An online intervention to support student-athlete mental health: Implementation, evaluation, and critical reflection

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AN ONLINE INTERVENTION TO ENHANCE STUDENT-ATHLETE MENTAL HEALTH: A SCIENTIFICALLY-GROUNDED CASE STUDY

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Abstract

This study examined the influence of two interventions (Therapeutic letter-to-self; Values targeting) on student-athletes' mental health using two variants of a single-subject design: a multiple-baseline single-subject design, and a probe design. Four high ability student-athletes (two male; two female), who competed in various sports (e.g., soccer, cycling) completed two pre-intervention measures (Mental Health Continuum Short Form; MHC-SF; Keyes et al., 2013; Clinical Outcomes Routine Evaluation – 10; CORE-10; Connell & Barkham, 2007) at the start of baseline. These measures were then re-administered after intervention one, two, and at two-week follow up using a probe design. Mental well-being (Short Warwick-Edinburgh Mental Well Being Scale; SWEMWBS; Haver et al., 2015) was assessed every two days from start to finish using a multiple-baseline design. Data was analysed via visual inspection methods, specifically immediacy of effect, mean change, effect sizes, and percentage of overlapping data (Hyrcaiko & Martin, 1996). Results indicated that all participants who completed the study (Donald, Nina, and Tim) showed an increase or maintenance of total *mental health*, and a decrease in *mental illness* from baseline to follow-up. Findings are discussed with respect to prior research and study limitations.

Key words: Mental health, mental illness, student-athlete, single-subject, probe-design.

Context

Recent years has witnessed increased attention directed toward the mental-health of athletes. The World Health Organisation (WHO; 2013) has defined mental health "…as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community*"* (p. 6). Student-athletes are a unique demographic, who have to cope simultaneously with academic and athletic demands, as they move into adulthood and who are confronted with many stressors such moving away from home (Bruner, Munroe, Chandler & Spink, 2008), stress (Noblet, Rodwell & McWilliams, 2002), limited social support (Noblet & Gifford, 2002), increased risk-taking behaviour (mainly associated with alcohol), and disordered eating habits (Sungot-Borgen & Torstveit, 2004).

Although accessing professional psychological services can be an effective way to manage mental health issues (Davidson & Roe, 2007), student-athletes underutilise mental health support available to them (Watson, 2006). Reasons for underutilisation include athletic culture (Reardon & Factor, 2010), stigma (Watson, 2005), not having enough time or finances (Paskar, Washburn, & Teplin, 2008; Wilson, Rickwood, & Deane, 2007), and negative expectations of what a mental health practitioner can do for an athlete (Fletcher, Benchoff, & Richburg, 2003).

Of the research directed toward enhancing student-athlete mental health many studies have examined the impact of interventions on mental health awareness, help-seeking attitudes and behaviours (cf., Breslin et al., 2017; Van Raalte et al., 2015). Other interventions have examined the impact of a range of psychosocial strategies on changes in student-athletes' mental health broadly (see Breslin & Leavey, 2018; Schincke, Stambulova, Si, & Moore, 2018). In addition, there has been a call for approaches that are sensitive to sport culture (Gavrilova & Donohue, 2018). To the authors' best knowledge, there has been no

examination of an online intervention designed to enhance the full spectrum of athletes' mental health (see Schinke et al., 2018; Uphill et al., 2016). Considering the above circumstances, this case study emerged from a co-produced project directed toward identifying student-athletes' understanding of, and preferences for psychological support (see needs analysis below), and describes one-facet of ongoing psychological support for a group of student-athletes.

Consultancy Philosophy

At the time of writing the first author is a trainee Sport and Exercise Psychologist working towards Chartered Psychologist status through the British Psychological Society. His approach adopts the core conditions of counselling (Rogers, 1961) within an overarching cognitive-behavioural (Greenberger & Padesky, 2015) approach. More specifically, his approach towards sport psychology support is directed toward building quality relationships, enhancing self-knowledge, and educating clients about psychological strategies, skills and/or attributes that can facilitate mental health, well-being, and performance. His practice is guided by a cluster of professional values including respect, commitment, collaboration, strengths identification, reflection on successes, and self-knowledge development. The second author is a Health Care Professions Council Registered Sport and Exercise Psychologist, a British Psychological Society Chartered Psychologist and British Association of Sport and Exercise Sciences Accredited Sport Scientist who is supervising the first author's practice toward becoming a HCPC Registered practitioner psychologist. He describes his philosophy as "client-centred, outcome-focussed" and draws primarily on humanistic- and cognitive-behavioural approaches to inform his consultancy practice in an integrative manner.

The Case

Needs analysis

As part of a review of psychological support provided to student athletes, and other stakeholders (e.g., trainee sport psychologist not involved in the study, athlete mentor, director of consultancy service), students were invited to take part in a series of conversations, and a focus-group to help explore student-athletes' understanding of, and preferences for psychological support. This approach was informed by a desire to "work with", rather than "do-to" athletes. A number of areas to improve the psychological provision to student-athletes were identified. One area was an enhanced focus on mental health alongside performance psychology. It was also noted that time-pressures were perceived as high among this group, and that complementing individual face-to-face, and workshop opportunities, an online-presence could help students access self-help at times that were appropriate to their training and competition schedules.

