As we advance into the twenty-first century, we are entering a new world driven by use of technology, including driving, television, computers, and mobile devices. Alongside, there is a worldwide trend of reduced physical activity. A recent systematic review of 1769 studies by Ng and her colleagues (Ng et al., 2014) found that in 2013 the prevalence of obesity and overweight in children and adolescents in developed countries was 23.8% for boys and 22.6% for girls. In developing countries, the prevalence of overweight and obesity has increased from 8.1% in 1980 to 12.9% in 2013 for boys and from 8.4% to 13.4% for girls in the same period. This is a worrying trend as childhood obesity and overweight has increased by 47% in the past 33 years, and there is an urgent need for actions to address this global epidemic. Physical education (PE) may be a vehicle to counter this trend. PE provides an existing organizational structure and opportunities to reach all school-aged children and adolescents (5–16 years). Within such a ‘captive audience’ (grouped by class to attend compulsory lessons), children can benefit from a physical education program that provides the skills, knowledge, and confidence to participate in physical activity (PA) within or outside of PE. To achieve this aim, insight into the mechanism of motivation in PE among children and adolescents is an important area of research.

With this in mind, the purpose of this chapter is to provide an understanding of the motivational processes in PE from a self-determination theory perspective (SDT; Deci & Ryan, 1985). Understanding student motivation from this perspective is the key to inform PE teachers and other practitioners of the fundamental mechanisms to effectively promote motivation in children and adolescents. The first part of this chapter will provide a brief historical overview of motivation research. The second part will focus on the theoretical tenets of SDT including its five sub-theories or constructs. Next, the current research trends and findings in SDT will be highlighted within the subtheory framework. Thereafter, practical implications will be outlined in the context of PE teaching and learning and key findings will be summarized at the end of the chapter.

**Historical overview**

Weiner (1992) divides the development of motivational theories into three metaphors. Initially, the ‘machine-like’ or mechanistic metaphor included approaches such as Hull’s (1943) drive
Maximizing student motivation

The mechanistic metaphor views humans as passive and motivated by a small set of drives (such as sex and avoidance of pain). Motivated behavior is equated with striving for equilibrium or homeostasis. As this approach is not adequate for addressing the complexities of human behavior, the 'god-like' metaphor, represented by cognitive theories, took over. Cognitive theories view motivation as a cognitive phenomenon and from this perspective humans have complete rationality in making fully informed choices (Weiner, 1992). Achievement theory (Atkinson, 1958; McClelland, 1961) and attribution theory (Weiner, 1972) are examples of this approach. The pioneering work of the cognitive theorists led to the development of a social cognitive approach that currently dominates the study of motivation. This is a 'judge-like' metaphor as described by Weiner (1992). In the social cognitive approach, human beings are seen as actively processing events (internal and external) with expectations regarding future consequences, rather than merely processing the information needed to guide the immediate action (Bandura, 1986).

The study of motivation has evolved toward a focus on the social environment. Under the conceptual umbrella of the social cognitive approach, two major theories commonly utilized in achievement motivation research are achievement goal theory (AGT; Ames, 1992; Dweck, 1986; Nicholls, 1989) and SDT (Deci & Ryan, 1985). In AGT, two major achievement goals operate in achievement settings. The first goal perspective focuses on self-referenced mastery or learning how to do a task and is commonly labeled as 'mastery' or 'task' goals. The second perspective emphasizes normative comparison of ability or performance relative to others and is normally labeled as 'performance' or 'ego' goals (Pintrich, 2000). Furthermore, variations in these goal perspectives are linked to different cognition, affect, and behavior. Specifically, a more motivationally adaptive pattern is predicted by mastery goals and a less motivationally adaptive pattern is associated with performance goals, depending on various factors (Ames, 1992; Dweck, 1986; Nicholls, 1989). See Elliot (2005) for detailed discussion about the AGT.

