Int. J. Sport Psychol., 2022; 53: 36-50
doi: 10.7352/IJSP.2022.53.036

Sport engagement and life satisfaction in Czech parasport athletes

JEFFREY J. MARTIN[1], MARKÉTA JISKROVÁ[2], KLÁRA DAĎOVÁ[2], ERIN E. SNAPP[1]

[1] *Wayne State University Detroit, Michigan, USA*
[2] *Charles University, Prague, Czech Republic*

The purpose of the current study was to determine if grit, hardiness and resilience predicted life satisfaction and sport engagement in Parasport athletes. We sought to determine if we could replicate the results of Martin, Byrd, Watts, and Dent (2015) and Atkinson and Martin (2020). Participants were forty adults, mostly male (n = 38), Parasport ice-hockey (n = 22) or wheelchair rugby (n = 18) athletes from the Czech Republic. They ranged from 15 to 59 years (M = 32.0) old and reported acquired disabilities (n = 28) or congenital disabilities (n = 12). Descriptive results supported an affirmation model of disability as most athletes were engaged in their sport, reported a strong quality of life and had moderate to strong levels of grit, hardiness, and resilience. We accounted for 17% of the variance in sport engagement with resilience accounting for meaningful variance based on its significant beta weight. We also accounted for 52% of the variance in life satisfaction with hardiness accounting for meaningful variance based on its significant beta weight. The regression results indicate that athletes reporting the highest levels of resilience tended to also be the most engaged in their sport and athletes with high levels of hardiness reported the highest quality of life.

KEY WORDS: wheelchair sport, physical disability, sport psychology.

Attention to replicating research is increasing (Atkinson & Martin, 2019; Makel, Plucker, & Hegarty, 2012; Martin, Guerrero, & Beasely, 2019). However, replication research in disability sport is rare (Coles, Tiokhin, Scheel, Isager, & Lakens, 2018; Mulkay, & Gilbert, 1986). In the current study we sought to replicate the work of Atkinson and Martin (2019) and Martin, Byrd, Watts, and Dent (2015). Replicating research allows a discipline to confirm or dispute if prior research results are robust or unique to their sample (Earp & Trafimow, 2015). For instance, if an effect is "real" using the same procedures in a replication study, should result in an effect

Correspondence to: Jeffrey Martin, Division of Kinesiology, Sport Studies and Health, Division of KHS, FAB Building, WSU, Detroit MI, 48202 (e-mail: aa3975@wayne.edu)

(assuming appropriate statistical power; Simons, 2014). Replicating studies also promotes good scientific practice (Martin et al., 2019; Morin, 2016). Relative to other disciplines replication research in disability sport psychology may be particularly important because many studies are based on small samples.

Research findings based on small samples are not as likely to generalize compared to research findings based on large samples and underpowered studies produce unreliable findings (Button et al., 2013). Obtaining large samples for parasport research is challenging as many impairment conditions are rare, making athletes with those impairments scarce (Martin, 2017). Finally, the two prior studies by Martin and colleagues (2015; 2019) were based on mostly American athletes. The current study is based on Parasport athletes from the Czech Republic. If the current study replicates prior research with athletes from a different culture that would represent strong replication support and increase the generalizability of the findings.

We next discuss the original studies by Martin et al. (2015) and by Atkinson and Martin (2019). A major rationale for the current and the original studies was the lack of research on positive psychology constructs with Parasport athletes, preventing researchers from knowing if grit or resilience, for example, would predict sport engagement. A second rationale is grounded in the idea that Parasport athletes typically face far more challenges to training and competition (e.g., chronic pain, lack of teammates, inaccessible training facilities, discrimination) that might make such internal strengths, like hardiness, more valuable for Parasport athletes relative to able bodied athletes (Martin, 2017). Our two outcome variables are life satisfaction which is a global judgment of one's quality of life (Diener, Emmons, Larsen, & Griffin, 1985, p. 71) and sport engagement which reflects high levels of dedication, enthusiasm, vigor and efficacy (Lonsdale, Hodge, & Jackson, 2007). These two constructs were selected given their links to a host of other positive well-being states such as mental health and sport performance. Additionally, because individuals with disabilities participating in sport tend to report greater life satisfaction compared to non-sport participants we wanted to see if some variability in life satisfaction could be accounted for by our three positive psychology predictors (Yazicioglu, Yavuz, Goktepe, & Tan, 2012).

