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Examination of the TOPS-2 Questionnaire in Able-Bodied Athletes and Athletes with a Disability

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EXAMINATION OF THE TOPS-2 QUESTIONNAIRE IN ABLE-BODIED ATHLETES AND ATHLETES WITH A DISABILITY

by

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EXAMINATION OF THE TOPS-2 QUESTIONNAIRE IN ABLE-BODIED ATHLETES AND ATHLETES WITH A DISABILITY

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ABSTRACT

Many para-athletes competing at the elite level currently have access to a mental performance consultant. However, the same opportunities are not always available for para-athletes at the amateur level (Dieffenbach & Statler, 2012). As such, an online psychological skills training (PST) program is being developed as a means to provide all para-athletes equal accessibility to PST. In order to examine the effectiveness of the online PST program, sound measurement tools are necessary. Therefore, the aim of the current study was to assess the concurrent validity of a PST questionnaire. This was accomplished by showing that able-bodied and athletes with a disability do not differ on their use of mental skills in both practice and competition using the modified Test of Performance Strategies-2 (TOPS-2). Participants included 34 athletes with a disability and 82 able-bodied athletes. A significant one-way multivariate analysis of variance ($F(15,100) = 2.265$, $p < .05$; Pillai's Trace =.254; partial η^2 = .254) was found. Follow up one-way analysis of variance revealed that there were no significant differences between the two groups of athletes on their use of psychological skills in practice and competition. Therefore, the modified TOPS-2 was found to be an effective measure of psychological skills for both able-bodied athletes and athletes with a disability, demonstrating the potential usefulness not only when measuring athletes with a disability alone, but in studies with mixed groups.

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RESEARCH ARTICLE

Introduction

Research examining sport and physical activity for athletes with a disability has gradually grown in recent times. Sport and physical activity can be tremendously beneficial for athletes with a disability and has not only the obvious physical, but psychological and social benefits as well (Smith & Sparkes, 2012). Furthermore, participating in sport has been shown to be efficacious in helping individuals adjust to a newly acquired disability (Kirkby, 1995), combat marginalization (Wheeler, Malone, VanVlack, Nelson, & Steadward, 1996), and with promoting the disability sport movement (Asken, 1991). Participation in disability sport can also lead to an enhanced self-concept following sport success (Huang & Brittain, 2006). Additionally, athletes with a disability have cited numerous other positive participation benefits associated with sport participation, such as increased social opportunities and personal empowerment (Huang & Brittain, 2006; Wu & Williams, 2001).

Unfortunately, social activity for individuals with a disability is significantly less than for able-bodied individuals (Wyeth, 1989). Thus, sport may represent one of few available outlets for positive development (Wyeth, 1989). Previous researchers examining athletes with a disability have noted that despite different environmental circumstances (e.g., adapted training facilities), athletes with a disability share similar characteristics, benefits, and performance needs as able-bodied athletes (Dieffenbach & Statler, 2012). That is, athletes with a disability display iceberg profiles similarly to able-bodied athletes (Campbell & Jones, 1994), can use sport to improve well being (Huang & Brittain, 2006), and require competent coaches to reach their potential (Campbell & Jones, 2002). Further, researchers have concluded that both groups of athletes are similar in terms of their character traits, states, and attributions (Sherrill, 1990). As

such, the developing athlete can experience many positive benefits from their sport participation, thus allowing sport to be widely regarded as an important avenue for both positive psychological and physiological development (McCann, 1986; Valliant, Bezzubyk, Daley, & Asu, 1985; Wyeth, 1989).

Researchers have demonstrated the need for effective mental skills for athletes with a disability (Djobova, Mavromati, & Daly, 2002; Martin, 2012; Martin, 2015). Proper utilization of mental skills for athletes with a disability may enable the athletes to increase their sport enjoyment, while also improving their performance (Hanrahan, 2004). Athletes with a disability also actively use and want to learn more about psychological skills (Kirkby, 1995), and the feelings they have towards mental performance consultants is positive (Page, Martin, & Wayda, 2001).

A commonly used method to foster the development of psychological skills in sport is with the use of a psychological skills training program. As defined by Weinberg and Gould, ‘‘psychological skills training (PST) refers to the systematic and consistent practice of mental or psychological skills for the purpose of enhancing performance, increasing enjoyment, or achieving greater sport and physical activity self-satisfaction’’ (2015, p. 248). A PST program should be systematic, have a goal, be planned, have control, and finally involve some aspect of evaluation (Seiler & Stock, 1994). Often, PST interventions are used to target specific mental skills, with the most common skills being imagery, goal setting, self-talk, and physical relaxation techniques (Vealey, 2007). Psychological skills have been identified as important for athletes to obtain optimal athletic performance (Hardy, Jones, & Gould, 1996). The effectiveness of PST programs has been widely demonstrated, leading to numerous benefits beyond just improved performance (Vealey, 2007; Weinberg & Gould, 2015). Some of these benefits include increased

sport enjoyment, greater sport and physical activity self-satisfaction, improved well-being, and greater life satisfaction (Weinberg & Gould, 2015). Furthermore, athletes with a disability are a population that has shown to be receptive to PST, demonstrating the potential psychological impact for more than just able-bodied athletes (Bastos, Corredeira, Probst, & Fonseca, 2014).

Although PST has been associated with many benefits and shown to positively foster psychological skills development, in certain populations, access to PST can be difficult. At the elite level, many athletes with a disability have access to a mental performance consultant and PST program (Dieffenbach & Statler, 2012; Mental Health, n.d.). These same opportunities are not available for amateur athletes with a disability (Dieffenbach & Statler, 2012). In Canada, athletes not carded under the Athlete Assistance Program (AAP) have to pay out of pocket for a mental performance consultant. Carded athletes receive the support for a mental performance consultant, however only for four hours per year (Athlete Services, n.d.). Therefore, there is a need to create opportunities for athletes with a disability who do not have access to PST.

One potential method to enable wider access to PST programs involves the use of online training programs. Online programs may bridge the gap between athletes with a disability and PST, as online programs are not only convenient, but also can be quite popular (Kemper & Khirallah, 2015). In North America, as much as 89.4% of the population has access to the internet (World Internet User Statistics, 2019). Furthermore, researchers have indicated the usefulness of online interventions in areas such as behaviour change (Webb, Joseph, Yardley, & Michie, 2010) and clinical practice (Gaffney, Mansell, Edwards, & Wright, 2014). Using online modules, athletes are able to access material when and where it is convenient for them, resulting in increased engagement in the modules (Moradi, Liu, Luchies, Patterson, & Darban, 2018). Another benefit of online programs is the ability to complete a program over multiple visits,

allowing individuals to accommodate schedules (Brouwer et al., 2010). The use of an online intervention allows large groups of people to be targeted, while still allowing for individualized and interactive content (Brouwer et al., 2010; Brug, Oenema, & Campbell, 2003; Evers et al., 2003). Furthermore, the cost of PST can be a major limitation, as not all athletes can afford the price of sessions costing $100 an hour or more (Weinberg, Neff, & Jurica, 2012; Wilson, Gilbert, Gilbert, & Sailor, 2009). Online PST programs can be designed to be affordable and cost effective in order to reach a wide audience (Stodel & Farres, 2002; Weinberg et al., 2012). Although online programs have potential, the need for research has been emphasized (Webb et al., 2010). Thus, the use of online PST programs may be beneficial for athletes with a disability, however before any conclusions can be made, more research must be done in the area.

In order to enable those who traditionally do not have access to PST to gain access, an online PST program is currently being developed (Munroe-Chandler, Loughead, & Martin, 2019). To ensure that the online PST program is training the skills that it purports to and is beneficial to the athlete, proper and sound measurement tools are essential. A commonly used tool for the assessment of psychological skills is the Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999). The original TOPS consists of two separate scales, one for practice and the other for competition settings. Each of the scales has 32 items and is further divided into subscales. For competition settings, the eight subscales are self-talk, emotion control, automaticity, goal setting, imagery, activation, relaxation, and negative thinking. The practice subscale is similar except attentional control is replaced by negative thinking. Researchers examining the TOPS have provided evidence of the internal consistency and construct validity of the scales for able-bodied athletes (Gould, Dieffenbach, & Moffett, 2002; Jackson, Thomas, Marsh, & Smethurst, 2001). The TOPS has established adequate validity for

use in adult able-bodied athletes (Miçooğulları, 2017; Saadatifard, Keshtidar, & Khoshbakhti, 2014), as well as for athletes with a disability (Bastos, Corredeira, Probst, & Fonseca, 2012; Goudas, Kontou, & Theodorakis, 2006).

Support for the use of the TOPS in youth athletes has been mixed, with researchers ultimately calling for further research to adequately validate the questionnaire in this population (Abdullah, Konsi, Eswaramoorthi, Maliki, & Musa, 2017; Katsikas, Donti, Psychountaki, 2011; Lane, Hardwood, Terry, & Karageorghis, 2004). Specifically, the activation, emotional control, imagery, and negative thinking for competition subscales, and the activation, automaticity, and relaxation subscales in practice all required significant improvements, such as rewording items to improve clarity. Certain items in the automaticity and activation for practice subscales also showed weak factor loadings (Lane et al., 2004). Furthermore, the suggestion was made to separate the competition constructs of attention and emotional control, as the constructs were measuring different things under the same subscale (Lane et al., 2004).

