Social cognitive predictors of competitive level among athletes with physical disabilities

Jessica N. Stapleton a, Marie-Josée Perrier b,*, Duncan S. Campbell c, Holly L. Tawse d, Kathleen A. Martin Ginis b

a Missouri Baptist University, St. Louis, MO, United States
b McMaster University, Hamilton, Ontario, Canada
c Canadian Wheelchair Sports Association, Vancouver, Canada
d British Columbia Wheelchair Sports Association, Vancouver, Canada

A R T I C L E   I N F O

Article history:
Received 29 October 2014
Received in revised form 15 June 2015
Accepted 16 June 2015
Available online 25 June 2015

Keywords:
Social support
Disability
Parasport
Social cognitive theory
Self-efficacy

A B S T R A C T

Objective: To test a model of Social Cognitive Theory variables for predicting participation in higher versus lower levels of parasport competition. Information on modifiable factors associated with parasport competition would help parasport coaches and organizations transition recreational and developmental-level athletes to more competitive streams of participation.

Design: Cross-sectional survey.

Method: Participants were 95 parasport athletes with physical disabilities that cause mobility impairment (74% male; mean age = 34.36 ± 12.41). Measures of Social Cognitive Theory constructs were assessed via online questionnaires. Path analysis was used to test the proposed model.

Results: The model explained 12% of the variance in level of sport participation. Peer support for sport was a significant predictor of self-regulatory efficacy (β = .22, p < .05) which, in turn, was positively related to outcome expectations (β = .43, p < .001), and self-regulation (β = .43, p < .001). Self-regulatory efficacy was the only significant predictor of level of sport participation (β = .26, p < .05). There were no significant indirect effects between social support and competitive status (p > .05).

Discussion: Social Cognitive Theory provides a reasonable basis for formulating a model of psychosocial factors related to parasport competitive status. Other relevant factors should be taken into consideration in subsequent studies. Parasport coaches and organizations may benefit from leveraging peer support to help bolster athletes’ self-regulatory efficacy to levels conducive to participation in higher competitive sport streams.

© 2015 Elsevier Ltd. All rights reserved.

The growth of the Paralympic movement has helped to foster an increase in sport participation among people with disabilities (Misener & Darcy, 2014). Indeed, the number of athletes competing at the Paralympics increased from 400 at the first games in 1960, to nearly 5000 across the 2012 and 2014 summer and winter games (www.paralympic.org). However, an ongoing challenge for disability sport coaches and organizations is to progress athletes from lower developmental and recreational levels to higher competitive and elite levels of participation (Higgs et al., 2012). The cultivation of elite parasport athletes is important not just for the sake of winning medals; elite athletes promote their sport, motivate others to participate, show how barriers can be overcome, and break down stereotypes about disability (Higgs et al., 2012; Kittson, Gainforth, Edwards, Bolkowy, & Latimer-Cheung, 2013).

Although several studies have been conducted to examine psychosocial factors that influence whether a person with a disability chooses to try a sport (Jaarsma, Dijkstra, Geertzen, Dekker, 2014; Wu & Williams, 2001), surprisingly little research has examined psychosocial factors that distinguish athletes competing at higher versus lower levels. Such knowledge would be valuable to disability sport organizations. Athletes who display characteristics associated with higher levels of competition could be targeted for development and transitioned to more competitive streams. In addition, interventions could be developed to cultivate the psychosocial resources (e.g., self-efficacy, social support) that athletes need to transition to higher levels of competition.