Participants

Student-athletes were recruited from two populations: sports scholars (in receipt of a bursary) and student-athletes (not in receipt of a bursary). There are currently 15 sports scholars at the Higher Education Institution, all of whom were initially targeted to take part in the current study. The second author introduced the research project face-to-face to scholars after a psychological skills workshop. 9 out of the 15 scholars were in attendance at the workshop and 4 (2 male; 2 female) of those voluntarily signed up to participate in the project. Contact e-mails were taken for all 4 participants and they were subsequently contacted by the lead author to begin the project. Only 1 (female; herein known as Nina) of those 4 participants actually participated in the project from start-to-finish and could be used for data analysis. Alongside athletes who are part of the Sport Scholar Scheme are student-athletes who participate at a high-level but do not receive remuneration or support that is recognised by the University. Accordingly, the second author also invited other student-athletes to participate, who were not part of the Sport Scholar scheme, and who expressed a desire to take part in the

study. Three more student-athletes signed up to take part. Two of these participants (herein known as Donald and Tim) participated in the project from start-to-finish and one other (herein known as Vivian) participated in the baseline and first intervention phase only. Next ensues some background information on these four participants, all of whom, were used in final data analysis.

All participants were given pseudonyms to protect their anonymity. Donald (male; aged 23; 14 years sporting experience), was a student-athlete and a semi-professional soccer player. Nina (female; aged 20; 13 years sporting experience) was a student-athlete, who was a national level cyclist. Tim (male; aged 24; 18 years sporting experience) was a student-athlete who was also a semi-professional soccer player and cricketer. Vivian (female; aged 26; 15 years sporting experience) at the time of the intervention, was a *former* university student-athlete currently working as a physical education (PE) teacher, and playing professional women's soccer. All athletes competed to a high level and had the challenge of balancing academic demands, with their demands of being an athlete.

Design

Two designs were used to evaluate changes in the following primary dependent variables of mental health (Keyes et al., 2008), and mental illness (Connell & Barkham, 2007) at four time phases: baseline, intervention 1, intervention 2, and follow-up. Specifically, a multiple- probe design (Barker et al., 2013) was used when the temporal characteristics of the measurement instructions (e.g., over the last two weeks…) was inappropriate to assess more frequently. Where circumstances permitted (e.g., over the last two days…) a multiple-baseline, single subject design was used to evaluate the impact of the interventions. The order of intervention was counterbalanced across participants.

Measures

To evaluate the impact of the intervention four measures were taken. Three well-established questionnaires were used to assess mental health, along with a social validation of how the intervention was received (cf. Thelwell & Greenlees, 2001). The framework of Keyes (2007) and applied within sport by Uphill, Sly, and Swain (2016) informed the assessment of mental health. Specifically, Keyes distinguishes between two continua: one assessing low to high levels of mental illness, the other assessing low to high levels of mental health. The mental illness continuum ranges from 'severe mental illness' to 'no mental illness' and the mental health continuum ranges from 'optimal mental health/flourishing' to 'minimal mental health/languishing. Within this model an athlete might well have a mental illness, but still be flourishing and have optimal mental health. Equally, an athlete might be devoid of mental illness, yet be languishing.

Accordingly, to assess mental illness, the Core-10 (Connell & Barkham, 2007) was used. The CORE-10 is a measure of psychological distress tapping into commonly experienced symptoms of psychiatric conditions like anxiety and depression and aspects of life and social functioning. The inventory also has an item on risk to self. The CORE-10 was derived from a larger 34 item form called the Clinical Outcomes Routine Evaluation – Outcome Measure (CORE-OM; Evans et al., 2000). The form includes 10 items that reflect how participants have been feeling over the last week (e.g., I have felt tense, anxious or nervous). Participants are invited to respond on a five point response scale ranging from 0 = not at all to 4 = most or all of the time.

To assess mental health, we used the Mental Health Continuum Short Form (Keyes et al., 2008) which contains 14 items reflecting well-being in each of emotional well-being, social well-being, and psychological well-being (EWB, SWB, and PWB respectively). The MHC-SF allows for three possible categorical diagnoses: flourishing, languishing, and moderate mental health. Flourishing is diagnosed when someone reports having at least one

of the EWB symptoms (items 1-3) and at least 6 of the 11 positive functioning (i.e., the remaining SWB and PWB items) symptoms (items 4-14) "every day" or "almost every day" within the past month. Languishing is diagnosed when someone reports having experienced at least one of the three EWB symptoms (items 1-3) and 6 out of the 11 positive functioning symptoms "never" or "once or twice" in the past month. Individuals that fall into neither of the aforementioned categories would be diagnosed as "moderately mentally healthy" (Keyes, 2002). Each of the items (e.g., Item 1 - *"During the past month how often did you feel happy"*) are measured on a 6 point response scale, ranging from 1 = never, to 6 = every day.

The Short Warwick-Edinburgh Mental Well Being Scale (SWEMWBS; Haver et al., 2015) was used in the current study to track mental well-being more frequently (every other day). The SWEMWBS comprises 7 items (e.g., I've been dealing with problems well, I've been thinking clearly) on a five point response scale ranging from 1 (none of the time) to 5 (all of the time).

