A case study investigation into a group online sport psychology support intervention for injured athletes

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Abstract

Sport psychology support can have a positive impact on sport injury rehabilitation, however, there appear to be barriers to injured athletes accessing such support (e.g., financial and geographical constraints). Online delivery has been suggested as a method to address some of these barriers. This case study therefore sought to explore whether an online sport psychology support hub was an effective method of sport injury psychology support. Sixteen injured athletes (seven male and nine female) participated in a six-week sport psychology intervention where they were given access to an online hub, moderated by a sport psychologist, in which sport psychology support was provided through social support (online forum), written emotional disclosure (diary), and psychological skills development (education resources). The impact of the hub was measured through analysis of the forum posts, diary entries, and responses to an evaluation questionnaire. Whilst engagement with the hub was not as high as anticipated, the athletes reported several positive benefits from using the hub and rated the overall impact of the hub highly demonstrating the potential of online delivery.

Keywords: sport injury psychology; online sport psychology support; injured athletes; applied practice
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Various studies have demonstrated that sport psychology support during sport injury rehabilitation can have a positive impact. In their review of the literature, Gennarelli et al. (2020) identified a range of psychological interventions that can benefit injured athletes including imagery, relaxation, positive self-talk, goal setting, counseling, and written emotional disclosure. Similarly, in their study of 1283 injured athletes from three Western countries (USA, UK, and Finland), Arvinen-Barrow et al. (2015) reported that the athletes rated goal setting, positive self-talk, imagery, and relaxation as the top four psychological interventions they used during sport injury rehabilitation. The majority of athletes who had used these interventions felt that they had a positive impact on the speed of their recovery (Arvinen-Barrow et al., 2015).

Whilst research has shown that sport psychology support has a positive impact on sport injury rehabilitation there appear to be barriers to injured athletes accessing this support. For example, in Arvinen-Barrow et al.’s (2015) study only 27% of the 1283 athletes had used psychological interventions during sport injury rehabilitation and only 3% did so under the guidance of a sport psychologist. It has been suggested that barriers preventing injured athletes from receiving sport psychology support can include geographical constraints, finances, stigma (Ardern et al., 2022), time (Cassilo & Sanderson, 2019), lack of knowledge the psychosocial aspects of sport injury, and lack of access to sport psychologists (Annear et al., 2019).

Strategies aimed at reducing the barriers and making sport psychology support more accessible to injured athletes are of the utmost importance in order to maximize sport injury rehabilitation. One strategy that may increase accessibility is providing sport psychology support to injured athletes in an online environment, which Ardern et al. (2022) suggested overcomes the
barriers of geography, cost, and stigma. Online sport psychology provision can potentially reach a larger audience and connect athletes who would otherwise not have access to a sport psychologist. Online interventions are suggested to be a cost-effective method of delivering psychological support with high retention and compliance rates (Hidalgo-Mazzei et al., 2015), that can be as effective as face-to-face support (Andersson, 2016). The flexible, on-demand nature of online support can also make it more accessible to those who are time poor (Ardern et al., 2022). Limited research exists which explores online psychological intervention strategies specifically for injured athletes, but Ardern et al. (2022) conducted a feasibility and usability study of a 24-week online and app-based psychological support intervention for athletes recovering from knee surgery (‘Get Back in the Game’). They found that the intervention was generally perceived positively by athletes, who felt that it had appealing content and would add value to their rehabilitation. The intervention was a self-directed psychological support tool comprising psychological skills, psychoeducation and motivational interviewing (Ardern et al., 2022). Online interventions have also been shown to be effective in other areas such as mental health (Spijkerman et al., 2016), depression (Roepke et al., 2015), and competitive performance (Lane et al., 2016). Additionally, online education interventions on the psychological aspects of sport injury have been shown to be effective in improving sport injury rehabilitation professionals’ attitudes and behaviors in relation to sport psychology (Heaney et al., 2017).

Online support groups or forums for injured athletes represent an example of the online support that could potentially be delivered to injured athletes. Such groups can provide social support which has been identified as an important intervention during sport injury and return to sport (Forsdyke et al., 2016). Social support has been suggested to benefit sport injury by acting as a stress buffer (Mitchell et al., 2014) and so it could be hypothesized that talking to other
injured athletes in an online forum could help reduce stress. Trainor et al. (2020) found that social support from those who have experienced sport injury is particularly valuable to injured athletes. The power of peer support and sharing thoughts and feelings with those who understand your perspective cannot be underestimated (Cassilo & Sanderson, 2019). Injured athletes may not have access to others with injuries in their physical environment, but it has been suggested that online communication can be effective in filling that void (Pendry & Salvatore, 2015). Online groups have been shown to be effective in various populations outside of injured athletes including those with long-term conditions (Allen et al., 2016) and mental health difficulties (Naslund et al., 2016). For example, Meade et al. (2018) explored the impact of an online support group on those with neuromuscular disorders and concluded that it provided an accessible source of support that allowed members to connect with others, exchange information, and feel empowered. In relation to sport injury, Cassilo and Sanderson (2019) examined 58 posts made by a range of athletes who had experienced concussion on three online support group websites. They concluded that athletes who had suffered from concussion could derive several benefits from engaging with online support groups including being able to share feelings of grief and loss, enhanced well-being, and improved coping skills.