After acknowledging the problematic validity present in certain subscales within the original TOPS, Hardy, Roberts, Thomas, and Murphy (2010) created a modified version of the questionnaire, the TOPS-2, to remedy the problems. The activation subscale was changed to reflect the original conceptualization of readiness to perform, rather than as unidimensional arousal levels. This change resulted in two initial items being kept and four being developed for the competition subscale, and only one initial practice item remaining with five new items being developed. To clarify the emotional control subscale in competition, three new items were developed to supplement the three original items. A distractibility subscale with 10 new items was created to separate distractibility from the attentional control subscale where it was initially measured (Hardy et al., 2010). The phrasing of the relaxation subscale was also changed,

resulting in three new relaxation practice items to supplement three original items, and six new relaxation competition items. The final changes included addressing the automaticity subscale, resulting in five new practice items to supplement one original item. All original competition items were removed, resulting in six new automaticity competition items.

After instrument refinement, the TOPS-2 included a total of 49 new items together with the original 64 items in the TOPS. Exploratory factor analysis resulted in 37 practice and 44 competition items, both of which were further reduced to four items in each subscale using results from fit statistics and the theoretical basis for each scale (Hardy et al., 2010). Confirmatory factor analysis of the refined TOPS-2 provided much improved factorial validity over the original TOPS, however the newly added distractibility subscale had poor factor loading and reliability, and therefore was removed (Hardy et al., 2010). The TOPS-2 has been validated in able-bodied athlete populations, however researchers have noted the problems with the automaticity subscale and advised against further use (Donti & Katsikas, 2014). Recently, the TOPS-2 has been used with athletes with a disability (Esatbeyoglu & Campbell, 2018). Cronbach's alpha coefficients ranged from .59 to .85, with four subscales considered unacceptable (Esatbeyoglu & Campbell, 2018). Within the competition subscale, only attentional control (α= .55) consisted of a low alpha value. In the practice subscale, automaticity (α = .38), activation (α = -.12), and attentional control (α = .34) all contained unacceptable alpha values. As the present study does not use the automaticity subscale in practice or the attentional control subscale in competition the TOPS-2 questionnaire was considered to be the most acceptable inventory for psychological skills in athletes presently available. Esatbeyoglu and Campbell (2018) concluded that although results were promising, more statistical analysis is required with

greater sample sizes in order to establish greater confidence in the factor structure of the revised questionnaire.

Therefore, the purpose of this study was to show that able bodied athletes and athletes with a disability do not differ on their use of mental skills in both practice and competition, thus establishing concurrent validity. . Concurrent validity, testing two different populations on the same test, wherein comparisons in the subscale scores between both groups of athletes, as well as internal reliability (Cronbach's Coefficient Alpha) were calculated. As the preponderance of research to date with the TOPS-2 has focused on construct validity, there is currently a need to establish the concurrent validity of the inventory. Modifications were made to the original TOPS-2 in order to better reflect the content of the online modules, such as changes to the item wording (i.e., replacing visualize to imagine within the imagery subscale). It was hypothesized that by comparing the modified TOPS-2 with athletes with a disability and their able-bodied counterparts, responses would be similar for each subscale, in both practice and competition. With a proper measurement tool, researchers will be able to further tailor PST programs to a population that traditionally has had poor access to PST and evaluate the effectiveness of the programs. Further, having one questionnaire that can be used by all athletes, regardless of physical abilities, will help move research in this area forward especially given the research suggesting that PST programs are largely the same between the two groups (Hanrahan, 2015).

Method

Participants

Power analysis using G*Power version 3.1.9.7 for a one-way multivariate analysis of variance (MANOVA) with two groups and 16 dependent variables recommends 72 participants (Faul, Erdfelder, Buchner, & Lang, 2009). This study included a total of 116 participants, 34

athletes with a disability and 82 able-bodied athletes, therefore satisfying that criteria. Although 70 athletes with a disability opened the link to complete the questionnaire, 36 of those did not move beyond demogrpahics section and therefore were not considered usable. Participants included male (n = 18, n = 39 for athletes with a disability and able-bodied athletes, respectively) female (n = 14, n = 43 for athletes with a disability and able-bodied athletes, respectively), transgender (n = 1 athlete with a disability), and non-binary (n = 1 athlete with a disability) athletes. Athletes were aged 15 to 73 years of age, with a mean age of 27.94 (SD = 13.68) for athletes with a disability, and 33.68 (SD = 12.62) for able-bodied athletes. For a full list of demographics, see Table 1. Demographic data were incomplete and unable to be analyzed for athlete disability type and classification. Physical disabilities were self-identified by each participant, and in some cases these athletes may have had more than one disability, although this was not measured in the current study. Able-bodied athletes self-identified that they had no disability.

Measures

The TOPS-2 is a 64-item instrument developed to measure the psychological skills used by athletes in both practice and competition (Hardy et al., 2010). Of the 64 items, 32 are for use in practice and 32 are for use in competition. For the purposes of the current study, both the practice and competition subscales were used. Due to the relatively short length of the questionnaire and straightforward responses required, no participant burden was anticipated (Rolstad, Adler, & Rydén, 2011). Within practice and competition, there are eight subscales, each containing four items. The practice subscales include goal setting, imagery, self-talk, automaticity, attentional control, emotional control, activation, and relaxation. Competition subscales are similar with attentional control being substituted for negative thinking. Items are

scored on a five-point Likert scale, with "1" meaning they *never engage in that behaviour*, and "5" meaning they *always engage in that behaviour*. Modifications were made to the original TOPS-2 instrument to provide a better match to the content of the online PST training modules (see Appendix A for original; Appendix B for modified). These modifications included changes to the wording of certain items, as well as substitution of the problematic automaticity subscale in practice and competition with an adapted version of the OMSAT-3 (Durrand-Bush, Salmela, & Green-Demers, 2001) competition planning subscale (i.e., routines). Furthermore, the negative thinking subscale was substituted with the attentional control subscale in competition.

Procedures

Following ethics clearance from the University's Research Ethics Board, recruitment began. Recruitment for athletes with a disability was primarily done using social media. The primary researcher was also in contact with organizations, teams, and coaches that involved athletes with a disability and requested their help with distributing a flyer and questionnaire link using their social media accounts, or through any other method they saw fit (i.e., mailing list; see Appendix C for recruitment email). All contact with the organizations was documented, as well as information concerning the social media outlets used for distribution and potential reach of each outlet. A graphic flyer was part of the package that was sent to all consenting organizations. This flyer outlined the purpose of the study and who the target participants were, as well as included a link to the online questionnaire and relevant contact information. Before each participant was able to begin the questionnaire, they were required to read the letter of information and consent form. After reading, the participant would click accept and consent was be obtained. Once consent was given, the questionnaire was opened, and instructions were provided for how to properly answer the remainder of the questions. The participant were

required to input their age, gender, ethnicity, highest level of education, geographic region, sport, level of competition, name of sport team or organization, years of sporting experience, disability and whether it is congenital or acquired, classification level in sport (if applicable) and previous experience with sport psychology (see Appendix D). The questionnaires were completed whenever the participant had the time during the data collection period. When the participant was finished, they submitted the completed questionnaire and the data were securely stored for analysis. To recruit the able-bodied athletes, an online participant recruitment pool was used through Qualtrics™. Using this method, we were able to gather responses from able-bodied athletes within a two-day period. Procedures for the questionnaire were the same as athletes with a disability. After the data collection process was completed, data were securely stored for analysis.

Data Analysis

Means and standard deviations were calculated for each dependent variable. In order to test the measure's concurrent validity, a single MANOVA was conducted to examine differences between the two independent variables, athletes with a disability and able-bodied athletes and included all of the practice and competition subscales. The independent variables were compared on each dependent variable, eight for the practice subscales and eight for the competition subscales, with a statistical difference representing a difference in psychological skill use between the groups. Cronbach's Coefficient Alpha was determined for each group of athletes separately and used to test the internal consistency of the modified scale.

Results

Data Screening

As revealed by preliminary assumption testing, none of the eight practice or competition subscales were normally distributed for either population, as assessed by the Shapiro-Wilk test ($p < .05$). Upon examination of the follow up Q-Q plots, data were nearly normal for each subscale, with a moderate negative skew. As the one-way MANOVA has been found to be relatively robust to deviations of normality (Pituch & Stevens, 2016), no transformations were yet performed on the data. The data were then assessed for outliers, with outliers being found within the following practice subscales: goal setting, routines, imagery, self-talk, activation, and attentional control. Moreover, the following competition subscales also included outliers: routines, imagery, relaxation, activation, and attentional control. Outliers were removed prior to running subsequent analysis. A total of four participants (two athletes with a disability and two able-bodied athletes) were identified as multivariate outliers, as assessed by Mahalanobis distance ($p > .001$). All multivariate outliers were removed from further data analysis. There was no multicollinearity, as assessed by Pearson correlation ($r = .131$ - $.697$, $p < .001$). The assumption of homogeneity of variance-covariances matrices was met, as assessed by Box's M test of equality of covariance matrices ($p = .002$). Further, there was homogeneity of variances as assessed by Levene's Test of Homogeneity of Variance ($p > .05$), in all but four subscales. These subscales included attentional control, relaxation, and emotional control in practice, and relaxation in competition. These variables were then transformed using LOG (relaxation in practice) and reciprocal (emotional control in practice and relaxation in competition) transformations and the assumption of homogeneity of variances was met ($p > .05$) for all subscales excluding attentional control. No transformations were able to transform the data successfully to pass this assumption. The difficulties arising from this subscale are likely due to a misunderstanding of two reverse scored items within the scale for athletes with a disability. As

such, the attentional control in practice subscale was removed, leaving seven subscales in practice and eight in competition.

