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ADAPTED PHYSICAL EDUCATION

# The Basic Psychological Needs in Physical Education Scale for Use With Students With Visual Impairments: A Delphi Study

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## Abstract

*The Basic Psychological Needs in Physical Education Scale (BPNPE; Vlachopoulos et al., 2011) measures the basic psychological needs for autonomy, competence, and relatedness. The BPNPE has yet to be vetted for use with students with visual impairments. The purpose of this study was to begin the vetting process of the BPNPE, with content and face validity screening, for use with students with visual impairments via the Delphi method. A panel of 15 experts rated the quality, importance, relation to self-determination for each item and provided wording suggestions and comments. On the basis of the feedback, items were revised and presented back to the experts until consensus was reached. Three rounds of obtaining feedback were necessary for the panel to reach consensus for the BPNPE. This instrument can be used to quantify the basic psychological needs satisfaction of students with visual impairments during physical education and to aid in curriculum improvements that encourage autonomy, competence, and relatedness.*

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When an individual has their basic psychological needs met, they feel as though they are in control of their actions, or self-determined, and experience greater motivation and well-being (Ryan & Deci, 2000) and this is no different for individuals with visual impairments (Cmar & Markoski, 2019). The Expanded Core Curriculum outlines that students with visual impairments should receive instruction in areas directly impacted by their disability in addition to the traditional academic instruction (Sapp & Hatlen, 2010). Learning skills related to self-determination is one of the nine areas of instruction detailed in the Expanded Core Curriculum (Sapp & Hatlen, 2010). To gain knowledge and experiences consistent with self-determination, students with visual impairments must learn to decipher their choices, acquire the skills necessary to take advantage of those choices, and have opportunities to make age-appropriate choices independently (Sapp & Hatlen, 2010). Teachers of students with visual impairments believe that their students can benefit from learning skills related to self-determination and be more successful at school and in postsecondary settings on the basis of those skills (Agran et al., 2007). Unfortunately, not all students have goals related to self-determination on their Individualized Education Program (Agran et al., 2007), even though individuals are more intrinsically motivated and experience more self-determination when they are afforded the opportunity to make choices (Deci & Ryan, 2008), and teachers rank choice making as the least important component of self-determination (Agran et al., 2007). Cmar and Markoski's (2019) literature review reveals 11 research studies investigating the self-determination of children and youth with visual impairments from 2003 to 2016. Of those 11 studies, only two (Robinson & Lieberman, 2004; Shapiro et al., 2005) investigate the self-determination of children and youth in a physical activity setting (Cmar & Markoski, 2019). In the Robinson and Lieberman (2004) study of opportunities for self-determination for students with visual impairments, the results show few opportunities across the domains of home; school, including physical education; friends; and health care (Robinson & Lieberman, 2004). Additionally, this study reveals students often do not exercise their decision-making skills, because their parents or teachers make their decisions (Robinson & Lieberman, 2004). In the other study of students with visual impairments after a weeklong

sports camp, the results reveal that boys have a higher perceived competence than girls at the start of camp. At the end of camp, though both boys and girls may experience increased perceived competence, girls may experience a more significant increase in their self- perception.

Self-determination research indicates that a person's basic psychological needs for autonomy, competence, and relatedness are met in sport and exercise settings (Ryan et al., 2009; Teixeira et al., 2012; Vlachopoulos & Michailidou, 2006). Given this finding, physical education may also be a setting in which students with visual impairments have the opportunity to have their basic psychological needs met (Lieberman et al., 2021). Ideally, the goal of physical education is to provide students with the resources and opportunities to develop the motor skills, confidence, and competence to become physically literate (Graham et al., 2013; SHAPE America, n.d.). Currently, individuals with visual impairments are often excluded from activities, receive differential treatment from teachers, and have negative interactions with peers during physical education (e.g., Haegele et al., 2020; Haegele & Kirk, 2018; Haegele et al., 2018; Haegele & Zhu, 2017; Haegele, Zhu, & Holland, 2019). Exclusion from activities typically takes the form of sitting on the sidelines or participating in a separate parallel activity away from classmates (e.g., Haegele et al., 2020; Haegele & Kirk, 2018; Haegele et al., 2018; Haegele & Zhu, 2017). Individuals with visual impairments think that their teachers have differing and lower expectations for them because of their visual impairment (Haegele & Kirk, 2018; Haegele et al., 2018). Additionally, they experience bullying by peers through social isolation, verbal teasing, and even being physically pushed or tripped (Ball, Lieberman, Haibach-Beach, Perreault, & Tirone, 2021). Individuals with visual impairments are at risk of living a more sedentary lifestyle than their peers without disabilities due to their limited participation and skill acquisition in physical education (Yessick & Haegele, 2019). Children and youth with visual impairments are lacking in perceived and actual motor skill performance and have lower physical activity levels than do their sighted peers (e.g., Brian et al., 2018; Haegele, Aigner, & Healy, 2019; Haibach et al., 2014; Houwen et al., 2010). Due to their experiences in physical education, individuals with visual impairments have negative feelings toward

