

Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and
Well-Being on Performance in a Putting Task

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Abstract

Researchers have advocated for greater insight into the relationship between self-compassion and well-being on performance. Grounded in this understanding, the purpose of this study was to examine the unique and combined contribution of self-compassion and well-being on performance in a putting task. It was hypothesized that self-compassion and well-being would predict performance. Using a cross-sectional design, male golfers ($N = 87$, $M_{\text{age}} = 54.94$; $SD_{\text{age}} = 15.37$ years) completed the Self-Compassion Scale - Athlete Version and the Warwick Edinburgh Mental Well-Being Scale immediately prior to a golf putting task. The putting task consisted of 15 consecutive putts from 7 feet on an outdoor practice putting green. The number of putts holed served as an indicator of actual performance. Perceived performance was measured using a self-reported single-item indicator. Participants holed an average of 7.77 ($SD = 3.15$) putts. Perceived performance was rated as neither good or bad ($M = 2.56$; $SD = 1.00$) across the 5-point response scale. Results from the linear regression analyses showed that self-compassion did not significantly predict putts holed ($\beta = -0.171$, 95% CI -2.12, 0.23, $p = 0.11$; $f^2 = .03$) or perceived performance ($\beta = -0.171$, 95% CI -2.12, 0.23, $p = 0.11$; $f^2 = .04$). Similarly, well-being was not predictive of putts holed ($\beta = -0.013$, 95% CI -1.38, 1.23, $p = 0.91$; $f^2 = .00$) or perceived performance ($\beta = -0.157$, 95% CI -0.79, 0.12, $p = 0.12$; $f^2 = .03$). Overall, conclusions from this research offer converging evidence that the psychological resources of self-compassion and well-being do not impact actual or perceived performance in adult male golfers. Greater insight into whether, and if so under what conditions, self-compassion and well-being are associated with performance outcomes in sport warrants additional empirical scrutiny.

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I came into this lab a caterpillar and emerged a butterfly... I am just kidding... but am I though?

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Introduction

Self-compassion is a concept that has been around for centuries in eastern philosophy and was more recently introduced in western psychology. Drawing from Buddhist philosophy, self-compassion can be defined as treating oneself with kindness and being open to one's own suffering as opposed to avoiding or disconnecting from it (Neff, 2003a). Pain, failures, and inadequacies are looked at in a non-judgmental and understanding way as they are viewed as a shared human experience. There are three components to self-compassion: self-kindness, mindfulness, and common humanity (Neff, 2003a). The first component, self-kindness can be defined as treating oneself with kindness instead of judging and criticizing oneself. Self-kindness involves being patient with oneself when faced with failure or inadequacy. Being kind and supportive to oneself may allow one to move forward, rather than being crippled or immobilized by one's own thoughts (i.e., self-judgement). The second component, mindfulness, means being aware of painful thoughts and feelings while holding them in balanced awareness. Mindfulness is contrasted with being over-identified (i.e., dwelling on and over-emphasizing negative experiences). Within the context of self-compassion, mindfulness differs from its more general forms (i.e., a disposition to engage in purposeful and non-judgmental awareness of the present moment; Kabat-Zinn, 2003). Whereas self-compassionate mindfulness refers to maintaining balanced awareness in the context of failure and inadequacy, general mindfulness refers to an attentive awareness of all experiences (Neff & Dahm, 2015). The last component of self-compassion is common humanity, which involves looking at painful experiences as a shared (i.e., universal) human experience rather than being perceived as isolated to oneself. Negative experiences are acknowledged as universal as opposed to experiences that are isolated to oneself.

Individuals view everyone, themselves included, as worthy of compassion because interconnectedness is recognized (Neff, 2003a).

In sport, self-compassion can be viewed as a tool to help athletes deal with challenging sport situations and negative events (Ferguson et al., 2014; Mosewich et al., 2013). Furthermore, it can be used to help athletes achieve personal goals and improve motivation (Killham et al., 2018). Athletes may be more equipped to reach their full potential in sport with a kind and loving attitude towards themselves (Ferguson et al., 2015).

Despite the positive benefits associated with self-compassion, fear that self-compassion will influence reaching optimal performance has been reported (Huysmans & Clement, 2017). More specifically, some athletes fear that too much self-compassion will lead to complacency, passivity, settling for mediocrity, and lack of motivation (Ceccarelli et al., 2019; Ferguson et al., 2014; Huysmans & Clement, 2017; Killham et al., 2018; Mosewich et al., 2013; Sutherland et al., 2014). Even though self-compassion involves being kind to oneself in failures and inadequacies, it does not imply complacency as a self-compassionate mindset also involves recognizing the potential for growth and improvement (Neff et al., 2005). The culture of sport itself has been suggested to contribute to athlete resistance toward self-compassion given the emphasis on mental toughness, sacrifice, and selflessness (Coulter et al., 2015; Huysmans & Clement, 2017).

Self-Compassion and Well-Being

Self-compassion has been associated with numerous positive mental health outcomes including greater life satisfaction, emotional intelligence, social connectedness, wisdom, personal initiative, curiosity, happiness, optimism, perceived efficacy, agreeableness, and positive affect. (Barnard & Curry 2011; Neff, 2009). Those who are more self-compassionate are

believed to maintain constructive self-attitudes, promote adaptive emotional regulations and resiliency (Gunnell et al., 2017; Trompetter et al., 2017). Self-compassion has further demonstrated associations with negative mental health in the theorized direction given noted links with depression, self-criticism, rumination, thought suppression, and anxiety (Barnard & Curry, 2011; Neff, 2009). As self-compassionate individuals do not ignore or ruminate on adverse events (Barnard & Curry, 2011), researchers have further suggested it serves a protective function in the development of psychopathology (Gerber et al., 2015; Trompetter et al., 2017).

The positive mental health outcomes associated with self-compassion have also been displayed in athletes (Cormier et al., 2023; Ferguson et al., 2014; 2015; Stamitis et al., 2021). Significant correlations between self-compassion and autonomy, meaning and vitality, self-esteem and body appreciation have been reported in young female athletes (Ferguson et al., 2014). Reis et al. (2019) reported positive associations between self-compassion and psychological well-being in male athletes who had competed in sport within the year prior to data collection. Female athletes have stated that self-compassion played a role in their well-being during competitive events as it helped them develop attitudes and behaviours that protect, provide, and motivate (Adam et al., 2021). Mosewich et al. (2013) demonstrated the utility of interventions to promote a self-compassionate mindset. Following a week-long intervention consisting of one psychoeducation session and five self-compassion writing tasks, Mosewich and colleagues (2013) noted increased self-compassion, lowered self-criticism, rumination, and concern over mistakes. Finally, Mosewich et al (2019) reported that self-compassion predicted greater perceptions of control during stressful situations in sport.

On top of using self-compassion to manage emotions during difficult sport events, athletes use self-compassion to see sport adversity in a more positive light, help them persevere

through negative sport events, mindfully take accountability for difficult sport experiences, better manage state anxiety and not get overwhelmed or ruminate on negative events (Adam et al., 2021; Ferguson et al., 2014; Huysmans & Clement, 2017; Lyon, 2020). The negative association between self-compassion and self-criticism has consistently been demonstrated in athletes (Alipour Ataabadi et al., 2022; Kilham et al., 2018; Moswich et al., 2013).

One form of anxiety and rumination that may be particularly salient to athletes may be preoccupation with one's body (Mosewich et al., 2011). Athletes tend to experience appearance-based evaluations that could result in body image concerns and body dissatisfaction (Reis et al., 2015). Self-compassion has been shown to be negatively related to shame proneness, social physique anxiety, objectified body consciousness, fear of failure, and fear of negative evaluation (Mosewich et al., 2011). The positive effects of self-compassion on body-related concerns has also been noted (Eke et al., 2020; Voelker et al., 2021). In their qualitative investigation, Eke et al. (2019) found that body self-compassion afforded athletes greater confidence in their sport-related abilities, appreciate the functionality of their bodies, and reductions in social comparisons. Athletes perceived the more self-compassionate they were towards themselves and their bodies translated into an adaptive focus on performance and skill development. In an attempt to intervene to support athletes' body-related concerns, female collegiate athletes enrolled in an intervention targeting body-related cognitive dissonance and self-compassion (Voelker et al., 2019). Relative to controls, athletes in the intervention reported greater self-compassion, experienced increased awareness of their body, increased acceptance and appreciation for their bodies, and developed skills to support the maintenance of positive attitudes and self-image. Whether self-compassion may alleviate the risk of eating disorders and disordered eating concerns through improved body satisfaction has been further explored in male

collegiate athletes. The proposed effects of self-compassion on the body satisfaction to disordered eating relationship were not supported, however, it was addressed that it may be dependent on gender and athlete status making further examination encouraged (Cusack et al., 2022).

Self-Compassion and Performance

The bulk of self-compassion research has focused on its links with mental health, emotions and adaptive coping. Mental health and effective coping strategies have been posited to contribute to goal progress in sport (Costa, 2017; Mosewich et al., 2019). Extending beyond this knowledge base, researchers have started to explore the link between self-compassion and markers of performance (Reizer, 2019; Tang, 2019; Zhang et al, 2021). In the academic domain, higher self-compassion has been linked to lower cognitive test anxiety (Tang, 2019; Zhang et al., 2021) and positively predicted academic performance in statistics (Zhang et al., 2021). Self-compassion in the workplace was associated with better self-rated performance and lower turnover intentions by employees (Reizer, 2019).

Self-compassion may also benefit sport performance (Cormier et al., 2023). Researchers (Adam et al., 2021; Barczak & Eklund, 2020; Killham et al., 2018) have demonstrated a positive link between self-compassion and perceived sport performance. Based on qualitative investigations, athletes (Adam et al., 2021; Eke et al., 2020; Kim et al., 2020); Reis et al., 2022) identified that self-compassion may serve as resources to support performance/competitive advantage. However, the self-compassion – performance relationship has not been uniformly demonstrated (e.g., Alipour Ataabadi et al., 2022). In their cross-sectional study, Tingaz and Çakmak (2021) examined differences in self-compassion using highest athletic ranking (i.e., no ranking to holding a world ranking) in a sample of university athletes. Using Neff's (2003b)

scale, significant differences in trait self-compassion by athletic ranking was not found. Similarly, Stamitis et al. (2021) did not find differences in self-compassion between NCAA Division I, II and III athletes. When contextualized to the sporting environment, Ferguson et al., (2022) noted that athletes competing at lower levels reported higher self-compassion than those competing at higher levels. Using a non-self-report marker of performance (i.e., time), Alipour Atabadi et al. (2022) examined whether self-compassion predicted changes in sprint performance following biomechanical feedback in a heterogeneous sample of competitive/recreational athletes. Results revealed that self-compassion was not linked with sprint time, nor did self-compassion significantly predict change in sprint performance across the four-time trials included in their investigation. Finally, self-compassion did not predict endurance performance in a 1250m time trial in U17 national team cyclists (Röthlin et al., 2022). Finally, a self-compassion based intervention delivered to athletes noted that training in self-compassion was associated with improvements in self-rated performance only for those who reported 'average' or 'below average' ratings of performance relative to controls at baseline (Kuchar et al., 2023). Coach-ratings of athlete performance improved across the intervention and follow-up period for those receiving the self-compassion intervention when contrasted against athletes assigned to the control condition (Kuchar et al., 2023).

Well-being and Performance

Well-being is a multifaceted construct without consensus for a universal definition (Dodge et al., 2012). Historically, two distinct traditions serve as the foundation for researcher understanding: hedonic and eudaimonic approaches (see Ryan & Deci, 2001 for a comprehensive review). The hedonic and eudaimonic approaches advance distinct characteristics of well-being. As such, the exclusive use of one approach to the expense of the other translates

into an incomplete representation of well-being (Lambert et al., 2015). For example, the centrality of feelings to the hedonic tradition discounts functioning and the fulfillment of personal goals. Similarly, the focus on functioning embedded within the eudaimonic tradition disregards the contributions of feelings to how an individual interprets their world. Therefore, well-being is a positive and sustainable mental state that allows individuals, groups and nations to thrive and flourish (Davidson, 2004).

