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Establishing Mentally Safe Environments for Children and Adolescents in Physical Education

Créer des contextes d'éducation physique psychologiquement sûrs pour les enfants et les jeunes

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School-based physical education classes can be anxious environments for children and youth. For some students, it can lead to a rejection of physical activity. The aims of this paper are to: (i) explore the relationship between anxiety and physical education among school-aged children and adolescents and, (ii) to describe efficacious pedagogical practices that may ameliorate anxiety by reducing or removing potential stressors in physical education. Relevant articles that examined anxiety relative to the physical education context were retrieved from several databases. The reviewed literature found the physical education setting to be fearful for anxious students; both the social context and opportunities for peer comparison elevated student anxiety levels. To minimize student anxiety, teachers can demonstrate skills in advance, establish attainable goals, and focus on skill development rather than competitive games. The pedagogical practices suggested in this paper will benefit all students, but particularly those students who experience anxiety.

Les cours d'éducation physique en milieu scolaire peuvent s'avérer une source d'anxiété pour les enfants et les jeunes qui, dans certains cas, peuvent en venir à détester l'éducation physique. Cet article : (i) explore les liens entre l'anxiété et l'éducation physique chez les enfants et les jeunes d'âge scolaire, et (ii) décrit des pratiques pédagogiques efficaces qui, en aidant à réduire ou éliminer les facteurs de stress associés à l'éducation physique, aident à calmer l'anxiété. Des articles pertinents sur l'anxiété associée à des contextes d'éducation physique ont été récupérés de plusieurs bases de données. Les documents pertinents révèlent que les cours d'éducation physique peuvent semer la crainte chez certains enfants anxieux, compte tenu de leur contexte social particulier et des comparaisons possibles entre élèves. Il s'agit là de grandes sources de stress pour certains élèves. Afin de réduire le taux d'anxiété des élèves, les enseignants peuvent démontrer d'avance les habiletés à développer, fixer des buts réalistes et mettre l'accent sur le perfectionnement des habiletés plutôt que sur des jeux

compétitifs. Les pratiques pédagogiques décrites dans cet article s'avéreront profitables à tous les élèves, mais surtout à ceux qui ont des troubles d'anxiété.

Components of anxiety

Anxiety is a common emotional problem among children (Krappe & Wilson, 2005); estimates range from 3.5% to 13% of children (Krappe & Wilson, 2005; Sigurdsson, van Os, & Fombonne, 2002) or one child in every average primary school class (Ford, Goodman, & Meltzer, 2003). Childhood anxiety can persist into adolescence and therefore, research surrounding the treatment of anxiety in young children has become increasingly important (Cartwright-Hatton, McNicol, & Doubleday, 2006). In comparison to the 1950's, children today are more vulnerable to anxiety disorders due to an increase in stressors such as divorce and time pressures within daily agendas (Twenge, 2000).

Anxiety can be thought of as having state and trait components. State anxiety is situational and is characterized by perceived feelings of apprehension and tension (Weinberg & Gould, 2003); whereas trait anxiety is a predisposition for an individual to perceive non-threatening situations as physically or psychologically frightening. As illustrated in Figure 1, state anxiety is triggered by arousal. As arousal increases, state anxiety takes on physical and psychological characteristics. Physical symptoms include elevated heart rates, increased sweating, and increased blood pressure. Children and adolescents may also experience psychological symptoms such as worry and negative thoughts (Weinberg & Gould, 2003). As well, highly trait anxious individuals may respond to situations with an exaggerated sense of state anxiety.

State anxiety is associated with an arousal of the nervous system in response to a situation; arousal, in turn, can be associated with the uncertainty surrounding a situation (Martens, 1987).