Social validation questionnaires were devised with reference to those used elsewhere (Thelwell & Greenlees, 2001). The function of social validation is to evaluate participant reactions to the intervention and its subsequent outcomes (Pates, Maynard, & Westbury, 2001). Seven items comprised the questionnaire, with the first five items (1) How important is an improvement in mental health and well being to you? 2) Do you consider the changes in your mental health and well being to be significant? 3) How satisfied were you with the intervention you received to improve your mental health and well-being? 4) Has the intervention proved useful to you? 5) Can you estimate the amount of time you spent on the intervention task?) being measured on a five-point rating scale from 1 (not at all important) to seven (extremely important/significant/satisfied/useful). For items six and seven (*6) "*What do you perceive to be the positive features of the intervention for you?" 7) "What do you perceive to be the aspects of the intervention that could be improved for you"?) participants

were invited to write as much or as little as they liked, in attempt to derive more qualitative information.

At the conclusion of the project the first author invited participants to provide additional information about their experience of the project as a whole.

Intervention

According to Keyes (2007), interventions designed to enhance mental health may buffer against the symptoms of mental illness and also act preventively to protect against the development of mental illness. Drawing on Keyes' conceptualisation that mental health comprises 3 elements (EWB, PWB and SWB), we selected two activities that would theoretically be aligned with the development of EWB and PWB (social well-being is being addressed in a separate project designed to enhance the student-athlete community).

Therapeutic Letter-to-self. In previous disclosive writing research (Lyobomirsky et al., 2011; King & Miner, 2000), expressive writing has been associated with enhanced emotional experience. Indeed theoretically, writing a letter from a future- to past- self would facilitate a change in perspective/appraisal that would be associated with change in emotional experience (Gross, 2002). The current study adapted instructions (see Chew, 1997; White & Murray, 2002) that invited participants to write about several concepts (past challenges [athletic or personal], perceived benefits of those difficulties, and gratitude) that had led to physical and mental health benefits (see appendix 1 for specific instructions).

Bulls-Eye Values Survey (BEVS). Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 2012) assumes that human suffering is predominantly contributed to by attempts to control or avoid unwanted private happenings, such as traumatic thoughts, memories or emotions, to the degree that they thwart adaptive and healthy functioning (Hayes et al., 2012). A broad empirical evidence base supports this branch of therapy (see Hayes,

Luoma, Bond,Masuda, & Lillis, 2006 for a review). ACT interventions facilitate acceptance and psychological flexibility, meaning they promote an openness to get into the present moment and engage in behaviours that lead to valued ends (Hayes et al., 2006). One popular intervention used in ACT to facilitate living a life in synchrony with one's values (i.e., engaged living) is the Bulls-Eye values survey (BEVS; Lundgren, Luoma, Dahl, Strosahl, & Melin, 2012). Inviting participants to reflect on "valued-living" is theoretically aligned to PWB as a component of mental health (see appendix 2 for specific instructions).

Procedure and Data Analysis

The second author introduced the study as an online intervention designed to enhance mental health and flourishing, and to complement the existing one-to-one, and group workshop support the scholars already received. The first author then provided a series of electronic prompts via email to encourage student-athletes to engage with the online interventions (delivered via a bespoke website: www.sports-scholars.weebly.com) It is worth noting that the titles of some of the measures used in the study were described using simpler terminology on the website to facilitate participant understanding and avoid use of technological jargon

Individual profiles of mental health, mental illness and mental well-being were reported and graphically plotted for each participant. Scientific assessment of treatment effects were performed using guidelines from Hyrcaiko and Martin (1996). These included: a) assessment of a stable baseline; b) immediacy of the effect following intervention; c) the number of overlapping data points between baseline and intervention phases, with lower percentage overlaps indicating stronger experimental effects; d) the size of the effect after intervention and e) the number of times that effects were replicated across the participants. Kazdin (1993) states that a minimum of three data points [but preferably more] are required to help establish a stable baseline. Immediacy of the effect refers to a change in level

between the last three data points of one phase and the first three data points of the next phase (Whitehurst, 2013). Percentages of overlapping data points represents the percentage of intervention points that are equal to or less than the highest data point in baseline. Size of the effects from baseline to intervention were reported using mean change and percentage increase scores (see Hamilton, Scott, & MacDougall, 2007) alongside effect sizes (ES) which were evaluated using criteria (< .87 = small, .87 – 2.67 = medium, >2.67 = large) forwarded by Parker and Vannest (2009).

Evaluation

Overall, the first three participants (Donald, Nina, and Tim) completed the study from start to finish, but Vivian was only able to complete one of the interventions (letter-to-self). Participants that completed the study from baseline through to follow-up (i.e., Donald, Nina, and Tim) all showed an increase or maintenance of total mental health evidenced by increases in mental health points and/or stability or improvement in mental health classification (i.e., moderately mentally healthy to flourishing). Moreover, Vivian, who only managed to complete the first intervention (letter to self), also showed an increase in total mental health from baseline through to the end of that intervention.

When examining mental illness scores [for Donald, Nina, and Tim) from baseline through to the end of the second intervention, all showed decreases (i.e., reduced symptomatology). These decreases were maintained at follow up. It appeared that both interventions were effective in reducing mental illness. Monitoring *mental well-being* seemed to somewhat corroborate the positive findings around mental health and mental illness.