Building on White’s (1959) effectance motivation and deCharms’ (1968) personal causation, Deci and Ryan’s (1985) SDT proposed that three psychological innate needs provide a basis for making predictions about the effects of the social environment on behaviors. SDT has differentiated the content of goals and the regulatory processes in predicting outcomes. In addition, SDT postulates (Deci & Ryan, 2000) that goal pursuit and behavioral regulation are influenced by the extent to which the three basic psychological needs are satisfied. In the last five years, SDT has dominated the literature in physical activity motivation due to its comprehensive ability to explain engagement and disengagement behaviors.

Theoretical framework

Empirical research examining SDT has generated five subtheories to explain motivated behavior. These subtheories, basic psychological needs theory, cognitive evaluation theory, organismic integration theory, causality orientations theory, and goal contents theory, will be briefly outlined in the following sections.

Basic psychological needs theory (BPNT)

From the SDT perspective, goals are driven by three basic psychological needs (Deci & Ryan, 1985; Ryan & Deci, 2000); the need for autonomy, competence, and relatedness (Deci & Ryan, 1985; Ryan, 1995). The need for autonomy is defined as the need to feel ownership of one’s behavior (deCharms, 1968). The need for competence refers to individuals’ need to produce desired outcomes and to experience mastery and effectiveness when dealing with their environment (Harter, 1978; White, 1959). The need for relatedness is the need to feel that one can relate
to others and with the social world in general (Ryan, 1995). People are motivated to satisfy these needs because they are considered essential to the development of the self in terms of growth, social development, and personal well-being (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000).

BPNT forms the core of SDT because without the needs concepts, explanations for intrinsically motivated behavior may not be complete (Deci & Ryan, 2000). Satisfaction of the three needs enhances intrinsic motivation. When intrinsically motivated, people engage in activities that interest them. They do so with a full sense of volition; without the presence of external rewards or constraints. On the other hand, if the three needs are thwarted, intrinsic motivation will be undermined. In this sense, psychologists predict mastery goals promote intrinsic motivation as the focus is on the activities as an end in itself, rather than a means to an end. Performance goals, on the other hand, are predicted to have a negative relationship with intrinsic motivation because the experience of engagement in the tasks is taken as a means to an end (Nicholls, 1989). Social contexts that support students’ autonomy, competence, and relatedness promote intrinsic motivation. In particular, those that support autonomy will promote self-determined behavior. It is thus important to understand the influence of social context on intrinsic motivation.

Cognitive evaluation theory

Deci and Ryan (1985) proposed cognitive evaluation theory (CET) as a subtheory within SDT to specify social environment conditions within achievement-oriented situations that influence intrinsic motivation. There are four formal propositions proposed in CET. In the first proposition, CET states that intrinsically motivated activities are autonomous or self-determined. For intrinsic motivation to be enhanced, individuals must be led to perceive they are the ‘origin’ or agent (internal perceived locus of causality) of their behavior rather than ‘pawns’ (external perceived locus of causality). The second proposition further specifies that feelings of competence and optimal challenge enhance intrinsic motivation. Social-contextual events (e.g., rewards, communication, feedback) that promote one’s feeling of competence will enhance intrinsic motivation for that activity, whereas those events that diminish one’s sense of effectance will undermine intrinsic motivation. In addition, for perceived competence to enhance intrinsic motivation, people must experience their behavior to be self-determined. In other words, feelings of competence will enhance intrinsic motivation only if they derive from the context of autonomy (Ryan & Deci, 2000).

The third CET proposition describes the importance of functional significance (i.e., psychological meaning) of the external events perceived by the actors. These events can be perceived as either informational, controlling, or amotivating. Informational events are those perceived to convey feedback about the individual’s competence and should, when positive, enhance intrinsic motivation. Controlling events are those perceived to apply pressure to act or think in a way the controlling party designates. Amotivating events are those that do not carry any feedback about competence or autonomy. When actors perceive external events as controlling or amotivating, their intrinsic motivation diminishes.