Descriptive Statistics and Preliminary Analyses

Means and standard deviations were calculated for each questionnaire (modified TOPS-2 practice and modified TOPS-2 competition) subscale for both athletes with a disability and able-bodied athletes (see Table 3). For athletes with a disability, activation was the most frequently used skill in practice (M = 4.15), with goal setting as the most used skill in competition (M = 4.19). For able-bodied athletes, the most used skill in practice was self talk (M = 3.99), with goal setting in competition (M = 4.00). Further, in 9 of the 16 subscales, athletes with a disability were found to have higher mean values than their able-bodied counterparts. Able-bodied athletes were higher in relaxation, attentional control, and emotional control in practice, and self-talk, relaxation, attentional control, and emotional control in competition.

Cronbach's alpha was used as a measure of internal consistency (see Table 3). All alpha coefficients were above .70, with the exception of attentional control (.24 for practice, .45 for competition for athletes with a disability; .63 for practice, .52 for competition for able-bodied athletes). As a result of the low internal consistency of the attentional control subscale in practice and the inability to pass Levene's Test, the scale was removed from further analysis. The attentional control in competition subscale was kept due to the close proximity to .5, which was deemed an accepted value (Hinton, Brownlow, McMurray, & Cozens, 2004).

In order to test for possible gender differences, two MANOVA's were conducted with gender as the grouping variable, one for the practice and one for the competition subscales. There was a significant result within the competition subscales, specifically with attentional control ($p < .006$), and a non-significant result within the practice subscales. Given the small

difference between the genders, it was concluded that the main analysis be run as a whole, rather than with gender grouping. Experience was also assessed, with no significant difference in psychological skill use found in terms of years spent playing their sport following a MANOVA.

Main Analysis

To test the concurrent validity of the TOPS-2, a MANOVA was conducted to examine if able-bodied athletes and athletes with a disability differed in their use of mental skills during both practice and competition. The differences between athletes with a disability and able-bodied athletes on the TOPS-2 was statistically significant, $F(15,100) = 2.265$, $p < .05$; Pillai's Trace =.254; partial $\eta^2 = .254$. However, in order to account for family-wise error with seven (practice) and eight (competition) dependent variables, a Bonferroni adjustment was applied ($p = .05/7 < .007$; $p = .05/8 < .006$). No significant differences were found between the two groups on any dependent variable following the adjustment.

Discussion

As opportunities continue to increase for athletes with a disability, so too must the surrounding literature develop. Athletes with a disability have been found to regularly use psychological skills when asked open ended questions to determine baseline skill use (Hanrahan, Grove, & Lockwood, 1990). As the literature continues to expand for these athletes, so too does the need for an effective measure of psychological skill use. As such, the purpose of the present study was to provide validation for the modified TOPS-2 by concurrently testing two groups of athletes (athletes with a disability and able-bodied athletes) in their use of psychological skills in order to show that they do not differ. As previous studies examining the TOPS-2 have focused on the questionnaire's construct validity, the current study sought to examine the concurrent validity. Based on previous research (Dieffenbach & Statler, 2012; Esatbeyoglu & Campbell,

2018), it was hypothesized that the two groups would have largely the same responses for each subscale within the TOPS-2, for both practice and competition. Following a one-way MANOVA with follow-up univariate tests, results supported the hypothesis and there were no significant differences between able-bodied athletes and athletes with a disability on any of the practice or competition subscales within the TOPS-2. Further, with the elimination of the attentional control subscale in practice, internal reliabilities for all other subscales were deemed acceptable.

The non-significant differences in their use of psychological skills are in line with previous research demonstrating that athletes with a disability are more similar than different to able-bodied athletes (Dieffenbach & Statler, 2012). No significant differences between the groups helps to reinforce that both groups of athletes are comparable regarding their use of psychological skills in sport. Further evidence for this can be found within the lack of disparity between psychological skills training programs between the two groups (Hanrahan, 2015). Authors have also agreed that athletes with a disability are able to benefit from psychological skills training (Hanrahan, 2007; Harbalis, Hatzigeorgiadis, & Theodorakis, 2008). Therefore, it is not surprising that athletes with a disability have been found to display similar levels of psychological skill use as their able-bodied counterparts.

Researchers have previously demonstrated the effectiveness of goal setting for athletes with a disability, providing support for the relatively high goal setting values for these athletes in the current study, 4.13/5 in practice and 4.19/5 in competition (Martin, 2010; Watanabe, Cooper, Vosse, Baldini, & Robertson, 1992). The regular use of self-talk is once again affirmed through this research, matching previous findings (Harbalis et al., 2008; Martin, 2010). Unsurprisingly, imagery is also a frequently used psychological skill for this population, similarly to able-bodied athletes. Imagery allows athletes with a disability to rehearse the performance in their mind,

allowing these athletes to practice mentally when they are unable to physically (Martin, 2010). Surprisingly, emotional control scores were not very high for either athletes with a disability or able-bodied athletes (3.07/5 for practice and 2.54/5 for competition for athletes with a disability; 3.31/5 for practice and 3.13 for competition for able-bodied athletes), despite previous findings of moderately high ability to cope (Martin & McCaughtry, 2004). Athletes with a disability also displayed moderate levels of relaxation in the current study (3.37/5, 3.80/5 for practice and competition, respectively). These levels can be explained as a way to cope and account for stressors in and out of competition (Arnold, Wagstaff, Steadman, & Pratt, 2017; Campbell & Jones, 2002), with previous research outlining specific strategies for athletes with a disability in particular, such as modified progressive muscular relaxation techniques that avoid the tension phase for athletes with cerebral palsy (Hanrahan, 1998). Routines, although not in the original TOPS-2 and adapted from the OMSAT-3, is a vital part of sport competition and displays values representing that in the current study (3.87/5, 4/5 for practice and competition, respectively). Attentional control was unable to be included in data analysis for the practice subscale due to low reliability. The competition values, however, were moderately high (3.42/5) and representative of regular use of concentration techniques. Finally, the activation subscale, similarly to the other subscales, demonstrated the sameness for both athletes with a disability (4.15/5, 4.16/5 for practice and competition respectively) and able-bodied athletes (3.89/5, 3.96/5 for practice and competition respectively). Proper activation in competition is important and is focused on achieving higher levels of energy (Burton & Raedake, 2008).

It is imperative that advancements are made to the benefit of athletes with a disability that provide increased access to PST programs, such as through online methods. The current research represents a promising finding for the development of online PST programs. Previous

researchers have demonstrated that PST programs for athletes with a disability are largely the same as programs for their able-bodied counterparts (Hanrahan, 2015), a finding that is further supported by the lack of significant difference in psychological skill use between the groups in the current study. The content of the psychological skills is the same between the groups, however the methods of communication may change depending on the disability (Hanrahan, 2015). PST programs can therefore be created, similarly to able-bodied athletes, without the need to retrain consultants on the content. Rather, it is the teaching of that content that may be different when compared to an able-bodied athlete. Hanrahan (2015) presents practical considerations for working with this population. These considerations, among others, must be at the forefront of any PST program for athletes with a disability. Regarding online PST methods, accessibility options must be in place to ensure that the content can be delivered in a manner that all can receive and understand. The benefit of online PST programs may be further emphasized because of the lack of resources to which this population has access (Dehghansai, Lemez, Wattie, & Baker, 2017).

When designing these PST programs for athletes with a disability, the modified TOPS-2 may be used as a means to evaluate baseline skill and progress in the program. The current study affirms the eligibility of the modified TOPS-2 as a measure of psychological skills for athletes with a disability and able-bodied athletes. As demonstrated through the current study's results, these athletes regularly use and can no doubt benefit from mental skills, even if they have not received specialized PST (Perreault & Vallerand, 2007).

A lack of difference between athletes with a disability and able-bodied athletes presents a promising finding for future research in that the two groups no longer need to be separated during interventions or studies using psychological skills. That is, since both groups have been

found to respond similarly to the modified TOPS-2 items, the questionnaire can be employed with success regardless of the athlete. This is even more important as there is a shift in competitions currently where athletes with a disability and able-bodied athletes are both competing, although not against one another, in the same competitions. Examples of this include the Czech winter classic, an ice hockey festival featuring para-hockey and able-bodied hockey in the same event (Houston, 2020). Swim Canada also has trials for both Olympics and Paralympics simultaneously in the same pool, rather than as two separate events on different dates (Swimming Canada, 2020). Therefore, with a change of the competition landscape it is important that the modified TOPS-2 can be used regardless of the athlete.