physical education (Ball, Lieberman, Haibach-Beach, Perreault, & Tirone, 2021) and these experiences also negatively impact their physical activity levels, preferences, and choices as adults (Yessick & Haegele, 2019).

Motivation is a significant aspect of physical literacy (Brian et al., 2019). Autonomous motivation toward physical activity is supported by competence satisfaction and perceived motor competence (Brian et al., 2019). This means that students with visual impairments who have more satisfaction with their need for competence and a higher level of perceived motor competence will likely have more autonomous motivation toward physical activity (Brian et al., 2019), which may increase their physical literacy. If students with visual impairments are afforded opportunities that satisfy their basic psychological needs along with developing physical literacy, they may acquire a stronger sense of well-being and engage in a physically active lifestyle. Therefore, a psychological needs satisfaction instrument specific to physical education needs to be identified and determined appropriate for use with students with visual impairments.

The Basic Psychological Needs in Exercise Scale (BPNES) is an exercise-specific tool that measures self-determination and how exercise meets the psychological needs for autonomy, competence, and relatedness (Vlachopoulos & Michailidou, 2006). The BPNES is valid for Chinese, Spanish, Greek, Portuguese, Turkish, and British cultures (Liu et al., 2013; Moreno-Murcia et al., 2012; Vlachopoulos et al., 2013; Vlachopoulos et al., 2010). Additionally, the scale's psychometrics are supported for individuals with intellectual disabilities in Europe (Skordilis et al., 2019). The BPNES is appropriate for use in structured exercise settings, such as the one in Saebu et al.'s (2013) study investigating the motivation for physical activity among young adults with physical disabilities during a 3-week rehabilitation stay. The BPNES is valid for adults aged 18 years and older (Vlachopoulos & Michailidou, 2006) as well as 16- and 17-year-olds (Skordilis et al., 2019). Additionally, its use is widespread, measuring basic psychological needs, physical self-concept, and physical activity of adolescents in secondary school in Spain (Fraguela-Vale et al., 2020) and physical education for primary and secondary students in Brazil (Costa et al., 2017). The modified version of the BPNES, the BPNPE, is valid for use with Portuguese, Brazilian, German, and Filipino cul-

tures (Cagas & Hassandra, 2014; Cid et al., 2016; Heckmann, 2013) as well as English-speaking students (Sanchez et al., 2018). While this instrument is valid in many populations and domains, the BPNPE has yet to be vetted for students with visual impairments.

Currently, the research on the self-determination of students with visual impairments in physical education is limited. Additionally, there is no quantifiable instrument specifically vetted to measure the basic psychological needs satisfaction of individuals with visual impairments solely on the basis of their experiences in physical education. To our knowledge, there is only one self-determination instrument modified to include physical education for students with visual impairments (Robinson & Lieberman, 2004). The instrument measures self-determination opportunities provided to students with visual impairments in physical education rather than measuring how their basic psychological needs are met in that setting; therefore, an instrument with a purpose of measuring the degree of psychological needs satisfaction specific to students with visual impairments in physical education must be vetted. The overall purpose of this study is to begin the vetting process of the Basic Psychological Needs in Physical Education Scale for use with students with visual impairments by utilizing content and face validity screening through the consensus of experts.

## Method

The Delphi method, a research process involving the collection and refinement of judgements made by experts on a specific topic (Skulmoski et al., 2007), was utilized to establish content and face validity of the BPNPE for use with students with visual impairments. One of the five purposes of a Delphi study is "to seek out information which may generate a consensus on the part of the respondent group" (Hsu & Sandford, 2007, p. 2). In the case of this inquiry, the purpose was to establish content and face validity for the BPNPE, as related to students with visual impairments, through the consensus of experts.

### Instrumentation

This study utilized the English translation of the BPNPE, which was initially validated by Sanchez et al. (2018). The scale comprises 12 items that measure the autonomy, competence, and relatedness

of students while in physical education class. Appendix A shows the English translation of the BPNPE (Sanchez et al., 2018) .