The final CET proposition focuses on events inside the person. Similar to external events, certain internal events such as thoughts and feelings can make the actor feel pressured to act in a less self-determined way. Ryan (1982) argues that ego involvement is a good example of these internal controlling events because individuals may feel their self Esteem hinges on the outcomes of their performance. This feeling leads to a decrease in intrinsic motivation.

In summary, CET highlights how social-contextual events can facilitate intrinsic motivation by supporting or satisfying people’s need for autonomy and competence. Conversely, if these
Maximizing student motivation

needs are not supported, intrinsic motivation will be undermined. However, Deci and Ryan (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000) stressed that CET applies only to activities that hold intrinsic personal interest. For activities that are not interesting to an individual, the CET principles are not applicable. Deci and Ryan (1985) addressed issues associated with the nature of extrinsic motivation creating another SDT subtheory entitled organismic integration theory (OIT).

Organismic integration theory

Deci and Ryan (1985) suggested that extrinsic motivation varied according to the degree of self-determination. For example, certain PE activities such as distance running may not be interesting to students in the first instance but they have to participate. OIT explains the process through which externally regulated behaviors can be acquired or ‘taken in’ by the individual and transformed into more self-determined regulation. This process is described as ‘internalization’ and involves a shift from an external to internal locus of causality (Deci & Ryan, 1991) as individuals are led to rationalize the behavioral outcomes relevant to their need satisfaction. That is, the more internalized a behavioral regulation, the more it will be experienced as autonomous (Ryan & Connell, 1989).

Deci and Ryan (1985) have linked the concept of internalization to that of extrinsic and intrinsic motivation. They suggest that there are five main types of behavioral regulations located on the intrinsic-extrinsic continuum, each reflecting a qualitatively different ‘reason’ for acting out the behavior in question (see Figure 41.1). These are external, introjected, identified, integrated, and intrinsic forms of regulation. External regulation is the least self-determined form of extrinsic motivation and refers to behavior that is controlled by external means, such as rewards or external authority. An example of external regulation occurs when children participate in PE lessons because they want to avoid punishment from their teacher.

Introjected regulation refers to behavior that is internally controlled or self-imposed, such as acting out of feelings of guilt avoidance, or to attain ego-enhancements such as pride. It is characterized by feelings of ‘ought,’ ‘should,’ or ‘must.’ A child saying “I must exercise in order to feel good about myself” might illustrate this form of regulation.

In identified regulation, the behavior is a more self-determined form of extrinsic motivation, acting according to one’s choice or values. It is characterized by feelings of ‘want’ rather than ‘ought.’ For example, a child saying, “I want to exercise to improve my fitness” exemplifies identified regulation. Although the activity is performed for an extrinsic reason (i.e., to improve fitness), it is internally regulated and self-determined.

Integrated regulation represents the most autonomous form of extrinsic motivation. This refers to behaviors that are in harmony with other structures within the self, that is, congruent

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**Figure 41.1** Schematic illustration of the self-determination continuum
to one’s beliefs and values. For example, a runner may choose to complete repetitive resistance training to improve his performance.

Finally, intrinsically motivated behavior is behavior that is undertaken solely for its own sake or enjoyment. Saying, “I play soccer because I enjoy it” is an example of intrinsic motivation. This is the highest level of self-determination whereby the behavior is emanating fully from the self.

These five behavioral regulations can be viewed as a continuum ranging from highly internal to highly external in the following order: intrinsic, integrated, identified, introjected, and external. In addition to these behavioral regulations, a state of amotivation exists where the person’s behavior has no personal causation and no intention to act. Amotivated people perceive a lack of contingency between their own actions and outcomes, or a lack of competence. Consequently, amotivation also occupies a separate category at the external end of the continuum.

