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Multidimensional Self-Efficacy and Affect in Wheelchair Basketball Players

Jeffrey J. Martin
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In the current study, variables grounded in social cognitive theory with athletes with disabilities were examined. Performance, training, resiliency, and thought control self-efficacy, and positive (PA) and negative (NA) affect were examined with wheelchair basketball athletes (N = 79). Consistent with social cognitive theory, weak to strong significant relationships among the four types of self-efficacy (rs = .22–.78) and among self-efficacy and affect (rs = -.40–.29) were found. Basketball players who were efficacious in their ability to overcome training barriers were also confident in their basketball skills and efficacious in their ability to overcome ruminating distressing thoughts while simultaneously cultivating positive thoughts. Athletes with strong resiliency and thought control efficacy also reported more PA and less NA. Multiple regression analyses indicated that the four efficacies predicted 10 and 22% of the variance in PA and NA, respectively.

Sport psychology researchers and practitioners have learned much about the psychological aspects of sport (e.g., Williams, 2001). In comparison, relatively few researchers have examined the psychological dynamics of disability sport (e.g., Campbell & Jones, 1994; Martin, 2006; Martin & Smith, 2002); however, we are beginning to understand some of the psychological aspects of wheelchair athletics.

For instance, Wheeler and colleagues' series of studies and others has illuminated the challenges wheelchair athletes face when leaving sport (Wheeler, Steadward, Legg, Hutzler, Campbell, & Johnson, 1999; Wheeler, Hutzler, Campbell, Malone, Legg, & Steadward, 1996a; Wheeler, Malone, VanVlack, Nelson, & Steadward, 1996b; Martin 1996, 1999, 2000). Campbell has reported on stress and coping in wheelchair basketball players (Campbell, 2002a, 2002b). Finally, much has been discovered about wheelchair athletes' mood states (Campbell, 1995; Campbell & Jones, 1994; Henschen, Horvat, & French, 1984; Horvat, Roswal, Jacobs, & Gaunt, 1989; Henschen, Horvat, & Roswal, 1992; Jacobs, Roswal, Horvat, & Gorman, 1990).

Despite the importance of self-efficacy in sport (Feltz, Short, & Sullivan, 2008), very few researchers have examined self-efficacy with wheelchair athletes (Martin, 2002). Martin examined training and performance self-efficacy, affect,

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and performance in wheelchair road racers. One way that Martin's (2002) research effort expanded the knowledge base on self-efficacy in sport was by examining training self-efficacy or athlete's confidence to overcome common training barriers. Most sport psychology researchers have typically focused on performance self-efficacy.

Furthermore, similar to criticism that researchers in general psychology have historically focused on negative mood states and dysfunction rather than the positive attributes (e.g., optimism) of people leading to superior psychological functioning, many sport psychology researchers have also ignored the value of positive affective states (Hanin, 2000). Thus, Martin's (2002) revelation that efficacy was positively related to positive affect (PA) highlighted the role of positive emotion and efficacy in performance. The major purpose of the current study was to further extend our understanding of self-efficacy by examining resiliency and thought control efficacy in addition to training and performance self-efficacy and affect.

Social cognitive theory was used to design the current study. According to Bandura (1997) and the tenants of social cognitive theory, individuals' self-efficacy judgments dictate how hard athletes train and the persistence they exhibit. Sport psychology researchers have affirmed the importance of self-efficacy in numerous investigations (Feltz et al., 2008). For instance, self-efficacy is predictive of wheelchair and distance race performances (Martin, 2002, 2003; Martin & Gill, 1991, 1995a, 1995b). Runners and wheelers with strong self-efficacy perform faster and place higher compared with wheelers and runners with weaker self-efficacy (Martin, 2002; Martin & Gill, 1991, 1995a, 1995b). In addition, efficacious wheelers have more PA compared with less efficacious wheelers (Martin, 2002).