## Participants

Participants for this study were 15 experts. To be considered an expert, they had to have extensive training or completed coursework in physical education, adapted physical education, special education, sports psychology, vision studies, or orientation and mobility, or be a current professor in adapted physical education or a related field.

Participants included a panel of experts ($N = 15$) from diverse areas of expertise. Our sample of experts included those from adapted physical education ($n = 8$), physical education ($n = 2$), sports psychology ($n = 1$), special education ($n = 1$), orientation and mobility ($n = 1$), vision studies ($n = 1$), and both adapted physical education and orientation and mobility ($n = 1$). Additionally, one of the experts included on the panel identified as an individual with a visual impairment.

## Procedure

Experts were contacted through email about their interest in participating in the Delphi study. Each participant was informed that upon completing the final round of the Delphi study they would receive a $50 Amazon gift card as compensation for their participation in the study. Data were collected through a series of rounds via email in which the expert panel provided feedback on the BPNPE items. When providing feedback, experts considered the framework of self-determination theory, more specifically the basic psychological needs of autonomy, competence, and relatedness as related to students with visual impairments in physical education. Experts rated the quality of the item on a 1–5 rating scale (1 = *poor quality*, 5 = *high quality*), the importance of the question/statement on a 1–5 rating scale (1 = *low importance*, 5 = *high importance*), the degree to which each item related to autonomy, competence, or relatedness on a 1–5 rating scale (1 = *low relation*, 5= *high relation*). They also provided optional alternative wording for the questionnaire item and/or comments. On the basis of the feedback the questionnaire was revised and presented back to the expert panel until consensus was reached. Three rounds of obtaining feedback was necessary for a consensus to be reached among the expert panel for all 12 BPNPE items. This

aligned with the recommendation for three or four rounds for an expert panel to establish consensus (Hsu & Sandford, 2007; Skulmoski et al., 2007). Experts had 2 weeks (14 days) to provide feedback to the researcher during each round of the Delphi. The researcher had 2 weeks (14 days) to analyze the feedback the experts provided and prepare the questionnaire and findings for the next round of the Delphi.

### Data Analysis

Data collected during each round of the Delphi was descriptively and thematically analyzed. The suggestions and comments provided by the experts were reviewed and categorized thematically to aid in revisions. The ratings were analyzed descriptively to investigate the agreement of importance, quality, and degree to which each BPNPE item related to self-determination. Based on the feedback the BPNPE was revised and presented to the expert panel along with a summary of the previous round's findings. A BPNPE item was revised if it received either a mean quality score of less than 4.0, a mean importance rating of less than 4.0, or a mean relation to self-determination rating of less than 4.0 and/or over 30% of the expert panel provided wording suggestions or comments. Following the recommendations of Hsu and Sandford (2007) consensus was reached when 70% of the experts provided a quality, importance, and relation to self-determination rating of 4 or 5 and less than 30% of the experts provided wording suggestions or comments for each BPNPE item.

## Results

Three rounds of the Delphi method process were necessary for the expert panel to reach consensus for each of the 12 BPNPE items. This indicated the instrument was adequate to measure the basic psychological needs satisfaction of students with visual impairments in physical education. Table 1 shows the results of the feedback. Additionally, this section provides a summary of each round's findings.

### Round 1

Significant revisions were made as a result of the feedback gathered from the first survey. The first notable revision was made to

the stem of the scale. This was changed to "When I participate in physical education, in general, I feel . . . ." Second, a common recommendation was to add a reference to physical education class to the statements because students completing the survey may forget the stem and this would remind them to consider their experiences in physical education. The expert panel advised that the comparison component in the competence items be removed. Justification for this revision included the comparison to peers may be context dependent because students may be in a class with high- or low-skilled peers. Additionally, some students with visual impairments may not have the knowledge of their peers' abilities as this may be learned through incidental and casual observation. Students also may not have reflected on what their peers consider difficult, and a student with a visual impairment may wonder if they are to compare their abilities to the abilities of their peers with visual impairments or of their sighted peers. It was suggested that the student's need for competence may be met through their perception of the level of difficulty of the task but not all items should focus on difficult tasks. Though many items received high mean quality, importance and relation to self-determination ratings, the items were revised because they received many wording suggestions and comments.