The three predictor variables of grit, resilience, and hardiness were examined for both theoretical and empirical reasons. First, all three can enhance life satisfaction and sport engagement. Second, although all three constructs are distinct, they share some similarities. For instance, all three are considered to be positive psychological strengths. However, grit is focused on persistent effort towards long term goals whereas hardiness is more gen-

eral given hardy athletes feel in control, find life has purpose, and view life difficulties as challenges. Finally, resilience reflects adaptive coping when stress is present. Given their distinctiveness and similarities, it would be of value to know if they all contribute, and how strongly, to predicting life satisfaction and sport engagement among Czech Parasport athletes.

Grit is defined as "perseverance and passion for long-term goals" (Duckworth, Peterson, Matthews & Kelly, 2007). Individuals high in grit work hard, despite setbacks and disappointment, and remain committed to their long-term goals (Duckworth et al., 2007). Despite the intuitive appeal that grit may hold for potential sport success it has rarely been studied in disability sport research. Duckworth et al. (2007) found that gritty children tended to study longer and harder and perform better than less gritty children in a spelling bee challenge. In another study Duckworth and colleagues reported that grittier students engaged in more deliberate practice and performed better than less grittier students (Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011).

In a study of West Point Cadets those higher in grit were more likely to complete a demanding summer program of training compared to students lower in grit (Duckworth & Quinn, 2009). It is plausible that athletes high in grit, are more likely to be satisfied with their lives as passion and perseverance for their goals gives purpose and direction to their lives and provides a foundation for enhanced life satisfaction. Two studies support such a supposition. Grit has been positively linked to well-being and meaning in life (Kleiman, Adams, Kashdan & Riskind, 2013) and negatively related to burnout in medical residents (Salles, Cohen, & Mueller, 2014). In brief, based on the above research, conceptual definitions and logic, we hypothesized that grit would positively predict life satisfaction and sport engagement.

Our second positive predictor of life quality was resilience which is defined as coping and effectively adapting to trauma, stress, and adversity. Various researchers in disability and able-bodied sport have documented the value of resiliency. For example, in research with adolescents with disabilities, resilience was positively related to quality of life (Alriksson-Schmidt, Wallander, & Biasini, 2006). Galli and Vealey (2008) have also supported the value of resiliency in sport and have suggested that sport researchers need to examine resilient outcomes. It is plausible that resilient athletes should be able to cope with challenges more effectively than less resilient athletes. For instance, resilient parasport athletes should be able to cope with various disability related challenges (e.g., staring by others), impairment effects (e.g., pressure sores), and other disability related challenges (e.g., underemployment) that should create a better quality of life compared to less

resilient athletes. Similarly, dealing with sport challenges such as being benched for poor play or having playing time cut should be handled effectively by resilient Parasport athletes resulting in higher levels of sport engagement. Given the above arguments we hypothesized that athletes reporting high levels of resilience would score higher on sport engagement and life quality compared to athletes with lower levels of resilience.

Our last predictor variable, hardiness, has a long history in psychology (Kobasa, 1979). Hardy individuals are committed to a purposeful life, have meaning in their lives, and feel in control. Hardy athletes also view change, adaptation, and difficulties as challenges versus problems. In one meta-analysis on hardiness and quality of life, Oliver (2009) reported a correlation of .46 between hardiness and subjective well-being (Oliver, 2009). In sport research, international level rugby players have scored higher on hardiness compared to division 1 players (Golby & Sheard, 2004). Finally, hardiness, after controlling for fitness and nutrition, has also predicted success by Norwegian Armed Forces Border Patrol soldiers in a long-distance ski march (Johnsen et al., 2013). The latter two studies are suggestive of a relationship between hardiness and sport success and by extension hardiness and sport engagement.

The current study is a replication of the Martin et al. (2015) research that reported that athletes high in grit and resilience were likely to be engaged (i.e., have passion) in their sports. In contrast, hardiness and resilience were the two significant predictors of quality of life (Martin et al., 2015). Atkinson and Martin (2019) found partial replication support for Martin et al. (2015) as they found that athletes high in resilience were likely to express a high quality of life. For sport engagement, hardiness, grit, and resilience were the three significant predictors of sport engagement. The common findings across both studies indicated that resilience was important for predicting life satisfaction and both grit and resilience were of value in predicting sport engagement.