Well-being has been deemed a critical resource in terms of athlete mental health, their ability to overcome challenges, performance outcomes and sustainable careers (Lindqvist, 2011). Despite the notable recent investment in athlete well-being (e.g., Lundqvist & Sandin, 2014), the bulk of our understanding resides within descriptive statistics to position athlete well-being along a continuum (Kuettel et al., 2021; Nicolls et al., 2020; Walton et al., 2021), athlete's well-being experiences (e.g. Dunn, 2014; Tanimaru & Dos Santos, 2016; Uzzell et al., 2022) and factors that contribute to an athlete's well-being (Agnew et al., 2017). Costa (2017) suggested that well-being and performance are considered as complementary goals that exert bidirectional influence on each other. Despite the rise in researcher/practitioner interest in well-being, links to sport performance to date is limited. Filho et al. (2015) reported a significant weak, negative relationship ($\beta = -.26, p = .04$) between well-being and subjective performance in a sample of elite cyclists concluding that well-being was predictive of better performance. Further, Kalda et al. (2004) reported a moderate to strong, positive correlation ($r = .63$) between the well-being and performance of Estonian track and field athletes. Vernier-Fillion et al. (2017) reported a small positive association between well-being and performance as measured by games played. When performance was rated by the coach, positive associations with athlete well-being was noted when measured at a single point in time (Lemelin et al., 2022; Study 1) but not over time

(Study 2). Finally, Belz et al. (2018) reported a small effect for differences in well-being between 1799 German athletes of various competitive levels with Junior National-level athletes reporting somewhat lower well-being scores on average than did National and International level athletes. Results suggestive of a positive relationship between well-being and athlete performance are not all uniformly positive. For example, Liberal et al. (2014) reported a non-significant weak, negative relationship ($r = -.09$) between well-being and change gymnastics competition performance. Intuitively, the link between well-being and performance outcomes appears plausible. Yet greater insight into the nature of the relationship between well-being and athlete performance is needed to support to build this evidence base.

Therefore, the objective of the present investigation was to examine the unique and combined contribution of self-compassion and well-being on performance in a putting task by golfers. This overall objective was guided by the following four research hypotheses.

H₁: At baseline, self-compassion would be positively associated with well-being consistent with (Eke et al., 2020; Ferguson et al., 2014; Pandey et al., 2021; Stamatis et al., 2020).

H₂: Higher levels of self-compassion at baseline would predict higher perceived (Adam et al., 2021; Barzak & Eklund; 2020; Killham et al., 2018) and actual golf putting performance.

H₃: Consistent with (Filho et al., 2015; Kalda et al., 2004; Vernier-Fillion et al., 2017), higher levels of well-being at baseline would be associated with higher perceived and actual golf putting performance.

H₄: As an exploratory hypothesis, well-being would predict unique variance beyond self-compassion for perceived and actual golf putting performance.

Significance of the Proposed Investigation

Overcoming challenges (e.g., injuries, not meeting personal goals and expectations and performance plateaus; Ferguson et al., 2014) is inherent to sport. Self-compassion may be one resource to increase well-being while also dealing effectively with stress and setbacks in athletes (Röthlin, 2019). Overall, researchers have demonstrated that treating oneself with kindness may play a role in enhancing well-being, facilitating positive perceptions of performance, and reducing both psychological and physiological anxiety symptoms that could impair sport performance (Cormier et al., 2023; Röthlin, 2019). Little debate still needs to be waged in support of the benefits of self-compassion on mental health. Yet, considerable scope to investigate the relationship between self-compassion and performance still exists given the limited (and somewhat inconsistent) conclusions that currently exist. The present investigation will address select inherent limitations of this literature. One limitation may be linked to sampling. What is currently known about the self-compassion– performance relationship is often examined using a heterogeneous sample of athletes in terms of the sport they compete in (Adam et al., 2021; Alipour Ataabadi et al., 2022; Killham et al., 2018; Tingaz & Çakmak, 2021; Stamitis et al., 2020). Performance metrics vary widely across sports (e.g., swimming versus volleyball). Only Barzak and Eklund (2020) offered insights into this relationship using a homogeneous sample of athletes in terms of sport participation (i.e., adolescent swimmers). Therefore, the present investigation serves to contribute to the existing knowledge through its recruitment of a homogeneous sample of athletes – namely golfers.

Concerns linked to sample heterogeneity holds implications for decisions linked to the measurement of the dependent (or response) variable. Notably performance. Except for Alipour Ataabadi et al. (2022) and Röthlin, Wyler et al., (2022) researchers have exclusively relied on athletes' perceived as opposed to actual sport performance for several reasons. It has been argued

that perceived performance may be most relevant when exploring associations with other subjective experiences (e.g., emotions, grit; Doorley et al., 2022) as individual athletes may appraise performance differently even if the outcome is similar (e.g., win, number of points scored). The present investigation includes both perceived and actual measures of performance in an effort to address concerns expressed with the exclusive use of one over another. There is a common suggestion that well-being can be influential for performance (Costa, 2017; Zhang et al., 2021), however, the research that is focused on the exploration of the relationship between well-being and sport performance is scarce. Therefore, the relationship between well-being and sport performance warrants research attention.

Methods

Participants¹

Five male golfers ($M_{age} = 52.4$ years; $SD_{age} = 18.18$ years) participated in the pilot study, four of whom self-identified as Caucasian (80%). Three (60%) of the golfers considered themselves to be “recreational” competitors. Three golfers indicated they were a member of Golf Canada and the average handicap was 9.10 ($SD = 4.87$). The average number of rounds of golf played in 2022 was 43.40 ($SD=40.96$). No golfers self-reported injuries that could have influenced their putting performance.

Eighty-seven male golfers ($M_{age} = 54.94$ years; $SD_{age} = 15.37$ years) participated in the main study. Of those who participated, the majority self-identified as Caucasian ($n = 77$; 88.5%). Most classified themselves as “recreational” competitors ($n = 77$; 88.5%). Twenty-one golfers indicated they were a member of Golf Canada and the average handicap was 9.93 ($SD = 6.31$). The average number of rounds of golf played in 2022 was 27.73 ($SD = 19.53$). Nine (10.3%) golfers self-reported injuries that could have influenced their putting performance.

Procedure

All study protocols/procedures were reviewed and cleared by a university-based Research Ethics Board (REB File #21-315) prior to initiating participant recruitment. Study protocol was pre-registered (<https://osf.io/8kmtz>). A multi-pronged recruitment strategy was adopted. Study participants were recruited from signage posted at Roseland Golf and Country Club (see Appendix A; Appendix F) Facebook and Instagram (see Appendix G). Participants expressing interest were e-mailed details about the study (see Appendix D) which contained the Letter of Invitation (LOI; see Appendix B) and Informed Consent (IC; see Appendix C) which provided information about this study and encouraged participants to ask questions. Those interested in participating were asked to sign and return via email the IC to the Principle Student Investigator. With consent gained, participants selected a 30 minute mutually convenient window of time in the upcoming days/weeks for data collection.

Pilot Study. Five golfers were recruited to perform the putting task. Inclusion criteria for selection mirrored that for participants of the main study described below. Participants included in the pilot phase were not eligible to participate in the main study. They were entered into a draw for a chance to win one \$50 gift card to Roseland Golf and Curling Club. Participants volunteering for this phase were asked to complete the general and golf-specific demographic questionnaires, the warm-up protocol, the putting task and the measure of perceived performance. They were not asked to complete measures of self-compassion or well-being. The purpose of this pilot task was to offer insight into the golf putting task adopted in this study on performance and to standardize researcher protocol.

Main Study. Participant recruitment was guided by the following inclusion criteria: (a) at least 18 years of age or older, (b) consider themselves to be a golfer, (c) able to read and write in

English, and (e) consent to participate in this study. Participants were entered into a draw for a 1 in 7 chance to win a \$50 gift card to Roseland Golf and Curling Club. An a priori power analysis for a bivariate correlation between self-compassion and performance (i.e., H3) was conducted in G*Power (version; 3.1.9.7; Faul et al., 2013). The target sample size for this study was 77 based on an $r = .28$ (Barzak & Eklund, 2020), a fixed probability value ($\alpha = .05$) and statistical power ($\beta = .80$). It was the self-compassion – performance relationship that was used in the apriori power analysis as this was the primary question under investigation. Further, the aprior power analysis was used based on perceived, as opposed to actual, performance given the timing of data collection. Insights into self-compassion-actual performance relationship (i.e., Alipour Ataabadi et al., 2022; Rothlin et al., 2023) were published post power calculation.

Once arriving at the practice putting green, main study participants were first asked to complete the general and golf-related demographic questionnaires followed by measures of self-compassion and well-being (see Appendix K). The data was collected on site in pencil and paper format. Participants were then taken through the putting task. Instructions regarding study protocol was made by the Principle Student Investigator using a standardized script to minimize potential between-group effects during data collection (see Appendix L). Participants were then asked to complete the familiarization and performance putting tasks. The Principle Student Investigator recorded the number of putts holed (see Appendix M). Regardless of the putt being successful or not, the ball was moved out of the way or removed from the hole to avoid interference with following putts. Once completed, participants were asked to complete the measure of self-rated performance (see Appendix N) and thanked for their participation.

Measures

Demographics. Participants were asked to complete both a general and golf-related demographic questionnaire. For the general demographic questionnaire participants answered questions regarding age, gender, and ethnicity. The golf-related demographic questionnaire assessed information about the golfer's skill level and frequency of play. Participants were asked questions regarding years of playing experience, if they are Golf Canada members, handicap, and the number of rounds played the current golf season. There was a three single item putting questions (i.e., "How important is putting to golf performance?", "How important is putting to your golf performance" and "How important is putting to you as a golfer?") on a 5-point Likert scale ranging from 1 ("Not at all Important") to 5 ("Extremely Important").

Self-Compassion. Modified from Neff (2003b), the athlete version of the Self-compassion Scale (SCS-AV; Killham et al., 2018) was used to measure golfers' self-compassion within the context of sport. The 26-item SCS-AV span the positive and negative aspects of self-compassion with response options ranging from 1 ("Almost never") to 5 ("Almost always") across six subscales: Self-kindness (5 items; Sample item: "I'm tolerant of my own athletic flaws and inadequacies"); Common humanity (4 items; Sample item: "I try to see my failings as part of the sport experience"); Mindfulness (4 items: Sample item: "when something upsets me in my sport I try to keep my emotions in balance"); Self-judgment (5 items; Sample item: "when times are really difficult in my sport, I tend to be tough on myself"); Isolation (4 items; Sample item: "when I fail in my sport, I tend to feel alone in my failure"), and Over-identification (4 items: Sample item: "when something upsets me in my sport I get carried away with my feelings"). Following the instructional stem "Please read each statement carefully before answering. Indicate how often you behave in the stated manner using the following scale." For the present investigation, the word "athlete" was changed to "golfer" and "sport" to "golf" to better reflect

the targeted sample and the performance task. After reverse scoring the negatively worded items, a total score for self-compassion was computed by summing responses to each item then dividing by 26. Higher scores represent greater self-compassion in golf. Evidence for the validity of SCS-AV scores in athlete samples have been reported as greater self-compassion has been linked with lower self-criticism and greater self-reported performance (Killham et al., 2018). Internal consistency score reliability estimates for the composite score has exceeded $\alpha = .84$ in athletic samples (Crozier et al., 2019; Killham et al., 2018).

Well-being. Well-being was measured using the 14-item Warwick Edinburgh Mental Wellbeing Scale (WEMWBS; Tennant et al., 2007) which assesses the extent to which an individual is feeling (Sample item: “I’ve been feeling optimistic about the future”) and functioning well (Sample item: “I’ve been able to make up my own mind about things”). Individuals were asked to respond to each of the positively worded items that best describes their experience in general. Typically, participants respond to each item over the last 2 weeks, however, global well-being was more appropriate for the current study to be consistent with the SCS-AV (Killham et al., 2018). The response scale ranges from 1 (“None of the time”) to 5 (“All of the time”). A total well-being score was computed by adding each item and dividing by 14 with higher scores corresponding to higher well-being. Score validity and reliability of the WEMWBS has been documented in the general population (Tennant et al., 2007) and in athletic samples (Olive et al., 2021; Rice et al., 2020; Walton et al., 2021). Approval to use the WEMWBS for the purpose of data collection for this study was secured April 28th, 2022.