## Round 2

This round of feedback provided by 15 members (100%) of the expert panel resulted in five of the BPNPE items reaching consensus (Autonomy Items 1 and 4, Competence Items 3 and 4, Relatedness Item 2). These items had mean quality, importance, and relation to self-determination ratings greater than 4.0, more than 70% of the expert panel provided ratings of 4 or 5, and less than 30% of the expert panel provided a wording suggestion or comment. The remaining seven items were revised for improvement of the overall caliber of each item. Subsequent questions were asked during this round of gathering feedback. The additional questions were developed and added to the questionnaire because many of the experts noted questions that revolved around the age of the target population and inquired about the relevance to visual impairment. The expert panel rated the degree to which they agreed the questionnaire items were appropriate for elementary students in Grade 5 with an age of 11 years, middle school students in Grades 6 to 8 from ages

**Table 1**
*Results of Feedback Provided by the Expert Panel*

| Delphi round | BPNPE item | $M_{quality}$ | % of panel rating 4/5 | $M_{importance}$ | % of panel rating 4/5 | $M_{relation\ to\ self\text{-}determination}$ | % of panel rating 4/5 | % of panel providing feedback | Meets consensus? |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Autonomy 1 | 4.13 | 80 | 4.13 | 80 | 4.18 | 71 | 47 | No |
| 1 | Autonomy 2 | 3.67 | 60 | 3.93 | 67 | 3.73 | 60 | 67 | No |
| 1 | Autonomy 3 | 3.13 | 40 | 3.87 | 60 | 3.86 | 64 | 100 | No |
| 1 | Autonomy 4 | 4.07 | 73 | 4.00 | 60 | 4.07 | 67 | 60 | No |
| 1 | Competence 1 | 4.00 | 60 | 4.60 | 93 | 4.60 | 93 | 67 | No |
| 1 | Competence 2 | 3.93 | 67 | 4.40 | 87 | 4.07 | 73 | 73 | No |
| 1 | Competence 3 | 4.00 | 64 | 4.21 | 79 | 4.57 | 86 | 73 | No |
| 1 | Competence 4 | 3.86 | 60 | 4.29 | 93 | 4.27 | 80 | 60 | No |
| 1 | Relatedness 1 | 4.80 | 100 | 4.33 | 87 | 4.80 | 100 | 40 | No |
| 1 | Relatedness 2 | 4.40 | 87 | 4.67 | 93 | 4.73 | 93 | 33 | No |
| 1 | Relatedness 3 | 4.73 | 93 | 4.60 | 93 | 4.80 | 100 | 53 | No |
| 1 | Relatedness 4 | 4.20 | 80 | 4.64 | 93 | 4.80 | 93 | 60 | No |
| 2 | Autonomy 1 | 4.50 | 87 | 4.57 | 93 | 4.14 | 79 | 27 | Yes |
| 2 | Autonomy 2 | 3.92 | 57 | 4.13 | 73 | 3.96 | 64 | 67 | No |
| 2 | Autonomy 3 | 4.29 | 79 | 4.29 | 79 | 4.11 | 79 | 40 | No |
| 2 | Autonomy 4 | 4.77 | 100 | 4.86 | 100 | 4.86 | 100 | 13 | Yes |

**Table 1 (cont.)**

| Delphi round | BPNPE item | $M_{quality}$ | % of panel rating 4/5 | $M_{importance}$ | % of panel rating 4/5 | $M_{relation\ to\ self\text{-}determination}$ | % of panel rating 4/5 | % of panel providing feedback | Meets consensus? |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Competence 1 | 4.20 | 73 | 4.73 | 100 | 4.71 | 93 | 33 | No |
| 2 | Competence 2 | 4.27 | 80 | 4.53 | 93 | 4.64 | 93 | 33 | No |
| 2 | Competence 3 | 4.43 | 86 | 4.64 | 100 | 4.85 | 100 | 27 | Yes |
| 2 | Competence 4 | 4.60 | 93 | 4.73 | 100 | 4.79 | 100 | 27 | Yes |
| 2 | Relatedness 1 | 4.80 | 100 | 4.87 | 100 | 4.85 | 100 | 40 | No |
| 2 | Relatedness 2 | 4.60 | 93 | 4.73 | 93 | 4.86 | 100 | 13 | Yes |
| 2 | Relatedness 3 | 4.33 | 73 | 4.87 | 100 | 4.86 | 100 | 33 | No |
| 2 | Relatedness 4 | 4.35 | 86 | 5.00 | 100 | 5.00 | 100 | 67 | No |
| 3 | Autonomy 2 | 4.57 | 100 | 4.70 | 100 | 4.75 | 93 | 0 | Yes |
| 3 | Autonomy 3 | 4.10 | 80 | 4.43 | 87 | 4.57 | 93 | 20 | Yes |
| 3 | Competence 1 | 4.63 | 93 | 4.77 | 100 | 4.90 | 100 | 7 | Yes |
| 3 | Competence 2 | 4.60 | 93 | 4.80 | 100 | 4.93 | 100 | 13 | Yes |
| 3 | Relatedness 1 | 4.50 | 93 | 4.77 | 93 | 4.77 | 93 | 13 | Yes |
| 3 | Relatedness 3 | 4.57 | 93 | 4.83 | 100 | 4.90 | 100 | 7 | Yes |
| 3 | Relatedness 4 | 4.37 | 87 | 4.70 | 93 | 4.90 | 100 | 13 | Yes |