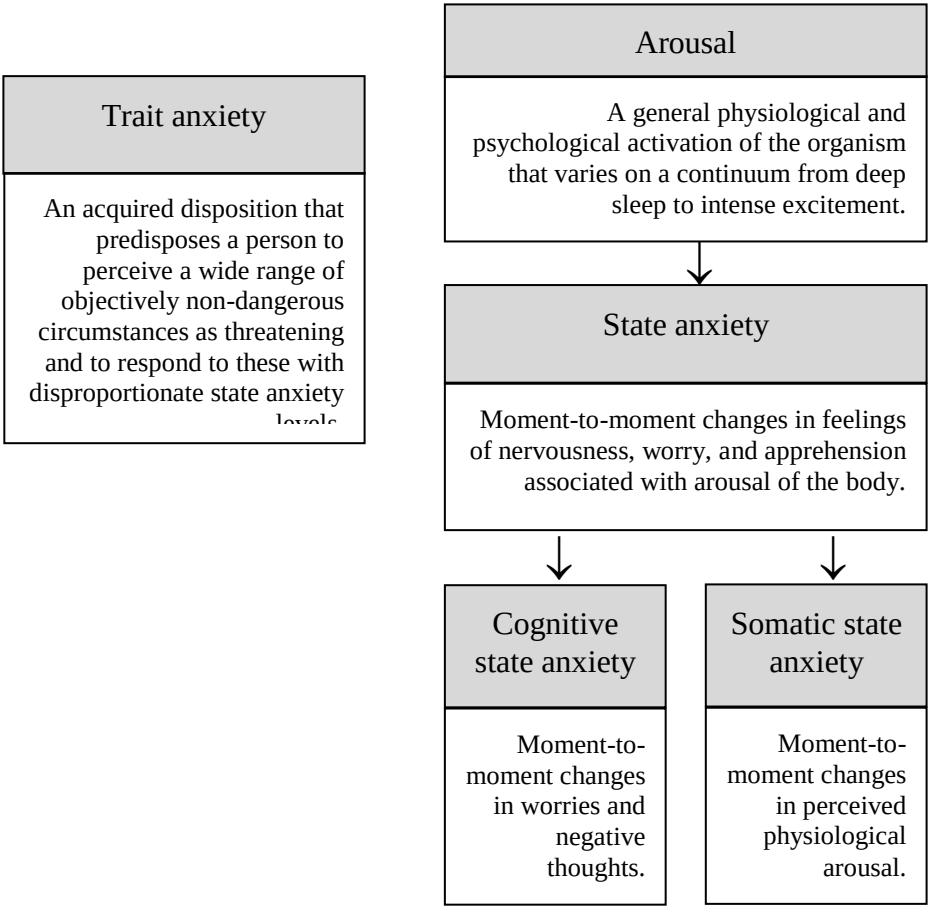

Figure 1. The interrelationships among arousal, trait anxiety, and state anxiety.

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In physical education, there are many instances when children may experience state anxiety. One example may be an individual demonstration of a gymnastics sequence to peers; in this circumstance, arousal levels may be high. In turn, the arousal can stimulate state anxiety exhibited through physical and psychological responses. At this point, if the student has a positive perception of successfully completing the challenge, state anxiety may be facilitative. Studies have shown that as an individual's arousal or state anxiety increases, performance can improve (Grossbard, Smith, Smoll, & Cumming, 2009; Hanton, Neil, Mellalieu, & Fletcher, 2008; Jones & Hanton, 1996). However, there is a point

where arousal may become debilitative. Hanin and Straub (1980) found that athletes have a performance ceiling where state anxiety changes from facilitative to debilitative. Beyond this ceiling, state anxiety contributes to over-arousal, and in turn, a negative impact on performance.

Unlike state anxiety that is dependent on a person's perception of a particular situation, trait anxiety is a persistive disposition in an individual. Trait anxiety is a component of an individual's personality that influences behavioral responses (Weinberg & Gould, 2003). Three of the most common forms of trait anxiety among children and adolescents are separation anxiety, general anxiety, and social anxiety. Separation anxiety is the most common form of trait anxiety disorder among children, affecting two to three percent of school-aged children (Krappe & Wilson, 2005). Normal separation fears are typically outgrown by five or six years of age. If a child does not outgrow these fears by six years, it can be representative of an anxiety disorder. A second childhood disorder is general anxiety disorder. This disorder involves extreme anxiety and worry lasting for at least six months over future events (American Psychiatric Association, 2000). This anxiety and worry are accompanied by restlessness, fatigue, irritability, and muscle tension.