Perceived performance. Participants were asked to provide an appraisal of the quality of their golf putting performance. Following the instructional stem, “Considering your golf putting performance today”, participants were asked to respond “Was it a good or bad performance for

you?” on a 5-point Likert scale ranging from 0 (“Very bad”) to 4 (“Very good”). This single-item indicator has been used in other sport literature (e.g., Coffee & Rees, 2008; Vast et al., 2010), including that examining self-compassion (Barzack & Eklund, 2020).

Actual golf putting performance. The total number of putts holed out of 15 served as the measure of actual golf putting performance consistent with Turner et al. (2018).

Golf Putting Task

Environmental conditions could potentially have an impact on green speed and putting performance (Oatis, 2016). In an attempt to address such concerns, data from Environment Canada (e.g., temperature, humidity, wind, probability of precipitation, etc.) was recorded by the researcher on the day of the data collection. The researcher also measured the speed of the green using a stimpmeter prior to each data collection session (Turner et al., 2018). Stimpmeter readings were taken as an average of three trials.

To enhance the ecological validity of the investigation the task occurred on an outdoor practice putting green at Roseland Golf and Curling Club. The task to measure putting performance was based on previous research done by Turner et al. (2018). The length of the putt was set at 7-feet as Professional Association Golfers have a 50% chance of making a putt from this length (Fearing et al., 2011). The participants were asked to complete 6 familiarization putts that did not count towards their performance. The experimenter then recorded the next 15 performance putts. Putts holed received a score of ‘1’. All other putts received a score of ‘0’. Higher scores on the putting task indicated better putting performance. Participants used their own putters. Titleist Pro V1 golf balls to be used in the putting task were provided to the participants and were uniform for all regardless of whether participants were in the pilot or main study.

The 6 familiarization putts and 15 performance putts were completed from the same location on the green and remained the same throughout the study. The putting green contained four cups. The one cup selected for the putting task was the part of the green with the flattest surface as determined by stimpmeter readings (i.e., the golf balls rolled approximately the same length from both directions). Participants completed the study instrumentation at the corner of the green for convenience. During the putting task, the researcher stood close enough to remove the ball from the hole by hand and place the ball back into the tube of balls. Exact location the researcher stood changed based on time of day to prevent shadows from being a distraction for the participant. Regardless of where the researcher was standing, there was 6-feet between the researcher and the participant to abide to COVID-19 protocol.

Data Analysis

Data was analyzed across the following steps using IBM SPSS (Version 28). Differences between pilot and main study participants across demographic and performance data were first examined using appropriate statistical tests based on level of measurement. Data was then screened for missing values, normality, outliers, and conformity with assumptions for relevant statistical tests. Third, internal consistency score reliability values were estimated for each multi-item instrument using coefficient alpha (α ; Cronbach, 1951) and coefficient omega (ω ; McDonald, 1999). Fourth, descriptive statistics for all study variables were calculated. Fifth, one-tailed Pearson bivariate correlations were calculated and interpreted to examine patterns of association consistent with H₁. Sixth, H₂ and H₃ were tested using a series of simple linear regression analyses to examine the unique effects of self-compassion or well-being on perceived and actual golf-putting performance. Finally, H₄ were examined using two separate hierarchical regression analyses conducted with either perceived or actual golf putting performance serving

as the response variable. Self-compassion was entered at Step 1 and well-being at Step 2. For all inferential statistics 95% confidence intervals (95% CI) and estimates of effect size were calculated and interpreted. Consistent with Cohen (1992), f^2 values of .02, .15 and .35 represent small, moderate and large effects for H2 – H4.

Results

The appropriate parametric (t -test) or non-parametric (χ^2) test was conducted to examine differences between pilot and main study participants on general and golf demographic variables (see Table 1). A large effect size for the number of rounds played in 2022 was found ($d = 0.75$), yet statistical significance was not achieved (i.e., $p = .11$). Participants in the pilot phase had played more rounds of golf in 2022 than had those in the main study. Significant differences were also found between pilot and main study participation on self-identified ethnicity ($p < .01$; $phi = .44$) and level of competition ($p = .04$; $phi = .27$). No other statistically significant differences between pilot and main study participants were found ($p > .05$) on general and golf demographic variables with effect sizes ranging from $d = .01$ to $.39$. Further, differences in total putts holed ($p = .97$; $d = .02$) and self-rated performance ($p = .74$; $d = .15$) were not found.

Environmental Conditions and Stimpmeter Readings

The average temperature across the data collection period was 23.51 degrees Celsius ($SD = 3.36$; $Range = 15 - 28$). Precipitation fell one out of the twenty-eight days of data collection and humidity averaged 60.54% ($SD = 15.29\%$; $Range = 26\% - 84\%$). The average stimpmeter reading was 7.75 feet ($SD = 0.70$; $Range = 6.09 - 9.08$) which was slightly slower than the average golf green (United States Golf Association, 2012) but within the range of acceptability to measure putting performance (Turner et al., 2016).

Preliminary Analyses

Five pilot and 89 main study participants provided consent to participate in the current study (see Footnote 1 and Appendix B). Two main study participants were deemed non-responders and were subsequently removed from further analysis. Therefore, the final sample size retained for analysis included pilot ($N = 5$) and main ($N = 87$) study participants. There were no non-response errors for primary study variables in the pilot sample. For main study participants, non-response errors were observed on five of twenty-six SCS-AV items with no more than two participants (2.23%) failing to provide a response to that individual item. Little's (1988) test ($\chi^2 = 165.60$, $df = 130$, $p = .165$) implied that SCS-AV data were not missing completely at random. Non-response errors on four of fourteen WEMWBS items was observed with no more than one participant (1.11%) failing to provide data for any one item. Little's (1988) test ($\chi^2 = 82.66$, $df = 38$, $p = .000$) implied that WEMWBS data were missing completely at random. Missing values were replaced using an expectation maximization algorithm before further analyses.

Internal Consistency and Descriptive Statistics Estimates

Estimates of internal consistency for SCS-AV and WEMWBS were $\alpha = 0.87$; $\omega = .75$ and $\alpha = 0.92$; $\omega = .92$ respectively for data provided. The average score on the SCS-AV was 3.43 ($SD = 0.55$) and 3.87 ($SD = 0.60$) on the WEMWBS. Main study participants averaged 7.86 ($SD = 3.10$; $Range = 1 - 15$) putts holed with self-rated performance at approximately the mid-point of the response options provided ($M = 2.56$; $SD = 1.10$). As such main study participants typically rated their performance "neither good nor bad".

Bivariate Correlation Between Self-Compassion and Well-being

To examine if self-compassion was positively associated with well-being in this study Pearson bivariate correlations were computed and interpreted (see Table 2). One participant was

deemed an outlier on WEMWBS scores ($z = -4.88$) and was subsequently removed. There was a small-to-moderate positive correlation between self-compassion and well-being $r = 0.35$, $p \leq 0.01$; $95\% CI = 0.15, 0.52$.

Regression Analyses Predicting Performance Outcomes

To evaluate if self-compassion and well-being predicted the performance indicators used in this study (i.e., total putts holed and self-rated performance), a series of four simple linear regression models were computed then interpreted (see Table 3). No statistical outliers were identified with self-compassion as the explanatory variable within the sample of golfers. One statistical outlier was identified with well-being ($z = -4.88$) as the explanatory variable. Based on visual interpretation of the scatterplot, this data point was deemed an influential, as opposed to leverage, point and was removed from all subsequent analyses including WEMWBS scores. No other assumptions of regression analyses were violated. Assessment of self-compassion in the regression models produced the following results: (a) total putts holed ($R^2_{adj} = .02$; $F(1,85) = 2.46$, $p = 0.12$; $f^2 = 0.03$) (b) self-rated performance ($R^2_{adj} = .03$; $F(1,85) = 3.42$, $p = 0.07$; $f^2 = 0.04$). Assessment of well-being for explanatory variables in the regression models produced the following results: (a) total putts holed ($R^2_{adj} = .00$; $F(1,84) = 0.01$, $p = 0.91$; $f^2 = 0.00$); (b) self-rated performance ($R^2_{adj} = .01$; $F(1,84) = 2.53$, $p = 0.15$; $f^2 = 0.03$). Neither self-compassion, nor well-being, were statistically significant predictors of either performance measure. Consistent with bivariate correlations between study variables (see Table 2), interpretation of the unstandardized beta coefficients demonstrated that lower scores on self-compassion/well-being were linked with better performance (albeit not significantly). All effect size estimates between explanatory and response variables were deemed small, save for estimates for well-being predicting total putts holed which was negligible (Cohen, 1992).

Hierarchical Regression Analysis for Performance Outcomes

To examine if well-being predicted unique variance beyond self-compassion for the performance indicators, two hierarchical regression analyses were conducted and interpreted (see Table 4). Self-compassion was entered at step one and well-being was entered at step two. Well-being did not predict unique variance beyond self-compassion on performance indicators. The total variance accounted for when total putts holed was the response variable was 1.3% ($F(2,83) = 1.56, p = 0.22; R^2_{adj} = .01; f^2 = 0.01$). Interpretation of the Relative Pratt Index (RPI) indicated only self-compassion was a meaningful indicator in this model. When self-rated performance was the predictor variable, the total variance accounted for was 2.6% ($F(2,83) = 2.13, p = 0.13; R^2_{adj} = .03; f^2 = 0.03$). Both self-compassion and well-being were deemed meaningful predictors in this model ($RPI > .25$). In sum, well-being was not statistically significant in predicting unique variance beyond self-compassion in either performance measure. Effect sizes ranged from negligible to small depending on response variable. Self-compassion had negative coefficients in all models, suggesting self-compassion increases as the response variable (i.e., performance) decreases. Well-being has positive coefficient in the regression model for total putts holed suggesting well-being increases as total putts holed increases. For the self-rated performance regression model the coefficients were negative indicating as well-being increases self-rated performance decreases.

Discussion

Self-compassion and well-being have been identified as potential resources to support performance in sport (Adam et al., 2021; Alipour Atabadi et al., 2022; Barczak & Eklund, 2020; Kalada et al., 2014; Kilham et al., Kuchar et al., 2023; 2018 Filho et al., 2015; Liberal et al., 2015; Röthlin et al., 2022; Vernier-Fillion et., 2014). Despite such claims, support for the direct

relationship between self-compassion and well-being on sport performance has been equivocal and therefore warrant further investigation. The purpose of this study was to examine the unique and combined contribution of self-compassion and well-being on performance in a golf putting task. Results supported a positive association between self-compassion and well-being in male golfers. Neither self-compassion, nor well-being, were statistically significant predictors of actual or perceived performance in the putting task with negligible-to-small effects noted. Further, well-being did not predict unique variance beyond self-compassion for either actual or perceived performance measures.

Insights into self-compassion research in general, and in sport in particular, have rarely exclusively sampled males. Reasons for the over-reliance on female samples advanced include consistent findings that females report lower self-compassion on average than males (Bluth et al., 2017; Souza & Hutz, 2016; Yarnell et al., 2015) combined with the understanding that females are more likely to enroll in self-compassion interventions (Neff & Germer, 2012). Despite this finding, Yarnell et al., 2015 cautioned that gender differences in self-compassion should not be over emphasized given the magnitude of the difference ($SD = .18$) and the finding that differences based on gender were reduced among older samples. Differences based on gender have not been found among athletes using either global (Röthlin et al., 2022) or contextual (i.e., SCS-AV; Ferguson et al., 2022) measures of self-compassion. Consideration of average self-compassion scores on the SCS-AV ($M = 3.43$) in the present male sample was comparable to that reported by female-only ($M = 3.23$, Ferguson et al., 2022) and mixed gender samples ($M = 3.47$; Alipour Atabadi et al., 2022).