There are various definitions of the meaning of replication and hence various ways to judge if a replication was successful (Killeen, 2007; Leek, Patil, & Peng, 2015, Schmidt, 2009). For example, both modest criteria (e.g., any significant effect regardless of the size) to more stringent criteria (e.g., a comparable effect size) have been proposed. Expecting the same exact results in replications is likely an unrealistic expectation given natural variation, and differences in the sample or method (Leek et al., 2015, Schmidt, 2009). In the current study we judge if our replication was successful based on obtaining significant effect sizes similar to Martin et al. (2015) and Atkinson and Martin (2019). Our rationale for this moderate approach is based on our small and ethnically different sample size which should operate against

obtaining identical results. In brief, the primary purpose of the current study was first to see if we could replicate the Martin et al (2015) and Atkinson and Martin (2019) studies to determine if grit, hardiness and resilience predicted sport engagement and life satisfaction.

We also had a secondary goal based on the mean scores for all five of our scales. If score means were relatively low it would confirm a tragedy model of disability where individuals with disabilities are assumed to have poor mental health and lack psychological strengths (Albrecht & Devlieger, 1999). High scores would support an affirmation model where people with disabilities are thought to possess personal strengths and have a good quality of life (Swain & French, 2000). Descriptive data, relative to scale ranges and descriptors, on all five self-perceptions were used to determine if athletes' self-views might refute a tragedy model of disability and an affirmative model of disability, or vice-versa.

To summarize, our major purpose was to test if grit, hardiness, and resilience predicted life satisfaction and sport engagement with a sample of parasport athletes from the Czech Republic where disability sport psychology research is in its infancy. A secondary purpose was to examine if mean levels of all constructs were indicative of an affirmation or tragedy model of disability.

Method

Participants and Setting

Forty Parasport athletes from the Czech Republic participated in the current study. Athletes played either para ice-hockey (55 %; n = 22) or wheelchair rugby (45 %; n = 18) and ranged in age from 15 to 59 years (M = 32.0; SD = 8.6). Participants reported acquired disabilities (70 %; n = 28) versus congenital disabilities (30 %; n = 12), and breakdown by gender was 95% male (n = 38) and 5% female (n = 2). Participants were considered to be recreational participants, from multiple teams, and had moderate experience (M = 7.4; SD = 5.1) in disability sport.

Measures

Demographic scale. Athletes provided informed consent, their name, age, gender, ethnicity, disability condition, years of parasport experience and team position.

Instruments. All instruments have been used in previous research and participants' scores produced acceptable alpha coefficients indicative of reliability and validity in past research (Duckworth & Quinn, 2009; Campbell-Sills & Stein, 2007; Hystad, Eid, Johnsen, Laberg, & Bartone, 2010; Diener, Emmons, Larsen, & Griffin, 1985; Lonsdale, Hodge, & Jackson, 2007). In the current study all scales were back and forward translated (Brislin, 1970; 1986) with a Czech Republic version administrated to all participants.

Grit. Participants completed the Short Grit Scale (Grit-S) (Duckworth et al., 2009) which was adapted from the original grit scale which consisted of 12 questions (Grit-O) (Duckworth

et al., 2007). Participants answered 8 questions on a 5-point Likert scale with 1 representing "not at all like me" and 5 representing "very much like me." Two subscales represent consistency of interests and perseverance of effort. Four items of the scale required reverse scoring. Only the total score was used in the current study. A sample item from the consistency of interests' subscale was "I often set a goal but later choose to pursue a different one." A sample item from the perseverance of effort subscale was "Setbacks don't discourage me." Duckworth et al. (2007) established adequate internal consistency for the subscales (α=.73-.83).

Resilience. Participants completed the 10-item Connor-Davidson Resilience Scale (10-item CD-RISC) (Campbell-Sills et al., 2007). The 10-item CD-RISC was adapted from the 25 item CD-RISC (Connor & Davidson, 2003). Participants answered 10 questions on a 5-point Likert scale with 0 representing "not at all true" and 4 representing true nearly all the time." A sample item was "Can achieve goals despite obstacles." Campbell-Sills et al. (2007) established good reliability (α=.85) and validity.

Hardiness. Participants completed the revised Norwegian hardiness scale (Dispositional Resilience Scale 15 (DSR-15)) (Hystad et al., 2010). Participants answered 15 questions on a 4-point Likert scale with 0 representing "not at all true" and 3 representing "completely true." Three subscales represent commitment, challenge, and control. Only the total scale score was used in the current study. A sample item from the commitment subscale was "Most of my life gets spent doing things that are meaningful." A sample item from the control subscale was "I don't think there's much I can do to influence my own future." A sample item from the challenge subscale was "I enjoy the challenge when I have to do more than one thing at a time." Six items of the scale required reverse scoring. Hystad et al. (2010) established adequate reliability for the subscales (α=.62-.79).

