understanding might be enhanced if they are given the rules in writing. They can then be asked to select several of the rules and write

about why and how each rule is important to effective or safe game play. This type of assignment, given as homework, assures that the students will: (1) review the rules between classes, (2) see how the rules look in writing, and (3) engage in critical thinking—an active learning strategy that may also help them relate the need for rules in a game to the need for rules in general.

*Content literacy has the potential to maximize content acquisition.* Good content-area teaching enhances direct-instruction models (e.g., lecture and demonstration) with literacy activities that help students make their own meaning and pursue content on their own, according to their personal interests. For example, when students have learned the technical language of sports, fitness, or movement, they can use this language to read manuals on how to improve their performance. In addition, such learning allows students to interpret sports information and become more educated consumers of sports-related products.

*Content literacy does not require content-area teachers to instruct students in the mechanics of writing or reading.* A major concern of physical educators is that they do not have time to teach both their subject area and general literacy. Rather than helping students learn to read and write, however, content literacy helps students read and write to learn. In content literacy, reading and writing are complementary tasks that can be used to follow direct instruction or demonstration. Students can construct their own meanings for the concepts related to a demonstration and then use writing to explain, analyze, summarize, or evaluate what they have learned, further refining their understanding. The criteria for assessing such learning (as we will discuss more fully later in this article) focus on depth of thinking and selection of appropriate information rather than on reading or writing skill.

However, if physical educators try to foster content literacy using text from their college courses or from

widely available trade materials, they may unknowingly present obstacles to understanding, since such writing often exceeds students' reading levels. Because physical educators have to teach such mixed-ability groups, it is important that they know the approximate reading and writing levels of their students; this way, activities can be structured to help students use reading and writing to support content learning at their own level. The following section offers suggestions for such activities that meet the needs of students with a variety of reading and writing abilities.

### Fostering Content Literacy

Content literacy and reading can be included in physical education in subtle but highly relevant ways, without taking up excessive class time. The

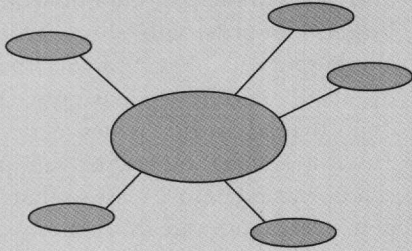
gym, locker room, and surrounding areas can be made into print-rich environments that support content literacy. For example, the rules of the gym can be posted for students to read. Bulletin boards with short articles about sports, athletes, physical activity, health, and fitness may entice students to read further. Issues related to physical activity, ethics, or fair play can be posted before class so that students can read and think about the content before discussion. A "strategy of the day" might also be posted on the wall when students enter the gym so that they can read and begin to process how the strategy will affect game play. Similarly, a "word for the day" might be posted and then discussed or analyzed during warm-ups as a means for students to focus on content-specific vocabulary.

**Table 1. Sample Topics for Journal Writing or Quick Writes**

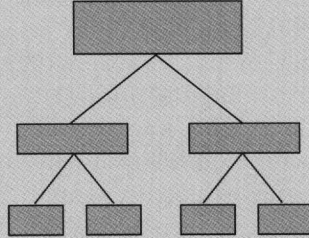
- Explain one rule that we used today and why it is important to the game.
- Describe how much effort you put into the activity today.
- Give one example of how you did or did not display ethical (fair play) behavior during the games today.
- Select one skill from the current activity and analyze your current level of expertise.
- Choose one word that is specific to this activity and write your own definition for it.
- Give examples of how your team did or did not cooperate (show teamwork) today.
- Give two technique cues that you think might help someone perform \_\_\_\_\_ [a skill] more successfully.
- Explain one thing that you learned about \_\_\_\_\_ [a sport or physical activity] by reading the newspaper or finding information on the internet.
- Set one goal for yourself for the next class.
- Make one suggestion about how the skills we worked on today could be practiced in a way that would help you learn them better.
- Why did/didn't you do something physically active over the weekend?
- What kinds of activities do you do with your family that have special family, cultural, or religious meaning? Is movement a part of these activities?
- If I could be a really skilled performer, I would like to be a...
- One idea I can use to help a family member become more physically active is...
- A question about this class (or activity) that I need answered is...
- One thing that would motivate me to do better in physical education is...
- Today I did/didn't reach the goal I set for myself yesterday because...