**Causality orientations theory**

Focusing on individual differences in motivational orientations, causality orientations theory (COT) was formalized as the fourth subtheory (Ryan & Deci, 2008). COT explains motivational orientations, namely autonomy, control, and impersonal, as predictors of behavior and other aspects of personality. The autonomy orientation is defined as the experience of choice whereby individuals select available information to make choices and self-regulate in pursuit of self-selected goals. Such orientation emanates from an integrated sense of self. The control orientation involves controls in the environment or internally controlling imperatives such as should, have to, and must, whereby individuals experience pressure to act accordingly. Such orientation emanates an absence of choice with no integrated sense of self. The impersonal orientation is based on beliefs that behavior and outcomes are independent, resulting in the experience of incompetence. Such orientation leads to impersonal functioning that is erratic and non-intentional. One lacks competence or does not have the essential psychological structures to deal with life’s challenges successfully (Deci & Ryan, 1985). Hence, COT is another subtheory that connects the self-determination continuum from OIT to the three classes of initiating and regulatory events: informational, controlling, and amotivating. These respective events relate to individuals’ motivational orientations that subsequently relate to their self-determined, control-determined, and amotivated behaviors.

**Goal contents theory**

Goal contents theory (GCT) is the latest addition to the subtheories of SDT (Ryan & Deci, 2008). As mentioned in the previous section, goal pursuit is driven by the three psychological needs and well-being. Within the SDT framework, the contents of people’s life goals tend to fall into extrinsic or intrinsic focus (Kasser & Ryan, 1996). Extrinsic goals or aspirations are goals such as gaining financial success, appearance, and fame and image. This type of goal reflects people’s intention to impress others by gaining external or outwardly focused signs of worth. Extrinsic goals emphasize outcomes that are not linked to needs satisfaction. On the other hand, intrinsic goals or aspirations are goals such as health, affiliation, personal growth, and community contribution. Ryan and Deci (2008) argued that intrinsic goals focus on needs satisfaction for autonomy, competence, and relatedness.

SDT assumes that goal contents are linked to outcomes related to well-being above and beyond the effects of motivation (Ryan, Williams, Patrick, & Deci, 2009). People who strongly emphasize extrinsic goals and aspirations demonstrate low levels of psychological well-being.
Maximizing student motivation

(Kasser & Ryan, 1996). In contrast, those who placed relatively strong importance on intrinsic goals and aspirations display high levels of well-being. These five inter-related subtheories represent a coherent SDT framework. For example, the BPNT is linked to OIT in that the three basic needs are the origins of the most autonomous forms of motivational regulations. The CET highlights the social and interpersonal contexts that may facilitate or undermine intrinsically motivated behaviors. The COT represents the personal orientation at a trait level and the GCT examines the goal content that individuals strive for. In the next section, research related to these five subtheories will be presented.

Current trends and issues

There has been extensive research examining the five SDT subtheories in various settings. In non-physical education settings, a meta-analysis conducted by Deci and his colleagues (Deci, Koestner, & Ryan, 1999) examined the effects of extrinsic rewards on intrinsic motivation. They reviewed 128 experimental studies published between 1971 and 1997. The results showed that all tangible rewards and expected rewards undermined free-choice intrinsic motivation. In the sub-levels of expected rewards, engagement-contingent, completion-contingent, and performance-contingent rewards all had undermining effects on free-choice intrinsic motivation. Although verbal rewards had a significant positive effect on free-choice intrinsic motivation, this effect was found for college students but not children. This study confirms that tangible rewards made contingent on task performance undermine intrinsic motivation for interesting tasks.

In addition to tangible rewards, a variety of experimental studies using varied tasks and age groups demonstrated that other factors, such as threat of punishment, externally set deadlines, evaluations, and competitive pressure, undermine intrinsic motivation. Researchers demonstrated that these events undermine people’s feeling of self-determination because often they are perceived as controlling people’s behavior (Deci et al., 1999).

In PE settings, Van de Berghe and his colleagues (Van de Berghe, Vansteenkiste, Cardon, Kirk, & Haerens, 2014) recently conducted a systematic review of SDT research. This review included a total of 74 publications that followed the motivational sequence based on the tenets of SDT (Teacher antecedents → Teacher need satisfaction and motivation → Need support in PE → Student need satisfaction → Motivation → Outcomes).