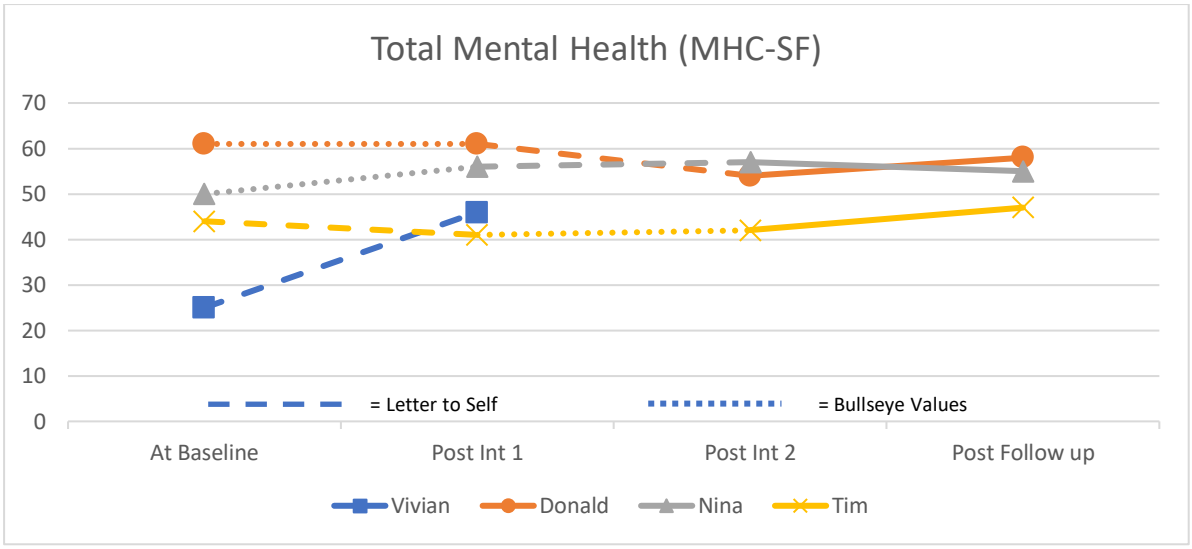

Figure 1. *Summary of impact of interventions on mental health*

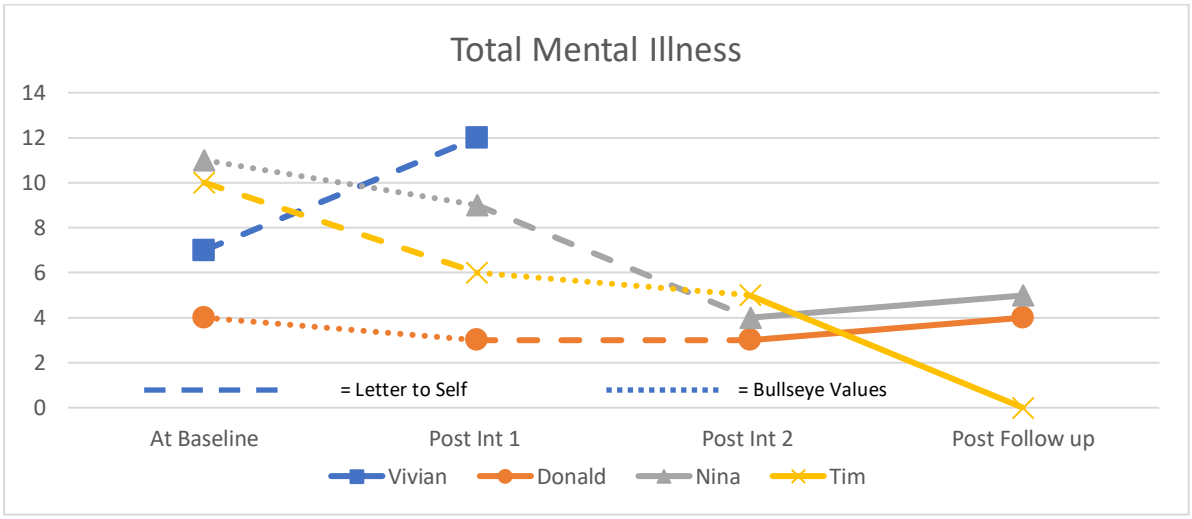

Figure 2. *Summary of impact of interventions on mental illness*

Table 1.0. Means (M), standard deviations (SD), and % overlapping data for each participant's mental well-being (SWEMWBS) at baseline, intervention, and follow-up phases

Participants	Baseline		Intervention 1		Intervention 2		Follow Up		% Overlapping Data
	M	SD	M	SD	M	SD	M	SD	
Donald	32.85	3.04	28.91	0.61	28.24	2.08	27.27	1.57	0/18 (0%)
Nina	24.75	3.24	25.78	3.19	25.80	4.17	26.69	3.12	2/20 (10%)
Tim	21.42	2.23	19.51	1.81	23.4	2.33	25.24	1.47	8/19 (42%)
Vivian	18.71	1.80	17.19	1.09	-	-	-	-	1/6 (16.6%)

Table 2.0. Mean change, percentage increase, change in variability, and effect sizes from baseline through follow up for mental well being

Participants	Mean Change	Percentage Increase	Change in Variability	Effect Size
Donald	-5.58	16.98% decrease	1.47	1.84
Nina	+ 1.94	7.83% increase	0.12	0.60
Tim	+ 3.82	17.83% increase	0.76	1.71
Vivian	-	-	-	-

Donald

Overall *mental health* scores remained relatively stable from baseline (61) throughout both interventions (BEVS, 61; Letter-to-self, 54) through to follow up (58). A consistent flourishing classification was observed at all four time points. Total *mental illness* decreased from baseline (4) to intervention one (BEVS, 3) and intervention two (Letter-to-self, 3), but returned to baseline levels at follow up (4). So, mental illness reduced after both interventions, but these reductions were not maintained at follow up.