Life Satisfaction. Participants completed the Satisfaction with Life Scale (SWLS) (Diener et al., 1985) to assess global life satisfaction. Participants answered 5 questions on a 7-point scale with 1 representing "strongly disagree" and 7 representing "strongly agree." A sample item was "In most ways my life is close to ideal." All items were summed and divided to obtain a life satisfaction score. Diener et al. (1985) established good reliability (α=.87).

Sport Engagement. Participants completed the 16 item Athlete Engagement Questionnaire (AEQ) developed by Lonsdale, Hodge, and Jackson (2007). There are four subscales with 4 items each with sample items as follows: Vigor; "I feel really alive when I participate in sport." Dedication; I am determined to achieve my goals in sport." Confidence; I believe I am capable of accomplishing my goals in sport." Enthusiasm; I feel excited about sport." In the current study we only used the total score. Athletes responded to a 5-point Likert scale with 1 indicating "almost never" and 5 indicating "almost always." Lonsdale et al. (2007) have confirmed the factor structure through adequate fit indices with Confirmatory Factor Analysis and satisfactory reliability (α = .84-.89).

Procedures

We received permission from the University Internal Review Board and athletes, to conduct our study. Athletes completed scales individually at their practice facilities under the guidance of the first author.

Data Analysis

The Statistical Package for the Social Sciences 22.00 was used for all analyses. Data were initially screened for missing data, outliers, and normal distribution characteristics. Descrip-

tive statistics, internal consistency estimates, and simple correlations for all variables were then calculated. Prior to running regression models, levels of tolerance and multicollinearity were examined. We used the total sample in two hierarchical multiple linear regression analyses to investigate the predictive ability of grit, hardiness and resilience to predict life quality and sport engagement. In both equations grit, hardiness, and resilience were entered simultaneously as a block. A power analyses with power set a .80, an effect size of .30, p <.05, with 3 predictors indicated a sample size of 41.

Results

Reliability, Validity, and Descriptive Statistics

For internal reliability, Cronbach alphas were calculated for all 5 scales and were all acceptable (α = .78 to .91) as seen in Table 1 (Cronbach, 1951). To provide evidence of convergent validity we examined the correlations between variables that should be conceptually related (Campbell & Fiske, 1959). For instance, 2 of the 3 correlations among grit, hardiness and resilience were significantly and positively correlated (*r's* = .48, .45, & .29) providing moderate convergent validity support. Means, standard deviations, skewness and kurtosis are also presented in Table 1.

Correlation and Regression Analyses

Initial screening suggested that, in general, variables were normally distributed. For example, skew and kurtosis ranged from – 1.79 to + 2.94

Table I
Means, Standard Deviations, Ranges, Skewness, Kurtosis, Alpha's and Pearson Product-moment Correlations for all Variables

Variable	1	2	3	4	5
1. Grit	-				
2. Resilience	.45**	-			
3. Hardiness	.29	.48**	-		
4. Life Satisfaction	.34*	.50**	.69**	-	
5. Sport Engagement	.21	.38*	.05	.15	-
Mean	3.64	2.70	2.01	4.85	4.31
SD	0.71	0.54	0.39	1.09	0.51
Skewness	-.81	-.97	-.14	-.75	-1.79
Kurtosis	1.13	2.94	.75	1.03	4.23
Alpha's	.82	.78	.85	.84	.91

Note. *** $p < .01$, ** $p < .05$, *$p < .10$

(Cramer, 1998) for all variables except for sport engagement. Correlations can be found in Table 1 and with a few exceptions all correlations were significant and in the expected positive directions[1]. The small to moderate correlations among grit, hardiness and resilience suggest that while they share some variance (8 to 23%) they appear to be measuring unique constructs. Condition indices (12, 14, 16) were all around or under the typically recommended threshold of 15-30 (Hair, Anderson, Tatham, & Black, 1998, p. 220).