**Figure 1. Sample Graphical Organizers**

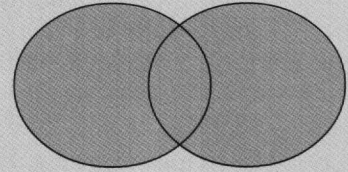
**Web Diagram:**  
organize topics or categories



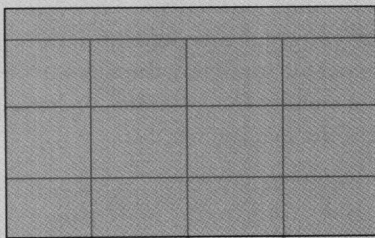
**Hierarchy:**  
organize ideas from general to specific



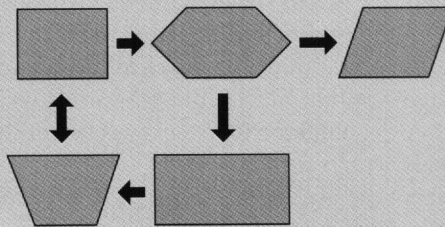
**Venn Diagram:**  
compare and contrast



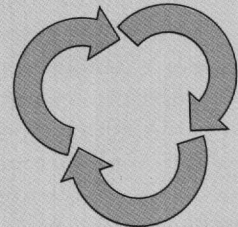
**Matrix:**  
compare and contrast using rows and columns



**Flow Chart:**  
display a process or cycle



**Cycle:**  
display a process that repeats



**T-Graph:**  
compare another's quote or idea with your own

Quote or idea from a text	Your own ideas or comments

Writing can also be incorporated in a physical education class in ways that take little time away from physical activity. For instance, students can use structured note-taking formats during lectures about strategies, rules, or techniques. Journal writing and "quick writes" are particularly effective ways to bring writing and reflection into physical education. For example, at the end of an instructional segment, students might be given a few minutes to record their performance, reflect on their participation, set a goal for the next day, or pose a question for the teacher to address. See table 1 for a list of potential journal topics or quick-write prompts.

Teachers may also use task cards that include instructions for the activity and/or cues for performance that require the students to read, make decisions, and take responsibility for their own learning. Another simple writing task is a student-designed playbook. Teams might create a playbook describing and illustrating strategies that the students hope to

use during tournament play. Teams might also design practice drills to be used during their pre-game warm-up.

While each of these suggestions offers ways to integrate content literacy day to day, more complex tools can be even more effective in helping students develop content-literacy and general-literacy skills. Graphical organizers and other visuals (such as Venn Diagrams, charts, webs, clusters, t-graphs, and posters) often help students understand the relationships between key ideas (figure 1). Simplified text containing the most important ideas can be arrayed visually to support students' understanding. English-language learners and others who are frequently mainstreamed into physical education classes will likely benefit from graphical organizers that reduce the linguistic demands of complex text or speech and that clearly depict links between concepts, actions, and facts. For example, one teacher in a high school fitness class used a web diagram summarizing key aspects of aerobic exercise in order to help

her students understand a text that described such exercise. Before reading, the students were given several categories or main ideas that they could use to activate prior knowledge and experience and to guide their reading. After reading, small groups of students compiled details from the text into the web diagram. A whole-class discussion then provided an opportunity for students to compare their diagrams and generate additional ideas for the topic (see figure 2 for the completed web).

English-language learners could also work together with their teachers to create handouts in multiple languages that summarize key concepts and reinforce understanding of rules or procedures. Teachers can provide graphical illustrations of techniques or strategies as well, and then have such students write verbal descriptions in English and in their native language.

Another way to develop content literacy is through "think-alouds." A think-aloud engages students in verbalizing their thinking to themselves while performing a skill or strategy and in analyzing their processes, successes, and challenges. Thinking aloud helps to make explicit the underlying physical and mental steps in a process and to focus the students on what they are doing well and what needs work. Thinking aloud can also serve a motivational purpose by challenging students to continue even when faced with difficulties. This process of monitoring one's performance can build "metacognitive awareness" or self-regulation that can be used in learning situations outside of sport and physical activity.

Newspaper and magazine articles and web sites can also be used to teach content and support students as readers and writers. Students might analyze articles, write about connections to their everyday lives (McKenna & Robinson, 1990), relate what they read to their own experiential knowledge, or indicate new information that they have gathered. For example, during a track-and-field unit, a middle school teacher asked her students to research a particular track-and-field athlete or event. Students located articles on their chosen topic through web or library searches, summarized these articles, and identified at least two concepts that they learned from the articles. This assignment, given by a first-year teacher in the early days of a new school year, set the tone for both active student learning and critical thinking and helped the students relate what they were doing to the world outside of physical education class.

Additional ideas for implementing

reading and writing in physical education include:

- Playing charades on rules or other topics and then writing about what was learned
- Analyzing videos of games or events (or even live events themselves)
- Using judging forms
- Completing peer observations
- Designing a new or modified game
- Creating posters or other visuals accompanied by written explanation.