A third disorder prevalent in children and adolescents is social anxiety disorder. It is typically diagnosed between the ages of 7 and 11 years (Krappe & Wilson, 2005) and can occur weeks in advance of an upcoming social situation (American Psychiatric Association, 2000). Children with social anxiety also experience anxiety-related performance deficits, and self-consciousness in athletic situations (Norton, Burns, Hope, & Bauer, 2000). Social anxiety manifests through personal perception of performance or social interaction. If the child perceives their performance of social interaction inadequate, they will experience distress or may avoid the feared social setting (den Boer, 2000). Typically, social anxiety disorder appears in late childhood (10-13 years) with a high-risk period at puberty (den Boer, 2000).

A sub-component of social anxiety disorder is social physique anxiety. Social physique anxiety is related to one's body image and self-presentation concerns within group settings (Crawford & Eklund, 1994). In physical education, student apparel and social comparisons present worries for individuals with social physique anxiety. For physical education teachers, minimizing social comparisons and de-emphasizing body physique can assist individuals with social physique anxiety and ultimately encourage them to participate more fully in physical education (Crawford & Eklund, 1994).

It can be interpreted that state and trait anxiety are interrelated. For example, when a child perceives a task to be beyond their capabilities, state anxiety may increase. Furthermore, children and youth with motor difficulties in physical education experience three times more anxiety when physically assessed in comparison to individuals without motor deficiencies (Rose, Larkin, & Berger, 1999). However, for a student who has trait anxiety, state anxiety will be exacerbated. An example in physical education may occur when a teacher asks a student to demonstrate a vault in gymnastics. With heightened state anxiety, this individual may withdraw from the vault demonstration if they perceive they do not have the physical resources to be successful. In contrast, highly trait anxious students may learn coping skills to reduce state anxiety in evaluative situations (Weinberg & Gould, 2003). For example, if the individual has practiced the vault,

and feels comfortable executing the skill, state anxiety may be low. Low state anxiety may allow the student to perceive the task as attainable and therefore, attempt the vault.

Relationship between physical activity and anxiety

As previously discussed, situations in physical education contexts can lead to state anxiety and exacerbate trait anxiety in some individuals. Athletic situations often presented in physical education classes may increase student anxiety and avoidance behaviours; as a result, anxious individuals experience anxiety-related performance deficits (Norton et al., 2000). However, it is interesting to note that physical activity can have a positive effect in reducing anxiety in children and adolescents. For example, Zoeller (2007) found that physical activity was associated with a decrease in anxiety among trait anxious children. Over a period of seven days, the children who accumulated over 12,000 pedometer step counts (equivalent to 60 minutes of moderate to vigorous physical activity) had significantly lower anxiety and higher self-esteem (Zoeller, 2007). Similarly, youth (8-18 years) who were physically active had lower trait anxiety, lower blood pressure and cholesterol levels than low active boys and youths (Holmes, Eisenmann, Ekkekakis, & Gentile, 2008).

Hormones related to stress and state anxiety are influenced by exercise through a reduction of epinephrine levels during stressful situations (Nabkasorn et al., 2006). In conjunction with physical benefits, exercise offers psychological benefits such as improved self-efficacy and reduction of anxiety. Among 198 ninth grade students in Chile, mental health improved following a school-based physical activity intervention program (Bonhauser et al., 2005). The program involved 90-minutes of activities, three times a week for a period of ten weeks. At the end of the program, the intervention group showed a significant improvement of 13.7% in anxiety scores compared to the control group (Bonhauser et al., 2005). Thus, for adolescents, a change in physical activity patterns can be followed by a reduction in anxiety symptoms.

The primary aim of this paper is to provide an evidence-based synthesis of the relationship between anxiety and school-based physical education among school-aged children and adolescents. A secondary aim is to describe efficacious pedagogical practices that may ameliorate anxiety by reducing or removing potential stressors in physical education.

Method

This descriptive study reviewed the literature that examined anxiety levels of school-aged children and adolescents relative to physical education contexts between the years 1990 and 2008. Databases including Academic Search Complete, PsycArticles, CINAHL, Health Source: Nursing/Academic Edition, MEDLINE, ERIC, Web of Science, Cochrane Review, and SportDiscus were searched using the following key words to identify relevant articles: “children,” “youth,” “adolescents,” “students,” “elementary school,” “middle school,” “primary school,” “secondary school,” and “high school.” Each of the population search terms were combined with “anxiety,” “physical education,” “physical activity,” “sport,” “development coordination disorder,” “fundamental motor skills,” and “intervention.” In addition, the search was constrained by English,

peer-reviewed articles. As a result, 24 articles fulfilled the search parameters and were included in the review.