Most sport self-efficacy researchers have used a microanalytic measurement approach (Bandura, 1997), especially when few distinct subskills in a sport are needed and the sport involves a repetitive motor skill (e.g., wheeling). Martin (2002), for example, assessed wheelers' performance efficacy for increasingly faster race times, often called hierarchical self-efficacy because the strength of the tasks get increasingly difficult for each level. In contrast, when distinct subskills are required for successful sport performance, researchers have assessed athletes' perceptions of their efficacy to execute wrestling maneuvers (e.g., pins), hockey skills (e.g., shooting), and gymnastics movements (e.g., tumbling; McAuley & Gill, 1983; Treasure, Monson, & Lox, 1996). In the current study, the various critical subskills (e.g., shooting, wheeling, passing, etc.) necessary for wheelchair basketball success were assessed.

Most athletes realize how vital it is to train consistently to reach their potential. For many athletes, competition represents just a minor temporal aspect of their sport engagement. Athletes with disabilities often have few competitive opportunities; therefore, training may represent an even greater percentage of their sport involvement (Martin, 1999). Past success in training and competition are important antecedents of self-efficacy (Bandura, 1997). Training quality and prior success are particularly critical to endurance performance (Martin, 2003) and are important antecedents of confidence. Thus, similar to Martin (2002) in his research on wheelchair road racers both performance and training self-efficacy were examined in the current study.

Despite the value of the above two types of sport-efficacy, it is unknown how two other important types of self-efficacy might also be related to sport self-efficacy and affect. In discussing the value of thought control self-efficacy, Bandura (1997, p. 145) noted, "The self-regulation of thought processes, therefore, plays a significant role in the maintenance of emotional well being." In a review of research on self-efficacy, Benight and Bandura (2004) noted that one of the four major mechanisms by which self-efficacy promotes socioemotional well-being is thought control efficacy. Finally, Bandura notes that thought control self-efficacy is a "crucial determinant of athletic performance" (1997, p. 391). Empirical research has also found that individuals perceived efficacy to control negative thoughts is related to anxiety arousal (Ozer & Bandura, 1990). Women reporting strong efficacy for controlling negative thoughts about sexual assault experienced less anxiety compared with women reporting weaker efficacy. In brief, individuals who can overcome distressing thoughts and not ruminate on upsetting cognitions are able to regulate their affective states.

In addition to the importance of managing cognitions by reducing distressful ruminations, it is also of value to maintain positive, optimistic, and hopeful thoughts, especially during difficult times. In other words, maintaining a positive outlook even when training, for instance, is going poorly is important. Thus, resiliency self-efficacy is also of tremendous value as Bandura (1997) notes when discussing mental toughness (p. 383).

The limited and somewhat related research in disability sport on coping and mood suggests there is merit in an examination of thought control and resiliency efficacy. For instance, Crocker and colleagues' line of research found that individuals with disabilities approached challenging physical activities with active coping strategies and positive mood states (Bouffard & Crocker, 1992; Crocker, 1992; Crocker & Bouffard, 1990). Although references to "positive self-talk" and "mental toughness" abound in the sport psychology literature, no research examining resiliency and thought control in disability sport could be found. To address this shortcoming, both resiliency and thought control efficacy were measured in the current investigation.

Although having strong self-efficacy cognitions are important for sport performance and emotional well-being, athletes' feelings are also important. Unfortunately, positive affect (e.g., enthusiasm) outside of flow state research (e.g., Jackson, 2000) and negative affect beyond anxiety (e.g., Raglin & Hanin, 2000) have not been extensively researched in disability or able bodied sport. In a review of coping and emotion in disability sport, Martin and McCaughtry (2004) urged researchers to examine the role of positive emotion in disability sport.

Self-efficacy is also related to affect. Bandura (1997), for instance, has noted that self-efficacy beliefs play a strong role in the self-regulation of affective states. At the same time, efficacy beliefs may not always act in concert with affect. For instance, despite strong efficacy for performance, overtraining, or illness may promote negative affect (NA) states such as irritability, fatigue, or a lack of energy. In contrast, PA, combined with strong feelings of efficacy should aid performance (Martin, 2002). So, in addition to two forms of sport specific efficacy (i.e., training and performance efficacy) and two types of general self-efficacy (i.e., resiliency and thought control efficacy), both PA and NA states (Watson & Tellegen, 1985) were assessed.