The regression equations predicting life satisfaction, F (3, 36) = 12.75, p < .001, and sport engagement, F (3, 36) = 2.37, p < .08, were both significant. Hardiness (β = .58) was the only significant predictor of life satisfaction and resilience (β = .43) was the only significant predictor of sport engagement. The regression results can be found in Table II and III. We accounted for 52% and 17% of the variance in life satisfaction and sport engagement, respectively. Using Cohen's f^2 as a measure of effect size accounting for 52% of the variance is equivalent to an effect size of 1.08 whereas 17% of the variance accounted for represents an effect size of .20 (Soper, 2013). Based on Cohen's (1988) convention of .02, .15, and 0.35 for small, medium and large effect sizes, our R^2 values approximate medium to large effect sizes (Fritz, Morris, & Richler, 2012).

Discussion

The primary purpose of our study was to determine if grit, hardiness, and resilience predicted life quality and sport engagement and replicated similar prior research. We found support for some but not all of our hypotheses. First, based on the significant beta-weights, hardiness was the only construct to predict life satisfaction whereas grit and resilience were not significant predictors. Athletes higher in hardiness expressed greater life satisfaction compared to athletes lower in hardiness. This finding suggests that a broadly defined type of personality disposition like hardiness may contribute to life

[1] Because this study has a relatively small sample to variable ratio 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. See Thomas, Salazar, and Landers (1991) and Cohen (1994) for a discussion of significance testing and effect size.

[2] It is important to note that in making this assertion we are not engaging in hypothesis testing and the use of inferential statistics to generalize our results to the population. We are simply reporting descriptive statistics based on what our participants told us and claiming such descriptive statistics are consistent with an affirmation model.

TABLE II
Multiple regression results predicting Life Satisfaction

Model Summary			
Variable	β	t	*p*
Hardiness	.58	4.36	.001
Resilience	.17	1.21	.235
Grit	.10	2.73	.47

TABLE III
Multiple regression results predicting Sport Engagement

Model Summary			
Variable	β	t	*p*
Hardiness	-.17	-0.97	.34
Resilience	.43	2.28	.03
Grit	.07	.696	.491

satisfaction relative to more narrowly defined constructs like resilience and grit. The three defining features of hardiness include feelings of internal control, viewing life difficulties as challenges, and having a purpose or meaning in life.

It is plausible that these three strengths are more relevant in promoting behaviors, cognitions and affect that leads to greater life satisfaction than resilience which may only be of value during particularly challenging times. For instance, being high in hardiness is indicative of a person who feels that their life is meaningful and has purpose. Such individuals are much more likely to feel satisfied with their lives compared to individuals who feel that life lacks meaning and question their life purpose. Individuals high in hardiness also feel in control of their lives and that the decisions and actions they take can make a difference in their life. It seems reasonable to believe that people who feel in control are more likely to feel satisfied with their lives compared to people who feel less in control. Lastly, individuals high in hardiness tend to view problems as opportunities to learn and grow as individuals. Cumulatively the three factors constituting hardiness should help people on a daily basis to experience satisfaction in their lives.

In regard to sport engagement, based on the beta-weights, resilience was the only significant construct predicting sport engagement and hardiness and

grit were not significant predictors. Resilience is typically portrayed as having value when people face hardships and when they have to cope with major life events and stressors and hence is more narrowly defined compared to hardiness. Having a disability is often challenging due to impairment related effects (e.g., chronic pain) and socially grounded challenges (e.g., discrimination). Sport is also challenging with athletes vying for playing time and wanting to play well and win. Resilience can promote coping skills leading to sport success which in turns leads to sport engagement. The relationship between resiliency and sport engagement may reflect that value of resiliency in dealing with sport specific setbacks such as failing to make a team or failing to obtain a valued goal that might, over time, serve to undermine sport engagement. These potential paths from resilience to sport engagement are speculative and require research to examine potential mediators of the resilience and sport engagement relationship.

It appears that grit has no role in sport engagement or life satisfaction. Passion and perseverance for long term goals, while an important self-regulation skill for goal achievement, does not appear to have a role in promoting life satisfaction or sport engagement in the current group of parasport athletes. A major purpose of our study was to replicate prior work by Martin et al. (2015) and Atkinson and Martin (2020) and we now address that purpose. For life satisfaction, we found that hardiness was a significant predictor in the current study, similar to Martin et al. (2015), but not Atkinson and Martin (2020). The previous two studies found resilience to be a significant predictor of life satisfaction, but that was not supported here. Grit was not a significant predictor of life satisfaction in any of the three studies.