The average well-being score in this study ($M = 3.87$; $SD = 0.60$) was aligned, albeit slightly higher, when compared to other sport-related literature. In their cross-sectional study,

Nicholls et al. (2020) reported an average score of 3.58/item in their sample of 233 professional male rugby players. Calculated across 37 weeks, Abbott and colleagues (2019) reported average well-being scores of 3.43/item generated from 25 professional male soccer players using the 14-item WEMWBS. Regardless of any slight differences across samples, participant scores on well-being were classified as ‘average’ (User Guide of the Warwick-Edinburgh Mental Wellbeing Scales”, 2020).

Consistent with the hypothesis advanced, a positive correlation between self-compassion and well-being was found in the present investigation. Study findings were similar to other research in female athletes adopting cross-sectional (Ferguson et al., 2014; 2015) and longitudinal designs (Ferguson et al., 2022). To date, few studies have exclusively examined the relationship between self-compassion and well-being in male athletes. One notable exception is Reis et al., (2019) who reported a positive association between self-compassion and well-being in male athletes who competed at various competitive levels across diverse sports. Turning to negative mental health, Jansen et al. (2019) found that self-compassion was inversely related to symptoms of depression and anxiety. Collectively, conclusions grounded on exclusively male athlete samples align with that from female athletes suggesting that self-compassion is associated with increased well-being, decreased negative mental health, lower self-criticism and may be a viable resource to persevere through negative cognitions and emotions that result from adverse events (Reis et al., 2019; 2022).

Undeniably, sport-based researchers are invested in the psychological resources that hold direct links with performance. While findings of qualitative investigations (Adam et al., 2021; Reis et al., 2022; Röthlin et al., 2022) consistently endorse have the benefits of self-compassion to performance, findings from quantitative investigations (e.g., Alipour Ataabadi et al, 2022;

Barzak & Eklund, 2020; Röthlin et al, 2022) remain equivocal. Most of what we know about the self-compassion – performance relationship has been undertaken in female participants (e.g., Adam et al., 2021; Killham et al, 2018). Yet, with the notable exception of Röthlin et al. (2022), investigations of this relationship using quantitative data in male athletes exclusively is limited. Hypotheses advanced were not supported. With perceived performance as the outcome, self-compassion was not a significant predictor. The direction of the relationship was negative suggestive that higher self-compassion was associated with lower perceived putting performance which is in contrast to the bulk of the existing literature (Barczak & Eklund, 2020; Killham et al., 2018). Only Walker (2021) reported a negative relationship between self-compassion and perceptions of reduced athletic accomplishment (i.e., subjective evaluation of the athlete's current performance when compared to their performance goals and/or the performance of other athletes) in adolescent squash players. One alternative explanation may be that those with lower performance had higher self-compassion at baseline. It is plausible that participants may begin the putting task with higher self-compassion because they have a sense of their own putting ability and anticipated lower performance. Researchers may want to gain greater insight into the bi-directional nature of the self-compassion performance relationship.

When actual putting performance served as the response variable, self-compassion was not a statistically significant predictor of actual putting performance. That self-compassion was not significantly related to actual performance aligns with findings grounded in sprint performance in a heterogenous sample of athletes (Alipour Ataabadi et al., 2022), judge ratings of gymnastics performance (Mazahreh & Awamleh, 2016) or cycling time trials (Röthlin et al., 2022). When actual performance served as the outcome, consistency in conclusions are advanced across the breadth of the literature. This is with the understanding that self-compassion was

assessed using different instruments, the measure of performance varied across sports and the demographics of the samples varied.

There may be a few potential factors that could have contributed to differences in results between the current and existing research. First, there may be differences in select demographic and sporting variables. Literature informing the present investigation relied exclusively on female (Ferguson et al, 2014; Killham et al, 2018) or both male and female (Alipour Ataabadi et al., 2022; Barczak & Eklund, 2020) athletes. Further, what is known about the self-compassion – performance relationship has typically been examined in adolescent (Barzak & Eklund, 2020; Walker, 2021) and young adult samples (Adam et al., 2021; Alipour Ataabadi et al, 2022; Killham et al, 2018). Finally, the competitive level of the athlete may hold implications for the self-compassion – performance relationship. A majority of participants in our study considered themselves to be 'recreational' or 'amateur' in comparison to findings derived from those participating at higher levels (Ferguson et al., 2014; Killham et al., 2018). Differences in the nature of the sporting task (e.g., putting in golf vs. sprint performance vs. endurance performance) may also influence the self-compassion – performance relationship. These reasons however currently remain speculative. Researchers may want to further unpack sample and/or sporting task characteristics that influence the self-compassion – performance relationship to offer greater clarity.

Costa (2017) suggested that well-being and performance exert a bidirectional relationship to each other. Consistent with noted positive associations between well-being and self-rated (Filho et al., 2015; Vernier-Fillion et al., 2017) and actual (Kalda et al., 2004; Vernier-Filon et al., 2017) performance, it was hypothesized that higher levels of well-being would predict higher perceived and actual golf putting performance. Results from the present investigation did not

support proposed hypotheses. Study findings are better aligned with Liberal et al. (2014) who measured well-being in adolescent female gymnasts prior to the start of the competitive season and contrasted scores to mean difference performance scores between the previous and current season.

Deviation from that which was hypothesized may similarly extend to diversity in sample and sport characteristics previously identified. Only Vernier-Filion et al. (2017) included an all male sample with scores of well-being collected during adolescence. The timing of assessments may also be implicated. In the present investigation, well-being was taken shortly (e.g., 10 minutes) prior to the putting task. Whereas assessments of well-being and performance were taken separated by 10 days (Filho et al., 2015), 5 months (Kalda et al., 2004), one year (Liberal et al., 2014) and 15 years (Vernier-Filion et al., 2017) in the existing literature that informed this research. Differences in the operationalization of well-being may further complicate the integration of findings. The measure used in the present investigation (i.e., WEMWBS) taps into elements of hedonic and eudaimonic well-being. Existing literature has typically adopted those that tapped exclusively into eudaimonic well-being (Liberal et al., 2014) or subjective well-being (Verner-Filion et al., 2017). The difference in measures used for sport performance (e.g., time, number of games played) and putting performance may also be implicated in the noted differences.

The final hypothesis was exploratory in nature. It was hypothesized that well-being would predict unique variance between self-compassion for perceived and actual golf putting performance. The results showed that self-compassion did not significantly predict unique variance beyond well-being for either performance measure. There was no increased variability when adding well-being as a predicting variable alongside self-compassion. Researchers have

invested in understanding the link between psychological resources and performance (Höner & Feichtinger, 2016; Marsh & Perry, 2005). Most relevant to the present investigation, self-compassion has been examined in tandem with self-criticism (Alipour Ataabadi et al, 2022; Kilham et al., 2018), self-esteem (Alipour Ataabadi et al., 2022) and mental toughness/achievement motivation (Röthlin, Wyler et al., 2022) to investigate the unique and combined influences of these resources on performance. Researchers are encouraged to continue their investigation into the psychological resources that underpin athletic performance.

It is clear that there remains considerable scope to investigation whether (and if so for whom) self-compassion and well-being are associated with performance in sport. Given the relative merits of adopting both perceived and actual performance measures (Doorley et al., 2022), it is recommended that both markers continue to be used. The limited evidence base, combined with noted variation conclusions, are suggestive of considerable intricacy in the relationship between self-compassion (and well-being) with performance. Understanding any mechanisms that explain the self-compassion (well-being) – performance relationship such as self-identified gender, age, type of performance task adopted and competitive level can further contribute to the existing knowledge base. For example, Mosewich et al. (2023) called for the need to examine self-compassion across the breadth of a sportsperson's lifespan. Further, Makepeace and Young (2021) suggested self-compassion may serve as a resource to help masters-level athletes accept and cope with age-related performance changes and balance the demands of sport and life. Further, Kuchar et al. (2023) noted the benefits of a self-compassion intervention on performance only for those with lower-than-average scores. This study used a cross-sectional design and putting task to measure the relationship between self-compassion, well-being, and performance. Researchers may want to extend this line of inquiry to include self-

compassion and well-being across tournament rounds. This extension would serve as a more ecologically valid test of the role of these psychological resources on performance. Future researchers may also want to replicate this study using a longitudinal design. Data can be collected at multiple time points to assess and interpret change in the self-compassion/well-being – performance relationship over time. Finally, the practical implications of study findings are difficult to assess given its focus and remain speculative. The relationship between self-compassion and sport performance and well-being and sport performance needs to be further explored to better understand each relationship. The relationship between variables should be researched in different contexts and with a variety of performance measures to help ground this understanding.

Although this study does have some interesting research implications, there are certain limitations that need to be addressed. The first limitation being this study used non-probability purposive sampling to recruit participants. This can limit the external validity of study findings (Lucas, 2003) because the study was limited to male golfers in Windsor-Essex County and public at Roseland Golf and Curling Club. The next limitation in the current study was that the majority of participants considered themselves to be recreational/amateur meaning they were not formally competing. Unlike the current literature where data is often collected on competitive athletes. Finally, although there are benefits to collecting data in the real-world setting there are also drawbacks. Because this study was conducted on an outdoor putting green at a public course there were some limitations with internal validity. There was the possibility of completing the putting task with other golfers on the green. Factors such as weather, time of day, time of month are variables that should be considered.

In conclusion, this study found a relationship between self-compassion and well-being similarly to that of the current literature. The psychological resources of self-compassion and well-being do not forecast performance by adult male golfers in a putting task using either performance criteria. Greater insight detailing ‘for whom’, ‘when’, and/or, ‘how’ self-compassion and well-being impact sport performance warrants additional scrutiny.

Footnotes

¹ Upon initial screening, an imbalance in terms of sample size between self-identified males ($n = 92$) and females ($n = 5$) providing consent was evident. Further, no female participants consented to be in the pilot study. This was despite, comparable access to recruitment protocol (e.g., Roseland Golf and Curling Club Facebook and Instagram accounts, posters in public spaces such as the Pro Shop). One potential reason for fewer women participating in the study may be due to scheduling of data collection which occurred on Wednesdays and Thursdays when Men's leagues were in play. Convenience of participation may have influenced the gender imbalance in terms of participation.

As a consequence, insight into differences between male and female participants was undertaken post-hoc. First, an examination of differences between females and males on general and golf demographic variables was examined. For demographic variables, only number of years playing golf differed significantly ($p = .01$; $d = 1.26$) with males reporting playing longer ($M = 31.60$; $SD = 15.89$) than females ($M = 12.00$; $SD = 9.46$). While not statistically significant ($p = .30$), practical significance approached moderate (i.e., $d = .48$) which favoured males ($M = 27.73$; $SD = 19.53$) over females ($M = 18.40$; $SD = 18.19$) for number of rounds of golf played in 2022. All other general and golf demographic variables were non-significant ($p > .05$) with corresponding d values in the weak to small range (see Table 5). When looking at main study variables (i.e., self-compassion, well-being, perceived and actual performance) there were no statistically significant differences ($p > .05$). Estimates of practical significance ranged from $d_{self-rated\ performance} = .15$ to $d_{total\ put\ sholed} = .53$.

To further explore differences between males and females on main study variables, Pearson

bivariate correlations were computed (see Table 6). A series of scatterplots were produced to further highlight discrepancies between males and females (see Figures 1 – 4).

Gender differences appeared in certain bivariate correlations in terms of magnitude and direction of the relationship. There was a change in direction between males ($r = -0.17$) and females ($r = 0.40$) for the correlation between total putts holed and self-compassion. Between total putts holed and well-being scores, there was a difference in magnitude, not direction, between the correlation for males ($r = 0.04$) and females ($r = 0.84$). Finally, differences in direction between well-being and perceived performance for males ($r = -0.16$) and females ($r = 0.23$). The direction and magnitude between total putts holed and perceived performance was almost identical between males and females. Therefore, it may be that gender moderated many of the relationships between study variables in the present investigation with exception of self-compassion and self-rated performance. Differences between males and females is further reinforced through inspection of the scatterplots. Based on all information presented, it was decided to remove female participants from the larger analyses of this study. For transparency, all a priori study hypotheses are presented in Appendix O for females consenting to participate in this study.