Nina

Overall *mental health* score increased from baseline (50 – Moderately mentally healthy) to follow up (55 – Flourishing). A classification of flourishing was evident post intervention one (BEVS, 56) and intervention two (Letter-to-self, 57). Total mental illness decreased substantially from baseline (12) to follow up (5). Reductions were also seen after intervention one (BEVS, 9), with greatest reductions observed post intervention two (letter-to-self, 4).

Tim

Overall *mental health* score improved from baseline (44) to follow up (47). A classification of moderate mental health was evident at each time point. Total mental illness decreased from baseline (10), to intervention one (letter-to-self, 6), through intervention two (BEVS, 5) to follow up (0), demonstrating that both interventions had a positive effect on reducing mental illness.

Vivian

Total m*ental health* increased from baseline (25 – moderately mentally healthy) to intervention one (letter-to-self; 46 – moderately mentally healthy). Total *mental illness* increased from baseline (7) to intervention one (letter-to-self – 12). No other changes regarding total mental health or illness could be commented on due to this participant failing to complete the second intervention (BEVS) and remaining surveys.

Social Validation

Several insights into the delivery and benefits of the interventions were gleaned from social validation. All participants considered mental health as important to them, implying presence of motivation towards the interventions.

Participants that gave feedback on their experience of the BEVS reported being *satisfied* with the effects manifested by the intervention on their mental health and well-being, and that they found it very *useful.* Participants took from 30-90 minutes to complete the BEVS.

Donald found this intervention beneficial for the following reasons:

"It [the BEVS intervention] has helped me to look at where I currently am in my life (in all areas). It has also given me time to take a look at exactly where I want to go with different areas of my life and how I want to progress. The values [I identified] have allowed me to put down in words exactly what I value in life and what I want to achieve"

Nina suggested the intervention enhanced her self-awareness, by bringing some latent thoughts and feelings to her attention; she commented:

"It made me aware of [my] beliefs and feelings I feel I have been ignoring recently"

Regarding the therapeutic letter to self all participants were reasonably *satisfied* with the intervention at improving their mental health and well-being, with scores ranging from 5-7 on the 7-point likert scale. Participants all found the intervention reasonably useful towards improving their mental health and well-being with scores ranging from 4 to 6 on the 7-point likert scale. Participants spent a longer period of time on this task, relative to BEVS, with participants taking anywhere from 30 minutes to 8 hours to complete the task. Vivian was questioning retirement from her sport and suggested that the intervention reminded her of how she felt [although she didn't clarify whether they were positive or negative feelings] towards her sport and the sacrifices she had made. She also found the task reflective and that the task also helped her approach her current self with a more open mindset. She commented:

"I have been questioning my retirement from the sport and the task managed to remind me how I truly felt towards the sport and all the sacrifices I had made. Being true to myself was working hard and it brought it to the forefront of my mind. I think the task was very reflective and wasn't just a letter to my former self but a letter to my current self with a more open mindset"

Donald suggested the intervention drew his mind towards considering different life goals and why he wanted to achieve those goals. He also suggested the intervention came at an ideal time for him.

"The positive features are the fact that it [the intervention] gave me a chance to think about what my goals are for all areas of my life, what I want to achieve and why. This was really important and came at a brilliant time for me."

Reflections

In this case study we draw upon the notion of critical reflection to (a) challenge views that have held sway, and (b) draw attention to elements of practice that may lack visibility (cf. Knowles & Gilbourne, 2010). Brookfield (1998) suggests that critical reflective practice is a process of inquiry in trying to discover, and research, the assumptions that frame how individuals work by seeing practice through four complementary lenses: (1) their own autobiographies as learners of reflective practice, (2) the lens of learners' eyes, (3) the lens of colleagues' perceptions, and (4) the lens of theoretical, empirical, and philosophical literature. This section includes information from the first, second and fourth lenses.

Authors perspectives. The interventions, and methodology (e,g., multiple-probe design) represent a novel approach to facilitating and evaluating student-athletes' mental health and contribute to the evidence-base of "what works". The timing of the study simply reflected pragmatic considerations, but the timing of the study (i.e., over Christmas/new year period) may have been a limitation and explain participant dropout. This seems plausible when considering that students often have a heavy workload over the festive period, with assignments to complete. Couple this with the fact that Christmas [and new year] time is associated with lower subjective well-being (Mutz, 2016), and one can begin to understand why it may have been difficult for participants to complete a two-month long research project.

Nevertheless, what the study lacked in internal validity, it seemed to counter with high ecological validity. For example, the online delivery allowed clients the autonomy to complete their interventions within a two-week period at times, places and on devices

convenient to them. This arguably simulates the real experience of a client that is given an intervention/homework task to do between sport psychology consultancy sessions (Hill, 2001). Another strength of the current study was its originality, in examining the effects of two novel interventions on mental health, rather than on more typical outcome variables like subjective and/or objective performance indicators or psychological attributes.