In summary, social cognitive theory was used to understand the psychological aspects of wheelchair basketball. Four forms of self-efficacy, and PA and NA were assessed to determine their relationships to each other and thereby test postulates of social cognitive theory. The major purpose of the current study was to test the relationships among the above variables and predict PA and NA with efficacy. It was hypothesized that all four forms of self-efficacy and PA would be positively related to each other. In contrast, it was anticipated that all types of self-efficacy and PA would be inversely related to NA. Given that the four types of efficacy should be positively related to test the relative contribution that each type of efficacy might make toward predicting NA and PA, two multiple regression analyses were conducted. A secondary goal was to provide basic descriptive information on athletes' efficacy and affect and potential gender and team differences.

Method

Participants

Seventy-nine adult (M = 31.4 yrs; SD = 11.5 yrs) wheelchair basketball players participated in the current study with fewer females (n = 13) than males (n = 66). Most athletes were Caucasian (n = 53) followed by African American (n = 13), Hispanic (n = 5), Arab American (n = 4), Asian American (n = 3), and Italian American (n = 1). Disability designations reported by the athletes were spinal cord injury (n = 24), cerebral palsy (n = 19), amputee (n = 11), orthopedic (n = 10), spina bifida (n = 7), polio (n = 5), and les autres (n = 3, e.g., muscular dystrophy).

Procedures

First, approval from the University Internal Review Board to carry out the current study was obtained. Directors in charge of three adult wheelchair basketball tournaments held in the suburban areas surrounding a major Midwestern city then gave their approval for the study. Finally, to supplement the number of participants (N = 50) from these sites, permission was also garnered from all members of a major university's men's and women's wheelchair basketball teams (N = 29). At all times participants were treated in accordance with the APA ethical standards for research

Measures

Performance Self-Efficacy (PSE). Athletes answered 20 questions on a 10-point Likert unipolar scale to obtain strength of self-efficacy for each task. Each stem read, "How confident are you in your ability to . . ." and was completed by questions listing a number of wheelchair basketball skills. Questions were developed in consultation with two wheelchair basketball athletes and two basketball coaches. One coach had able bodied coaching experience and the other coach had

guided a team to a recent Paralympic Gold Medal in men's basketball. The 20 items were as follows: pass, shoot 3 point shots, 2 point shots, dribble, gain offensive rebounds, gain defensive rebounds, score off the dribble, shoot right handed layups, shoot left handed layups, shoot free throws, create turnovers, avoid turnovers, execute your team offense, guard your opponent, create assists, overall basketball fitness, block shots, avoid fouls, "transition" game ability, and "speed" and "conditioning." A mean score was obtained by summing strength scores for each task (i.e., question) and dividing by the number of tasks (i.e., number of questions).

Training Self-Efficacy (TSE). Athletes answered 20 questions on a 10-point Likert unipolar scale with a stem which read, "How confident are you that you can train well under the following conditions?" Twenty conditions were noted with the following key words: training alone, anxious, unmotivated, tired, not competing, personal crisis, bad weather, busy at work, training poorly, competing poorly, after a layoff, lacking fitness, missing important activities, lack of fun, lack of social support, hungry, maintaining a hectic schedule, failure to achieve goals, on vacation, and having difficulty with disability. A mean score was obtained by summing strength scores for each task (i.e., question) and dividing by number of tasks (i.e., number of questions). The TSE scale has demonstrated adequate reliability and convergent validity in prior research with athletes with disabilities (Martin, 2002).

Thought Control Self-Efficacy (TCSE). The TCSE is a 4-item scale that is part of a Parental Self-Efficacy Scale developed by Bandura and colleagues (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). An example question is, "How well can you stop yourself from worrying about things" on a ten-point Likert type unipolar scale with 1 anchored by *nothing* and 10 anchored by *a great deal*.

Resiliency Self-Efficacy (RSE). The RSE is a 7 item scale that is also part of the Parental Self-Efficacy Scale developed by Bandura et al. (2001). An example question is, "How well can you keep up your spirits when you suffer hardships?" on a 10-point Likert type unipolar scale with 1 anchored by *nothing* and 10 anchored by *a great deal*.