* Corresponding author. Ivor Wynne Centre, Room A205, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada L8S 4L8. Tel.: +1 905 525 9140x21375.
E-mail address: perrier@mcmaster.ca (M.-J. Perrier).
We are aware of only two published studies that have examined the psychosocial factors distinguishing parasport athletes competing at higher versus lower levels. In the first study by Tasiemski, Kennedy, Gardner, and Blaikley (2004), athletic identity was measured in a sample of 678 adults with spinal cord injury, of which 31% were athletes. Individuals who competed at the international level more strongly identified with the athlete role than those who competed at national or regional/local levels. There was no difference between individuals participating at national and regional/local levels. The second study involved nearly 200 wheelchair athletes and revealed that motivation and social support needs differed for those competing at high school versus collegiate levels (Swanson, Colwell, & Zhao, 2008). Specifically, high school athletes were more motivated by opportunities for escapism, self-improvement, and social interaction than collegiate athletes. There were also some differences across the competitive levels regarding the importance of social support, although analytical limitations (i.e., parametric tests were conducted on ranked scores) rendered the results difficult to interpret. These two studies provide some preliminary evidence of psychosocial differences between parasport athletes competing at different levels. However, the studies are limited by a lack of an organizing theoretical framework in which to understand and interpret the findings. For instance, it is not clear whether the reported differences in social support, motivation, and self-perceptions are equally or relatively important for predicting competitive level within a theory-based framework.

Researchers have long argued for the use of motivational theories to understand and increase sport and exercise participation among persons with disabilities (Crocker, 1993; Kosma, Cardinal, & Ritala, 2002). Yet despite this call to action, remarkably few studies of disability sport participation have employed a theory or model. In a review of studies that examined factors related to sports participation among people with disabilities, Jaarsma et al. (2014) noted that only 15 out of 52 reviewed studies employed a guiding theory or model. Among those 15 studies, Bandura’s (1986) Social Cognitive Theory (SCT) was the most utilized framework (e.g., Dlugonski, Wojcicki, McAuley, & Motl, 2011; Martin, 2006, 2008; Suh, Weikert, Dlugonski, Balantrapu, & Motl, 2011).

According to the tenets of SCT, self-efficacy (i.e., belief in one’s ability to produce a particular level of performance) has direct effects on behavior as well as indirect effects through its influence on outcome expectations (e.g., perceived instrumental and affective benefits of the behavior) and self-regulatory strategies such as the formulation of plans and intentions. Bandura (1997) has also proposed that within physical activity contexts, social support has indirect effects on behavior, through self-efficacy. Consistent with these tenets, in a study of parasport athletes that was partially grounded in SCT, athletes’ commitment to sport was positively correlated with measures of the athletes’ perceived physical abilities, perceived affective benefits of sport participation, and social support (Martin, 2006). Subsequent SCT-based research conducted by Martin (2008) revealed that different types of self-efficacy—including task, barrier, and self-regulatory—influence participation in wheelchair sport participants. These findings were supported by a recent study in which parasport participants scored higher on measures of task self-efficacy, scheduling self-efficacy, and barrier self-efficacy than non-participants (Perrier, Shirazipour, & Latimer-Cheung, 2015). Parasport participants also scored higher than non-participants on measures of outcome expectations and the use of self-regulatory strategies.

We are aware of only one published study that reported a test of a full model of SCT predictors of sport and other leisure time physical activity participation in adults with a physical disability. The model accounted for 39% of the variance in minutes per day of physical activity (Martin Ginis et al., 2011). Structural equation modeling revealed that social support was unrelated to self-efficacy. However, outcome expectations and self-regulatory efficacy had significant indirect effects on activity, which were mediated by the use of self-regulation strategies. Self-regulation was the only direct predictor of activity.

Taken together, the results of theory-based studies, coupled with preliminary evidence of differences in social support needs across parasport athletes competing at different levels (Swanson et al., 2008), support the viability of the SCT framework for studying and understanding parasport participation. However, to date, no published studies have applied SCT to explain differences in parasport athletes competing at different levels. Accordingly, the primary aim of the current study was to determine whether a model of SCT variables could explain higher (provincial/state, or national) versus lower (i.e., developmental/recreational, club) levels of sport participation among athletes with physical disabilities. Based on preliminary studies of psychosocial differences between parasport athletes competing at different levels (Swanson et al., 2008; Tasiemski et al., 2004), and theory-based studies of sport/leisure time physical activity participation in people with physical disabilities (Martin, 2006, 2008; Martin Ginis et al., 2011; Perrier et al., 2015), it was predicted that a model of SCT variables would explain significant variance in level of sport participation among parasport athletes.