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Figure 1

The relationship between self-compassion scores and total putts holed by gender

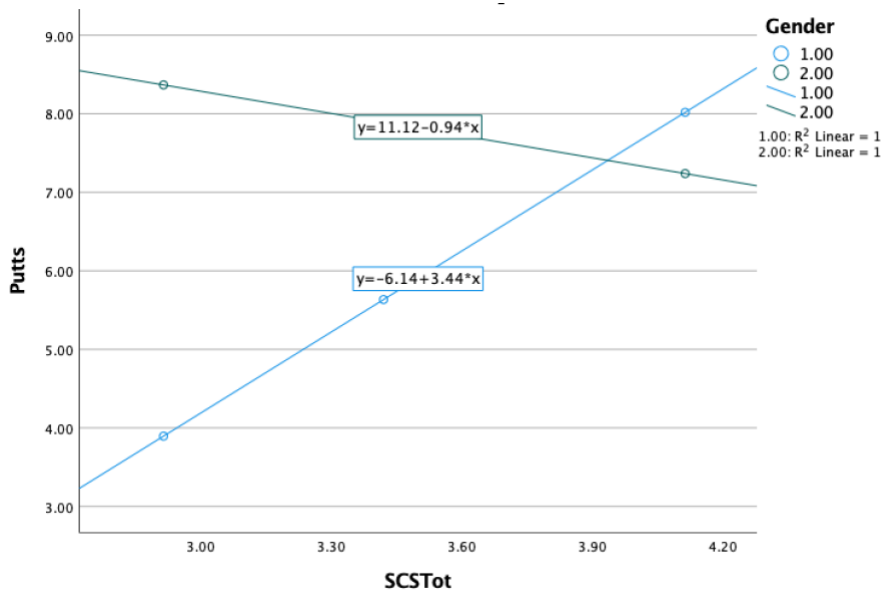


Figure 2

The relationship between well-being scores and total putts holed by gender

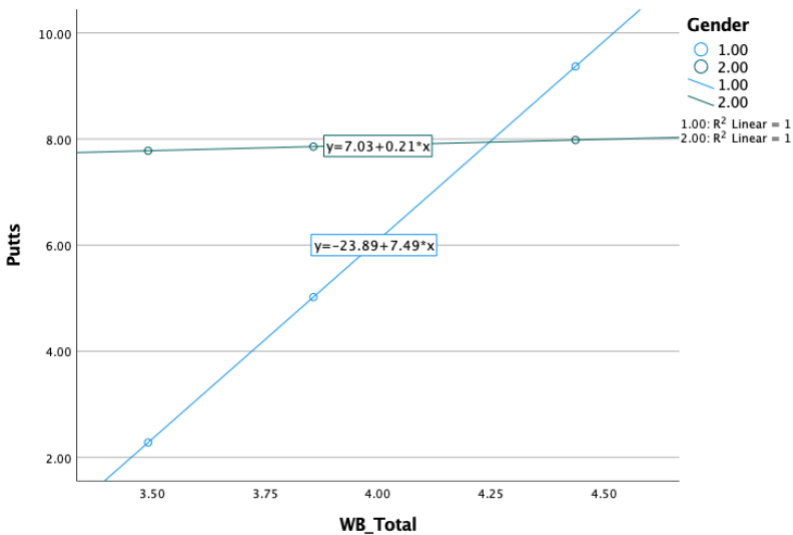


Figure 3

The relationship between self-compassion scores and perceived performance by gender

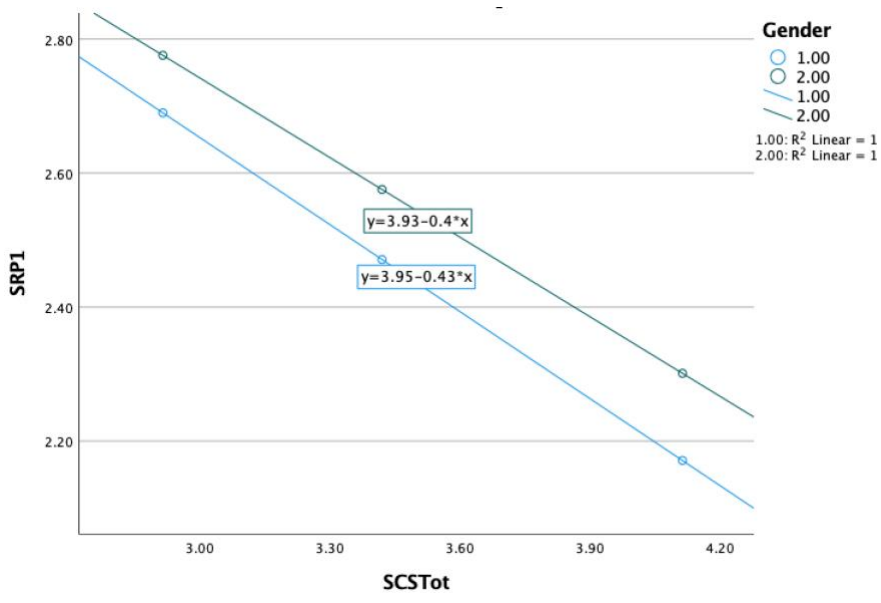
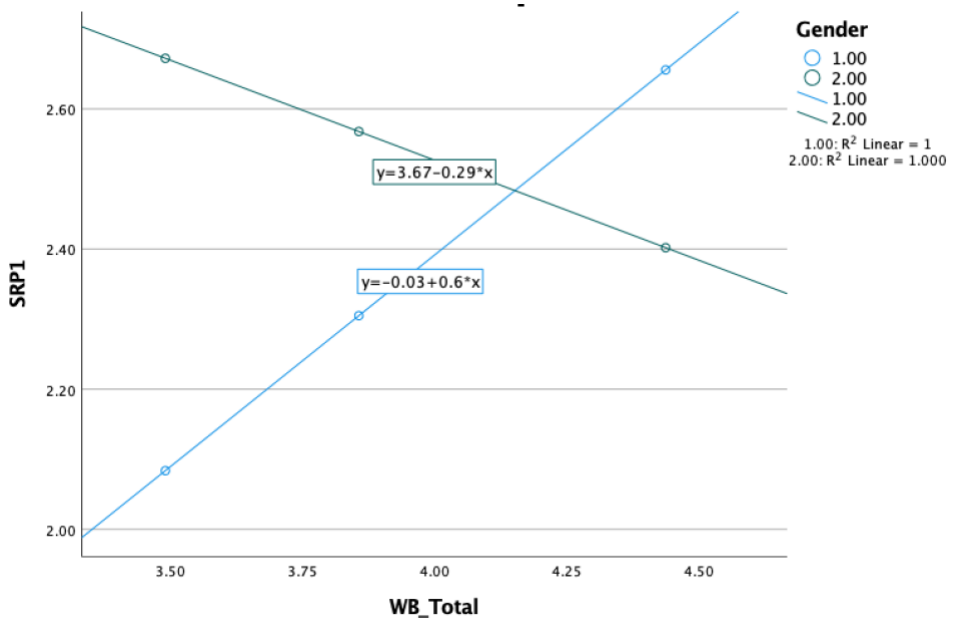


Figure 4

The relationship between well-being scores and perceived performance by gender



List of Tables

Table 1

Comparison between Pilot and Main Study Participants Across General and Golf Demographic Variables

Variable	Pilot		Main		<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Age (years)	52.40	18.19	54.94	15.37	-0.36	89.00	0.72	0.16
How many years have you been playing golf?	37.80	17.11	31.60	15.89	0.84	75.00	0.40	0.39
How many rounds of golf have you played in 2022?	43.40	40.96	27.73	19.53	0.85	4.11	0.11	0.75
If yes, please provide your Golf Canada Handicap	9.10	4.88	9.93	6.31	-0.22	23.00	0.83	0.13
How important is putting to golf performance?	4.40	0.55	4.62	0.71	-0.67	89.00	0.50	0.31
How important is putting to your golf performance?	4.60	0.55	4.57	0.64	0.10	89.00	0.92	0.05
How important is putting to you as a golfer?	4.60	0.55	4.60	0.60	0.02	89.00	0.99	0.01
Total putts holed	7.80	2.28	7.86	3.10	-0.04	90.00	0.97	0.02
Considering your golf putting performance today, was it a good or bad performance for you?	2.40	0.55	2.56	1.10	-0.33	90.00	0.74	0.15
How challenging was the putting task you performed today?	1.80	1.10	1.80	1.01	0.01	90.00	0.99	0.01
		%		%		χ^2	<i>p</i>	<i>phi</i>
Self-Identified Ethnicity						18.01	0.01	0.44

Arab		1.10			
Asian		2.30			
Black	20.00	1.10			
South Asian		1.10			
White	80.00	88.50			
Indigenous		4.60			
Other		1.10			
Level of Competition			6.38	0.04	0.27
Recreational	60.00	88.50			
Competition-Amateur	40.00	6.90			
Competition-CPGA/PGA Professional		2.30			
Are you a Golf Canada Member?			3.01	0.08	0.18
Yes	60.00	24.10			
No	40.00	73.60			
Do you have any injuries that may impact your putting performance today?			0.58	0.45	0.08
Yes		10.30			
No	100.00	88.50			

Note. M = Mean; SD = Standard deviation; t = t-test statistic; χ^2 = Chi-square statistic; p = significance of inferential test; d = effect size (Cohen, 1988); ϕ = phi coefficient (Grissom & Kim, 2005). The sample size for the pilot study is $n = 5$ and ranged from 72 to 87 for the main study depending upon variable.

Table 2*Bivariate correlation and 95% confidence intervals between study variables*

Variable	1	2	3	4
1. Self-Compassion	–			
2. Well-Being	0.35 (0.15, 0.52)	–		
3. Total Putts Holed	-0.17 (-0.36, 0.04)	0.04 (-0.17, 0.25)	–	
4. Perceived Performance	-0.20 (-0.39, 0.01)	-0.16 (-0.36, 0.05)	0.71 (0.59, 0.80)	–

Note. All r 's expressed in the lower diagonal of the matrix are bivariate (Pearson) coefficients. Information in brackets is the 95% *CI* spanning the bivariate correlation. The sample size was $N = 87$ between self-compassion and performance indicators. When well-being scores were included in the analysis, $n = 86$.

Table 3

Simple Linear Regression Analysis Examining the Influence of Self-compassion/Well-being on Performance Indicators

Explanatory Variables	Variables	R^2_{adj}	$Beta$	f^2	t	p	Lower Bound CI	Upper Bound CI	Durbin Watson Statistic
Self-Compassion	Total Putts Holed	0.02	-0.17	0.03	-1.60	0.11	-2.12	0.23	2.15
	Self-Rated Performance	0.03	-0.20	0.04	-1.91	0.06	-0.81	0.02	2.25
Well-Being	Total Putts Holed	0.00	-0.01	0.00	-0.12	0.91	-1.38	1.23	2.09
	Self-Rated Performance	0.01	-0.16	0.03	-1.45	0.15	-0.79	0.12	2.18

Note. R^2_{adj} = Adjusted R-squared. $Beta$ = Unstandardized beta-coefficient (standard error of unstandardized beta-coefficient). f^2 = estimate of effect size (Cohen, 1988); t = t -test statistic; p = significance of t -test statistic. CI = Confidence interval. The sample size was $N = 87$ and $n = 86$ when well-being respectively served as the explanatory variable.