Another reflection was that giving prompts to participants via e-mail and/or text messages every other day proved to be very labour intensive for the first author and possibly led to some of the athletes feeling pressurised to participate. Although speculative, perhaps participant drop-out might be attributed to a dislike of being prompted to fill out the surveys and/or complete either of the interventions. Perhaps some of the participants experienced this as added pressure to participate and did not like that. This was corroborated by feedback from Vivian, who said she would have preferred automated reminders. Effects observed and amount of data collected may have looked different had participants been given greater autonomy (i.e., no prompts from first author).

Learners' Experience. All participants reported enjoying their experience of doing the interventions. When considering their overall experience of participating in both interventions, Donald said the following:

> *"I have thoroughly enjoyed my experience. It has made me consider my thoughts and feelings in all areas of my life and why I have been feeling the way I have. It has also helped me dedicate time to think about where I am currently in my life, where I am heading and what I need to be doing regularly to get there."*

This comment suggests how the interventions enabled the participant to 'take stock' of their current life functioning, consider their life direction(s), and what actions need to be taken to get them where they want to go. The experience also seemed to facilitate reflections

of thoughts and feelings in different life areas. Similarly, participant three also talked about how her experience of the whole intervention package facilitated manifestation of latent thoughts and feelings, and encouraged her to think more about self-care; she said: *"[The] intervention tasks made me think more about my self-care and made me aware of deeper thoughts and feelings towards myself/sport/training that I wasn't making known"*

All participants expressed having a good experience of receiving the interventions online, opposed to face-to-face. Regarding the online delivery of the intervention, Donald said: *"The online delivery worked well for me and meant that I could fill out the necessary forms and do the work as and when I had the chance".*

This comment supports how the online delivery seemed to afford participants flexibility around when they did their interventions and how much time they invested into them. All participants were satisfied with the order in which they received the interventions. Two improvements for the project were suggested. First, it was recommended to include a wider variety of questions for the mental well being scales. Second, for automated reminders to be sent to participants, rather than direct messages from the lead author

Theoretical, philosophical and professional practice literature. For brevity, we didn't report the results of the individual subscales of the MHC-SF. Yet, the subscale of EWB within the MHC-SF increased for all participants that completed the study (i.e., Donald, Nina, and Tim). All three participants demonstrated positive mean change from baseline to follow up. EWB for Vivian also increased from baseline through to the end of the letter-to-self intervention. These findings are arguably supported by social validation data, which seemed to contain an emotional theme in feedback given. More specifically, participants spoke about the interventions making them more aware of their deeper feelings towards themselves, their

sport and their training, that were previously outside of their awareness and that thoughts and feelings of self-care/compassion were aroused.

The importance of emotion to disclosive writing was observed in a study by Pennebaker & Beale (1986), who found that when participants were instructed to not write about emotional content, positive effects from the writing paradigm stopped. Results like this and from the current study show that emotional release is a crucial part of the benefits of disclosive writing and perhaps provide some support for 'catharsis theory' (Pennebaker, 1997). Moreover, happiness, an item making up part of the EWB scale, has been shown to be enhanced by interventions like writing a letter of gratitude (Lyobomirsky et al., 2011; Seligman et al., 2005) and writing about ones best future self (King, 2001).

Conclusion

Two online interventions (Letter to self; Bulls-Eye values exercise) were associated with maintenance or improvements in mental health, and reductions in mental illness in student-athletes. The results suggest that interventions designed specifically toward enhancing mental health may serve a buffering effect in reducing symptoms of mental illness. The characteristics of the design thwart a cause-effect explanation, yet suggest that a more ambitious, perhaps quasi-experimental examination of this intervention in a larger, more representative sample of athletes is appropriate. This study provides some support for a psychological informed, accessibly-delivered strategy to enhance mental health of student-athletes.

References

Abram K. M, Paskar L. D, Washburn J.J, & Teplin, L. A (2008). Perceived barriers to mental health services among youths in detention. *Journal of the American Academy of Child Adolescent Psychiatry,* 47, 301-308. 10.1097/CHI.0b013e318160b3bb.

Armstrong, S., & Oomen-Early, J. (2009). Social connectedness, self-esteem, and depression symptomatology among collegiate athletes versus nonathletes. *Journal of American College Health*, 57, 521-6. doi.10.3200/JACH.57.5.521-526.

Barker, J. B., Mellalieu, S. D., McCarthy, P. J., Jones, M. V., & Moran, A (2013). A Review of Single-Case Research in Sport Psychology 1997–2012: Research Trends and Future Directions, *Journal of Applied Sport Psychology, 25*, 4-32.

Breslin, G., & Leavey, G. (2018). *Mental health and well-being interventions in sport: Research, theory and practice.* London: Routledge.

Breslin, G., Shannon, S., Haughey, T., Donnelly, P. and Leavey, G., 2017. A systematic review of interventions to increase awareness of mental health and well-being in athletes, coaches and officials. *Systematic Reviews, 6,* p.177.

Brookfield, S. (1998). Critically reflective practice. *Journal of Continuing Education in the Health Professions,* 18, 197-205.

Bruner, M. W., Munroe-Chandler, K. J., & Spink, K. S. (2008). Entry into elite sport: A preliminary investigation into the transition experiences of rookie athletes. *Journal of Applied Sport Psychology,* 20, 236-252.