Methods

Stakeholder involvement

Community stakeholders were engaged at all stages of the research process. Specifically, the research question was formulated in consultation with members of a national parasport organization (Canadian Wheelchair Sport Association). These individuals also assisted with the operationalization of the SCT constructs to ensure they were meaningful within the context of parasport participation. The stakeholders also provided assistance with participant recruitment and the interpretation of results.

Participants

Participants were 95 male and female athletes with physical disabilities that result in mobility impairment (mean age ± SD = 34.36 ± 12.41; Table 1). Recruitment strategies included posting advertisements on social media, contacting participants from our prior studies, and advertising through North American parasport programs as well as organizations that support people with disabilities. Study inclusion criteria were: (a) at least 15 years of age, (b) have a physical disability that causes mobility impairment, and (c) participating in parasport in the United States or Canada. Exclusion criteria were: (a) cognitive impairment, (b) unable to understand or read English, and (c) sensory impairment. Athletes with sensory impairments were excluded because of differences in sport skills and barriers to participation for wheelchair athletes versus athletes with sensory impairments, which would thus require different questionnaire assessments of task and self-regulatory efficacy.

Measures

Demographic information

Participants reported their age, sex, primary mode of mobility, ethnicity, highest level of education, type of physical disability, and
individuals participating at higher competitive levels would report significantly more min/week of LTPA than those participating at lower levels.

### Level of sport participation

Participants were asked to indicate their current level of sport participation: developmental/recreational, club, provincial/state, or national (note that national team athletes play at the international level). These categories of participation were identified by experts from a national parasport organization as the four primary levels of parasport participation in North America.

### Task self-efficacy

Task self-efficacy was measured by assessing participants’ confidence to perform sport specific tasks (e.g., balance and control to pick up a loose ball, function to control a stick/racket). This 6-item measure was adapted from a previous task self-efficacy measure used among parasport athletes (Perrier et al., 2012). Items were rated on a 10-point scale (1 = Not at all confident, 10 = Completely confident). Participants could rate items as “not applicable” given that specific tasks vary between sports and not all athletes would have experience with all tasks. Therefore, the scale was scored by calculating an average score across the items to which a participant responded. For example, if a participant responded to five out of six items, an average score was calculated for those five items. This measure demonstrated acceptable internal consistency ($\alpha = .89$).

### Self-regulatory efficacy

Three aspects of self-regulatory efficacy were assessed: goal-setting, scheduling, and barrier self-efficacy. Goal-setting efficacy was assessed by four items that measured participants’ confidence to set goals for increasing and maintaining sport participation, as well as confidence to develop plans for reaching goals and following through with goals. Scheduling efficacy was assessed by four items that measured participants’ confidence to fit sport into their weekly schedule one, two, three, and more than three times a week. Both goal-setting and scheduling efficacy items were rated on a 7-point scale (1 = Not at all confident, 7 = Completely confident). These items have previously been used among persons with physical disabilities (Latimer, Martin Ginis, & Arbour, 2006; Latimer-Cheung et al., 2013; Martin Ginis et al., 2011). Barrier self-efficacy was assessed by seven items regarding participants’ confidence to participate in sport amidst barriers (e.g., pain, stiffness, weather) rated on a 10-point scale (1 = Not at all confident, 10 = Completely confident). These items and scales have previously been used among parasport athletes (Perrier et al., 2012). All three self-regulatory efficacy scales were averaged to create an overall self-regulatory efficacy construct score. Although it might be argued that the scales should be treated as separate constructs in the model, our objective was to test the role of the self-regulatory efficacy construct in general, rather than the role of specific aspects of self-regulatory efficacy. The use of an aggregate self-regulatory efficacy score is consistent with the operationalization of the self-regulatory efficacy construct in other studies that have tested motivational theories for predicting LTPA (Martin Ginis et al., 2011; Perrier et al., 2012). Internal consistency of the aggregated items was acceptable ($\alpha = .88$).