12 to 14 years, high school students in Grades 9 to 12 from ages of 15 to 18 years, and students with visual impairments. Table 2 shows the results of the additional questions. The expert panel agreed that the BPNPE items were appropriate for students in middle and high school as well as for students with visual impairments.

### Round 3

The remaining seven BPNPE items reached consensus during the third and final round of obtaining feedback from the 15 (100%) experts. All items received mean quality, importance, and relation to self-determination ratings greater than 4.0, more than 70% of the expert panel provided ratings of 4 or 5, and less than 30% of the expert panel provided wording suggestions or comments for each item. Appendix B shows the final version of the scale determined to be appropriate for use with students with visual impairments by the expert panel.

## Discussion

When provided the appropriate tools and modifications, students with visual impairments have the opportunity to perform comparably to their peers without visual impairments in physical education (Ball, Lieberman & Haibach-Beach, 2021). The Expanded Core Curriculum provides students with visual impairments the skills necessary to lead an independent life as an adult (Sapp & Hatlen, 2010). The experts who created the Expanded Core Curriculum point out that often students with visual impairments need more instruction in certain areas to fully engage in school, community, and work (Sapp & Hatlen, 2010), whereas in physical education students with visual impairments often miss out on incidental learning through visual observation (Haegele et al., 2014). This Delphi study brings to light the expert panel's concern for a lack of incidental learning. More specifically, the expert panel finds it is inappropriate to have students with visual impairments compare their abilities with their peers' when answering questions related to competence satisfaction on the BPNPE. Rather, they advise the need for competence can be met through the student's individual perception of the level of difficulty of tasks in physical education. The finalized competence items do not involve a comparison component but still ask students about

**Table 2**
*Results of Feedback from Round 2 Additional Questions*

| Student group | $M_{\text{appropriateness agreement}}$ | % of panel rating 4/5 | Meets consensus? |
|---|---|---|---|
| Elementary school | 3.57 | 50 | No |
| Middle school | 4.43 | 93 | Yes |
| High school | 4.36 | 79 | Yes |
| With visual impairment | 4.50 | 86 | Yes |

their feelings in regard to being able to improve, perform well, and succeed in tasks in physical education class.

The expert panel agrees that the revised BPNPE is appropriate for use with students with visual impairments. In addition, many of the members of the expert panel emphasize that the scale may also be appropriate for use with all students whether they have a visual impairment or have fully functional vision. This concept directly relates to Universal Design for Learning in physical education, which is an approach to teaching and learning that allows all students to participate (Lieberman et al., 2020). When employing Universal Design for Learning, teachers present lesson materials such as tasks or assessments in various ways to allow all students to access the content and display what they know. The initial BPNPE measures the self-determination of students on the basis of their experiences in physical education (Vlachopoulos et al., 2011). On the basis of the ideals of Universal Design for Learning, there should be a version of the scale that measures the psychological needs satisfaction of students with unique learning needs that is comparable to the original instrument (Lieberman et al., 2020). Although the vetting of this instrument supports use with students with visual impairments, there is no reason why it cannot be used in the evaluation of the psychological needs satisfaction of all students in physical education.