### Assessing Content Literacy

Current thinking in education suggests that assessment must be integrated with the teaching process and provide meaningful information about student learning (National Association for Sport and Physical Education [NASPE], 1995). Therefore, teachers should use a range of assessment techniques and measures that "reflect important subject content,...enhance learning through a connection with the instruction, [and]...provide reliable evidence of student performance" (NASPE, p. vii). Content literacy in physical education includes both "what students should know" and "what students should be able to do," in all domains. Employing strategies to develop content literacy ensures that students will have opportunities to demonstrate multiple ways of knowing and their current levels of learning. Authentic assessment, based on a demonstration of content literacy, communicates to students, administrators, and parents both "what is valued in physical education and how students are progressing toward specific goals" (NASPE, p. viii).

Again, reading material provided to students must be at a level that allows them to comprehend the content. Teachers can use a simple "cloze" test on a text to ensure that it is written at an appropriate level (Bormuth, 1968, and Taylor, 1953, as cited in Alverman & Phelps, 1998). Here are the directions for such a test:

- Beginning with a randomly selected word in the second sentence of the text, delete every fifth word until 20 words have been removed.

- Ask students to read the altered text on their own and make guesses about the missing words. Let them know in advance that this guessing will be difficult. Encourage them to draw on past experience with the topic and to use the surrounding text to support their guesses. If they can figure out 40-to-60 percent of the missing words, then the text is at their instructional level.

- Once students have made their guesses, reveal the deleted words, discuss strategies that the students used to make their guesses, and ask them to calculate their score (allow them to earn a correct score for very close synonyms as well as exact matches).

This test takes only about 15 minutes to administer, and it gives teachers a reasonable understanding of the reading level of individuals and whole classes. The cloze test also helps students recognize the strategies that they use to make sense of text (e.g., using prior knowledge, predicting, using knowledge of syntax and other context cues). They can transfer these strategies to reading in physical education and other courses, thereby promoting literacy development in general as well as content literacy in physical education.

Once teachers identify appropriate reading levels using the cloze test, they can select materials for use with whole classes or groups of students. In addition, the cloze process helps teachers identify which aspects of the text are posing difficulties for students and which content-specific terms are unfamiliar. After identifying these difficulties, teachers can plan vocabulary lessons that help students learn the terms needed to understand and participate in a new activity. For example, an article on weight training may include unfamiliar names of muscle groups, weight equipment, or lifting techniques. The results of a cloze test can help teachers single out such concepts to teach in an explicit and meaning-centered way in the gym and in the classroom.

Students also need support when writing reports if the teacher is going

to grade the quality of their understanding as exhibited within such reports. To give this support, teachers could do the following:

- Provide clear guidelines for what will need to be included.
- Share the rubric or scoring guide when the assignment is given rather than keeping expectations secret.
- Allow some in-class time for gathering resources (web, text, etc.).
- Encourage students to use graphical organizers or note-taking formats to help them organize ideas before writing.
- Use staggered due dates so that students turn in a draft or some other aspect of the report (e.g., a list of resources, a graphical organizer summarizing key aspects of the report) in order to receive feedback and avoid procrastination.

Teachers should use rubrics and scoring guides that focus primarily on the content, organization, and clarity of student writing, not on the mechanics of their writing (spelling, grammar, and punctuation). This will help students clearly understand the goal of assignments and prepare for

success. For example, in *Moving into the Future: National Standards for Physical Education* (NASPE, 1995, p. 65), one sample assessment of an eighth-grade performance benchmark for standard two (“Applies movement concepts and principles to the learning and development of motor skills”) is a project that requires the students to select an activity in which they already participate or in which they wish to participate, develop a training and conditioning program, analyze the basic skills and movement patterns, assess their current personal skill and fitness status, describe specific conditioning and practice procedures, and set goals for improvement.