Additionally, we found that resilience was a significant predictor for sport engagement, supporting the findings from both Martin et al. (2015) and Atkinson and Martin (2020). However, in the current study, hardiness and grit were not significant predictors of sport engagement. This differs from the previous studies, as grit was found to be a significant predictor in both previous studies, while hardiness was only a significant predictor in Atkinson and Martin (2020). Table IV shows a comparison of results from the three studies. In conclusion, we found moderate support for replication. An assessment of the results of all three studies based on the significant beta-weights and their size suggests the following: Hardiness and resilience are important predictors of life satisfaction with grit being irrelevant and resilience and grit are important predictors of sport engagement. Overall resilience appears to be the most critical predictor for both outcomes across the three studies.

A secondary purpose of the current study was also to use the descriptive statistics as a basis to comment on participant's general life outlook as defined

TABLE IV
β *comparison of three studies*

Life Satisfaction			
Citation	Hardiness	Resilience	Grit
Martin et al. (2015)	.40**	.21*	-.05
Atkinson & Martin (2020)***	.15	.46**	.03
Current	.58**	.17	.10
Sport Engagement			
	Hardiness	Resilience	Grit
Martin et al. (2015)	.03	.22*	.31*
Atkinson & Martin (2020)***	.27*	.23*	.21*
Current	-.17	.43*	.07

*$p<.05$, **$p<.001$, *** Social support was a predictor in this study making it a replication and extension

by the five variables we assessed. The mean values relative to the scale ranges and descriptors (i.e., strongly disagree versus strongly agree) all suggest a moderately "positive" set of self-perceptions. No scores were low or even at or below neutral as would be consistent with a tragedy model of disability. For instance, grit was assessed on a five-point scale and the mean was 3.64. In general, a similar pattern exists for the other four measures with average scores in the moderate to strong range. The highest mean score was for sport engagement indicating this group of athletes are confident, enthusiastic, dedicated and approach their sport participation with much energy and vigor.

Together the data are consistent with an affirmation model rather than the tragedy model because these participants reported reasonably high scores on the various scales (e.g., quality of life). Hence, our parasport athletes, as a group, find meaning and satisfaction in their life and sport which is the antitheses of a tragedy or medical model of disability[2]. In terms of limitations, it is important to note that the correlational design of our study precludes asserting such cause and effect relationships. It is plausible that being satisfied with one's life and being engaged in sport can lead to the development of hardiness and resilience, respectively. A second limitation that future researchers may consider is that we did not assess other factors that might explain why we did not predict more variance in both life satisfaction and sport engagement. People with disabilities, including athletes, encounter many environmental (e.g., weather, transportation barriers) and social barriers (e.g., discrimination, lack of opportunities) that would seem to have the potential to negatively influence their life satisfaction. Future researchers may also consider examining such factors. Finally, a last limitation was that with a

sample of 40 athletes our study was only powered to find a large effect size. The current findings have some practical implications for coaches and sport psychologists, as our results support developing adaptive coping strategies through common mental skills. For instance, helping athletes develop positive self-talk phrases, cue words, and using imagery may help foster the development of grit, resilience and hardiness.

REFERENCES

Albrecht, G, G. L., & Devlieger, P, J. (1999). The disability paradox: high quality of life against all odds. *Social Science & Medicine, 48,* 977-988. DOI: 10.1016/S0277-9536(98)00411-0.

Alriksson-Schmidt, A. I., Wallander, J., & Biasini, F. (2007). Quality of life and resilience in adolescents with a mobility disability. *Journal of Pediatric Psychology*, *32*, 370-379.

Atkinson, F., & Martin, J. (2020). Gritty, hardy, resilient, and socially supported: A replication study. *Disability and Health Journal*, *13*.

Bonanno, G. A. (2012). Uses and abuses of the resilience construct: Loss, trauma, and health related adversities. *Social Science and Medicine*, *74*, 753-756.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1,* 185-216.

Brislin, R. W. (1986). The wording and translation of research instrument. In W. J. Lonner & J. W. Berry (Eds.), *Field methods in cross-cultural research* (pp. 137-164). Beverly Hills, CA: Sage.

Button, K. S., Ioannidis, J. P., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S., & Munafò, M. R. (2013). Power failure: why small sample size undermines the reliability of neuroscience. *Nature Reviews Neuroscience*, *14*, 365-376.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56,* 81-105.

Campbell Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the connor–davidson resilience scale (CD RISC): Validation of a 10 item measure of resilience. *Journal of Traumatic Stress*, *20*, 1019-1028.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd Ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates.

Cohen, J. (1994). The earth is round ($p < .05$). *American Psychologist*, *49*, 997-1003.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multi-regression/correlation analyses for the behavioral sciences (3rd Ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates.