Positive and Negative Affect (PANA). Affect was assessed with the Positive and Negative Affective Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS allows researchers to assess both NA and PA with 10 items each. Items constituting the PA scale are "active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud and strong." Items for the NA scale include "afraid, ashamed, distressed, guilty, hostile, irritable, jittery, nervous, scared, and upset." Participants responded to the header, "Indicate the extent to which you have been feeling the following during the past few months" on a 5-point Likert type unipolar scale with 1 anchored by *not at all* and 5 anchored by *extremely*. When using longer time frames such as in the current instructions, PANAS scores "exhibit trait like stability" (Watson et al., 1988, p. 1069). Previous disability sport psychology research has demonstrated adequate internal consistency and convergent validity (Martin, 2002).

Results

Data Analysis

The psychometric properties of the measurement instruments were assessed by examining internal reliability (n = 79) and 2 week test-retest reliability (n = 7). Descriptive statistics, Analysis of Variance (ANOVA), correlations, and multiple regression analyses were then computed.

Reliability and Validity

Coefficient alpha (Cronbach, 1951) indicated that all scales shared a high level of interitem agreement. The alpha coefficients for all 6 of the scales were strong (i.e., r = .81–.95) and above the typical cutoff of .70 (Cronbach, 1951). Test-retest reliability was assessed for training self-efficacy, because it was not situation specific. Test-retest reliability was considered acceptable (r = .83, p < .05). Finally, the correlations among the efficacy measures, discussed later, also provide evidence of convergent validity.

Descriptive Statistics

Means, standard deviations, and range of scores for all psychological variables are presented in Table 1. An analysis of the four efficacy scores (i.e., 5.93, 6.57, 6.93, 7.14) indicated they were significantly different, $F(3, 76) = 15.24$, $p < .001$. Follow-up t tests (with a Bonferroni correction setting $p < .008$) indicated significant differences among four of the possible six pairs. Athletes were significantly lower in training self-efficacy (TSE) compared with the other three forms of efficacy.

Resiliency efficacy was significantly higher than thought control efficacy. Finally, there were no differences between performance self-efficacy and both thought control and resiliency self-efficacy. The effect sizes (Cohen's d) ranged from small (i.e., .23) for the difference between thought control and resiliency efficacy to large (i.e., .80) for the performance and training efficacy difference. The pattern of results indicates athletes were least efficacious about overcoming training barriers. It should also be noted that the mean scores were all above the

Table 1 Means, SD, Range, and Alphas for all Variables

Variable	Mean	SD	Range	Alpha
PSE	7.14	1.29	3.6–10.0	.92
TSE	5.93	1.71	1.9–10.0	.95
TCSE	6.57	1.73	2.0–10.0	.85
RSE	6.93	1.40	2.7–10.0	.93
PA	3.90	0.58	2.3–5.0	.81
NA	1.85	0.67	1.0–3.5	.86

Note. PSE = Performance self-efficacy, TSE = Training self-efficacy, TCSE = Thought control self-efficacy, RSE = Resiliency self-efficacy, PA = Positive affect, NA = Negative affect.

mid point on the scales, suggesting no deficits in efficacy. Training efficacy was slightly lower (M = 5.93) compared with wheelchair road racer's training (M = 6.23) efficacy (Martin, 2002). Last, athletes reported stronger positive affect (M = 3.9) than negative affect (M = 1.85) with a t test confirming this observation: t (1, 78) = 17.50, $p < .01$.

Gender and Team Differences

Because participants (n = 50) in the local tournaments were mostly recreational wheelchair athletes whereas the remaining athletes (n = 29) played on a university team, it seem prudent to test for differences among these two groups. A multiple analysis of variance (MANOVA) was significant, $F(6, 72) = 3.90$, $p < .002$, partial eta squared; $\eta = .243$, indicating posthoc analysis of variance (ANOVA) tests were warranted. Two significant results were found. The university team subsample reported greater, $F(1, 77) = 5.64$, $p < .02$, partial eta squared, $\eta = .07$; training efficacy (M = 5.90 vs. 5.10) and more, $F(1, 77) = 11.82$, $p < .001$, partial eta squared, $\eta = .13$; negative affect (M = 1.92 vs. 1.50) compared with the recreational athletes.