The modified TOPS-2 is not without drawbacks, however. The attentional control in practice subscale was removed from analysis due to the poor reliability and inability to pass assumption testing. This finding is somewhat surprising as previous research using the original TOPS-2 did not call attention to problematic items within this subscale. However, a recent study with athletes with a disability did display low alpha values for attentional control in competition ($\alpha = .55$) and attentional control in practice ($\alpha = .34$) (Esatbeyoglu & Campbell, 2018), similar to the current research. Their study, along with the current study, could potentially point to a problem with the subscale as a whole, as the alpha was low for both groups with lower values for athletes with a disability ($\alpha = .24$, $\alpha = .45$ for athletes with a disability in practice and competition, respectively; $\alpha = .63$, $\alpha = .52$ for able-bodied athletes in practice and competition, respectively). After an examination of the items within the subscale, the most likely explanation for the poor reliability may be due to the reverse scoring. Two of the four items contained within the scale are reverse scored (i.e., trouble maintaining concentration & attention [concentration] wanders). With the current data, without reverse scoring the two items, reliability improves for

both practice and competition, with a more pronounced effect when specifically examining athletes with a disability. The inability to respond correctly to the reverse scored items could be due to various factors, such as a lack of proper directions. The current directions simply state the question with the response options listed, similarly to every other question, with the only directions at the beginning of the practice or competition sections. As a result, individuals may not have interpreted the negative wording correctly, leading to incorrect responses. Reverse scored items can occasionally be problematic, with some researchers advising against their use (Suarez-Alvarez et al., 2018) and others advocating for it (Weijters, Baumgartner, Schillewaert, 2013). To account for the variation in item polarity, it is recommended that a large number of regular items does not precede the reverse scored items (Drolet & Morrison, 2001). Unfortunately, the modified TOPS-2 does not employ this method, as the questionnaire abruptly switches from regularly scored items for the majority of the questionnaire to reverse scored items. Further attention can be drawn to the issue of reverse scoring when examining the emotional control subscale. Although internal consistency was much higher ($\alpha = .92$, $\alpha = .91$ for practice and competition, respectively) than that of attentional control, the mean values were significantly lower than the other subscales (see Table 1). Although plausible that these values are indicative of emotional control for both able-bodied and athletes with a disability, it is more likely that similarly to attentional control, there was a misinterpretation of the reverse scored items contained within the scale.

Furthermore, attentional control has been shown to load onto emotional control in the past, clearly demonstrating the problematic nature of the current scales (Hardy et al., 2010). The TOPS-2 is still relatively new and has not received extensive research compared to the original TOPS. Despite this, the modified TOPS-2 was able to effectively measure psychological skills

within the target population, cementing the notion that the questionnaire is currently the best available.

The current research is not without limitations. Namely, the number of athletes with a disability was significantly less than that of able-bodied athletes. The smaller sample size may have acted to amplify the errors in interpretation made for reverse scoring, potentially skewing the data in those subscales to be unusable. A larger sample size may have resulted in significant differences between the two groups of athletes, as the mean scores were in that direction with athletes with a disability displaying higher levels of skill use, although not significantly. Small sample size has long been noted as an obstacle when performing research with athletes with a disability (Harbalis et al., 2008; Stamous, Theodorakis, Kokaridas, Perkos, & Kessanopoulou, 2007). Further, the current study was unable to measure all eight scales in both practice and competition, having to remove attentional control from practice. The result is an incomplete modified TOPS-2, with vital information missing in the form of athletes' with a disability attentional control skill in practice.

Researchers should continue to examine the psychological skills of athletes with a disability. Namely, researchers should perform a confirmatory factor analysis to improve the factor structure and validity of the modified TOPS-2. As the current sample of participants was quite small for athletes with a disability, future researchers may do well to examine the modified TOPS-2 with a larger sample. Furthermore, researchers should look to improve the reliability of the attentional control subscale in both practice and competition. The current study, along with previous research (Esatbeyoglu & Campbell, 2018) have noted the low alpha values for attentional control, leading to the subscale's subsequent removal from analysis. Researchers may look to improve the subscale by replacing the reverse scored questions or changing the wording

of the questionnaire directions. Alongside this, researchers may consider examining the emotional control subscale, as comparatively the scores are lower than that of other subscales.

Conclusion

The aim of the current study was to show that able bodied athletes and athletes with a disability do not differ on their use of mental skills in both practice and competition, as measured by the modified TOPS-2, and thus establish the questionnaire's concurrent validity. Through initial validation to the questionnaire, researchers and practitioners can effectively use the measure when conducting PST programs with athletes. It was hypothesized that responses for athletes with a disability and able-bodied athletes would not differ significantly on either the practice or competition subscales, thereby demonstrating concurrent validity and the appropriateness of the questionnaire for use in both populations. To achieve this, athletes' with a disability self-reported responses were compared to those of able-bodied athletes' responses. As the original TOPS-2 has been validated with able-bodied athletes in the past (Hardy et al., 2010; Donti & Katsikas, 2014), similar responses would provide a method of validation for athletes with a disability due to our knowledge of the similarities between these groups in regards to their use of psychological skills (Dieffenbach & Statler, 2012). The current results indicated that there were no significant differences between the two groups on all 15 subscales included in the data analysis, supporting the hypothesis. The attentional control subscale was found to be largely problematic and was removed. With respect to internal consistency, all subscales were deemed acceptable based on the Cronbach's Coefficient Alpha scores. The current study is important to the literature in that it will enable researchers to examine the psychological skills of athletes with a disability using the modified TOPS-2. Further, researchers may use the same questionnaire for both athletes with a disability and able-bodied athletes without needing to separate participants,

allowing more robust samples to be examined. This finding may be chiefly important to applied and intervention-based studies where pre- and post- measures of multiple psychological skills is needed. Researchers should continue to examine the modified TOPS-2 and expand our knowledge of the questionnaire's validity.

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TABLES

Table 1

Descriptive Statistics

Descriptive		Able-Bodied Athletes		Athletes with a Disability	
		n	%	*n*	%
Gender	Male	39	47.6	18	52.9
	Female	43	52.4	14	41.2
	Transgender	0	0	1	2.9
	Non-binary	0	0	1	2.9
Ethnicity	Caucasian	56	68.3	24	70.6
	African	9	11	4	11.8
	Asian	10	12.2	1	2.9
	Hispanic/Latino	5	6.1	2	5.9
	Middle Eastern	0	0	1	2.9
	Jewish	1	1.2	0	0
	Other	1	1.2	2	5.9
Education	Elementary School	0	0	2	5.9
	High School	12	14.6	9	26.5
	Some Post-Secondary	13	15.9	6	17.6
	College Diploma	12	14.6	4	11.8
	Undergraduate Degree	18	22	7	20.6
	Graduate Degree	10	12.2	2	5.9
	Professional Degree	3	3.7	1	2.9
	Master's degree	13	15.9	3	8.8
	Doctorate Degree	1	1.2	0	0
Previous Deliberate PST	Yes	17	20.7	19	55.9
	No	65	79.3	15	44.1
Source of Disability	Acquired	-	-	15	44.1
	Congenital	-	-	19	55.9

Table 2

Experience Level of Athletes With A Disability and Able-Bodied Athletes in Their Specific Sport

Population	Experience			
	Minimum	*Maximum*	*Mean*	*SD*
Able-Bodied Athletes	4	9	6.57	1.59
Athletes with a Disability	1	30	12.02	8.57

Table 3

Means, Standard Deviations, and Reliability for Athletes With A Disability and Able-Bodied Athletes

Skill		Able-Bodied Athletes			Athletes with a Disability			Total		
		Mean	*SD*	*α*	*Mean*	*SD*	*α*	*Mean*	*SD*	*α*
Goal setting	Practice	3.88	.77	.89	4.13	.72	.90	3.95	.76	.89
	Competition	4.00	.70	.84	4.19	.78	.93	4.06	.72	.87
Routines	Practice	3.76	.70	.76	3.87	.70	.76	3.79	.70	.76
	Competition	3.81	.82	.84	4.00	.81	.86	3.87	.82	.84
Imagery	Practice	3.93	.74	.81	4.12	.78	.83	3.99	.76	.82
	Competition	3.92	.70	.84	3.96	.95	.88	3.93	.78	.85
Self-talk	Practice	3.99	.80	.90	4.00	.68	.87	4.00	.77	.89
	Competition	3.98	.74	.85	3.93	.84	.84	3.97	.77	.85
Relaxation	Practice	3.85	.82	.81	3.37	1.16	.92	3.70	.96	.87
	Competition	3.95	.80	.83	3.80	1.05	.93	3.91	.89	.87
Activation	Practice	3.89	.72	.83	4.15	.55	.85	3.96	.68	.83
	Competition	3.96	.68	.83	4.16	.78	.94	4.02	.71	.87
Attentional Control	Practice	3.81	.76	.63	3.53	.53	.24	3.73	.71	.56
	Competition	3.57	.63	.52	3.42	.72	.45	3.53	.66	.49
Emotional Control	Practice	3.31	1.11	.91	3.07	1.34	.93	3.24	1.19	.92
	Competition	3.13	1.05	.89	2.54	1.19	.94	2.96	1.12	.91

REVIEW OF LITERATURE

The purpose of the present thesis was to show that able bodied athletes and athletes with a disability do not differ on their use of psychological skills in both practice and competition using the modified TOPS-2 inventory as a measure of psychological skills. Through validation (concurrent validity) and reliability (Cronbach Alphas), researchers and applied practitioners can use the modified TOPS-2 as measurement tool for an online psychological skills training program for athletes with a disability. The review of the literature will consist of three sections: (a) disability sport (b) psychological skills training (PST) programs/ online interventions, and (c) the Test of Performance Strategies (TOPS).