Table 4

Results From Hierarchical Regression Analyses Examining the Influence of Well-being Beyond Self-Compassion on Performance Indicators

Response	Explanatory	<i>B</i>	<i>SE_B</i>	<i>95%CI_B</i>	β	<i>t</i>	<i>r_s</i>	$(sr)^2$	<i>RPI</i>	<i>R</i> ²	<i>R</i> ² _{adj}	ΔR^2
Total Putts Holed	Step 1:									.03	.03	
	Self-compassion	-1.01	.59	-2.19; 0.17	-.18	-1.70	-0.93	-.18	1.02 ^a			
	Step 2:									.04	.01	.00
	Self-compassion	-1.12	.63	-2.37; 0.14	-.20	-1.76	-.89	-.19	0.85 ^a			
	Well-being	0.34	.69	-1.04; 1.71	.06	.49	.21	.05	0.06			
Self-rated Performance	Step 1:									.04	.03	
	Self-compassion	-.39	.21	-.81; .03	-.20	-1.87	1.00	-.20	1.00 ^a			
	Step 2:									.05	.03	.01
	Self-compassion	-.33	.22	-.77; .12	-.17	-1.46	-.91	-.16	0.68 ^a			
	Well-being	-.22	.24	-.70; .27	-.10	-.88	-.73	-.09	0.32 ^a			

Note: *F* = *F*-statistic per regression model. *SEE* = Standard Error of the Estimate. *R*² = Coefficient of Determination. *R*²_{adj} = Adjusted R-squared *B*(*SE*) = Unstandardized beta-coefficient (standard error of unstandardized beta-coefficient). *95%CI_B* = Ninety-five percent confidence interval around the point estimate for the unstandardized beta-coefficient. β = Standardized beta-coefficient. *t* = *t*-test statistic. *r_s* = Structure coefficients $(sr)^2$ = Semi-partial correlation coefficients (squared). The sample size *n* = 86 when self-compassion and well-being served as the explanatory variables. *RPI* = Relative Pratt Index; **p* < .05. ***p* < .01, ^aMeaningful predictor (*RPI* cut-off = 0.25)

Appendices

Appendix A: Recruitment Poster (Pilot Study)

Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and Well-Being on Performance in a Putting Task



Researchers from our lab are conducting a new study that focuses on the contribution of self-compassion and mental well-being have on sport performance in **golfers 18 years and older**. We are looking for golfers living in **Windsor-Essex County** to complete a questionnaire and a putting task at Roseland Golf and Curling Club.

Are you a golfer who wants to participate? If you are 18 years of age or older, can read and write in English, please email mb21ot@brocku.ca or dmack@brocku.ca for further information and or to answer any questions that you may have pertaining to this study.

Completion of the questionnaire and putting task enters you into a draw to win one **\$50 Roseland Golf and Curling Club Gift Card**.

This study has been reviewed and cleared for recruitment by the Health Research Ethics Board and Brock University (File #XX-XXX)

Appendix B: Letter of Invitation- Pilot Participants

[insert date]

Title of Study: Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and Well-Being on Performance in a Putting Task

Principal Investigator: Dr. Diane E. Mack, Professor, Department of Kinesiology, Brock University

Student Principal Investigator: Melanie R. Burgess, BSc, Graduate Student, Faculty of Applied Health Sciences, Brock University

Purpose: The purpose of this study is to examine the contribution of psychological resources – namely self-compassion and well-being - on performance in a putting task with golfers. You are being invited to be involved in the pilot study which involves the putting task.

Involvement: Should you choose to participate, you will be asked to complete a demographic questionnaire (e.g., age, years golfing experience), the warm-up protocol, the putting task and a self-reported assessment of performance. Participants are required to bring their own putter and golf balls will be provided at the session. The study will take place at Roseland Golf and Curling Club. It is expected that your participation in this research study should take no longer than twenty (20) minutes of your time.

Your involvement in this pilot phase will render you ineligible to participate in the main study.

Benefits: There are a number of benefits associated with participating in this study. You will have the option of being entered in a random draw to win one (1) \$50 Roseland Golf and County Club Gift Card. Your odds of winning are approximately 20%. Withdrawing from this study does not preclude your entry into the draw. This research will further benefit both the academic community and athletes by providing further insight into the golf putting task adopted in this study. Study findings may be disseminated through academic journals and presenting at scientific conferences, yet no participant will be identified as a function of their involvement in this research study. Any information that is provided from study participants will be treated as confidential and access to all information provided in this study is restricted to the Principal Investigator and Principal Student Investigator identified in this letter. All data will be kept on an encrypted website accessible only to members of the research team. Data collected for this study will be destroyed 5 years post-publication.

Participation: Participation in this study is voluntary and you may decline to answer any question(s) or refuse to perform the golf putting task. Risks may be associated with participation. Procedures have been implemented to reduce your risk of exposure to COVID-19 including self-screening, masking and enhanced cleaning protocols. Questions that solicit personal information (e.g., age, handicap, etc.) may make some people feel uncomfortable or anxious. The golf putting task will be performed in a public setting. Therefore, your performance may be viewable to others. Finally, the Principle Student Investigator may be known to me given her employment as a Pro Shop Attendant at Roseland Gold and Country Club. Procedures have been implemented to minimize physical risks linked to COVID-19 including self-screening, masking of Ms. Burgess, the provision of enhanced sanitization.

You are eligible to participate in this study if you:

- Are at least 18 years of age or older
- Are able to read and write in English,
- Consider yourself to be a golfer,
- Provide consent to participate in this study.

You may choose to decline or withdraw your participation at any time throughout the course of the study. Data provided are not anonymous, but will be treated with the utmost confidentiality. Once the data any participant submits as a function of their involvement in this study have been de-identified, they can no longer be removed from the database upon request. No negative consequences as a result of your decision to withdraw will result. Any summary report emanating from this study will include information that does not identify any participant individually.

If you have any pertinent questions about your rights as a research participant, please contact the Brock University Research Ethics Officer (905 688-5550 ext. 3035, reb@brocku.ca)

If you have any questions, please feel free to contact either Dr. Diane E. Mack, PhD or Ms. Melanie R. Burgess using the contact details below.

Thank you,



Diane E. Mack, PhD
Professor
dmack@brocku.ca
905 688 5550 Ext. 4360

Melanie R. Burgess, BSc
Graduate Student
mb21ot@brocku.ca
905 688 5550 Ext. 5564

Appendix C: Informed Consent- Pilot Participants

Informed Consent

Date: [To be inserted]

Project Title: Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and Well-Being on Performance in a Putting Task

Principal Investigator: Dr. Diane E. Mack, Professor
Department of Kinesiology
Brock University
905 688 5550 Ext. 4360

Principal Student Investigator: Melanie R. Burgess, BSc, Graduate Student
Faculty of Applied Health Sciences
Brock University
(905) 688-5550 Ext. 5564

Purpose: The purpose of this study is to examine the contribution of psychological resources – namely self-compassion and well-being - on performance in a putting task with golfers. You are being invited to be involved in the pilot study which involves the putting task.

Involvement: Should you choose to participate, you will be asked to complete a demographic questionnaire (e.g., age, years golfing experience), the warm-up protocol, the putting task and a self-reported assessment of performance. Participants are required to bring their own putter and golf balls will be provided at the session. The study will take place at Roseland Golf and Curling Club. It is expected that your participation in this research study should take no longer than twenty (20) minutes of your time.

Your involvement in the pilot phase will render you ineligible to participate in the main study.

Potential Benefits and Risks: Possible benefits of participation include being entered into a draw to win one (1) \$50 Roseland Golf and Curling Club Gift Certificate. Withdrawal from the study does not preclude your entry into the random draw. Additional potential benefits include: a) greater awareness of research being conducted at Brock University, (b) greater awareness of your golf putting performance on a single task.

The intent is not to induce any physical, psychological, or social harm as a result of participation in the study. I understand that enhanced protocols have been implemented to reduce exposure to COVID-19. It is recognized that responses to questions that request personal information (e.g., age) may be uncomfortable for some. Further, the golf putting task is set in a public setting. Therefore, your performance may be observable to others. Finally, the Principle Student Investigator (Melanie R. Burgess) may be known to participants as a result of her role as a Pro Shop Attendant at Roseland Golf and Curling Club. While there is no intention to induce feelings of coercion on prospective study participants, some may feel some obligation to do so.

Anonymity and Confidentiality: I understand that members of the research team have secured procedures to ensure participant confidentiality and that all personal information will be kept strictly confidential. All information will be assigned a unique alphanumeric code so that the name of individual participants will not be associated with their specific answers or putting performance

scores. You will, however, be given the option to provide contact information to receive feedback regarding this study and to enter to receive compensation for your involvement. This information will be collected separately from the data you provide. Access to all data will be restricted to Dr. Diane Mack and Melanie R. Burgess

Once received, all data will be manually entered and stored on a password protected computer file located on the Faculty of Applied Health Sciences (Brock University) server and will remain confidential. Any hard copy data will be immediately shredded once electronically entered. Exported files containing participant contact information for the purposes of providing summary feedback will be kept for no longer than six months from the completion of the study. All other data will be kept for a maximum of 5 years post-publication. After this point all electronic files will be deleted. Contact information will also be stored separate from participant responses so that responses cannot be traced back to specific individuals.

Voluntary Participation: Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time by cancelling or terminating your selected 20-minute time frame. Withdrawal from the study will not impact your ability to receive compensation for participation in the study. As study data will be de-identified, your data cannot be removed once it has been electronically entered because it will not be identifiable to the research team.

Publication of Results: Results of this study may be published in professional/academic journals and/or presented at academic/professional conferences. Feedback about this study will be available once all data has been collected and analyzed. Please anticipate at least six (6) months post-data collection to receive summary feedback.

Exported files containing participant contact details for the purposes of providing summary feedback will be kept for no longer than six (6) months from the completion of the study. After this point all electronic files will be deleted.

CONTACT INFORMATION AND ETHICS CLEARANCE

I agree to participate in this study described above. I have made this decision based on the information I have read in the Informed Consent. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time. Please retain a copy of this form for your own records.

As indicated by my consent below, I acknowledge that I am participating freely and willingly.

I consent to participate in this study by checking this box Date:

This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (File# XX-XXX). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

Appendix D: Electronic Recruitment Script

Good Morning/Evening,

My name is Melanie Burgess and I am a graduate student in the Faculty of Applied Health Sciences at Brock University. For my master's thesis, I am conducting a research study entitled "Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and Well-Being on Performance in a Putting Task: under the supervision of Dr. Diane E. Mack, PhD (Department of Kinesiology, Brock University). Briefly, this research study is designed to examine the influence of psychological resources on golf putting performance.

With thanks for your expression of interest in being involved in the study for my thesis. Attached to this email is the Letter of Invitation and Informed Consent form for your review. These documents outline the purpose, procedures, benefits and risks of the study for your consideration.

Also attached is a link to the COVID-19 Risk Acknowledgement Form [Online Survey Software | Qualtrics Survey Solutions](#)

If you agree to participate, please sign and return the Informed Consent form to Melanie R. Burgess (mb21ot@brocku.ca) or Dr. Diane E. Mack (dmack@brocku.ca). We also ask that you complete the COVID-19 Risk Acknowledgement Form.

The study has been reviewed and cleared for recruitment by the Health Research Ethics Board at Brock University (REB File XX-XXX). You are welcome to contact me if you have any questions about this research study.

Thank you very much for your time,

Melanie R. Burgess, BSc
mb21ot@brocku.ca

Appendix E: Debriefing and Compensation Form

Once this study is finished, you will have the opportunity to receive feedback in terms of the main findings. The summary of main findings will not identify anyone personally in the presentation of the information.

Please click the box next to each statement that applies to you:

- I would like to receive a brief summary of the final results from this study*
- I would like to be entered to win one of the gift cards to Roseland Golf and Curling Club valued at \$50 (CAD)*

If you clicked any of these boxes, a member of our research team will need to contact you directly in the future to send you (a) a summary of the study results in a .pdf file via email, and/or (b) notify you as one of the recipients of a gift card. Please provide the following details:

Name:

Contact e-mail:

It is anticipated that summary feedback and notification of compensation will be provided by February 2023.

Appendix F: Recruitment Poster (Main Study)

Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and Well-Being on Performance in a Putting Task



Researchers from our lab are conducting a new study that focuses on the contribution of self-compassion and mental well-being have on sport performance in **golfers 18 years and older**. We are looking for golfers living in **Windsor-Essex County** to complete a questionnaire and a putting task at Roseland Golf and Curling Club.

Are you a golfer who wants to participate? If you are 18 years of age or older, can read and write in English, please email mb21ot@brocku.ca or dmack@brocku.ca for further information and or to answer any questions that you may have pertaining to this study.