This project clearly holds expectations of content literacy and authentic assessment. The selection of the activity is tied to the student’s life away from the classroom, which creates a higher level of personal meaning and motivation. The student must gather, interpret, and analyze both verbal and visual information in order to complete the project successfully. In this case, the criteria for assessment reflect what the student knows and is

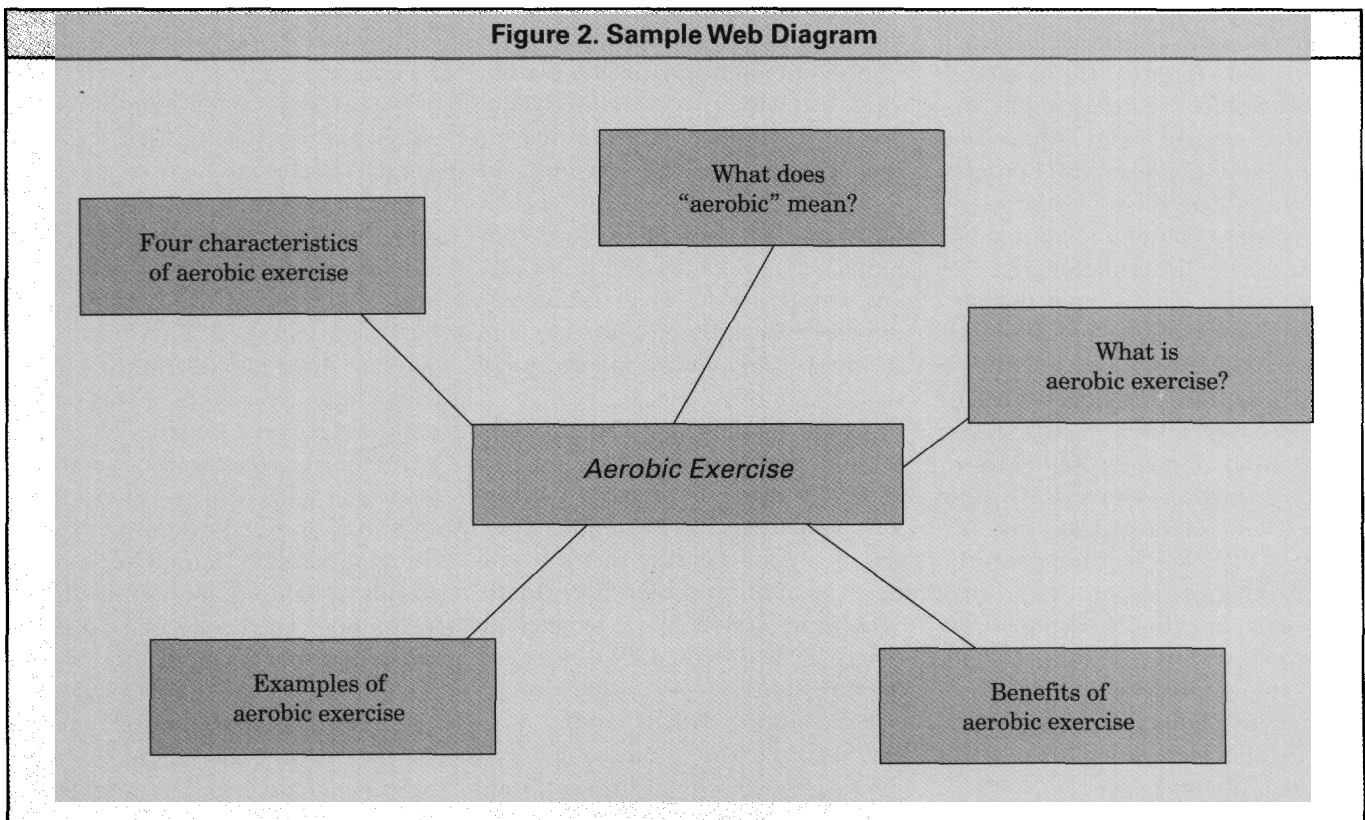
able to do relative to the selected physical activity. The successful student:

- a. Accurately assesses personal motor fitness status
- b. Correctly identifies motor fitness requirements
- c. Correctly identifies the component skills and movement patterns
- d. Selects appropriate practice procedures to learn and master skills and movement patterns (NASPE, 1995, p. 65)

In addition, the student should be able to demonstrate knowledge about multiple facets of skill development by using various personally selected strategies, such as reading, writing, illustrating, using technology, and giving physical demonstrations.

For some types of students (e.g., English learners or special-education students), it may be appropriate to reduce reading and writing demands but still allow students to show what they know. For example, rather than requiring students to write a lengthy report, teachers may want to assess student posters or graphical organiz-

Figure 2. Sample Web Diagram



ers that display key concepts and their interrelationships. In the aerobic-exercise unit mentioned earlier, the teacher assessed students' graphical organizers for the article they read by examining how they linked details with main idea categories. This assessment revealed which terms and concepts were understood and which needed to be taught again through demonstration or explanation.

Finally, when assessing journals or other reflective writing, teachers can focus their feedback on the quality and depth of students' ideas, on their explanations of content-related concepts and strategies, on their analysis of their own strategies and performances, and on how they make connections to their own life experience. As with other projects, teachers should provide rubrics or scoring guides for journal writing to clarify for students what will be assessed.