Given that females often have less experience in sport, gender differences favoring males are often reported for sport efficacy and related constructs such as perceived competence and perceptions of ability. Thus, although the sample size was quite unbalanced (Females: n = 13; Males: n = 66), the data were examined for gender differences among the 6 variables. There were no gender differences in efficacy or affect: F (6, 77) = .94, $p < .47$.

Correlations Among All Variables

Correlations among the psychological variables can be found in Table 2. Two significant patterns of correlations are evident. First, five of the six potential correlations among the four forms of self-efficacy were weakly to strongly positively related (i.e., r = .22–.78). Athletes confident in their ability to train and execute a variety of basketball skills also reported a strong sense of efficacy to overcome worrisome and negative thoughts and to remain efficacious about maintaining

Table 2 Correlations Among the Psychological Variables

	1	2	3	4	5
1. PSE					
2. TSE	.22*				
3. TCSE	.23*	.29**			
4. RSE	.20	.37**	.78**		
5. PA	.12	.05	.29**	.29*	
6. NA	-.20	.03	-.40**	-.37**	-.38**

Note. PSE = Performance self-efficacy, TSE = Training self-efficacy, TCSE = Thought control self-efficacy, RSE = Resiliency self-efficacy, PA = Positive affect, NA = Negative affect. *$p < .05$, **$p < .01$

upbeat and positive thoughts despite encountering problems and hardships. Second, both NA and PA were moderately (i.e., r = -.40–.29) related to thought control and resiliency efficacy but unrelated to training and performance efficacy. This last pattern of results indicates that athletes who can manage their thoughts to avoid ruminating and distressing thoughts and remain positive despite when things are going badly also exhibit positive affective states and less negative affect. In contrast, athletes lacking efficacy in their thought control abilities and who allow themselves to worry excessively report less PA and more NA.

Multiple Regression Results

All four efficacy variables were entered simultaneously as predictors in two different regression analyses. Results for PA and NA can be found in Tables 3 and 4 , respectively. In brief, 10% of the variance in PA was accounted for, $F(4,74) = 2.08$, $p < .09$, $R = .32$, $R^2 = .10$.[1] None of the individual standardized beta weights were significant. For NA, 22% of the variance in PA was predicted, $F(4,74) = 5.23$, $p < .001$, $R = .47$, $R^2 = .22$. Standardized beta weights for thought control self-efficacy and training self-efficacy were significant ($p < .10$).

Discussion

The major purpose of this investigation was to examine multidimensional efficacy and affective states in wheelchair basketball athletes. In particular, social cognitive theory provided a theoretical framework to generate hypotheses about self-efficacy and affect in a group of athletes with disabilities. Four sets of important findings from the current investigation warrant discussion.

First, based on the absolute mean values of the various constructs, athletes in the current study were efficacious about their sport and about managing their thoughts in times of difficulty. Their affective states were, in general, also positive in that they expressed more positive feelings compared with negative affect items. In respect to efficacy specifically, athletes reported moderate to strong efficacy cognitions. Players had the weakest efficacy in their ability to train well when faced with adversity (e.g., tired, lacking motivation, etc.), but their absolute values for training efficacy still suggested a moderate sense of efficacy. In comparison, they had stronger efficacy cognitions for performing 20 different basketball skills. As suggested by Martin (2002), the difference in training versus performance

Table 3 Multiple Regression Results Predicting PA

Variable	β	t	Sig.
PSE	.069	.598	.552
TSE	–.080	–.663	.509
TCSE	.161	.904	.369
RSE	.175	.965	.338

Note. PSE = Performance self-efficacy, TSE = Training self-efficacy, TCSE = Thought control self-efficacy, RSE = Resiliency self-efficacy, PA = Positive affect.