Completion of the questionnaire and putting task enters you into a draw to win 1 of 7 **\$50 Roseland Golf and Curling Club Gift Card**.

This study has been reviewed and cleared for recruitment by the Health Research Ethics Board and Brock University (File #XX-XXX)

Appendix G

The following script and poster will be used to recruit participants through Facebook and Instagram.

Appendix G: Facebook and Instagram Poster (Main Study)

Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and Well-Being on Performance in a Putting Task



Researchers from our lab are conducting a new study that focuses on the contribution of self-compassion and mental well-being have on sport performance in **golfers 18 years and older**. We are looking for golfers living in **Windsor-Essex County** to complete a questionnaire and a putting task at Roseland Golf and Curling Club.

Are you a golfer who wants to participate? If you are 18 years of age or older, can read and write English, click the link below to learn more about this study.

Completion of the questionnaire and putting task enters you into a draw to win 1 of 7 **\$50 Roseland Golf and Curling Club Gift Card**.

Please email mb21ot@brocku.ca or dmack@brocku.ca for further information and or to answer any questions that you may have pertaining to this study.

This study has been reviewed and cleared for recruitment by the Health Research Ethics Board and Brock University (File #XX-XXX)

Choosing to interact with this posting in any way (e.g., “liking”, “sharing”, etc.) may impact your anonymity with regards to the study.

Appendix H: Letter of Invitation- Main Study

[insert date]

Title of Study: Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and Well-Being on Performance in a Putting Task

Principal Investigator: Dr. Diane E. Mack, Professor, Department of Kinesiology, Brock University

Student Principal Investigator: Melanie R. Burgess BSc, Graduate Student, Faculty of Applied Health Sciences, Brock University

Introduction: Research led by Melanie Burgess and Diane E. Mack, PhD in the Behavioural Health Sciences Research Lab at Brock University is being conducted to understand how psychological resources predict golf putting performance.

Purpose: The purpose of this study is to examine the unique, and combined, contribution of self-compassion and well-being on performance in a putting task with golfers.

Involvement: Should you agree to participate, you will be asked to complete a survey asking about demographics (e.g., age) and golf history (e.g., approximately how many rounds of golf have you played in 2022) and psychological resources “I’ve been feeling optimistic about the future”. Once completed, you will then be asked to engage in a golf-putting task and rate your performance. Participants are required to bring their own putter and golf balls will be provided at the session. Data collection will take place at the Roseland Golf & Curling Club (Windsor ON) at a mutually convenient time. The expected time to complete the questionnaire and putting task is approximately thirty (30) minutes.

Benefits: A number of benefits may be linked with participation in this study. As compensation for your participation, you may elect to provide contact information to enter into a draw to win one of seven \$50 (CAD) gift cards to Roseland Golf and Curling Club. The draw for each prize will take place upon completion of data collection and winners will be contacted electronically by a member of the research team no later than six (6) months after study completion. Withdrawing from the study does not preclude your eligibility for compensation. Odds of receiving compensation are approximately 1 in 8 (12.5%). Additionally, this research may benefit both the academic community, golfers and yourself through a greater understanding of the role afforded psychological resources on performance. Study findings may be disseminated by publishing in academic journals and presentations at scientific conferences, yet no participant will be identified as a function of their involvement in this research study. Any information that is provided from participants will be treated as confidential. Access to all information provided in this study is restricted to the Principal Investigator and Principal Student Investigator identified in this letter. All data will be kept on a password protected computer accessible only to members of the research team. Data collected through paper and pencil will be shredded once entered electronically to a secured computer. All electronic data collected for this study will ultimately be destroyed 5 years post-publication.

Participation: Participation in this study is voluntary and you may decline to answer any question(s) or refuse to perform the golf putting task. Risks may be associated with participation.

Procedures have been implemented to reduce your risk of exposure to COVID-19 including self-screening, masking and enhanced cleaning protocols. Questions that solicit personal information (e.g. age, handicap) may make some feel uncomfortable or anxious. The golf putting task will be performed in a public setting. Therefore, your performance may be viewable to others. Finally, the Principle Student Investigator may be known to me given her employment in the Pro Shop at Roseland Golf and Country Club.

You are eligible to participate in this study if you:

- Are at least 18 years of age or older
- Are able to read and write in English,
- Consider themselves to be a golfer,
- Provide consent to participate in this study.

You may choose to decline or withdraw your participation at any time throughout the course of the study. No negative consequences as a result of your decision to withdraw will result. Any summary report emanating from this study will include information that does not identify any participant individually.

Any information that is provided will be treated with confidentiality and access to all information that might identify participants will be limited to members of the research team named above. All data provided are not anonymous in nature but will be treated with the utmost confidentiality. Once the data any participant submits as a function of their involvement in this study have been de-identified, they can no longer be removed from the database upon request. All recorded data will be kept in a locked cabinet accessible only to members of the research team.

If you have any questions about this research study, please feel free to contact either Dr. Diane E. Mack or Ms. Melanie R. Burgess using the contact details offered below:

If you have any pertinent questions about your rights as a research participant, please contact the Brock University Research Ethics Officer (905 688-5550 ext. 3035, reb@brocku.ca)

Thank you,

Diane E. Mack, PhD
Professor
dmack@brocku.ca
905 688 5550 Ext. 4360

Melanie R. Burgess, BSc
Graduate Student
mb21ot@brocku.ca
905 688 5550 Ext. 5564

Appendix I

The following material is the informed consent for participants in the main study.

Appendix I: Informed Consent- Main Study

Informed Consent

Date: [To be inserted]

Project Title: Treating Yourself in a Fairway: Examining the Contribution of Self-Compassion and Well-Being on Performance in a Putting Task

Principal Investigator: Dr. Diane E. Mack, Professor
Department of Kinesiology
Brock University
905 688 5550 Ext. 4360

Principal Student Investigator: Melanie R. Burgess, Graduate Student
Faculty of Applied Health Sciences
Brock University
(905) 688-5550 Ext. 5564

Purpose: The purpose of this study is to examine the unique, and combined, contribution of self-compassion and well-being on performance on a putting task with golfers.

Involvement: As a participant, you will be asked to complete a questionnaire that includes demographic information (e.g., age, the approximate number of rounds of golf played in 2022), a questionnaire about psychological resources, and perform a golf putting task. Participants are required to bring their own putter and golf balls will be provided at the session. Participants are required to bring their own putter and golf balls will be provided at the session. Study involvement will take approximately thirty (30) minutes of your time. All data will be collected at Roseland Golf and Curling Club.

Compensation: As compensation for your participation in this study you may enter into a draw to win one (1) of seven (7) \$50 gift cards to Roseland Golf and Curling Club. This draw will be held no later than six (6) months after the data collection period has been completed. Those receiving the gift cards will be contacted electronically by a member of the research team. Withdrawal from the study does not preclude a participant from being eligible for compensation.

Potential Benefits and Risks: Possible benefits of participation include but are not limited to: (a) possible selection as one of seven winners of the random prize draw at the culmination of this study (each prize valued at \$50 CAD) (b) greater awareness of research being conducted at Brock University, (c) greater awareness of their perceived levels of self-compassion and well-being during golf and putting performance.

Risks may also be associated with participation, yet the intent is not to induce any physical, psychological, or social harm as a result of your participation. I understand that enhanced protocols have been implemented to reduce exposure to COVID-19. Questions that inquire about personal information such as self-compassion and well-being may invoke feelings of discomfort or anxiety in some participants. The putting performance task is held in a publicly accessible area such that your performance may be viewed by others. Additionally, the Principal Student Investigator (Melanie R. Burgess) may be known to participants as a result of her role as a Pro

Shop attendant at Roseland Golf and Curling Club. This may result in some individuals feeling obligated to participate in the study.

Anonymity and Confidentiality: Members of the research team have secured procedures to ensure participant confidentiality. Access to all information that might identify participants will be limited to members of the research team named above. Data collected are not anonymous, but will be treated with the utmost confidentiality. Once your participation is secured, personal identifiers will be associated with a unique alpha-numeric code (e.g., XX-aa-XX) and retained on a master list that will be stored on a password protected computer file located on the Faculty of Applied Health Sciences (Brock University) server and will remain confidential. This master list will be separate from any data you provide. You will, however, be given the option to provide contact information to receive feedback and enter into the draw to receive compensation. This information will also be collected and stored separately from the data provided.

Once the data any participant submits as a function of their involvement in this study have been de-identified, they can no longer be removed from the database upon request. All recorded data will be kept in a locked cabinet accessible only to members of the research team. Information containing personal identifiers will be shredded once electronically entered or summary feedback/compensation received. All other data will be kept for a maximum of 5 years post-publication. After this point all electronic files will be deleted.

Voluntary Participation: Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time by discontinuing completion of the questionnaire or to refrain from putting. Withdrawal from the study will not impact your ability to receive compensation for participation in the study.

Publication of Results: Results of this study may be published in professional/academic journals and/or presented at academic/professional conferences. Feedback about this study will be available once all data has been collected and analyzed. It is anticipated that this may take 6 months to complete following the final participant response and completion of participant involvement.

Summary of study results will be provided to you for the purposes of feedback by providing contact details to the study investigators on a separate questionnaire. Files containing participant contact details for the purposes of providing summary feedback will be kept immediately transferred to a password protected computer.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please Dr. Diane Mack and/or Melanie R. Burgess using the contact information provided above.

This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (REB XX-XXX),

If you have any comments or concerns about your rights as a research participant, please contact the Office of Research Ethics at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

As indicated by my consent below, I acknowledge that I am participating freely and willingly.

I consent to participate in this study by checking this box Date:

Appendix J: Environmental Conditions and Stimpmeter Recording

Date:

Time:

Stimpmeter Reading	1.	2.	3.	Avg:
---------------------------	-----------	-----------	-----------	-------------

Environmental Condition	Recording
Temperature (Celsius)	C
Probability of Precipitation (PoP)	%
Rain (if applicable)	mm
Wind	(km/h)
Humidity	%

Appendix K: Instruments for Data Collection

Demographics

These questions are about you! They will be used to describe, in general terms, the individuals who participated in this research study.

Age: _____ years

Gender: Female Male Other (Please specify):

Self-Identified Ethnicity: How would you describe yourself? You may check more than one if applicable

Asian Black White
 First Nations/Inuit/Métis Hispanic/Latino
 South Asian Southeast Asian Other (Please specify): _____

How many years have you been playing golf?:

Please check which best describes your level of competition:

Recreational University/Collegiate
 Competition- Amateur Competition- CPGA/PGA Professional

Approximate number of golf rounds played in 2022 to date: _____

Are you a Golf Canada member? Yes No

If yes, please provide your Golf Canada Handicap: _____

Do you have any injuries that may impact your putting performance today?

Yes No**How important is putting to golf performance?**

Not at all important	Mostly not important	Neutral	Mostly very important	Very important
1	2	3	4	5

How important is putting to you:

Not at all important	Mostly not important	Neutral	Mostly very important	Very important
1	2	3	4	5

How important is putting to your golf performance?

Not at all important	Mostly not important	Neutral	Mostly very important	Very important
1	2	3	4	5

What type of putter (brand name/style) are you using today (e.g., Scotty Cameron/belly):

Self-Compassion Scale- Athlete Version (SCS-AV)

Please read each statement carefully before answering. Indicate how often you behave in the stated manner using the following scale.