Chew, J. (1997). *Women survivors of childhood sexual abuse*. Binghamton, NY: Haworth Press.

Connell, J. & Barkham, M. (2007). *CORE-10 User Manual, Version 1.1*. CORE System Trust & CORE Information Management Systems Ltd.

Davidson, L., & Roe, D. (2007). Recovery from versus recovery in serious mental illness: one strategy for lessening confusion plaguing recovery. *Journal of Mental Health, 16*, 1−12. doi.org/10.1080/09638230701482394.

Evans, C., Mellor-Clark, J., Margison, F., Barkham, M., McGrath, G., Connell, J. & Audin, K. Clinical Outcomes in Routine Evaluation: The CORE-OM. (2000). *Journal of Mental Health*, 9, 247-255.

Fletcher, T. B., Benshoff, J. M., & Richburg, M. J. (2003). A systems approach to understanding and counselling college student-athletes. *Journal of College Counselling,* 6, 35-45. doi: 10.1002/j.2161-1882.2003.tb00225.x

Gavrilova, Y., & Donohue, B. (2018). Sport-specific mental health interventions in athletes: A call for optimization models sensitive to sport culture. *Journal of Sport Behavior, 41*, 283-304.

Greenberger, D., & Padesky, C. (2015). *Mind over mood*. 2nd ed. Guildford Press, New York.

Gross, J.J. (2002) Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology* 39, 281–291

Hamilton, R. A., Scott, D., & MacDougall, M. P. (2007). Assessing the effectiveness of self-talk interventions on endurance performance. *Journal of Applied Sport Psychology, 19*, 226–239.

Haver, A., Akerjordet, K., Caputi, P., Furunes, T., Magee, C. (2015). Measuring mental well-being: A validation of the Short Warwick-Edinburgh Mental Well-Being Scale in Norwegian and Swedish. *Scandinavian Journal of Public Health,* 43, 721–727.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes, and outcomes. *Behaviour Research and Therapy*, 44, 1–25.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2012). *Acceptance and commitment therapy: The process and practice of mindful change* (2nd ed.). New York: Guilford Press.

Hill, K.E. (2001). *Frameworks for sport psychologists: Enhancing sport performance*. Champaign, IL: Human Kinetics.

Hrycaiko, D., & Martin, G. L. (1996). Applied research studies with single-subject designs: Why so few. *Journal of Applied Sport Psychology*, *8*, 183-199.

Jowett, S. (2003). When the honeymoon is over: a case study of a coach-athlete relationship in crisis. *The Sports Psychologist*, *17*, 444-460. doi.org/10.1123/tsp.17.4.444.

Kazdin, A. E. 1993. Adolescent mental health: Prevention and treatment programs. *American Psychologist, 48*, 127–141.

Keyes, C. L. M. (2007). Promoting and protecting mental health as flourishing: A complementary strategy for improving national mental health. *American Psychologist, 62*, 95-108.

Keyes, C. L. M., Wissing, M., Potgieter, J., Temane, M., Kruger, A., & van Rooy, S. (2008). Evaluation of the Mental Health Continuum—Short Form (MHC-SF) in Swetsana-speaking South Africans. *Clinical Psychology and Psychotherapy, 15*, 181–192.

Keyes, C. L. M., & Lopez, S. J. (2002). Toward a science of mental health: Positive directions in diagnosis and interventions. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 45–59). New York: Oxford University Press.

Keyes, C.L.M. (2013). Promoting and protecting positive mental health: Early and often throughout the lifespan. In C.L.M. Keyes (Ed.), *Mental well-being: International contributions to the study of positive mental health*, (pp. 3-28). New York: Springer.

King, L.A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin,* 27, 798–807.

King, L.A., & Miner, K.N. (2000). Writing about the perceived benefits of traumatic events: Implications for physical health. *Personality and Social Psychology Bulletin,* 26, 220–230.

Knowles, Z., & Gilbourne, D. (2010). Aspiration, inspiration, and illustration: Initiating debate on reflective practice writing. *The Sport Psychologist*, *24,* 504–520.

Lyubomirsky, S., Dickerhoof, R., Boehm, J. K., & Sheldon, K. M. (2011). Becoming happier takes both a will and a proper way: An experimental longitudinal intervention to boost well-being. *Emotion*, *11*, 391-402.

Lundgren T, Luoma JB, Dahl JA, Strosahl KD, & Melin L (2012). The Bull's-Eye Values Survey: A psychometric evaluation. *Cognitive and Behavioral Practice,* 19, 58-526.

Mutz, M. (2016). Christmas and subjective well-being: A research note. *Applied Research Quality Life*. doi:10.1007/s11482-015-9441-8.

Noblet, A., & Gifford, S. (2002). The sources of stress experienced by professional Australian footballers. *Journal of Applied Sport Psychology, 14*, 1–13. doi.10.1080/10413200209339007.

Noblet, A., Rodwell, J., & McWilliams, J. (2002). The job strain model is enough for managers. *Journal of Management Psychology, 16*, 635–649. doi:10.1108/EUM0000000006304.

Pates, J., Maynard, I. W., & Westbury, T. (2001). An investigation into the effects of hypnosis on basketball performance. *Journal of Applied Sport Psychology*, 13, 84–102.