Table 4 Multiple Regression Results Predicting NA

Variable	β	T	Sig.
PSE	–.147	–1.37	.174
TSE	.217	1.95	.055*
TCSE	–.279	–1.69	.096*
RSE	–.196	–1.16	.249

Note. PSE = Performance self-efficacy, TSE = Training self-efficacy, TCSE = Thought control self-efficacy, RSE = Resiliency self-efficacy, NA = Negative affect. * Significant at $p < .10$.

efficacy may reflect the difficulty in maintaining efficacy across time when mental and physical conditions, competition, and other life commitments (e.g., school, family) have to be managed to train well. In contrast, mastering a discrete set of basketball skills over time may present a more achievable challenge. Furthermore, the athletes in the current study were relatively skilled and experienced, making their moderately strong expressions of efficacy in their basketball skills unsurprising.

In addition to their positive set of efficacy beliefs, athletes reported a favorable affective profile. For instance, they were well ($M = 3.90$) above neutral (i.e., 2.5) for PA and below ($M = 1.85$) neutral (i.e., 2.5) for NA. Based on items constituting the PA scale, this group of athletes reported being alert, enthusiastic, and active. In contrast, based on the NA scale questions, they were not particularly ashamed, scared, or fatigued. Fredrickson's (2001) broaden and build theory clearly substantiates the importance of positive emotions.

The second set of findings deserving of commentary involves the university athletes and the recreational athletes. University athletes expressed greater training efficacy and greater NA compared with the recreational level athletes, although the effect sizes were small. It seems reasonable to assume that the university athletes' more strenuous training requirements contributed to the differences in both variables. For instance, they trained 3 hr a day, 5–6 days a week, lifted weights 3 days a week for 1.5 hr, and had video sessions once a week (personal communication with coach, Oct 14, 2007). In contrast, most of the recreational athletes did not belong to teams. As a result of their greater training requirements, it would seem reasonable that the university athletes had greater opportunities to develop training efficacy. Furthermore, it is likely that the social (e.g., team friendships), functional (e.g., team facility), and financial support (e.g., transportation) provided by a university team made it "easier" to overcome any training barriers. For instance, if an athlete was feeling tired and reluctant to go to practice, the knowledge that teammates are there to practice with should make it easier compared with attempting to overcome fatigue to train alone.

Furthermore, given the greater training load, it also seems reasonable that the university team members experienced greater negative affect. A few of the terms in the negative affect subscale of the PANAS (i.e., irritable and distressed) can be framed as indicative of physical tiredness and/or symptoms of hard training. To provide some perspective, however, it should be clear that the university team athletes only expressed more negative affect relative to the recreational athletes.

Their average levels of negative affect were still below the midpoint of the scale and not excessive in absolute terms.

The third set of important of findings concerns the patterns of correlations among the different types of efficacy and affect. Athletes who were efficacious about their training also tended to report strong performance efficacy. This finding supports similar research by Martin (2002) with wheelchair road racers and self-efficacy theory (Bandura, 1997) postulates in which efficacy cognitions are considered situation specific (e.g., training vs. performance) but can generalize within a domain (e.g., sport). Furthermore, the correlations among training efficacy and the other three types of efficacy also supports self-efficacy theory and demonstrates that individuals who have strong efficacy cognitions specific to sport also possess efficacy to manage their thoughts. Given that success in sport requires efficacy to perform and train and to maintain a positive outlook despite setbacks, it is not surprising that athletes who are efficacious in sport also feel competent in managing their thoughts.

Unlike Martin (2002) and Treasure et al.'s (1996) study, athletes who were high in training and performance efficacy did not report more positive affect compared with athletes who were less efficacious. This finding is contrary to Bandura's (1997) position that individuals who feel capable in their abilities are more likely to experience positive affect compared with people who doubt their capabilities.

PA and NA were related to thought control and resiliency efficacy scales, however. Although they did not examine self-efficacy, Hardy, Hall and Alexander (2001) found that positive self-talk was positively correlated with positive affect. Because one of the functions of positive self-talk is to "boost self-confidence," "cope in tough situations," and "mentally prepare yourself" (Hardy, Hall, & Hardy, 2005, p. 917), the current results would seem to complement the Hardy et al. (2001) findings.