Nine studies examined the antecedents of teacher need satisfaction and motivation (e.g., Taylor & Ntoumanis, 2007) and found that teachers’ beliefs, work pressures, and perception of student self-determination are related to teacher needs satisfaction and self-determination motivation to teach in PE classes. In addition, teacher high needs satisfaction positively related to more adaptive motivational strategies (needs support strategies). In general, the various aspects of the teaching context may thwart teachers’ needs for autonomy, competence, and relatedness. This leads to teacher use of motivational strategies that prevent satisfaction of students’ psychological needs (Taylor, Ntoumanis, & Smith, 2009). On the other hand, teacher satisfaction of the three psychological needs positively predicted teacher self-determined motivation, thereby leading to use of motivational strategies, such as gaining an understanding of students, provision of instrumental support, and provision of meaningful rationale (Taylor, Ntoumanis, & Standage, 2008).

According to CET, significant others’ behaviors can impact individuals’ intrinsic motivation (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000; Vallerand & Losier, 1999). In the school context, teachers are probably the most influential people in the environment. The ways teachers interact with students can either facilitate or undermine their intrinsic
motivation. Specifically, teachers can either communicate with a controlling style, such as giving directives, exerting pressure, or controlling the students’ behavior, or interact in an autonomy-supportive way that enhances decision making and student choice. Several studies have shown that autonomy-supportive teachers enhance their students’ intrinsic motivation, intentions to exercise during leisure time, and exercise behaviors (e.g., Chatzisarantis & Hagger, 2009; Standage, Duda, & Ntoumanis, 2003).

Further, research has shown the motivational benefits of more self-determined behavioral regulations in the PE contexts. For example, in Standage et al.’s (2003) study, intrinsic motivation was positively related to concentration, positive affect, and a preference for trying challenging tasks. Wang and Liu (2007) found that external and introjected regulations in PE were negatively related to enjoyment. On the other hand, identified regulation and intrinsic motivation were positively related to enjoyment and competence.

Researchers have begun to examine contextual events that support or inhibit the internalization process. Deci, Eghrari, Patrick, and Leone (1994) suggested that three contextual factors, providing a meaningful rationale, acknowledging the actor’s perspective, and communicating choice rather than control, promote internalization. Providing a rationale that is meaningful to the actor can help the individual understand the value of performing the activity. Acknowledgment of conflict helps reduce internal pressure and also conveys respect from the actor’s perspective to strengthen relatedness. Finally, rationale and acknowledgment need to be presented in an autonomy-supportive way rather than in a controlling manner.

Surprisingly, there were not many studies conducted in PE and sport settings examining the causal orientation theory. In the classroom domain, Deci, Schwartz, Sheinman and Ryan (1981) have shown the direct effects of teachers’ autonomy orientation towards supporting children’s intrinsic motivation. Children of more controlling teachers scored lower on measures of mastery orientation and perceived competence than children in classrooms of more autonomy-supportive teachers. In addition to showing less interest in learning and challenge, these children reported lower self-esteem than children exposed to autonomy-supportive teachers. Taylor et al. (2008) found that teachers’ autonomous causality orientation positively predicted teacher self-determined motivation to teach.

Another area that has been greatly ignored is the goal content theory in PE settings. In one study, Vansteenkiste, Simons, Lens, Sheldon, and Deci (2004) found that framing an exercise activity in terms of an intrinsic goal attainment produced better performance compared to extrinsic goal framing. A handful of other studies examined the goal content of participants in recreational and competitive sport contexts (e.g., Chatzisarantis & Hagger, 2007; Vansteenkiste, Mato, Lens, & Soenens, 2007). In general, competitive athletes tended to focus on extrinsic goal aspiration compared with recreational athletes. Athletes who placed more importance on intrinsic goals reported higher well-being (Chatzisarantis & Hagger, 2007). Extrinsic goals were found to be associated with ego involvement and less task-involvement compared with intrinsic goals (Vansteenkiste et al., 2007). Although these findings may not be generalized to the physical education setting, the findings may serve as starting points for PE researchers to launch studies on goal framing issues in relation to student motivational processes in learning.