Disability Sport

How society perceives disability has changed drastically in recent years. The way that disability is seen is often a result of cultural perceptions (Munyi, 2012). For example, in certain African cultures, disability may be viewed as a sickness (Franzen, 1990). However, there exist other African cultures where disability is revered and those with disabilities are held above able-bodied individuals (Munyi, 2012). As a result, the appearance and standing of individuals with disability can vary drastically from one place to another. Perceptions of disability can be viewed through the lens of different models to understand the variations in viewpoints. Common models of disability include the biomedical model, the functional model, and the sociopolitical model (Smart, 2009). The biomedical model purports that disability is pathology, dysfunction, disorder, or deformity within that individual (Bickenbach, 1993). Further, this model does not consider the social aspects of disability, and rather features an objective and measurable classification of disability for the individual (Smart, 2009). The functional model states that disability is the result of "role failure", or the inability of that individual to fulfil their roles due to disability (Smart,

2009). This model acknowledges a lack of accommodations as the disabling factor for these individuals and strives to provide adaptations to the environment and increase accessibility (Pope & Brandt, 1997). In doing so, the functional model would state that disability is not always present, as the disability is not always met with difficulties (Gradison, 1997). The final model of disability, the sociopolitical model, does not consider disability itself to be the issue, but rather purports that it is the lack of civil rights and unequal opportunities for individuals with a disability that often results in a life of reduced opportunity, inferiority, and marginalization (McCarthy, 2003). As this model considers society to be the source of difficulties for individuals with a disability, it is therefore up to society to change attitudes and laws to be more inclusive (Gill, Kewman, & Brannon, 2003). The use of each of these three models can be seen in many different facets of society, with each having their advantages and disadvantages to consider. For the purposes of this thesis, disability will be defined and viewed through the lens of the functional model of disability.

In recent decades, individuals with disabilities have seen advancements in many aspects of life, from cultural attitudes, to improvements in technologies designed to assist those with impairments, advancements in medicine, and for continual improvement in legal support (Dieffenbach & Statler, 2012). Due to these tremendous steps forward for those with disabilities, the opportunities for these individuals have been greatly increased. Namely, sport has been expanded to create opportunities for those with disabilities to experience physical activity similar to able-bodied athletes (Dieffenbach & Statler, 2012). There exists a developed body of literature that emphasizes the importance of a physically active lifestyle for individuals with a disability (Cooper et al., 1999; Durstine et al., 2000; Heath & Fentem, 1997). Some researchers have even put forward the notion that individuals with a disability may need to place a greater importance

on a physically active lifestyle when compared to the general population (van der Ploeg, van der Beek, van der Woude, & van Mechelen, 2004). Despite the evidence, however, youth with disabilities are more prone to leading sedentary lives and receive less encouragement to be active (Longmuir & Bar-Or, 2000). Furthermore, children and adolescents with disabilities receive fewer opportunities to engage in physical activity than their able-bodied counterparts (Shapiro & Martin, 2010). Yet, even though there are more barriers to sport and physical activity participation among individuals with disabilities (Arnold, Wagstaff, Steadman, & Pratt, 2017), nearly two-thirds of Canadian youth with disabilities are still actively engaged (Statistics Canada, 2006). As such, individuals with disabilities are actively competing in sport at all levels of competition, from the grassroots all the way up to the Paralympic Games.

The modern Paralympic Games is an elite level sporting competition, bringing together the top athletes from around the world for both winter and summer sports at the individual and team level. One of the outcomes of this event is the removal of negative stigma, as for some people there still exists a view that disability sport is somehow inferior to able-bodied sport (DePauw & Gavron, 2005), and disabilities are then seen as unfortunate (Gilson, Tusler, & Gill, 1997). For some athletes with a disability, they can still be seen as a "patient combating their limitations," rather than an elite athlete in their own right (Van Hilvoorde & Landeweerd, 2008 p. 108). This outlook leads to a view of athletes with disabilities as metaphors for being a survivor, with the representative qualities of endurance, persistence, and over achievement (Gill, 1997; Zola, 1985). However, a thematic analysis of the experiences of athletes with a disability shows that these athletes do not want to be treated differently, and are not super achievers, but rather as regular people doing everyday things (Goodwin, Thurmeier, & Gustafson, 2004). Purdue and Howe (2012) highlight the importance of all body types being viewed in the context

of the sport in which they are competing. This is true for both able-bodied athletes and athletes with a disability, as all bodies are prone to limitations, and as such each athlete should be seen through the lens of their physical accomplishments rather than their limitations. Furthermore, from the perspective of those with disabilities, sport is physical activity where disability is not seen as a negative (Pensgaard & Sorensen, 2002; Taleporos & McCabe, 2002).

As previously stated, there have been several researchers that have emphasized the importance of a physically active lifestyle for people with a disability (Cooper et al., 1999; Durstine et al., 2000). With increased opportunities, comes an abundance of benefits associated with participation. Physical activity participation may help individuals adjust to a disability (Kirkby, 1995), combat marginalization (Wheeler, Malone, VanVlack, Nelson, & Steadward, 1996), and help to promote the disability sport movement (Asken, 1991). Researchers have found that participation in disability sport can also contribute to an enhanced self-concept and lead to feelings of empowerment from sport success (Huang & Brittain, 2006).

Furthermore, within disability sport there has been an increase in competition, leading some researchers to suggest that the need for effective mental skills for athletes with a disability is increasing (Djobova, Mavromati, & Daly, 2002). Researchers have reaffirmed the need for effective mental skills among athletes with a disability (Martin, 2012; Martin, 2015). Athletes with disabilities have been shown to actively use psychological skills, showing a desire to learn more about (Kirkby, 1995) and be receptive to (Bastos, Corredeira, Probst, & Fonseca, 2014) psychological skills, as well as having positive attitudes towards mental performance consultants, similarly to able-bodied athletes (Page, Martin, & Wayda, 2001). The proper understanding and use of mental skills training for athletes with a disability will not only allow

these athletes to positively improve their sporting performance, but also to increase their enjoyment (Hanrahan, 2004).

Athletes with a disability, similarly to able-bodied athletes, are able to benefit greatly from the development and utilization of mental skills (Dieffenbach & Statler, 2012). These athletes also display iceberg profiles similarly to able-bodied athletes (Campbell & Jones, 1994), have been found to use sport to improve well being (Huang & Brittain, 2006), and share the same need for a competent coaches to reach their potential (Campbell & Jones, 2002). Researchers have further concluded that both groups share similarities in terms of their character traits, states, and attributions (Sherrill, 1990). Athletes with a disability can also benefit from goal setting (Martin, 2010), and more specifically goals related to training, competition, and diet (Watanabe, Cooper, Vosse, Baldini, & Robertson, 1992). Self-talk can be used by athletes with a disability to enhance sport performance, as well as promote correct technique similarly to able-bodied athletes (Harbalis, Hatzigeorgiadis, & Theodorakis, 2008; Martin, 2010). The use of self-talk may be of even greater importance for arousal control in athletes with a disability, as for some their physiology may present a limitation whereas their thoughts may be easier to control (Martin, 2010). Athletes with a disability can also benefit from the use of imagery, as these athletes may not always be able to practice the skills physically, demonstrating the importance for the use of mental practice (Martin, 2010). Visually impaired athletes are even able to benefit from the motivational and cognitive types of imagery (Eddy & Mellalieu, 2003). With regards to youth athletes in particular, the sport setting has been found to be a potentially attractive avenue for enhancing social networks and developing stronger relationships with peers, as individuals with disabilities often have less extensive social networks than able-bodied individuals (Martin,

2006; McNeil, 1993). In an effort to promote the mental skills of athletes and enhance their sport experience, psychological skills training (PST) can be used.

Psychological Skills Training (PST)

PST is defined as "the systematic and consistent practice of mental or psychological skills for the purpose of enhancing performance, increasing enjoyment, or achieving greater sport and physical activity self-satisfaction" (Weinberg & Gould, 2015, p. 248). PST is often utilized through the form of a program that allows the athlete to effectively learn mental skills. These PST programs are often theoretically grounded in a cognitive-behavioural (CB) approach, first modifying the way an individual thinks, which in turn influences that individual's emotions and behaviour. In order for the program to be effective, PST should be systemic, goal oriented, involve an aspect of control, and involve evaluation of program results (Seiler & Stock, 1994). Universal PST programs are not generally used as the program should be developed and adapted to the specific needs of the population or individual being targeted (Bertollo, Saltarelli, & Robazza, 2009). PST programs are often used to target specific mental skills, such as imagery, goal setting, self-talk, and physical relaxation techniques (Vealey, 2007).

Psychological skills have been deemed important for obtaining optimal performance in sport, demonstrating the potential usefulness of these programs (Hardy, Jones, & Gould, 1996). While psychological skills often have a direct influence on performance, as seen by the example of remaining calm during a game and making the correct decisions, these skills can also indirectly influence performance in meaningful ways, such as through effective training (Martin, 2015). The effectiveness of PST programs has been exhibited throughout sport psychology literature and is known to be beneficial beyond just improved performance (Vealey, 2007; Weinberg & Gould, 2015). These benefits can include increased sport enjoyment, a greater sense

of sport and physical activity self-satisfaction, improved athlete well-being, and a greater life-satisfaction (Weinberg & Gould, 2015). Implementation of PST programs is not always easy, as some coaches erroneously believe that the program is only needed for athletes currently facing psychological problems, that the implementation of programs takes too much time away from physical training, or that PST programs represent a quick fix (Bastos et al., 2014). It is important to note that, in general, the PST programs for athletes with a disability do not differ dramatically from the PST programs in use with able-bodied athletes (Hanrahan, 2015). This is in line with previous research by Dieffenbach and Statler (2012), which demonstrated that when comparing athletes with a disability to able-bodied athletes, there are more similarities among groups than there are differences. This finding was also true of psychological skill use between the two groups. Therefore, it stands to reason that psychological skill use between these two populations will be largely the same, and that any psychological skills questionnaire will also be the same as a result.