Although not in an online environment, Clement and colleagues have explored the impact of group support on injured athletes. They advocated the use of groups for injured athletes which provide social support and allow the development of psychological skills (Clement et al., 2012a). Clement et al. (2011) suggested that such groups provide injured athletes with a safe space to express their fears about injury, learn from others in the group, and develop new coping strategies. To be most effective, Clement et al. (2012b) suggested that these face-to-face groups are comprised of around ten injured athletes with a similar estimated recovery time. This is
largely because athletes tend to have different psychological responses to injury at different
stages of the injury process (e.g., initial injury, rehabilitation, and return to sport) (Clement et al.,
2015). There may, however, be disadvantages to small homogenous groups such as increased
competitiveness when participants are at similar stages and less opportunity for sharing of
diverse experiences. There is no guidance on how these suggestions may extrapolate to an online
forum group and consequently more research is required to investigate the effectiveness of
online support groups for injured athletes where group sizes are likely to be larger and
communication is likely written rather than verbal (e.g., online forum).

Online forums represent a form of written disclosure and sharing with others, but less
public written emotional disclosure can also be beneficial. Written emotional disclosure, such as
undertaking writing tasks or keeping a sport injury diary, have been shown to benefit sport injury
rehabilitation by helping athletes to better understand and come to terms with their injuries
(Mankad & Gordon, 2010), reduce stress levels (Mankad et al., 2009b), increase self-esteem
(Mankad et al., 2009b), and improve psycho-immunological status (Mankad et al., 2009a).

Wadey et al. (2019) reported expressive writing as a way of allowing an athlete’s story to be
heard as part of the process of facilitating sport injury related growth, although caution is urged
in the application of written emotional disclosure methods (e.g. diaries) as they can reveal
sensitive information (Day & Thatcher, 2009) and elicit negative responses such as ‘re-
traumatization’ (Salim & Wadey, 2018). This highlights the need for additional support for those
undertaking written emotional disclosure tasks rather than the exclusion of such tasks as Salim et
al. (2016) suggested that it is important for athletes to have an emotional outlet in order to
facilitate a more positive injury experience. Both online forums and diaries can provide such an
outlet.
Purpose and philosophy

Given the potential for online delivery to increase the accessibility of sport psychology support to injured athletes, the purpose of this paper is to offer a reflection on a case study that explored the impact of an online sport psychology support package incorporating sport psychologist supported social support, written emotional disclosure, and psychological skills development on a group of injured athletes. Whilst some research (e.g., Ardern et al., 2022; Cassilo & Sanderson, 2019) has begun to explore online sport psychology support for injured athletes, none has combined sport psychologist supported social support, written emotional disclosure, and psychological skills development. This intervention therefore represents a unique and comprehensive package for injured athletes.

The desire to undertake such an intervention was founded on our combined applied and research experiences of the psychological aspects of sports injury, and extensive knowledge of online teaching and support gained through several years’ experience (collectively almost 30 years) of developing and delivering distance learning education materials. The aim was to apply the online delivery approaches that we have successfully adopted in distance learning education to increase the reach of sport psychology support for injured athletes. We are both experienced sport and exercise psychologists with over 20 years of applied experience each and have used online sport psychology delivery methods in our applied practice, both currently and long in advance of the COVID-19 pandemic (e.g., Heaney, 2013), but prior to this case study these have primarily been as an adjunct to face-to-face provision.

Our philosophy is grounded in an assumption that wellbeing and sports performance, and in this case sport injury rehabilitation, are strongly interlinked (Trainor et al., 2020). This is an approach that underpins our applied practice and philosophies where we both adopt a philosophy
of an athlete-centered, person-centered approach to sport psychology practice. It was on this foundation – mindful of the challenge of creating a safe space for appropriate support in an online medium - that the case study was designed, and implemented, with the clear goal to provide a support system that encouraged and facilitated the athletes to develop their own solutions to challenges faced during injury rehabilitation (Katz & Keyes, 2020). Consequently we adopted an online approach that placed the athlete centrally allowing them to curate their own support package, with the sport psychologist embedded throughout, emphasizing the importance of the athlete-psychologist relationship.