Coles, N.A, Tiokhin, L., Scheel, A. M., Isager, P.M., & Lakens, D. (2018). The Costs and Benefits of Replication Studies. https://doi.org/10.31234/osf.io/c8akj

Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: The Connor Davidson resilience scale (CD RISC). *Depression and anxiety*, *18*, 76-82.

Cramer, D. (1998). *Fundamental statistics for social research: Step-by-step calculations and computer techniques using SPSS for Windows*. Psychology Press.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*, 297-334.

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*, 71-75.

Duckworth, A. L., Kirby, T. A., Tsukayama, E., Berstein, H., & Ericsson, K. A. (2011).

Deliberate practice spells success why grittier competitors triumph at the national spelling bee. *Social Psychological and Personality Science*, *2*, 174-181.
Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, *92*, 1087-1101. DOI: 10.1037/0022-3514.92.6.1087.
Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (GRIT–S). *Journal of Personality Assessment*, *91*, 166-174.
Earp, B. D., & Trafimow, D. (2015). Replication, falsification, and the crisis of confidence in social psychology. *Frontiers in Psychology*, *6*, 621-632.
Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behavior Research Methods, 41, 1149-1160
Franks, B. D., & Huck, S. W. (1986). Why does everyone use the .05 significance level? *Research Quarterly for Exercise and Sport*, *57*, 245-249.
Fritz, C. O., Morris, P. E., & Richler, J. J. (2012). Effect size estimates: Current use, calculations, and interpretation. *Journal of Experimental Psychology: General, 141,* 2-18.
Gabana, N. T., Steinfeldt, J. A., Wong, Y. J., & Chung, Y. B. (2017). Gratitude, burnout, and sport satisfaction among college athletes: The mediating role of perceived social support. *Journal of Clinical Sport Psychology*, *11*, 14-33.
Galli, N., & Vealey, R. S. (2008). " Bouncing Back" from Adversity: Athletes' experiences of resilience. *Sport Psychologist*, *22*, 316-335.
George, D. and Mallery, P. (2010) SPSS for Windows Step by Step: A Simple Guide and Reference 17.0 Update. 10th Edition, Pearson, Boston.
Golby, J., & Sheard, M. (2004). Mental toughness and hardiness at different levels of rugby league. *Personality and Individual Differences*, *37*, 933-942.
Guerrero, M., & Martin, J. (2018). Para sport athletic identity from competition to retirement: A brief review and future research directions. *Physical Medicine and Rehabilitation Clinics*, 29, 387-396.
Hair, J., Anderson, R., Tatham, R., & Black, W. (1998). Multivariate Data Analysis with Readings, Prentice-Hall International. *Inc., Englewood Cliffs, New Jersey*.
Hystad, S. W., Eid, J., Johnsen, B. H., Laberg, J. C., & Bartone, T. P. (2010). Psychometric properties of the revised Norwegian dispositional resilience (hardiness) scale. *Scandinavian Journal of Psychology*, *51*, 237-245.
Johnsen, B. H., Bartone, P., Sandvik, A. M., Gjeldnes, R., Morken, A. M., Hystad, S. W., & Stornæs, A. V. (2013). Psychological hardiness predicts success in a Norwegian armed forces border patrol selection course. *International Journal of Selection and Assessment*, *21*, 368-375.
Kleiman, E. M., Adams, L. M., Kashdan, T. B., & Riskind, J. H. (2013). Gratitude and grit indirectly reduces risk of suicidal ideations by enhancing meaning in life: Evidence for a mediated moderation model. *Journal of Research in Personality*, *47*, 539-546.
Kobasa, S. C. (1979). Stressful life events, personality, and health: an inquiry into hardiness. *Journal of personality and social psychology*, *37,* 1-11.
Lafrenière, M.-A., K., Vallerand, R. J., & Sedikides, C. (2013). On the relation between self-enhancement and life satisfaction: The moderating role of passion. *Self and Identity, 12*, 597-609.
Larkin, P., O'Connor, D., & Williams, A. M. (2016). Does grit influence sport-specific engagement and perceptual-cognitive expertise in elite youth soccer? *Journal of Applied Sport Psychology*, *28*,129-138.
Lindsay, S., & Yantzi, N. (2014). Weather, disability, vulnerability, and resilience: exploring how youth with physical disabilities experience winter. *Disability and Rehabilitation*, *36*, 2195-2204.