PST for able-bodied athletes has been widely studied and has demonstrated a host of potential benefits, such as improved sport performance (Hanton & Jones, 1999; Patrick & Hrycaiko, 1998; Thelwell & Greenlees, 2001), increased motivation, and decreased negative cognitive states (Thelwell & Greenlees, 2003). Furthermore, PST allows athletes to better focus their attention, improve their confidence, and manage arousal levels (Thelwell & Greenlees, 2001; Thelwell & Greenlees, 2003). There is currently a significant dearth of information for athletes with a disability and PST program benefits. In a case study of a wheelchair athlete receiving a PST program, improvements in psychological skills and performance were found, however the results lacked generalizability due to the nature of the study (de Guast, Golby, Van Wersch, & d'Arripe-Longueville, 2013).

To date, the majority of studies in this field have focused on athletes with intellectual disabilities (e.g., Gorely, Jobling, Lewis, & Bruce, 2002; Gregg, Hrycaiko, Mactavish, & Martin, 2004; Porretta & Surburg, 1995). Hanrahan, Grove, and Lockwood (1990) conducted a pilot study using PST with blind athletes and found the program was both beneficial and enjoyable for the participants. The authors also indicated that the program was scarcely different than that of an able-bodied athlete, and blind athletes would be able to find success in a sighted PST program with the addition of certain summary information (Hanrahan et al., 1990). A recent study on Paralympic table tennis players with a spinal cord injury demonstrated the effectiveness of a PST program for increasing athletes' mental skill, however once again due to a low sample size results could not be generalized (Lim, Jang, O'Sullivan, & Oh, 2018). Further, two case studies examining the Israeli Paralympic table tennis and sailing teams demonstrated the benefits to performance that resulted following the implementation of a Psychological Preparation Program, a program similar to PST that also includes additional training aspects (Blumenstein & Orbach, 2015). Authors' recommendations for future research on PST for athletes with a disability included expanding the current literature to include different skill levels and age groups (Lim et al., 2018), as well as addressing the small sample sizes traditionally used with athletes with a disability (Blumenstein & Orbach, 2015).

It is important to note that while athletes with a disability often have an interest in participating in a PST program and developing their mental skills, often these athletes do not have access to a mental performance consultant (Arnold et al., 2017). This problem is more apparent in amateur athletes with a disability as elite level athletes with a disability generally have greater access to a PST program and mental performance consultant (Dieffenbach & Statler, 2012; "Mental Health," n.d.). In Canada, athletes who are carded under the Athlete

Assistance Program (AAP) have access to only four hours of support per year with a mental performance consultant ("Athlete Services," n.d.). For athletes not carded, cost can become a major barrier to access. Thus, the need to provide non-elite athletes with mental skills training has long been noted in the literature, and despite the frequent emphasis by sport psychology professionals, the need remains (Vealey, 2005; Weinberg, Neff, & Jurica, 2012). As a result, it is imperative to provide athletes with a disability with access to programs that allow the proper development of their psychological skills.

To create opportunities for athletes with disabilities to receive PST when they otherwise do not have access, online interventions can be utilized. Recently, online programs have grown in popularity and offer a convenient way for athletes to acquire knowledge with ease (Kemper & Khirallah, 2015). Online programs can be wide reaching as 58.8% of the World's population uses the internet, with as many as 89.4% of North American's having access ("World Internet User Statistics," 2019). Researchers have also highlighted the use of online interventions as a potentially useful tool in areas such as behaviour change (Vandelanotte, Spathonis, Eakin, & Owen, 2007; Webb, Joseph, Yardley, & Michie, 2010) and clinical practice (Gaffney, Mansell, Edwards, & Wright, 2014). A benefit to online modules during intervention is the ability for the athlete to access the material when it is convenient for them, thereby increasing engagement in the modules (Moradi, Liu, Luchies, Patterson, & Darban, 2018; Stodel & Farres, 2002). Furthermore, the information can be accessed from any location, at any time, and often can be completed in multiple visits rather than all at once (Brouwer et al., 2010). This can be contrasted to the typical one-to-one session that mental performance consultants typically offer, where both parties must find a time that works. Some users may also prefer anonymity for certain topics, rather than engaging in face-to-face contact with a professional (Brouwer et al., 2010).

Potentially the most important benefit of online interventions is the ability for professionals to tailor interactive interventions for large groups of people, while still allowing individualized and interactive content (Brouwer et al., 2010; Brug, Oenema, & Campbell, 2003; Evers et al., 2003). Furthermore, a major limitation to non-elite athletes seeking PST is that of cost, as PST is generally considered non-essential for these athletes and they cannot warrant the expense of sessions that may cost $100 an hour or more (Weinberg et al., 2012; Wilson, Gilbert, Gilbert, & Sailor, 2009). This limitation to PST may be eliminated through online methods, as an online program can be designed with affordability in mind and offers a cost effective alterative to one-to-one sessions (Stodel & Farres, 2002; Weinberg et al., 2012). An online PST program would also allow for continuous access in line with recommendations that PST be conducted over an extended period of time (Stodel & Farres, 2002; Weinberg & Williams, 2010). Furthermore, a recent study using online training as a means of enhancing competitive performance revealed that engagement in online interventions may help individuals feel and perform better (Lane et al., 2016). Although there is potential for online programs, a review of web-based program effectiveness has emphasized the need for continued research in the area (Webb et al., 2010). Thus, online PST programs may be beneficial for athletes with a disability, however more research must be done in the area before any conclusions can be made.

Despite the potential benefits that an online PST program could offer, there is still a dearth of programs available online that are supported by experts in the field and provide athletes ways in which to develop psychological skills. During an online search, Weinberg et al. (2012) were unable to find a single online program meeting these requirements, a finding supported by a more recent search in 2019 done by the lead author of the current study. Weinberg et al. (2012) believed that an online PST program should be internet-based, affordable for all, fully

automated, tailored to the individual, relevant for users, taught by experts in the field, following "best practices" in mental training (using Vealey's 2007 model), and providing user tools that enhance program success (Weinberg et al., 2012). Other researchers have identified characteristics of effective online programs to include personalized feedback to the users and be attractive to the users (Webb et al., 2010). Further, to increase engagement in online programs, goal setting may be beneficial, as well as the use of interactive elements such as quizzes or the use of media features, such as embedded videos (Brouwer et al., 2009; Severson, Gordon, Danaher, & Akers, 2008). Periodic prompts and monitoring of progress have also been found to be effective in improving the likelihood of website revisits (Brouwer et al., 2009; Ferney, Marshall, Eakin, & Owen, 2009; Severson et al., 2008). Finally, Weinberg et al. (2012) have advocated for the use of online programs as a way of providing "sport psychology for all," a concept long stressed (e.g., Gould, 1990; Weiss, 1998), but still unrealized. Although online PST is promising, no research yet exists to support the efficacy of such a website.

Online PST programs may be a potentially great benefit to athletes with a disability, but online programs are not without their limitations. For one, online programs may not always present individuals with the material or intervention optimally, lessening potential benefits (Glasgow, 2007; Leslie, Marshall, Owen, & Bauman, 2005). Researchers have also encountered trouble with engagement not always being high among visitors, with individuals leaving the website before completing the content, affecting exposure to the material (Eysenbach, 2005; Glasgow et al., 2007). Furthermore, despite the ease with which individuals can visit intervention websites, some researchers have reported that the majority of participants are not visiting the website more than once (Brouwer et al., 2010). Face-to-face consulting is able to offer consistent accountability and a human relationship to the individual, however this may be lacking for a

web-based program (Neff & Carlson, 2016, p. 178). Another potential limitation of an online program is the amount of time and expertise needed to develop and maintain such a program. In order for an online PST program to become operational, many skills are needed such as expertise in web development and developing online modules and applications, as well as the expertise of a mental performance consultant to provide the content of the program (Weinberg et al., 2012). A considerable time investment is also required by the involved parties, as developing a working online program, especially one customized to the needs of the individual, requires a great deal of work (Weinberg et al., 2012). Finally, the cost of development and maintenance of such a program may also be a potential barrier, especially if the goal is to produce a high-quality program (Weinberg et al., 2012). Therefore, there are improvements that can be made to online interventions in order to realize the potential of online delivery methods.

Online interventions for PST among athletes appear to be a promising way of eliminating barriers that non-elite athletes often face (Weinberg et al., 2012). However, the PST programs being administered need to ensure that the psychological skills contained within are targeting the skills they purport to, creating the need for proper measurement tools. Without proper measurement tools, athletes are unable to properly target skills, monitor progress, and create goals for psychological skill development.

Test of Performance Strategies (TOPS)

The goal of the present thesis is to ensure that an online PST program is training the targeted skills and is beneficial to the athlete by way of validating the tools used to measure the psychological skills. Over the years, there has been a number of different inventories developed to accurately measure psychological skills for athletes. Amongst the first of these was the Psychological Performance Inventory (PPI; Loehr, 1986), which was designed to measure

mental strengths and weaknesses on seven different factors. These factors include self-confidence, negative energy, attention control, visual and imagery control, motivational level, positive energy, and attitude control (Loehr, 1986). An important aim of the PPI was to improve the athletes' awareness of their own use of mental skills. The PPI was initially used in various applied settings by consultants, however since then there have been few studies to examine its validity and reliability, and as such the PPI is not a widely used tool in research.

A relatively popular tool for assessing psychological skills relevant to athletes has been the Psychological Skills Inventory for Sport (PSIS; Mahoney, Gabriel, & Perkins, 1987). The original PSIS consisted of six subscales containing a total of 51 true or false items. These subscales included anxiety control, concentration, confidence, mental preparation, motivation, and team emphasis (Mahoney et al., 1987). After analysis, Mahoney et al. (1987) created a revised version of the inventory consisting of 45 items scored on a 5-point Likert scale (1= *Never engage in that behaviour* and 5= *Always engage in that behaviour*). The revised questionnaire demonstrated success when distinguishing between athletes of different skill levels and between genders (Lesser & Murphy, 1988; White, 1993). However, some problems have been highlighted with regards to the revised PSIS, including very poor internal consistency on five out of six subscales (Chartrand, Jowdy, & Danish, 1992), unreliable proposed factor structures (Tammen & Murphy, 1990), and an unacceptable goodness-of-fit following confirmatory factor analysis (Chartrand et al., 1992). Due to the psychometric issues surrounding the PSIS, use of the inventory may result in inaccurate research.