SDT can be applied in many domains, ranging from sport and exercise to health (e.g., Cheon, Reeve, & Moon, 2012; Ryan & Deci, 2008; Williams, Freedman, Ryan, & Deci, 1996), parenting (e.g., Grolnick, Ryan, & Deci, 1991), and education (e.g., Klassen, Perry, & Frenzel, 2012). Despite the extensive research on this topic, SDT is an empirically based open theory with much room for continued improvement in the specification and expansion of its propositions (Ryan & Deci, 2008). It seems true that SDT is a relevant guiding theory in the study of PE student motivation as well. It provides a comprehensive platform to connect motivation
Maximizing student motivation

with the social contexts and events and cognitive processes. It also provides theoretical guidance in terms of leading PE students to internalize external values and regulations.

Implications for evidence-based practice

A recent study by Church and his colleagues (Church et al., 2012) extended support for the universal importance of SDT needs satisfaction in eight cultures. The study demonstrated that perceived need satisfaction predicted overall well-being to a similar degree in all eight cultures studied. Therefore, interventions that facilitate need satisfaction may enhance well-being across different cultures.

SDT provides unique contributions to our understanding of motivation. For example, it acknowledges that every individual has inherent growth tendencies and innate psychological needs that act as inner motivational resources to produce high quality engagement and optimal functioning (Reeve, 2012). The theory also acknowledges that not everyone is intrinsically motivated in a particular setting. Content can be structured to promote internalization of extrinsic motivation with practical implications for PE teachers derived from the SDT literature.

Use of adaptive motivational strategies

Connell and Wellborn (1991) proposed three broad types of motivational teaching strategies, autonomy-support, structure, and involvement. Autonomy-support teaching strategies focus on promoting students’ internal locus of causality and increasing their feelings of volition. Autonomy-supportive teachers facilitate students’ personal autonomy by taking students’ perspective; identifying and nurturing students’ needs, interests, and preferences; providing optimal challenges; highlighting meaningful learning goals; and presenting interesting, relevant, and enriched activities (Jang, Reeve, & Deci, 2010). For example, when teaching soccer, teachers can provide a meaningful rationale for students undertaking the activity, such as fun, teamwork, and/or fitness development. By providing a meaningful rationale in an autonomy-support manner, the teacher may facilitate the students in internalizing the values acknowledged externally, thereby increasing students’ motivation to engage in the learning activities.

Structure refers to the amount and clarity of information that teachers provide to students about expectations and ways of effectively achieving desired educational outcomes (Skinner & Belmont, 1993). Students in a well-structured environment have a clear understanding of what is required of them to achieve the desired outcomes. Therefore, they can direct their effort to complete the activities. It is important for PE teachers to plan their lessons to include clear declarative and procedural objectives. For the provision of structure, teachers might want to initiate learning activities by offering clear and detailed expectations and instructions, offering helpful guidance and scaffolding to guide students to attain positive tangible outcomes from each task throughout the lesson. During the process, it is crucial for PE teachers to provide clear feedback to enhance students’ perceptions of competence and perceived personal control throughout the lesson.