Results

As previously discussed, there are many triggers that initiate the anxiety response in individuals. However, if these triggers are managed through effective prevention or intervention strategies, subjects like physical education can be a rewarding experience for anxious students. According to the reviewed literature, there are pedagogical strategies that may help teachers reduce anxious situations in physical education. These techniques are outlined in the following paragraphs.

Anxiety management strategies

One strategy for decreasing state anxiety is the use of advanced knowledge. Students can become anxious about perceived physical and psychological challenges presented to them in physical education. By introducing these situations to students in advance, anxiety can be minimized. Useful presentation formats are videos and leisure magazines introduced at least six weeks before the initiation of a potentially threatening physical activity (i.e. gymnastics) (Robazza, Bortoli, Carraro, & Bertollo, 2006).

In physical education, a gymnastics movement like a backward walkover may be perceived as dangerous, risky or threatening by students who experience anxiety. Advance knowledge of this particular movement can help reduce feelings of anxiety. For example, adolescent students were shown pictures of people engaged in gymnastic-type activities over 12 physical education lessons. After the sessions, the students were asked about their feelings. This indirect exposure modified the student's perceptions and reduced their state anxiety levels (Robazza et al., 2006).

A second approach towards reducing state anxiety for students in physical education involves goal setting. In physical education, particular goals can trigger anxious thoughts in children if seen as unachievable (Lagerberg, 2005). However, if the goals are perceived as attainable and positive, state anxiety can assist performance. For example, 91 competitive swimmers (14-28 years) were studied to understand the psychological effects of goal attainment. Three types of goals were analyzed: outcome goals, performance goals, and process goals. Findings indicated that those who viewed all goal types as positive and attainable found anxiety to be facilitative (Jones & Hanton, 1996). For those swimmers who viewed all goal types as negative and unattainable, anxiety was a debilitating factor. Therefore, by establishing positive and attainable goals for students, physical education teachers can minimize anxiety.

In support of these findings, Mosston and Ashworth's work on the spectrum of instructional methods in physical education also stresses the importance of attainable goals for anxious students (Mosston & Ashworth, 2002). Specifically, teachers are encouraged to provide multiple levels of a task and allow students to select a task relevant to their perceived competency. As examples, reducing the size and weight of a ball, or altering the angle of a shot aimed at a target, may improve the success ratio for anxious students. Overall, recognizing that students are different in terms of size, ability, capacity for learning and motivation, teachers can set achievable goals in physical education.

To further expand goal setting and its role in decreasing anxiety, a specific focus on mastery-oriented goals can compliment this strategy. Young children

believe success is based on simple task mastery; mastery-oriented goals promote positive perceptions of competence (Weiss, 1995). In addition, Horn (2008) describes mastery goals as goals that emphasize effort, enjoyment and skill development and mistakes are viewed as part of the cooperative learning process between the teacher and student. To put this in context, 176 academically advanced high school students completed a questionnaire concerning their perceptions of goal orientation and task choices in the classroom. Results indicated that mastery goals encouraged students to have a more positive attitude towards their peers, and challenged them to attempt more difficult tasks (Ames & Archer, 1988). In addition, 115 school children (11-12 years) were studied to examine the relationship between the motivational climate established by a physical education teacher, and self-confidence and anxiety prior to competition. It was found that after 12 sessions of teacher-led mastery motivational activities, perceived ability, effort and pre and post competition anxiety all improved significantly (Cecchini et al., 2001). In contrast, a performance-outcome motivated child can be more susceptible to negative perceptions of competence and anxiety (Weiss, 1995). As an example, when the same teacher in the aforementioned study reverted to a performance-based motivational climate, anxiety increased and self-confidence decreased. For physical education teachers, focusing on individualistic, mastery goals can improve student perception and minimize anxiety. Individual goals use self-referenced information for judging one's abilities whereas competitive goals promote social comparisons and increase state anxiety.