Another psychological inventory measuring mental skills in sport is the Athletic Coping Skills Inventory (ACSI-28; Smith, Schutz, Smoll, & Ptacek, 1995). The ASCI-28 measures the psychological skills that athletes employ to enhance their sporting performance. After evaluation

of the original instrument, the eight factor, 42-item inventory was not confirmed using confirmatory factor analysis, and a revised seven factor, 28-item inventory was advanced (Smith et al., 1995). The seven factors were represented by the subscales of goal setting/mental preparation, coping with adversity, peaking under pressure, confidence and achievement motivation, freedom from worry, coachability, and concentration. Although initial results using the ASCI-28 were promising (Smith & Christensen, 1995), the confirmatory factor analysis and exploratory principal components analysis were done on the same set of data, violating normal procedures for a confirmatory factor analysis (Schutz & Gessaroli, 1993). Furthermore, the ASCI-28 is not an all-inclusive test for psychological skills, and is lacking several important skills such as imagery, self-talk, and relaxation.

Due to the dearth of psychometrically valid inventories in sport, Thomas, Murphy, and Hardy (1999) developed a measure, the Test of Performance Strategies (TOPS), to address the problems apparent in other measures at the time. Specifically, for the purposes of this thesis the TOPS-2 (Hardy, Roberts, Thomas, & Murphy, 2010) is being used to assess athletes' psychological skills. The original TOPS (Thomas, Murphy, & Hardy, 1999) contained two separate scales, one measuring psychological skill use in practice, and the other in competition. Within each scale, there are 32 items that are further divided into subscales. The eight practice subscales include self-talk, emotional control, automaticity, goal setting, imagery, activation, and attentional control. The competition subscales are similar to the practice subscales, except in place of attentional control is negative thinking. Preliminary researchers of the TOPS have provided evidence of both the internal consistency and construct validity of the scales (Gould, Dieffenbach, & Moffett, 2002; Thomas, Marsh, & Smethurst, 2001). The TOPS has established adequate validity for use in able-bodied athletes (Miçooğulları, 2017; Saadatifard, Keshtidar, &

Khoshbakhti, 2014), as well as for athletes with a disability (Bastos, Corredeira, Probst, & Fonseca, 2012; Goudas, Kontou, & Theodorakis, 2006). Support for the use of the TOPS in youth athletes (12-18 years) has been mixed, with researchers ultimately calling for further research to adequately validate the questionnaire in this population (Abdullah, Konsi, Eswaramoorthi, Maliki, & Musa, 2016; Katsikas, Donti, Psychountaki, 2011; Lane, Hardwood, Terry, & Karageorghis, 2004). Specifically, the competition subscales of activation, emotional control, imagery, and negative thinking required significant improvements. For practice, the activation, automaticity, and relaxation subscales also required significant improvements. Specific items also showed weak loadings, particularly for the practice subscales of automaticity and activation (Lane et al., 2004). Furthermore, Lane et al. (2004) suggested the need to separate the attention and emotional control constructs within the competition items, as the constructs are measuring separate things under a singular subscale. In a pilot study, these findings were later supported and demonstrated the need for significant improvements to the original TOPS questionnaire (Hardy et al.,2010).

After an examination of the literature and understanding the problematic validity within certain scales in the original TOPS, Hardy et al. (2010) developed a modified version of the questionnaire, the TOPS-2, that attempted to solve the aforementioned problems. As the original activation factor was conceptualized as readiness to perform, rather than as unidimensional arousal levels, the activation subscale was changed to reflect this. Within the scale, two of the initial competition items were kept and four more were developed. Only one practice item was retained and five new items were developed. In the original TOPS, the attentional control competition items were impossible to isolate, and instead the items gravitated towards either emotional control, or the unpredicted factor of negative thinking (Hardy et al., 2010). As such

three new items were developed to supplement three original items in an attempt to clarify the emotional control competition subscale. The authors also believed that measuring attentional control in competition may be more appropriate if viewed as resistance to disruption and distractibility, and developed 10 new items to reflect this, supplementing the original one item measuring distractibility (Hardy et al., 2010). Furthermore, the phrasing of the relaxation subscale was changed to reflect only the strategic use of the skills in line with the other basic psychological skills (self-talk, goal setting, relaxation, and imagery). This change resulted in three new relaxation practice items to supplement three original items, and the addition of six new relaxation competition items. The final change to the TOPS subscales included modification of the problematic automaticity subscale. These changes included five new automaticity practice items that better reflected the construct, with one original practice item remaining. The competition subscale was completely redone, with six new items being created. In total, instrument refinement resulted in the creation of 49 new items along with the original 64 items. Exploratory factor analysis was then performed, resulting in 37 practice items and 44 competition items (Hardy et al., 2010). Each practice and competition subscale was then further reduced to four items per subscale. The factor structure was then analyzed, and the model was found to have a good overall fit, however the distractibility subscale contained several items with a low factor loading. Furthermore, due to the removal of certain items, the subscale did not adequately measure being resistant to, or distracted by, many relevant situations. As the model fit was still acceptable, and athletes may prefer a shorter questionnaire (Beckmann & Kellmann, 2003), the distractibility subscale was removed resulting in a 64-item questionnaire with eight subscales for both practice and competition.

Confirmatory factor analysis on the TOPS-2 questionnaire concluded a very good fit for the eight-factor competition model (Hardy et al., 2010). The automaticity subscale contained an item that loaded in the opposite direction, and as such was removed and the model re-tested. The revised model fit was also very good (Hardy et al., 2010). As self-talk and negative thinking were conceptually overlapping, the model was tested with each of the constructs removed. The model fit was very good after each removal, however the fit with negative thinking removed was better. The eight-factor practice model was also found to have a very good fit (Hardy et el., 2010).

As the TOPS-2 is still relatively new, there have been few studies to either confirm or refute the validity of the questionnaire. Donti and Katsikas (2014) have demonstrated the validity of the TOPS-2 with able-bodied athlete populations, however also highlighted the problems with the automaticity subscale and recommended against its use. Furthermore, the questionnaire has recently seen use for athletes with a disability (Esatbeyoglu & Campbell, 2018). Cronbach's alpha was calculated for each of the subscales with values above .70 considered acceptable (Pallent, 2007), however values above .60 may also be acceptable for subscales containing only four items (Loewenthal & Lewis, 2018). Usable TOPS 2 subscale coefficients ranged from .59 to .85, containing four subscales that were considered unacceptable (Esatbeyoglu & Campbell, 2018). Three practice subscales were found to have low alpha coefficients; automaticity (α= .38), activation (α= -.12), and attentional control (α= .34). Only attentional control (α= .55) was found to have a low alpha within the competition subscale. The practice subscale of activation was kept with an alpha of .59 due to extremely close proximity to acceptable standards. Esatbeyoglu and Campbell (2018) concluded that the TOPS-2 requires more statistical analysis with greater sample sizes to establish greater confidence in the inventory's factor structure. As the present

study does not use the automaticity subscale in practice or attentional control in competition, the TOPS-2 questionnaire was deemed the most acceptable psychological skill inventory available presently for use with athletes.

Although a valid tool for psychological skills measurement in sport, the TOPS-2 is not without limitations. Self-report measures are widely used in sport psychology research, however possess inherent limitations from which the TOPS-2 is not exempt (Nisbet & Wilson, 1977). Furthermore, as noted previously there remains a dearth of research on the validity of the TOPS-2 and further research is required (Esatbeyoglu & Campbell, 2018; Hardy et al., 2010). As such, the aim of the present study was to validate the TOPS-2 questionnaire, in a population of able-bodied athletes and athletes with a disability, thus providing a valid measurement tool for athletes' use of psychological skills.