	Almost Never				Almost Always
I'm disapproving and judgmental about my own flaws and inadequacies as a golfer.	1	2	3	4	5
When I'm feeling down as a golfer, I tend to obsess and fixate on everything that's wrong.	1	2	3	4	5
When things are going badly for me in golf, I see the difficulties as part of life that everyone goes through.	1	2	3	4	5
When I think about my inadequacies as a golfer, it tends to make me feel more separate and cut off from the rest of the world.	1	2	3	4	5
I try to be loving towards myself when I'm feeling emotional pain in golf.	1	2	3	4	5
When I fail at something important to me in golf, I become consumed by feelings of inadequacy.	1	2	3	4	5
When I'm down and out, I remind myself that there are lots of other golfer's in the world feeling like I am.	1	2	3	4	5
When times are really difficult in golf, I tend to be tough on myself.	1	2	3	4	5
When something upsets me in golf I try to keep my emotions in balance.	1	2	3	4	5
When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most golfers.	1	2	3	4	5
I'm intolerant and impatient towards those aspects of my golfer personality I don't like.	1	2	3	4	5

When I'm going through a very hard time in golfer, I give myself the caring and tenderness I need.	1	2	3	4	5
When I'm feeling down in golf, I tend to feel like most other people are probably happier than I am.	1	2	3	4	5
When something painful happens in golf I try to take a balanced view of the situation.	1	2	3	4	5
I try to see my failings in golf as part of the human condition.	1	2	3	4	5
When I see aspects of myself as a golfer that I don't like, I get down on myself.	1	2	3	4	5
When I fail at something important to me in golf, I try to keep things in perspective.	1	2	3	4	5
When I'm really struggling, I tend to feel like other golfers must be having an easier time of it.	1	2	3	4	5
I'm kind to myself when I'm experiencing suffering in golf.	1	2	3	4	5
When something upsets me in golf I get carried away with my feelings.	1	2	3	4	5
I can be a bit cold-hearted towards myself when I'm experiencing suffering in golf.	1	2	3	4	5
When I'm feeling down in golf, I try to approach my feelings with curiosity and openness.	1	2	3	4	5
I'm tolerant of my own flaws and inadequacies as a golfer.	1	2	3	4	5
When something painful happens in golf, I tend to blow the incident out of proportion.	1	2	3	4	5
When I fail at something that's important to me in golf, I tend to feel alone in my failure.	1	2	3	4	5

In golf, I try to be understanding and patient towards those aspects of my golfer personality I don't like.

1

2

3

4

5

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Tennant et al., 2007)

Instructions: Below are some statements about feelings and thoughts. Please select the number that best describes your feelings and thoughts.

	None of the Time	Rarely	Some of the Time	Often	All of the Time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

Appendix L: Golf Putting Task- Verbal Script

Script- Familiarization Putts

To measure putting performance you are asked to putt 15 putts from 7-feet. Before your 15 performance putts you will be asked to complete 6 familiarization putts. These 6 putts will not count towards your performance score. Please hit each putt as you would during a typical round of golf. This means that you are encouraged to take practice strokes and line up the putt if you choose to do so. After each putt the ball removed out of the way. There is no time limits placed on you. Before you begin, are there any questions, comments or concerns?

Script Performance Putts

Now that you have completed your 6 familiarization putts, you will now be asked to complete 15 performances putts that will count towards your performance score. After each putt the ball removed out of the way and whether the putt was "holed" or "not holed" will be recorded. Once again, please hit each putt as you would during a round of golf. You are encouraged to take practice strokes and line up the putt if you choose to do so. Again there is no time limit for this task. Before you begin, are there any questions comments or concerns?

Appendix M: Golf Putting Task- Scoring Sheet**Date:****Time:**

Putt #	Not Holed	Holed
1	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	<input type="checkbox"/>
11	<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	<input type="checkbox"/>
13	<input type="checkbox"/>	<input type="checkbox"/>
14	<input type="checkbox"/>	<input type="checkbox"/>
15	<input type="checkbox"/>	<input type="checkbox"/>
		Total:

Appendix N: Self-rated Performance Task

Self-rated performance

	Very Bad				Very Good
Considering your golf putting performance today, was it a good or bad performance for you?	0	1	2	3	4

	Not at all				Very Challenging
How challenging was the putting task you performed today?	0	1	2	3	4

Appendix O: Female Results

Preliminary Analyses, Estimates of Internal Consistency and Descriptive Statistics

Five female participants provided consent to participate in the main study. There were no non-response errors for primary study variables in the pilot sample. Internal consistency estimates for SCS-AV and WEMWBS were $\alpha = 0.87$; $\omega = .75$ and $\alpha = 0.84$; $\omega = .92$ respectively for data provided from main study participants. The average score on the SCS-AV was 3.59 ($SD = 0.46$) and 4.01 ($SD = 0.44$) on the WEMWBS. Participants averaged 6.20 ($SD = 3.96$; $Range = 1 - 12$) putts holed with self-rated performance at approximately the mid-point of the ($M = 2.40$; $SD = 1.14$).

Participants

Five female golfers ($M_{age} = 52.20$ years; $SD_{age} = 15.71$ years) participated in the main study, four of whom self-identified as Caucasian (80%). Four (80%) of the golfers considered themselves to be “recreational” competitors. One golfer indicated they were a member of Golf Canada and the handicap was 8.00 ($SD = 0.00$). The average number of rounds of golf played in 2022 was 18.40 ($SD = 19.19$). No female golfers self-reported injuries that could have influenced their putting performance (see Table 5).

Bivariate Correlation Between Study Variables

To examine if self-compassion was positively associated with well-being in this study Pearson bivariate correlations were computed and interpreted (see Table 6). There was a moderate positive correlation between self-compassion and well-being $r = 0.48$, $p = 0.41$; 95% CI = -0.70, 0.96.

Regression Analyses Predicting Performance Outcomes

To evaluate if self-compassion and well-being predicted the performance indicators used in this study (i.e., total putts holed and self-rated performance), a series of four simple linear regression models were computed then interpreted (see Table 7). No statistical outliers were identified with either self-compassion or well-being as the explanatory variable within the sample of golfers. Assessment of self-compassion for explanatory variables in the regression models produced the following results: (a) total putts holed ($F(1,3) = 0.56, p = 0.51; R^2_{adj} = 0.00; f^2 = 0.19$) (b) self-rated performance ($F(1,3) = 0.09, p = 0.78; R^2_{adj} = 0.00; f^2 = 0.03$). Assessment of well-being for explanatory variables in the regression models produced the following results: (a) total putts holed ($F(1,3) = 6.91, p = 0.08; R^2_{adj} = 0.60; f^2 = 1.50$); (b) self-rated performance ($F(1,3) = 0.17, p = 0.71; R^2_{adj} = 0.00; f^2 = 0.06$). Effect size estimates ranged from small-to-large depending on analysis.

Multiple Linear Regression Analysis for Performance Outcomes

To examine if well-being predicted unique variance beyond self-compassion for the performance indicators, a multiple linear regression analysis was conducted and interpreted (see Table 8). Self-compassion was entered at step one and well-being was entered at step two. Well-being predicted unique variance beyond self-compassion for both performance measures. The total variance accounted for when total putts holed was the predictor variable 40% ($F(2,2) = 2.30, p = 0.30; R^2_{adj} = 0.40; f^2 = 0.67$). Change in R^2 was .54 with the addition of well-being into the regression equation. When self-rated performance was the predictor variable, the total variance accounted for was 68% ($F(2,2) = 0.19, p = 0.84; R^2_{adj} = 0.00; f^2 = 0.19$). The change in R^2 was .13 between step 1 and step 2 in this analysis. In sum, well being was statistically significant in predicting unique variance beyond self-compassion in both performance measures. Effect sizes ranged from moderate to large indicating that there is practical significance

Table 5*Baseline Demographic and Descriptive Statistics*

Variable	Females					
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Age	52.20	15.71	-0.53	89.00	0.60	0.24
How many years have you been playing golf?	12.00	9.46	-2.71	75.00	0.01	1.26
How many rounds of golf have you played in 2022?	18.40	18.19	-1.04	87.00	0.30	0.48
If yes, please provide your Golf Canada Handicap	8.00	0.00	-0.30	21.00	0.77	0.31
How important is putting to golf performance?	4.60	0.55	0.05	89.00	0.96	0.02
How important is putting to you as a golfer?	4.40	0.60	-0.72	89.00	0.47	0.33
Total putts holed	6.20	3.96	-1.15	90.00	0.25	0.53
Considering your golf putting performance today, was it a good or bad performance for you?	2.40	1.14	-0.32	90.00	0.75	0.15

	1.60	1.14	-0.44	90.00	0.66	0.20
	%			X ²	<i>p</i>	phi
How challenging was the putting task you performed today?						
Self-Identified Ethnicity				2.45	0.87	0.16
White	80.00					
Indigenous	20.00					
Level of Competition				17.53	0.00	0.44
Recreational	80.00					
University/Collegiate	20.00					
Are you a Golf Canada Member?				0.06	0.81	-0.03
Yes	20.00					
No	80.00					
Do you have any injuries that may impact your putting performance today?				0.58	0.45	-0.08
Yes	0.00					
No	100.00					

Note. M = Mean; SD = Standard Deviation; t = t-test statistic; p = significance of t-test statistic; d = effect size (Cohen, 1988); phi = phi coefficient (Grissom & Kim, 2005). The sample size for the females is $N = 5$.

Table 6*Bivariate correlation and 95% confidence intervals between study variables*

Variable	1	2	3	4
1. Self-Compassion	–			
2. Well-Being	0.48 (-0.70; 0.96)	–		
3. Total Putts Holed	0.40 (-0.75; 0.95)	0.84 (-0.16; 0.99)	–	
4. Self-Rated Performance	-0.17 (-0.92; 0.84)	0.23 (-0.82; 0.92)	0.70 (-0.48; 0.98)	–

Note. All r 's expressed in the lower diagonal of the matrix are bivariate (Pearson) coefficients. Information in brackets is the 95% *CI* spanning the bivariate correlation. The sample size was $N = 5$.

Table 7*Results From Simple Linear Regression Analysis*

Explanatory Variables	Variables	R^2_{adj}	Beta	f^2	t	p	Lower Bound CI	Upper Bound CI	Durbin Watson Statistic
Self-Compassion	Total Putts Holed	0.00	3.44(4.60)	0.19	0.74	0.51	-11.19	18.07	1.53
	Self-Rated Performance	0.00	-0.43(1.42)	0.03	-0.31	0.78	-4.95	4.08	1.17
Well-Being	Total Putts Holed	0.60	7.50(2.85)	1.50	2.63	0.08	-1.58	16.57	1.74
	Self-Rated Performance	0.00	0.61(1.45)	0.06	0.42	0.71	-4.01	5.22	1.74

Note. R^2_{adj} = Adjusted R-squared; Beta = Unstandardized beta-coefficient (standard error of unstandardized beta-coefficient). t = t-test statistic; p = significance of t-test statistic; f^2 = estimate of effect size (Cohen, 1988); The sample size was $N = 5$.

Table 8*Results From Hierarchical Regression Analyses*

Response	Explanatory	<i>B</i>	<i>SE_B</i>	<i>95%CI_B</i>	β	<i>t</i>	<i>r_s</i>	$(sr)^2$	<i>RPI</i>	<i>R²</i>	<i>R²_{adj}</i>	ΔR^2
Total Putts Holed	Step 1:									0.16	0.00	
	Self-compassion	3.44	4.60	-11.19; 18.07	0.40	0.75	1.01	0.40	1.00			
	Step 2:									0.70	0.40	0.54
	Self-compassion	-0.08	3.85	-16.66; 16.51	-0.01	-0.02	0.48	-0.01	-0.01			
	Well-being	7.53	3.99	-9.63; 24.69	.84	1.89	1.01	0.74	1.01			
Self-rated Performance	Step 1:									0.03	-0.29	
	Self-compassion	-0.43	1.42	-4.95; 4.08	-0.17	-0.31	-1.00	-0.17	0.96			
	Step 2:									0.16	-0.68	0.13
	Self-compassion	-0.93	1.85	-8.87; 7.01	-0.37	-0.51	-0.42	-0.33	0.39			
	Well-being	1.07	1.91	-7.14; 9.29	0.42	0.56	0.57	0.36	0.60			

Note. *F* = F-statistic per regression model. *SEE* = Standard Error of the Estimate. *R²* = Coefficient of Determination. *R²_{adj.}* = Adjusted R-squared *B*(*SE*) = Unstandardized beta-coefficient (standard error of unstandardized beta-coefficient). *95%CI_B* = Ninety-five percent confidence interval around the point estimate for the unstandardized beta-coefficient. β = Standardized beta-coefficient. *t* = *t* = t-test statistic. *r_s* = Structure coefficients $(sr)^2$ = Semi-partial correlation coefficients (squared). The sample size was *N* = 5.