Lonsdale, C., Hodge, K., & Jackson, S. A. (2007). Athlete engagement: II. Development and initial validation of the Athlete Engagement Questionnaire. *International Journal of Sport Psychology*, *38*, 471-492.

Machida, M., Irwin, B., & Feltz, D. (2013). Resilience in competitive athletes with spinal cord injury: The role of sport participation. *Qualitative Health Research*, *23*, 1054-1065.

Martin, J. J. (2017). *Handbook of disability sport and exercise psychology*. Oxford University Press.

Martin, J. J., Byrd, B., Watts, M. L., & Dent, M. (2015). Gritty, hardy, and resilient: Predictors of sport engagement and life satisfaction in wheelchair basketball players. *Journal of Clinical Sport Psychology*, *9*, 345-359.

Martin, J. J. (2013). Disability Sport: The Development of an Athletic Identity. In Anthony Farelli (Ed.) *Sports and Exercise: Psychology and Health Research.* (pp. 15-24). New York, NY: Nova Science.

Martin, J. J., & Mushett-Adams, C. (1996). Social support mechanisms among athletes with disabilities. *Adapted Physical Activity Quarterly, 13*, 74-83.

Martin, J. J. & Vitali, F. (2011). Social Identity Implications for Active Individuals with Physical Disabilities. In Michael Wearing (Ed). *Social Identity* (pp. 163-174). London, England: Nova Science.

Martin, J. J. (2012). Psychological Perspectives on Athletes with Disabilities. In S. Mellalieu & S. Hanton. *Professional Practice Issues in Sport Psychology: Critical Reviews*. (pp. 54-78). New York, NY: Routledge Publishing.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50,* 370-396. doi:10.1037/h0054346.

Makel, M. C., Plucker, J. A., & Hegarty, B. (2012). Replications in psychology research how often do they really occur? *Perspectives in Psychological Science, 7*, 537-542. doi: 10.1177/1745691612460688

Morin, K. H. (2016). Replication: Needed Now More Than Ever. *Journal of Nursing Education*, *55*, 423-424.

Mulkay, M., & Gilbert, G. N. (1986). Replication and mere replication. *Philosophy of the Social Sciences,16*, 21-37doi: 10.1177/004839318601600102

Oliver, C. M. (2009). *Hardiness, well-being, and health: A meta-analytic summary of three decades of research.* (Order No. 3391674, Portland State University). *ProQuest Dissertations and Theses,* 263. Retrieved from http://search.proquest.com/docview/304979452?accountid=5567. (304979452).

Salim, J., Wadey,R., & Diss, C. (2016). Examining hardiness, coping and stress-related growth following sport injury. *Journal of Applied Sport Psychology*, 28, 154-169.

Salles, A., Cohen, G. L., & Mueller, C. M. (2014). The relationship between grit and resident well-being. *The American Journal of Surgery*, *207*, 251-254.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55,* 5-14. doi:10.1037/0003-066X.55.1.5.

Smith, B., Bundon, A., & Best, M. (2016). Disability sport and activist identities: A qualitative study of narratives of activism among elite athletes with impairment. *Psychology of Sport and Exercise*, *26*, 139-148.

Soper, D.S. (2013). "Effect Size Calculator for Multiple Regression (Online Software)", http://www.danielsoper.com/statcalc.

Sutlive, V. J., & Ulrich, D. A. (1998). Interpreting statistical significance and meaningfulness in adapted physical activity research. *Adapted Physical Activity Quarterly*, *15*, 103-118.

Swain, J., & French, S. (2000). Towards an affirmation model of disability. *Disability & Society*, *15*, 569-582.

Thomas, J. R., & Nelson, J. K. (1990). *Research Methods in Physical Activity (2nd Ed.)*. Champaign, IL: Human Kinetics.

Waterman, A. S. (2013). The humanistic psychology – positive psychology divide: Contrasts in philosophical foundations. *American Psychologist, 68,* 124-133. doi: 10.1037/a0032168.

Wood, A. G., Barker, J. B., Turner, M. J., & Sheffield, D. (2018). Examining the effects of rational emotive behavior therapy on performance outcomes in elite Paralympic athletes. *Scandinavian Journal of Medicine & Science in Sports*, 28, 329-339.

Yazicioglu, K., Yavuz, F., Goktepe, A. S., & Tan, A. K. (2012). Influence of adapted sports on quality of life and life satisfaction in sport participants and non-sport participants with physical disabilities. *Disability and health Journal*, *5*(4), 249-253.