Parker, R. I., & Vannest, K. J. (2009). An improved effect size for single case research: Non-overlap of all pairs (NAP). *Behavior Therapy*, *40*, 357–367.

Pennebaker, J. W. (1989). Confession, inhibition, and disease. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology (Vol. 22, pp. 211-244).* New York: Springer-Verlag.

Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, *8*, 162-166.

Pennebaker,J.W., & Beall,S. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology, 95*, 274-281

Reardon, C, L., & Factor, R, M. (2010). Sports psychiatry: a systematic review of diagnosis and medical treatment of mental illness in athletes. *Sports Medicine*, *40*, 961-80. doi. 10.2165/11536580-000000000-00000.

Rogers, C. R. (1961). *On Becoming a person: A psychotherapists view of psychotherapy*. Houghton Mifflin.

Schinke, R. J., Stambulova, N. B,, Si, G., & Moore, Z. (2018). International society of sport psychology position stand: Athletes' mental health, performance, and development. *International Journal of Sport and Exercise Psychology, 16*, 622-639

Seligman, M. E. P. Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychologist*, *60*, 410-421.

Shannon, S., Hanna, D., Haughey, T., Leavey, G., McGeown, C., & Breslin, G. (2019). Effects of a Mental Health Intervention in Athletes: Applying Self-Determination Theory. *Frontiers in psychology*, *10*, 1875. doi:10.3389/fpsyg.2019.01875

Sungat-borgan, J., & Torstveit, M, K. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical Journal of Sports Medicine, 14,* 25-32.

Thelwell, R. C., & Greenlees, I. A. (2001). The effects of a mental skills training package on gymnasium triathlon performance. *The Sport Psychologist, 15,* 127-141.

Uphill, M., Sly, D., and Swain, J. (2016). From mental health to mental wealth in athletes: looking back and moving forward. *Front. Psychol. 7*:935. doi: 10.3389/fpsyg.2016.00935

Van Raalte, J. L., Cornelius, A. E., Andrews, S., Diehl, N. S., & Brewer, B. W. (2015). Mental Health Referral for Student-Athletes: Web-Based Education and Training. *Journal of Clinical Sport Psychology, 9,* 197-212.

Watson, J. (2005). College student-athletes' attitudes towards help-seeking behaviour and expectations of counselling services. *Journal of College Student Development, 46,* 442-449. doi.10.1353/csd.2005.0044.

Watson, J. C. (2006). Student-athletes and counselling: Factors influencing the decision to seek counselling services. *College Student Journal, 40,* 35-42. doi.org/10.1179/1935739714Z.00000000022.

White, V. E. & Murray, M. A. (2002). Passing notes: The use of therapeutic letter writing in counseling adolescents. *Journal of Mental Health Counseling,* 24, 166–176

World Health Organization (2013). *Mental health action plan (2013-2020).* Geneva, WHO Document Production Services.

Wilson C., Rickwood, D., Deane, F. (2007) Depressive symptoms and help-seeking intentions in young people. *Clinical Psychologist,* 11 (3): 98-107. 10.1080/13284200701870954

Whitehurst, G. (2013). Dwindling resources: The use of singlecase research designs as an efficient alternative for applied aviation research. *Aviation Psychology and Applied Human Factors,* 3(2), 63-72.

Appendix xx Details about intervention:

Therapeutic letter to self

Specific instructions were given to invite participants to write about trauma and perceived benefits of trauma (e.g., *"Recall any significant traumas and/or challenges you have gone through in your life up until now. Focus [ONLY] on the positive aspects of these challenging*

experience(s). What would your older wiser you say to you about how you have changed or grown as a person as a result of these challenging experience(s)? What would s/he say about how these challenging experiences will make you better equipped to meet the challenges of your future here as CCCU sport scholar?) and gratitude (e.g., "*Who, when looking back across your life so far, would s/he tell you to be grateful for? What individuals would s/he say did or said something to you that changed your life for the better? What would your older, wiser you, say to you about why you should be grateful to this individual?).* Finally, to follow suit of anecdotal evidence (https://www.theplayerstribune.com/en-us/articles/pete-sampras-letter-to-my-younger-self; https://www.wolves.co.uk/news/academy/20180904-elliot-watt-a-letter-to-my-14-year-old-self/ from two elite athletes, participants were invited to write in the format of a letter to themselves, from a future standpoint.

Bulls-Eye Values Exercise

). First, the BEVS asks participants to write down their values in four important life domains (1) Work/education; 2) leisure; 3) relationships and 4) personal growth/health). To assist participants in identifying their life values, the current author modified the BEVS, by adding a non-exhaustive alphabetical list of values. Next, participants would see an image of what resembled a dartboard, divided into four quarters, with each quarter representing each of the four life domains. The participant would be required to make four X marks on each of the

four quarters on the dart board to reflect what degree she perceived to be living her life in accordance with that value. A mark in the bullseye indicated that the person perceived to be living their life in complete synchrony with that value, whereas a mark further away from the target indicated less synchrony. Following this, participants listed the psychological barriers which they perceived to keep them from living their lives in accordance with their values. Following this, participants were asked to estimate [on a scale of 1-7, where 1 means *"Does not prevent me at all"* and 7 means *"Prevents me completely"*] to what extent each self-selected barrier prevented them from living their life in accordance with each value. Finally, participants were asked to select at least one behaviour/action in each of the four life domains that would increase their chances of values-based living.