### Outcome expectations

Instrumental and affective outcome expectancies were assessed (Perrier et al., 2012). The stem for each question was, “Participating in sport will…” Instrumental outcome expectations (i.e., beliefs about the utility of performing a behavior) were measured by seven items. An example item was: “…increase my fitness”. Affective
outcome expectations (i.e., beliefs about the emotional outcomes associated with a behavior), were measured by 4 items. An example item was: “... be fun”. Instrumental and affective outcome expectations were rated on a 7-point scale (1 = Not at all, 7 = Definitely). Instrumental and affective expectancies were averaged to create the outcome expectations construct. Internal consistency was acceptable (α = .87).

Self-regulation

Intentions and planning were measured as two aspects of self-regulation (cf. Martin Ginis et al., 2011). Intention was measured using one item about intentions to engage in sport over the next two weeks. Four planning items included questions about having specific plans for sport and specific location, type, and frequency for participation. All self-regulation items were rated on a 7-point scale (1 = Strongly disagree, 7 = Strongly agree). Intentions and planning items were combined to create a mean score for the self-regulation construct. Internal consistency was acceptable (α = .89).

Social support

Social support was operationalized as the perceived extent to which peers provide support for sport participation. Peers can be defined as individuals who possess either similar “experiential knowledge of a specific behavior or stressor ...” or “similar characteristics of the target population” (Dennis, 2003, p. 329). We focused on peer support given research indicating that peers provide instrumental and validation support for physical activity (Williams, Smith, & Papathomas, 2014), are the primary source of support for introducing parasport athletes to their current sport (Wu & Williams, 2001), and are the most important source of social support for initiation and maintenance of participation (Williams & Kolinka, 1998).

Peer support for sport was assessed using a modified version of the Social Support and Exercise Survey (Sallis, Grossman, Pinski, Patterson, & Nader, 1987). This survey has separate 13-item subscales that measure perceived support for exercise from (a) friends and (b) family. For the purpose of the present study, items were rewritten to replace “exercise” with “sport.” Items about “friends” were also re-written to ask about “peers” which were defined to study participants as “friends, acquaintances, or coworkers with a disability.” For the present analysis, only the “peers” subscale was used. Participants rated how often peers provided social support using a 5-point scale (1 = None, 5 = Very often). The scale was scored by averaging across the 13 items such that higher scores indicated greater levels of social support from peers. The original measure has been used among clinical populations (Nguyen, Gill, Wolpin, Steele, & Benditt, 2009) and the modified version used in this study demonstrated acceptable internal consistency (α = .91).

Data collection

The study protocol was approved by the McMaster University Research Ethics Board. Study measures were posted online via Fluid Surveys. Potential participants accessed the online survey using hyperlinks sent through email and social media. The first page of the survey presented the study information letter; participants provided informed consent before they proceeded to the survey. Upon completion, participants were sent a $10 gift card.

Data analysis

Preliminary analyses

If fewer than 10% of subscale items were missing, missing data were treated with mean scale score replacement; only 4% of our data were missing (Tabachnick & Fidell, 2007). Next, correlation matrices were created to identify any scale scores that did not significantly correlate with other scale scores for a particular social cognitive construct. Lastly, level of sport participation was classified as lower (developmental and club) and higher (provincial/state and national) levels of participation. Stratifying the groups into two levels of sport participation created equal-sized sample comparison groups and maximized statistical power for path analyses. The community stakeholders confirmed that this dichotomy was appropriate and meaningful.

Path analysis was conducted using Mplus statistical software (Muthén & Muthén, 2011). Given that level of sport participation was a categorical outcome, the assumption of multivariate normality required for maximum likelihood estimation was violated. As such, weighted least squares estimation was used, which is appropriate for categorical outcomes (Kline, 2005). Chi-square values cannot be used as goodness-of-fit indices with weighted least squares estimation; therefore, the Comparative Fit Index (CFI), Tucker–Louis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Weighted Root Mean Square Residual (WRMR) were used to evaluate the models. CFI and TLI values greater than .95, RMSEA values less than .06, and WRMR values less than .90 indicate a good fitting model (Hu & Bentler, 1999).