It appears that efficacy cognitions directed specifically toward sport are not impacted or, conversely, do not directly impact athletes' emotional worlds. In contrast, confidence in their ability to manage distressing thoughts and have positive thoughts about overcoming hardships is more tightly linked to athletes' feelings. Based on social cognitive theory, it is most plausible that a bidirectional relationship exists. Athletes who feel "determined" and "inspired" are more likely to have the emotional and physical energy to maintain a positive set of thoughts and to resist ruminating about distressing cognitions. On the flip side, athletes who maintain optimistic and positive thoughts in the face of adverse situations may limit how upset or afraid they feel, generate feelings of enthusiasm and determination, and as a result experience reduced NA and increased PA. Finally, given the link between behavior, thought, and emotion, it is plausible that both positive affective states and efficacious cognitions drive adaptive behavior (e.g., seeking social support, exercising), which in turn facilitates or maintains positive affective states and efficacious thought patterns.

The last set of findings revolves around the regression results. First, although 10% of the variance in PA was accounted for by the four measures of efficacy, none of the four variables had a significant standardized beta weight. This suggests that the cumulative shared variance among the four predictors was sufficient

to predict 10% of the variance in PA, but no single variable uniquely accounted for variance.

In contrast to the above finding, the efficacy measures accounted for twice (i.e., 22%) as much variance in NA and both thought control efficacy and training efficacy had significant standardized beta weights; however, training efficacy loaded positively ($\beta = .22$, $p < .05$) and was substantially larger than the insignificant simple correlation ($r = .03$) between training self-efficacy and NA. It also added a significant amount of variance (i.e., 4%). According to Tabachnick and Fidell (2001, p. 149), this indicates that training self-efficacy acted as a suppressor variable. In the current analysis, because training self-efficacy was uncorrelated with NA, it is considered a "classic suppressor" and operates by cleaning out criterion (i.e., NA) irrelevant variance from the other predictors (Tzelgov & Henik, 1991). Given the direction of the significant standardized beta weight for thought control self-efficacy, athletes with greater thought control self-efficacy experienced less NA. Last, according to Cohen (1988) the variance accounted for in both analyses (i.e., 10 & 22%) is considered a large effect size.

Limitations

Some limitations of the current study warrant acknowledging. The sample was mostly male athletes but relatively heterogeneous in terms of disability type and ethnicity. Both factors limit how generalizable the present findings might be. In addition, the correlational nature of the study precludes establishing cause and effect relationships. Finally, Lazarus (2000) and Hanin (2000) are both skeptical that some of the PANAS items (e.g., tired) reflect emotion; however, they do not comment on the degree to which this criticism might be obviated by the PANAS directions that ask respondents to report on the items based on how they are "feeling."

Future Research

Future researchers could proceed in a myriad of directions. For instance, collecting behavioral data on overt self-talk during competition would provide converging evidence of athletes' thought control and resiliency self-talk. Similarly, efficacy assessments of various subskills (e.g., efficacy in free throws) could be compared with performance data (e.g., percent free throws) made to determine the relationship of efficacy judgments to "objective" measures of performance. Lastly, Fredrickson's (e.g., 2001) broaden-and-build theory of positive emotions provides a sound theoretical framework for investigating how positive emotions aid in coping and building resilience (Tugade & Fredrickson, 2007).

Conclusions

In conclusion, the current study appears to be the first research investigation examining multidimensional self-efficacy and affect in wheelchair basketball players. In particular, the significant relationships among thought control and resiliency self-efficacy and positive affect support emerging research on how indi-

viduals cultivate positive emotion (Fredrickson, 2001) which can contribute to developing resilience toward managing stress (Tugade & Fredrickson, 2007).

End Note

1. Because this study has a small sample size and is exploratory in nature, p was set at <.10. Given the dearth of research in this area, it was determined that making a Type II error would be more serious than making a Type I error (Franks & Huck, 1986). See Sutlive and Ulrich (1998) for a discussion of the value of selecting larger alpha levels in adapted physical activity research.

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