Self-determination is critical to an individual's sense of well-being and is crucial to success in all areas of life (Cmar & Markoski, 2019; Ryan & Deci, 2000). Skills related to self-determination are essential for students with visual impairments as the Expanded Core

Curriculum shows (Sapp & Hatlen, 2010). Physical education is a setting in which students with visual impairments have the opportunity to learn lifelong skills in the area of self-determination in addition to physical literacy when their basic psychological needs are met (Haegele et al., 2014; Lieberman et al., 2021). When students experience psychological needs satisfaction in physical education, they are making strides toward maintaining a physically active life (Brian et al., 2019). To this point, research reveals that students with visual impairments have negative experiences in physical education, which often leads them to pursue a more sedentary lifestyle (Ball, Lieberman, Haibach-Beach, Perreault, & Tirone, 2021; Yessick & Haegele, 2019). Having an instrument that measures the degree of psychological needs satisfaction of students with visual impairments will aid in assessing how autonomous, competent, and related students feel in physical education and in improving existing curricula. The version of the BPNPE vetted for students with visual impairments can be used by physical educators and other vision professionals in mainstream schools and schools for the blind to measure psychological needs satisfaction of their students on the basis of their experiences in physical education. This will aid professionals in quantifying the psychological needs satisfaction of students and allow them to provide opportunities that encourage students to express autonomy, competence, and relatedness during class. If they do this, it is possible that all students will view physical education in a more positive light and gravitate toward a more physically active lifestyle.

## Strengths, Limitations, and Future Research

This Delphi study has a number of strengths. First, a strength is the expert panel. The panel comprises experts in the areas of physical education, adapted physical education, sports psychology, special education, and vision studies. Furthermore, the study considers the perspective of individuals with visual impairments as one of the expert panelists has a visual impairment. Next, another strength is the in-depth evaluation of the BPNPE items and the resulting three rounds of edits. The completion of three rounds in a Delphi study is sufficient for reaching consensus (Hsu & Sandford, 2007; Skulmoski et al., 2007). Last, the attrition rate for this study is 0% with all 15 experts who began the study completing all three phases. The literature

does not provide a specific guideline as far as the number of experts necessary for a Delphi study; however, research indicates that 10 to 15 experts is often recommended (Hsu & Sandford, 2007).

A limitation to this study is the establishment of only initial validity for the use of the BPNPE with students with visual impairments. Future research needs to investigate a more rigorous form of content validity, construct validity, the exploratory factor analysis, and confirmatory factor analysis for the version of the BPNPE developed as a result of this study for use with students with visual impairments.

## Conclusion

This Delphi study begins the vetting process of the BPNPE for use with students with visual impairments. The revised questionnaire is appropriate for assessment of the self-determination of secondary students with visual impairments in physical education. Often, students with visual impairments view physical education negatively and are bullied, isolated, and treated differently (Ball, Lieberman, Haibach-Beach, Perreault, & Tirone, 2021). This instrument can measure the degree of psychological needs satisfaction for students with visual impairments during physical education lessons. Providing students with opportunities to have their basic psychological needs met may allow them to feel differently and view physical education in a positive manner.

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# Appendix A

## The Basic Psychological Needs in Physical Education Scale (BPNPE)

In general, in Physical Education…

1. I feel that I improve even in tasks considered difficult by most of the children.
2. My relationships with my classmates are very friendly.
3. We do things that are of interest to me.
4. I feel I perform well even when the tasks are considered difficult by most of the children.
5. I feel I have a close bond with my classmates.
6. I feel that Physical Education is taught in the way I would like it to be taught.
7. I feel I do very well even in the tasks considered difficult by most of the children.
8. I feel a valued member of a group of close friends.
9. I feel lessons are taught in ways I completely agree with.
10. I am able to succeed even in the tasks considered difficult by most of the children.
11. I feel I belong to the group of my classmates.
12. I feel the activities we are doing have been chosen by me.

Competence Satisfaction = Items 1, 4, 7, and 10; Relatedness Satisfaction = Items 2, 5, 8, and 11; Autonomy Satisfaction = Items 3, 6, 9, and 12 (Sanchez et al., 2018, p. 342).

# Appendix B

## The Basic Psychological Needs in Physical Education Scale for Use With Students With Visual Impairments

When I participate in physical education, in general, I feel…

**Autonomy Items:**
1. I do activities that are of interest to me.
2. I have a say in how physical education is taught to me.
3. I choose to participate in all parts of the physical education lesson.
4. I am given options to choose from during physical education class.

**Competence Items:**
1. I am able to improve in skills in physical education class.
2. I can perform tasks well during physical education class.
3. I do difficult tasks very well in physical education class.
4. I am able to succeed in tasks in physical education class.

**Relatedness Items:**
1. Most of my classmates and I are friendly with one another during physical education.
2. I have a close connection with my classmates in physical education.
3. I am a valued member of my friend group in physical education class.
4. I belong in the group with my classmates in physical education.