A fourth approach to decrease state anxiety relates to evaluation. Rose et al. (1999) found that students felt much more anxious when asked to complete assessments or compete in physical education. As a solution, several evaluation techniques can be used or applied so that students can select one in which they perceive success. For example, when evaluating kicking accuracy with a soccer ball, provide several net sizes or reduce the distance between the ball and the goal (Figure 2). If only a single option is available for evaluation, a less skilled individual may feel threatened, anxious, and perform below capability level.

Directly related to evaluation is the fear associated with negative peer evaluation. For example, a study involving 192 primary school children found that those with a high fear of negative evaluation had lower perceptions of his/her athletic competence (Ridgers, Fazey, & Fairclough, 2007). As well, a significant correlation was observed between perceived athletic competence and fear of negative evaluation. In addition, state anxiety increases in competitive, evaluative situations and therefore, minimizing peer evaluation may decrease anxiety (Weinberg & Gould, 2003). As well, social physique anxiety increases when individuals feel their peer group is negatively evaluating their performance (Crocker, Mack, Strong, & Kowalski, 2007). Therefore, by reducing evaluative situations in physical education teachers can promote positive perceptions of athletic competence and minimize state anxiety levels.

Another technique for anxiety reduction is the idea of reducing social comparisons. Physical education does offer situations for negative peer comparisons, but

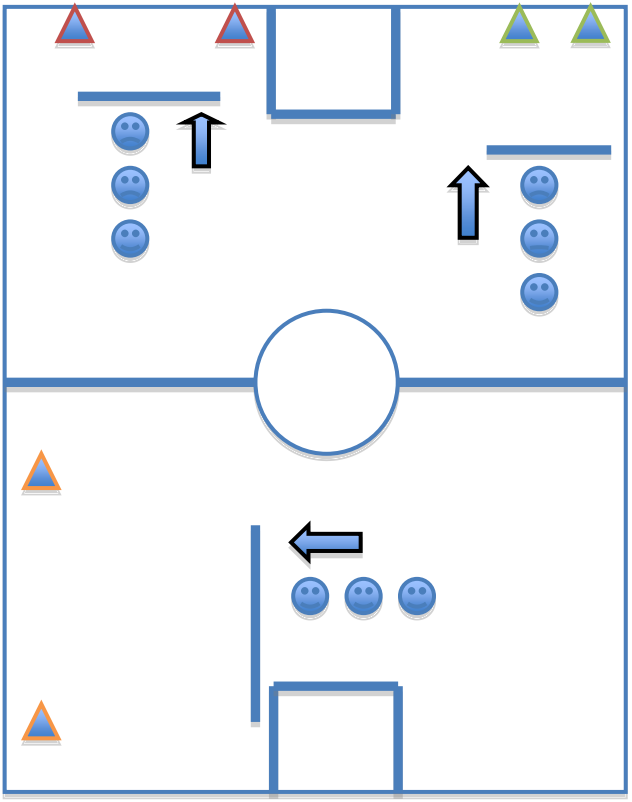

Figure 2. Goal setting strategy for minimizing anxiety in physical education.

Note: Triangles = markers; happy faces = student groupings of 3-4;
arrows = direction soccer ball will be kicked;
lines = ball must be kicked before it goes over this line.

one way of reducing these assessments is to implement a dress policy that encourages less-revealing shorts and T-shirts (Crawford & Eklund, 1994; Evans & Roberts, 1987). Asking students to exercise in less revealing clothes can increase participation levels during exercise (Crawford & Eklund, 1994). Furthermore, physical activities themselves can increase comparisons in physical education. For example, if students are instructed to run from one end of the gym and back at the same time, first and last place are easily identifiable. An anxious student may withdraw from this task knowing that they are incapable of being first.

A final strategy surrounds the competitive nature of activities in physical education; competition can promote sustained engagement for some students, but it also can be detrimental for anxious students. For example, children and adolescents (9-14 years) expressed higher baseline state anxiety prior to competitive events (Scanlan & Lewthwaite, 1984); and contests (Rose et al., 1999). Therefore, establishing activities that diminish the importance of a winner can help manage anxiety levels in state anxious individuals. As an example, when touched in a freeze tag game, a child is live again after they melt to the ground. This minor adjustment reduces the anxiety a child may feel if they do not have the resources to win the game.