Results

Demographics

Demographic characteristics were compared between parasport athletes who participated in lower and higher levels of sport participation (Table 1). Chi-square analyses revealed no significant differences between the number of men and women competing at each level, primary mode of mobility, level of education, or marital status. t-Tests indicated no significant differences for age (p = .41). However, as would be expected, athletes competing at higher levels reported more min/week of moderate intensity (p = .01), heavy intensity (p < .01), and total LTPA (p < .01) than athletes competing at lower levels.

Preliminary path analyses were conducted using all measured social cognitive variables (see Table 2 for included variables). The initial model included task self-efficacy; however, model fit was not acceptable (CFI = .86; TLI = .49; RMSEA = .18; WRMR = .75).

Table 2: Scale scores and correlation matrix (n = 95).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>TSE</th>
<th>OE</th>
<th>SRIP</th>
<th>SREG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task self-efficacy (TSE) total</td>
<td>7.90 (1.98)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher level TSE</td>
<td>8.40 (1.45)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower level TSE</td>
<td>7.33 (2.33)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome expectations (OE) total</td>
<td>12.54 (1.53)</td>
<td>.39**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher level OE</td>
<td>12.60 (1.39)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower level OE</td>
<td>12.47 (1.68)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self regulation (SRIP) total</td>
<td>6.34 (1.01)</td>
<td>.36**</td>
<td>.47**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher level SRIP</td>
<td>6.52 (0.67)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower level SRIP</td>
<td>6.15 (1.26)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-regulatory efficacy (SREG) total</td>
<td>18.14 (3.71)</td>
<td>.41**</td>
<td>.40**</td>
<td>.37**</td>
<td></td>
</tr>
<tr>
<td>Higher level SREG</td>
<td>18.87 (3.71)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower level SREG</td>
<td>17.34 (3.59)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social support (peer) total</td>
<td>2.84 (0.93)</td>
<td>.24*</td>
<td>.26*</td>
<td>.14 .14</td>
<td></td>
</tr>
<tr>
<td>Higher level peer</td>
<td>2.93 (0.87)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower level peer</td>
<td>2.73 (1.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05, **p < .01.
Discussion

The purpose of this study was to determine whether a model of Social Cognitive Theory (SCT; Bandura, 1986) variables could explain higher (i.e., provincial/state, national) versus lower (i.e., developmental/recreational, club) levels of sport participation among athletes with physical disabilities. The results support the SCT as a model with acceptable fit to the data and explained 12% of the variance in competitive levels. These results provide insight on the utility of SCT for explaining differences in competition participation among parasport athletes and provide some practical direction for assisting coaches and organizations in progressing athletes from lower to higher levels of competition.

In general, our results are consistent with other studies showing models that incorporate SCT variables have reasonable utility for predicting LTPA among persons with a physical disability (Martin Ginis et al., 2011; Perrier et al., 2012). Yet, interestingly, whereas previous modeling found no association between social support for LTPA and self-regulatory efficacy (Martin Ginis et al., 2011), we found a significant positive relationship between these constructs. This discrepancy likely reflects differences in how social support was operationalized. Martin Ginis et al. (2011) operationalized social support as overall support for LTPA from important others. In the present study, we utilized “peer support” as the operationalization, drawing on extensive research documenting the importance of peer support for parasport initiation and maintenance (Williams & Kolka, 1998; Williams et al., 2014; Wu & Williams, 2001), as well as the opinions of our community stakeholders. The significant association between peer support and self-regulatory efficacy suggests that peers may effectively bolster athletes’ confidence to set goals and to overcome scheduling and other barriers to participation. Peers may exert their influence on other athletes’ self-efficacy by providing modeling, vicarious experiences, feedback, and reinforcement (cf., Bandura, 1997; Martin Ginis, Nigg, & Smith, 2013). This interpretation is consistent with qualitative studies of people with physical disabilities who have described the powerful impact of peers for modeling LTPA (Letts et al., 2011), demonstrating how to play the sport, but also providing these individuals with a sense of what can be accomplished with practice (Perrier, Smith, & Latimer-Cheung, 2013; Perrier, Smith, Strachan, & Latimer-Cheung, 2014), as well as the value of learning from other athletes with disabilities, how to cope with and overcome barriers (Machida, Irwin, & Feltz, 2013).