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APPENDICES

APPENDIX A

Test of Performance Strategies-2

Hardy, Roberts, Thomas, & Murphy, 2010

1	2	3	4	5
I never do this	I rarely do this	I sometimes do this	I often do this	I always do this

Practice

Self-talk:

Motivate myself to train through positive self-talk _____

Talk positively to get the most out of practice _____

Manage self-talk effectively _____

Say things to myself to help my practice performance _____

Emotional Control:

Trouble controlling emotions when things are not going well _____

Performance suffers when something upsets me _____

Emotions keep me from performing my best _____

Frustrated and emotionally upset when practice does not go well _____

Automaticity:

Able to performance skills without consciously thinking _____

Perform automatically without having to consciously control each movement _____

Allow whole skill or movement to happen naturally without concentrating on each part _____

Monitor all the details of each move to successfully execute skills _____

Goal setting:

Very specific goals _____

Set goals to help me use practice time effectively _____

Set realistic but challenging goals _____

Don’t set goals for practice, just go out and do it _____

Imagery:

When I visualize my performance, I imagine what it will feel like _____

When I visualize my performance, I imagine watching myself as if on a video replay _____

Rehearse my performance in my mind _____

Visualize successful past performances _____

Activation:

Can get my intensity levels just right _____

Can get myself “up” if I feel flat _____

Can psych myself to perform well _____

I have difficulty getting into an ideal performance state _____

Relaxation:

I use relaxation techniques to improve my performance _____

Use practice time to work on relaxation techniques _____

Practice using relaxation techniques at workouts _____

I use workouts to practice relaxing _____

Attentional Control:

Able to control distracting thoughts when training _____

Focus attention effectively _____

Trouble maintaining concentration during long practices _____

Attention wanders while training _____

Competition

Self-talk:

Talk positively to get the most out of competitions _____

Manage self-talk effectively _____

Say things to help competitive performance _____

Say specific cue words or phrases to help performance _____

Emotion Control:

Emotions get out of control under pressure _____

Difficulty with emotions at competitions _____

Difficulty controlling emotions if I make a mistake _____

Emotions keep me from performing my best _____

Automaticity:

Able to trust my body to perform skills _____

Sufficiently prepared to perform on automatic pilot _____

Allow whole skill or movement to happen naturally without concentrating on each part _____

Unable to perform skills without consciously thinking _____

Goal Setting:

Set personal performance goals _____

Set very specific goals _____

Evaluate whether I achieve competition goals _____

Set specific result goals _____

Imagery:

Rehearse performance in my mind _____

Imagine competitive routine before I do it _____

Rehearse the feel of performance in my imagination _____

Visualise competition going exactly the way I want it _____

Activation:

Can get myself "up" if I feel flat _____

Can psych myself to perform well _____

Can get my intensity levels just right _____

Can get myself ready to perform _____

Relaxation:

Use relaxation techniques to improve performance _____

Use relaxation strategies as a coping strategy _____

If I'm starting to "lose it", I use a relaxation technique _____

Relax myself to get ready to perform _____

Negative Thinking:

Keep my thoughts positive _____

Self-talk is negative _____

Thoughts of failure _____

Imagine screwing up _____

APPENDIX B

Modified Test of Performance Strategies-2

1	2	3	4	5
I never do this	I rarely do this	I sometimes do this	I often do this	I always do this

Practice

Goal Setting:

Set very specific practice goals _____

Set goals to help me use practice time effectively _____

Set realistic but challenging goals in practice _____

Evaluate whether I achieve my practice goal _____

Imagery:

Rehearse the feel of performance in my mind _____

When I rehearse my performance using imagery, I see it as if on video or through my own eyes_____

Rehearse my performance in my mind _____

Imagine successful past performances _____

Self-Talk:

Motivate myself to train through positive self-talk _____

Talk positively to get the most out of practice _____

Manage self-talk effectively _____

Say things to myself to help motivate or instruct me in my practice _____

Routines:

I plan a regular set of things to do before practice _____

I plan a regular set of things to think about before practice _____

I plan a regular set of things to do during practice _____

My plan includes certain cue words or action words that I say to myself during practice _____

Relaxation:

I use relaxation techniques to improve my practice _____

Use practice time to work on relaxation technique _____

Incorporate relaxation techniques at workouts _____

If I'm starting to lose it during practice, I use a relaxation technique _____

Activation (Psyching Up):

Can get my intensity levels just right _____

Can get myself up if I feel flat _____

Can psych myself up to practice effectively _____

Can get myself ready to practice _____

Attention Control (Concentration):

Able to control distracting thoughts when training _____

Focus attention (concentration) effectively during practice _____

Trouble maintaining concentration during long practices _____

Attention (concentration) wonders while training _____

Emotional Control:

Trouble controlling emotions when practice is not going well _____

Practice suffers when something upsets me _____

Emotions keep me from practicing at my best _____

Frustrated and emotionally upset when practice does not go well _____

Competition

Goal Setting:

Set personal performance goals_____

Set very specific goals_____

Evaluate whether I achieve my competition goal_____

Set specific result (outcome) goals_____

Routines:

I plan a regular set of things to do before a competition_____

I plan a regular set of things to think about before a competition_____

I plan a regular set of things to do during a competition_____

My plan includes certain cue words or action words that I say to myself during competition____

Imagery:

Rehearse my performance in my mind_____

Imagine my pre-competition warm up_____

Rehearse the feel of performance in my mind _____

Imagine the competition going exactly the way I want it_____

Self-Talk:

Talk positively to get the most out of competitions_____

Manage self-talk effectively_____

Say things to help motivate or instruct me in my performance_____

Say specific cue words or phrases to help performance_____

Relaxation:

Use relaxation techniques to improve performance_____

Use relaxation techniques as a coping strategy_____

If I'm starting to lose it, I use a relaxation technique_____

Relax myself to get ready to perform_____

Activation:

Can get myself "up" if I feel flat_____
Can psych myself up to perform well_____

Can get my intensity levels just right_____

Can get myself ready to perform_____

Attention Control (Concentration):

Able to control distracting thoughts_____

Focus attention (concentration) effectively_____

Trouble maintaining concentration_____

Attention (concentration) wanders_____

Emotional Control:

Emotions get out of control under pressure (stress) _____

Difficulty with emotions at competitions_____

Difficulty controlling emotions if I make a mistake_____

Emotions keep me from performing my best_____

1	2	3	4	5
Not at all interested	Slightly Interested	Moderately Interested	Very Interested	Extremely interested

APPENDIX C

Recruitment Letter for Athletes with a Disability

Hello,

I hope this email finds you well. I, along with my advisor Dr. Krista Chandler, am conducting a study validating a psychological skills questionnaire - the Test of Performance Strategies-2 (TOPS-2)- in **able-bodied athletes and athletes with a disability**. This research study has received clearance from the University of Windsor Research Ethics Board.

I am emailing to request your organization's assistance for recruiting purposes in this study. The goal of the study is to validate a psychological skills questionnaire for use with athletes with a disability. A validated questionnaire for this population would allow the development and **tailoring of specific psychological skills training (PST) programs for this population**. This study is the first step in increasing access to PST programs for athletes with a disability, namely using online methods.

As the organization, I would ask that you consider assisting us by distributing an electronic flyer (see attached Recruitment Flyer) outlining the study information, target participants, contact information, and link to participate in the questionnaire (https://uwindsor.ca1.qualtrics.com/jfe/form/SV_9MR9XP6sUtxjS4Z).

This distribution may be through whatever means you see fit, such as through the use of your organization's social media (i.e., Twitter) account, or by using an e-mail list. Our goal is to recruit as many youth athletes with a disability as possible.

If your organization chooses to participate:

1. **Please complete the permission form attached and return it to us or simply respond by email that you are willing to do so.**
2. **Post the recruitment flyer attached along with the link https://uwindsor.ca1.qualtrics.com/jfe/form/SV_9MR9XP6sUtxjS4Z in whatever format you see fit (email, social media, etc.)**

Should you have any questions, please do not hesitate to contact me.

Thank you for your consideration.

Sincerely,

Matthew Varga

Krista Chandler

Recruitment Letter for Able-Bodied Athletes

Hello,

I hope this email finds you well. I, along with my advisor Dr. Krista Chandler, am conducting a study validating a psychological skills questionnaire - the Test of Performance Strategies-2 (TOPS-2)- in **able-bodied athletes and athletes with a disability**. This research study has received clearance from the University of Windsor Research Ethics Board.

I am emailing to request your organization's assistance for recruiting purposes in this study. The goal of the study is to validate a psychological skills questionnaire for use with able-bodied athletes and athletes with a disability. A validated questionnaire for these populations would allow the development and **tailoring of specific psychological skills training (PST) programs**. This study is the first step in increasing access to PST programs for athletes and will enable the use of a single questionnaire for different populations.

As the organization, I would ask that you consider assisting us by outlining the study information, target participants, contact information, and include a link to participate in the questionnaire (https://uwindsor.ca1.qualtrics.com/jfe/form/SV_9MR9XP6sUtxjS4Z).

This distribution may be through whatever means you see fit, such as through the use of your organization's social media (i.e., Twitter) account, or by using an e-mail list. Our goal is to recruit as many youth athletes with a disability as possible.

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Should you have any questions, please do not hesitate to contact me.

Thank you for your consideration.

Sincerely,

Matthew Varga

Krista Chandler

APPENDIX D

Demographic Questionnaire

Q1. Age: _____

Q2. Gender:

- Male
- Female
- Non-Binary

Q3. What is your ethnicity?

- Caucasian
- African
- Asian
- Hispanic/Latino
- East Indian
- West Indian
- Middle Eastern/Arabic
- European
- Jewish
- Indigenous/Native

Q4. What is your highest and/or current education level achieved?

- Elementary School
- High School
- Some Post-Secondary
- College Diploma
- Undergraduate Degree
- Graduate Degree
- Professional Degree
- Masters Degree
- Doctorate Degree

Q5. Where are you from? Geographic Location (City/Town and State/Province):

_____

Q6. What is the main sport that you play?:

_____

Q7. What level do you compete at in that sport?:

_____

Q8. What is the name of your sport team or organization?:

_____

Q9. How many years of experience in your sport do you have?:

_____

Q10. Do you have a disability?

- Yes
- No

Q11. Is your disability acquired (you were not born with it) or congenital (you were born with it)

- Acquired
- Congenital

Q12. If your disability was acquired, at what age was it acquired?:

_____

Q13. What is your classification level in your sport (if you don't have one then put N/A):
_____

Q14. Have you ever done any deliberate mental training or sport psychology in the past?
Yes
No

Q15. If yes, where?
Online
In person
Using a book
Other (please indicate): _____

VITA AUCTORIS

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PLACE OF BIRTH: Windsor, ON

YEAR OF BIRTH: 1996

EDUCATION: Sandwich Secondary School, LaSalle, ON, 2014

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