Finally, to encourage interpersonal involvement with student growth, Connell and Wellborn (1991) encouraged PE teachers to show personal interest and provide emotional support to students (demonstrating warmth, sympathy, humor, willingness to listen, and investing time and energy). Acknowledging students’ inner conflicts may help in reducing apprehensions related to practicing new motor skills. Tessier, Sarrazin, and Ntoumanis (2010) argue that in-service and pre-service teachers acquire adaptive motivational strategies through physical education teacher education and in-service teacher training or intervention programs.
Satisfying the need for competence

The importance of perceived competence is emphasized in many motivation theories including SDT. PE teachers need to nurture and enhance students’ sense of competence to assist them to develop intrinsic motivation in physical activity tasks. There are a few practical suggestions based on the research literature for enhancing students’ need for competence. First, PE teachers need to provide successful lesson experiences for their students. Teachers need to differentiate activities for different abilities so that everyone can be optimally challenged at their own level and achieve success. Second, PE teachers need to praise students for the effort they put into the learning processes rather than just for the outcomes. In other words, PE teachers should create a mastery climate (Ames, 1992) such that the focus is on mastery of skills, self-improvement, and effort. Third, when students are practicing skills, PE teachers need to provide informative and positive feedback to inform students how to be successful, thereby improving their competence.

Minimizing use of external rewards

PE teachers need to be aware that external rewards can undermine intrinsic motivation. Any rewards, threats, and evaluation given within PE lessons may have undermining effects on students’ intrinsic motivation. SDT suggests that when considering students’ intrinsic motivation, it is more important to consider students’ perceptions of the environment where an event takes place than to focus on the event itself (e.g., rewards, goals) (Deci & Ryan, 1985). External rewards need to convey informational feedback to the students rather than controlling feedback. The focus, instead, should be on enhancing students’ autonomy and competence. For example, PE teachers should not reward/praise the highest goal scorer because students may perceive this as controlling feedback. Instead, if the high scorer has made significant improvement and given much effort in the game, the teacher should highlight that, thus using informational feedback to enhance the students’ perceptions of competence.

Using contextual factors to promote internalization

PE teachers need to understand that not all students enjoy physical activities, and some may see PE as a source of stress. PE teachers can use three contextual factors (Deci et al., 1994) to promote internalization: providing a meaningful rationale, acknowledging the actor’s perspective, and communicating choice rather than control. To effectively provide a meaningful rationale to students PE teachers need to acknowledge the reasons some students may not wish to participate. For example, they may have internal conflicts (external conditions and internal factors, e.g., poor weather conditions, fear, and avoidance of tasks) that make them reluctant to participate in the activity willingly. Acknowledging these conflicts helps teachers reduce internal pressure and also conveys respect for students. Thus, students may perceive the internalization process to be persuasive rather than coercive, further enhancing the relatedness between the teacher and students and fostering empathy and respect for the students as individuals. In addition, teachers need to present the rationale and acknowledgment in an autonomy-supportive way rather than in a controlling manner. The final contextual factor is maximizing students’ perception of activity choice. Providing choice allows students to feel a sense of autonomy, control, and empowerment over their own behaviors. For example, students can be given the choice in sequencing activities or have a choice of activity in PE lessons.

Additionally, satisfying the need for relatedness can facilitate the internalization process. In fact, PE is an optimal context to assist learners to fulfill this need when teachers show
genuine concern and respect for their students. Additionally, teachers can use different grouping methods to foster relatedness among students, such as grouping students into teams for long periods of time so they can have a common identity in working towards a common task.

**Promoting intrinsic goals**

The inherent long-term goals of PE should be for health, positive interpersonal relationships, personal growth, and sense of community (Education Scotland, 2014). To optimize SDT strategies, PE teachers should stress the importance of intrinsic goals instead of highlighting sport stars. Instead, intrinsic goal aspirations contribute to needs satisfaction and well-being. One example of intrinsic goal framing in PE might be: “Increasing your cardio-vascular endurance enhances physical fitness and prevents many diseases, such as high blood pressure, diabetes, and obesity.” An example of extrinsic goal framing is: “Performing fitness exercises will make you more physically attractive and prevent you from being fat.”