Also consistent with SCT, self-regulatory efficacy significantly predicted outcome expectations and self-regulation. Thus, athletes with greater confidence to set goals, overcome barriers, and schedule sport participation, expected more positive outcomes from participating in sport and had stronger intentions and plans to participate. Outcome expectations and self-regulation were positively associated with SCT as a model with acceptable fit to the data and explained 12% of the variance in competitive levels. These results provide insight on the utility of SCT for explaining differences in competition participation among parasport athletes and provide some practical direction for assisting coaches and organizations in progressing athletes from lower to higher levels of competition.

However, contrary to previous findings (Martin Ginis et al., 2011) and the tenets of SCT, self-regulatory efficacy was the only significant predictor of sport participation. Interestingly, this finding is consistent with previous research that has shown barrier and scheduling self-efficacy to be the only significant predictor of sport participation (Perrier et al., 2012). For example, research by Perrier et al. (2012) found no direct association between planning and sport participation; rather there was an indirect effect of planning on sport participation through self-regulatory efficacy. Given that sport practices and competitions are often planned by someone other than the athlete — such as a coach — it may not be the act of planning that is important, but rather the confidence people have in their ability to adhere to those plans, even in the face of barriers and scheduling challenges. Similarly while outcome expectations may be important for motivation to participate in sport, such that people with disabilities who do not wish to

**Fig. 1.** Standardized path coefficients for the model of Social Cognitive Theory predictors of level of sport participation with social support operationalized as peer support for sport. Note, “p < .05, **p < .001.”

Martin Ginis et al.’s (2011) test of SCT in a sample of people with spinal cord injury showed that task self-efficacy was neither directly, nor indirectly related to LTPA, suggesting it may not be an important predictor among persons with physical disability. It has also been proposed that task self-efficacy is important for sport initiation but may not be as relevant for ongoing sport participation among experienced parasport athletes (Perrier et al., 2012), such as those included in our sample. Given these statistical and conceptual considerations, task self-efficacy was removed from the model.

Once task self-efficacy was removed, the goodness-of-fit indices suggested acceptable fit: CFI = .98, TLI = .94, RMSEA = .06, and WRMR = .45 (Fig. 1). Overall, this model accounted for 12% of the variance in level of sport participation. Peer support for sport was positively, significantly associated with self-regulatory efficacy ($\beta = .22, p = .04$). Self-regulatory efficacy was positively, significantly associated with outcome expectations ($\beta = .43, p < .001$). Self-regulatory efficacy ($\beta = .23, p < .001$) and outcome expectations ($\beta = .36, p < .001$) were both positively, significantly associated with self-regulation. Neither outcome expectations ($\beta = -.20, p = .16$) nor self-regulation ($\beta = .23, p = .19$) were significantly associated with level of sport participation. Self-regulatory efficacy was positively, significantly associated with level of sport participation ($\beta = .26, p = .048$). Given the small sample size relative to the sample required for path analysis (Kline, 2005), we would likely not have the power necessary to detect indirect effects. However, to be faithful to the SCT, we did run a model with indirect effects. The total indirect effect of social support on competitive status was not significant ($\beta = .059, p = .11$), nor was the indirect effect of social support through self-regulatory efficacy significant ($\beta = .058, p = .15$).
participate in sport have lower outcome expectations than those who currently participate (Perrier et al., 2015), outcome expectations as tested may not be enough to differentiate among athletes who already are convinced of the beneficial outcomes of sport participation. Rather, research that explores the perceived positive and negative outcomes of participating in higher levels of competitive sport may be necessary. Given that both lower and higher levels of competitive sport are pre-organized and planned, confidence to adhere to a more intensive training plan may be the important factor to target when encouraging athletes to try participating in sport at a higher competitive level.