Trait anxiety

As previously discussed, trait anxiety is a pre-disposed disorder that is part of an individual's personality. Thus, when comparing state and trait anxious students, there are differences in how each individual will perceive a particular situation. For example, trait anxious children that are highly competitive worry more frequently about making mistakes and not playing well compared to low trait anxious children (Passer, 1983). As well, these children worry more about evaluation by teachers and negative evaluation in the event of failure.

Along with being active, there are efficacious programs for trait anxious children that provide positive results. Typically, these interventions are administered by a clinical psychiatrist or psychologist, over several sessions, and focus on anxiety recognition and management. One effective intervention is the "Being Brave" program. When implemented, this program resulted in significant decreases in the number of anxiety disorders and anxiety symptoms in children (4-7 years) with clinically diagnosed anxiety disorders (Hirshfeld-Becker et al., 2008). Secondly, an Australian version of the "Coping Koala" anxiety program significantly decreases anxiety disorders in children and adolescents (7-14 years) (Spence et al., 1999). Thirdly, the "FRIENDS" program targets children with generalized anxiety disorder, separation anxiety disorder and social phobias (Oswald & Mazefsky, 2006). When investigated with 693 children in grades six and nine, the program significantly reduced anxiety in all participants at the end of ten weeks, and in the follow-up sessions, one and three months later (Barrett, Lock, & Farrell, 2005). The interventions outlined are not specific to physical education but include strategies that may be useful for reducing student anxiety in physical education.

Considerations for children with motor skill impairment

A distinct group of individuals who are more susceptible to anxiety in physical education are students who have, or are at risk for, developmental coordination disorder (DCD). DCD is a condition where motor skill coordination is substantially below what is expected given an individual's chronological age and measured intelligence (American Psychiatric Association, 2000). The prevalence of this disorder in children ages 5-11 is 6% with diagnosis in mid-primary school (Piek, Bradbury, Elsley, & Tate, 2008). Larkin and Rose (2005) found that in a sample of children from five schools in Western Australia, 18% of the children had movement difficulties, with 50% of this group being girls. In population studies, however, the differences in the incidence of DCD in boys and girls are not as distinct (Larkin & Rakinov, 2006)

In terms of anxiety, the relationship between motor coordination difficulty and emotional problems has been detected as early as six years old (Schoemaker & Kalverboer, 1994). In the context of physical education, children and adolescents with DCD are highly anxious prior to physical activity (Skinner & Piek, 2001). In addition, Sigurdsson et al. (2002) found that boys with motor skill difficulties are four times as likely to be anxious and Rose et al. (1999) determined that students with DCD were much more anxious when asked to complete assessments or compete in physical education. Furthermore, Schoemaker and Kalverboer (1994) discovered that children at risk of DCD had high trait and state anxiety prior to motor skill assessment and children (3-5 years) expressing early symptoms of DCD had significantly higher levels of anxiety than their peers prior to fine and gross motor tasks (Piek et al., 2008).

Therefore, motor skill assessment and physical activity may invoke an anxiety response in students with DCD. Due to their motor skill inhibitions, students completing motor tasks may have increased anxiety, particularly in assessment and competitive situations. Physical educators can minimize anxious feelings for students with DCD by creating activities that reduce competitive and assessment situations and, in turn, help students with varied motor skill abilities feel comfortable.

Discussion

One aim of this article was to raise awareness of the possibility that students may have or experience anxiety in physical education. A secondary aim was to provide practical modifications and accommodations to implement in physical education that welcome anxious students. Based on the literature, physical education does present specific challenges for anxious students. For example, when five grade ten girls (15-16 years) were asked why they decided to drop physical education after grade nine, they all indicated that negative emotions and feelings were major factors (van Daalen, 2005). In terms of emotions, they reported feeling insecure, uncomfortable, and inadequate. The most significant feelings associated with physical education were fear, depression, nervousness, embarrassment and loss of self-esteem all of which are related to anxiety. To counteract this negative association, physical educators can use the pedagogical strategies discussed to reduce student anxiety and, in turn, encourage long-term participation.

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