### Conclusion

Reading and writing in physical education? While it is critical that we provide students with opportunities to be physically active, it is equally important that we offer opportunities to think, to learn how to learn. It may not be possible for students to become highly skillful performers in a three-to-six-week unit. However, if these same students are given the opportunity to learn what they can about unit activities and are provided with the tools (i.e., content literacy) to learn more in the future, they are more likely to become lifelong movers.

### References

Alverman, L., & Phelps, S. (1998). *Content reading and literacy: Succeeding in today's diverse classroom* (2nd ed.). Needham Heights, MA: Allyn & Bacon.

Bormuth, J. (1968). Cloze test readability: Criterion-referenced scores. *Journal of Educational Measurement*, 5, 189-196.

McKenna, M. C., & Robinson, R. D. (1990). Content literacy: A definition and implications. *Journal of Reading*, 34(3), 184-186.

National Association for Sport and Physi-

cal Education. (1995). *Moving into the future: National physical education standards: A guide to content and assessment*. Reston, VA: Author.

O'Brien, D., & Stewart, R. A. (1990). Preservice teachers' perspectives on why every teacher is not a teacher of reading: A qualitative analysis. *Journal of Reading Behavior*, 22, 101-129.

Tannehill, D., Romar, J. E., & O'Sullivan, M. (1994). Attitudes toward physical education: Their impact on how physical education teachers make sense of their work. *Journal of Teaching in Physical Education*, 13, 406-420.

Taylor, W. (1953). Cloze procedure: A new tool for measuring readability. *Journalism Quarterly*, 30, 415-433.

Tishman, S., & Perkins, D. (1995). Critical thinking and physical education. *Journal of Physical Education, Recreation & Dance*, 66(6), 24-30.

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### Williams

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consists of icing, stretching, ultrasound, and strengthening exercises (Anderson & Hall, 1995). In order to prevent jumper's knee, children should stretch properly before physical activity and make sure that the surrounding musculature is properly strengthened.

### Conclusion

Athletic injuries can affect children in a number of negative ways. Children who are injured might feel ashamed or embarrassed of their injuries and therefore avoid telling their physical education teacher that they should not participate. Continued participation may hinder the healing process or lead to additional injuries. Other children may seek different ways of avoiding activity in order to hide their injury from their teacher or peers. This strategy may lead to teasing from other children that could eventually affect the child's attitude towards

physical activity. Armed with the above information on the causation, identification, and treatment of common injuries, teachers and youth sport coaches can help children prevent such injuries and maintain their excitement for physical activity.

### References

American Academy of Pediatrics. (2000). *Intensive training and sports specialization in young athletes* [On-line]. Available: <http://www.aap.org/policy/re9906.html>

Anderson, M. K., & Hall, S. J. (1995). *Sports injury management*. Media, PA: Williams & Wilkins.

Arnheim, D. D., & Prentice, W. E. (2000). *Principles of athletic training* (10th ed.). St. Louis, MO: Mosby-Year Book.

DiFiori, J. (1999). Overuse injuries in children and adolescents. *The Physician and Sports Medicine*, 27, 75-89.

Duff, J. F. (1992). *Youth sports injuries: A medical handbook for parents and coaches*. New York: Macmillan.

Gallaspy, J. B., & May, J. D. (1996). *Signs and symptoms of athletic injuries*. St. Louis, MO: Mosby-Year Book.

KidsHealth. (2001). *Preventing children's sports injuries* [On-line]. Available: [http://kidshealth.org/parent/firstaid\\_safe/outdoor/sports\\_safety.html](http://kidshealth.org/parent/firstaid_safe/outdoor/sports_safety.html)

National Athletic Trainers' Association. (1998). *NATA foundation emphasizes commitment to youth safety* [On-line]. Available: [http://www.nata.org/publications/press%20releases/foundation\\_emphasizes.htm](http://www.nata.org/publications/press%20releases/foundation_emphasizes.htm)

National SAFE KIDS Campaign. (2000). *New survey reveals parents lack concern about sports injuries to kids* [On-line]. Available: [http://www.safekids.org/tier3\\_cd.cfm?content\\_item\\_id=505&folder-id=178](http://www.safekids.org/tier3_cd.cfm?content_item_id=505&folder-id=178)

O'Conner, D. L. (1998, June 15). Preventing sports injuries in kids. *Patient Care*, 32, 60-78.

Thomas, C. L., & Craver, R. H., Jr. (1993). *Taber's cyclopedic medical dictionary* (17th ed.). Philadelphia: F. A. Davis.

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