**Future directions**

In general, SDT has generated many insights into the motivational forces underlying students’ behavior in PE. There remain, however, a few key issues for future research. First, although in the academic domain, intrinsic motivation has been shown to demonstrate higher engagement, lower dropout, and better academic performance than extrinsic motivation (Deci et al., 1999), additional research is needed to examine this construct in PE. For example, Sun and Chen (2010) found no relationship between students’ self-determined motivation and learning outcomes in PE. In this study, although PE students were intrinsically motivated, they learned little. There is a need for future research to revisit the link between motivation and effective learning outcomes in the PE domain.

Second, Van de Berghe et al.’s (2014) review of 74 SDT studies in PE found several limitations in design and methods. In fact 55.4% (41 out of 74 studies) of the study authors mentioned study design as one of the main limitations of their studies. Additionally, sample sizes in these studies were small and the duration of the interventions was usually short (< 5 weeks). In addition, 39.3% of authors mentioned measurement issues as one of their concerns, including single item measurement and instrument reliability. Certainly, greater access to school environments would permit studies with larger and multi-leveled samples, control groups, study replication, and increased duration (including longitudinal designs) greatly enhancing research validity and study design.

Finally, most of the SDT research in PE has focused on students, rather than on teachers. In any classroom setting, teachers are the agents of change and are responsible for setting up a conducive classroom structure for learning. It is thus important for future research to look into teacher-related contextual factors, possible antecedents of teacher behavior, and links to the SDT constructs. Again, effectively communicating the value of SDT findings and strategies to teachers is critical to facilitating their assistance and participation in research and then attending workshops to implement SDT into their daily practices.

**Summary of key findings**

- This brief overview of SDT and its research suggests a few key principles that have broad implications for practice in PE classrooms. SDT assumes that all humans possess inherent growth tendencies.
Three innate psychological needs, autonomy, competence, and relatedness, are the nutrients for self-motivation and personality integration.

The motivational sequence based on the tenets of SDT (Teacher antecedents → Teacher need satisfaction and motivation → Need support in PE → Student need satisfaction → Motivation → Outcomes) provides a systematic understanding of the causal inference of the key variables.

Social-contextual factors have profound influence on the needs satisfaction of students in PE.

It is important for PE teachers to understand their own needs satisfaction to facilitate student learning in the gymnasium. This will assist them to incorporate needs satisfaction in their instructions with the goal to involve, nurture, and vitalize these inner motivational resources, facilitating high quality engagement and learning in the classroom.

Teachers also can teach adaptive motivational strategies. Effective motivational strategies can be acquired from an educational environment emphasizing autonomy-support, structure, and involvement.

From the SDT’s perspective, motivation is a multidimensional construct. Students can be motivated intrinsically, extrinsically, or both in physical activities.

Facilitating the internalization process will help students develop more autonomous motivation.

Students can be very successful when they internalize extrinsic motivation into intrinsic motivation. This finding can be a key to developing sustainable students. PE teachers can improve student motivation by creating environments that satisfied students’ needs for autonomy, competence, and relatedness.

Teachers can make intrinsic goals the main focus of PE. These goals can be associated with positive outcomes and well-being enhancing student enjoyment.

Learning goals within the physical education curriculum should be linked to SDT’s intrinsic goal framework for optimal student motivation.

Administrators’ and teachers’ use of tangible and expected extrinsic rewards can undermine intrinsic motivation in PE and thus should be employed with caution.

Reflective questions for discussion

1. SDT focuses on three innate psychological needs (competence, autonomy, and relatedness) that are essential for self-growth and optimal functioning. How does the satisfaction of these needs lead to different types of motivation?

2. How do social contexts, such as those characterized by competition and rewards, influence PE students’ intrinsic motivation? What strategies can teachers use to reverse the influences of these contextual factors?

3. What needs do some students satisfy through participation in sports and games? Classify these needs within the categories of extrinsic or intrinsic motivation. Are there any long-term benefits of extrinsic motivation? To what extent should teachers work to encourage intrinsic motivation while discouraging extrinsic?

4. What teaching strategies can PE teachers use to promote students’ self-determined motivation? Describe factors that stop PE teachers from using such strategies.

References


Maximizing student motivation