Although the model of SCT variables produced a good fit to the data, we acknowledge that the amount of variance explained — 12% — indicates that other, unmeasured factors are linked with competitive levels of parasport participation. Indeed, one limitation of this study is that we did not measure perceived support from other sources that might be particularly relevant to athletes such as coaches, trainers, and therapists. In addition, our study measured goal-setting self-efficacy, but not self-efficacy for other types of psychological skills (e.g., resiliency, managing arousal; Martin, 2008) that may be important predictors of the transition from lower to higher levels of competition. Broadening the operationalization of the SCT variables to include other types of support and self-efficacy might explain additional variance. In addition, inclusion of variables from outside SCT, such as objective measures of sport skill, athlete funding status, and athletic identity (Perrier et al., 2012; Tasiemski & Brewer, 2011), could make important contributions. Another study limitation is the cross-sectional design, which precludes any assumptions regarding directionality or causality of the observed relationships. Prospective observational studies are not necessarily a feasible design for testing predictors of transitions in competitive status in parasport, but experimental methods could be used to examine whether interventions that target SCT constructs prompt athletes participating at recreational and club levels, to try out for regional or national teams.

Despite some limitations, our study has several noteworthy strengths. It is the first to use theory to predict level of sport participation among parasport athletes; the results suggest SCT provides a reasonable basis for continued study of factors that can be targeted to promote transition to higher levels of competition. Second, we recruited parasport athletes with a variety of physical disabilities that cause mobility impairment and athletes participating in a variety of parasports. Thus, our results can be generalized to a broader community of parasport athletes with mobility impairments. Third, because community stakeholders were engaged throughout the research process, our findings have yielded important implications for coaches and organizations with a vested interest in increasing the numbers of athletes competing at the highest levels.

In particular, our results emphasize the important role of peer support for bolstering the self-efficacy beliefs linked with higher levels of competitive participation. Some parasport organizations are already leveraging peer support through existing programs (e.g., the Canadian Paralympic Committee’s “Changing Minds, Changing Lives” and the Canadian Wheelchair Sport Association’s “Bridging the Gap” programs) by engaging peer athletes to promote and teach parasport. Given that this approach is effective for enhancing self-efficacy (Foulon, Martin Ginis, Benedict, Latimer, & Sinden, 2013; Tomasone, Martin Ginis, Estabrooks, & Domeniciucci, 2014), other organizations are encouraged to follow suit. Parasport coaches and organizations might also consider training their veteran athletes on techniques that will bolster the self-regulatory efficacy of next generation athletes. Indeed, qualitative research attests to the important role that veteran athletes can play in sharing sport knowledge with developing athletes (Tawse, Bloom, Sabiston, & Reid, 2012). Experimental investigations have demonstrated that peers can indeed be trained to deliver efficacy-enhancing physical activity interventions (Latimer-Cheung et al., 2013; Martin Ginis et al., 2013). In addition, our finding that higher self-regulatory efficacy is linked to higher levels of competition may help coaches and sport organizations target athletes for transition to more competitive streams. For instance, when a recreational athlete begins to express confidence in his or her ability to schedule time for sport, overcome participation barriers, and set realistic goals, this could be an indication that the athlete is ready for invitations to tryouts and training camps for more highly competitive teams.

In summary, the results of this study suggest that Social Cognitive Theory is a reasonable framework for predicting level of sport participation among parasport athletes; however, researchers should consider incorporating additional constructs in tests of explanatory models. Our results also provide guidance for selecting variables to study in future longitudinal investigations of parasport athletes’ progression. Such investigations could ultimately lead to the development of interventions to promote participation in higher competitive levels of parasport.

Acknowledgments

The authors extend their appreciation to the Canadian Wheelchair Sports Association (CWSA) for assistance with participant recruitment. The project was supported by an Ontario Neurotrauma Foundation and Rick Hansen Institute Mentor-Trainee award (Award number: 2013-KM-ONF-MT-975) (KMG and JS). MJF was supported by a SSHRC Postdoctoral Fellowship (756-2013-0531).

References