**The Case**

**The athletes**

The case study explored the impact of a sport psychology intervention on a group of 16 injured athletes. After institutional ethical approval was gained these athletes were recruited via an invitation placed on social media (Twitter) calling for injured athletes who would like to receive free sport psychology support. This self-selected group of 16 athletes (7 male and 9 female) ranged in age from 22-67 years (mean age = 42 years) and participated in a range of sports (athletics, triathlon, football, swimming, rugby, cycling, rowing, duathlon, and roller derby) at various different levels. To join the group athletes were required to be engaged in regular competition in their sport (excluding periods where they have been unable to compete due to injury), currently suffering from a sport injury, and not currently working with a sport psychologist. In order to create a diverse group no restrictions were put on the type or extent of sport injury, or the stage of rehabilitation and the athletes consequently reported a range of injuries (bicep tendon rupture, plantar fasciitis, hamstring strain, meniscal root tear, osteoarthritis, shoulder separation/wrist fracture, broken leg/ankle, hip labral tear/spinal pars
fracture, hip injury/muscle imbalance, sacral stress fracture, Morton’s neuroma, sciatic nerve compression/impingement, stress fracture/soft tissue injury, combined hamstring/lower back/hip injury, rotator cuff tear, and suprapatellar bursitis). Similarly, no restrictions were placed on the level the athletes competed at prior to injury resulting in further variation. One athlete reported competing at a recreational level, six at club level, 2 at county level, 3 at regional level, and 4 at international level.

Most athletes (n=12) were based in the UK, but three were based in the USA and one was based in the Republic of Ireland. This represents an exclusively Western sample from English speaking nations, who whilst diverse in some characteristics, likely share Western views and values that will impact on their experience and the meaning they attribute to injury. Consequently it is recognized that this research does not fully align with calls for more culturally diverse sport psychology research (e.g., Ryba et al., 2013).

Of the 16 group members, 12 engaged fully by participating in all aspects of the study (submitting diary entries, making forum posts, and completing an evaluation questionnaire), whilst four partially engaged by only completing one or two of these activities. It was considered important to include data from those who only partially engaged in order to understand the barriers that prevented them engaging further.

The intervention

After completing an informed consent form the athletes were given access to an online community called the Sport Psychology Hub for Injured Athletes through which sport psychology support was provided. The hub was a website that comprised three main areas: a discussion forum, a diary, and a resources section.

Discussion forum
The discussion forum was a closed group, only open to the athletes and a sport psychologist (the first author) who moderated the forum. The forum was pre-populated with a series of discussion threads that the athletes were invited to contribute to, covering topics such as the feelings experienced in response to injury and experiences of using the sport psychology techniques in the resources section of the website. The athletes were invited to contribute to all of these discussions and interact with other athletes and the sports psychologist. Athletes were also able to start their own discussion threads. There was an option to anonymize contributions or athletes could post with their own name. The lead author moderated the forum accordance existing guidance (e.g., O'Grady et al., 2010) by initiating posts and reading and responding to posts where appropriate within 24 hours and inviting further discussion from the group. As self-disclosure has been suggested as an effective strategy to encourage disclosure in others in sport psychology settings the lead author shared their own recent experiences of injury in the forum, drawing on the guidelines of Way and Vosloo (2016).

**Diary**

The diary section of the hub contained a link to a page where athletes could submit a private diary entry that was only seen by the study authors. The athletes were requested to write one diary entry per week and were sent either an email or text message (depending on their preference) each week to remind them to complete an entry. The athletes were asked to write diary entries connected to the psychological aspects of their sport injury experience and were told that there was no minimum or maximum word limit. Athletes were able to write about anything they felt was appropriate, but as it has been suggested that athletes sometimes find diary writing difficult (Day & Thatcher, 2009) a series of reflective questions were given within the diary to help those who were unsure what to write (listed below). These open questions were
aimed at stimulating athlete reflection on their experiences of injury that week and their
experience of interacting with the hub and were based the authors’ evidence informed
experiences of working with injured athletes. The first author replied to each of the diary entries
made by athletes via email, responding to the points shared, answering any questions, and
providing support. This aspect of the diary was considered particularly important from an ethical
viewpoint as written emotional disclosure as well as being therapeutic can potentially be
traumatizing (Salim & Wadey, 2018). The diary provided the only opportunity for one-to-one
interaction between the athlete and psychologist and a space for providing support for the
difficulties divulged. Although not akin to verbal interaction Day and Thatcher (2009) suggest
that good rapport can be built between the athlete and researcher through diary entries.

- What emotions have you experienced this week in relation to your injury? What caused
  these emotions? What impact did they have?
- Have you tried any of the menu of options resources in the sport psychology hub this
  week? If so, how effective did you find them?
- Did you have any interesting conversations on the forum this week? What impact did
  they have on you?
- Have there been any particularly challenging moments this week?
- Have there been any particularly positive moments this week?
- What have you learnt this week?

Resources

The resources section contained educational and self-help sport psychology resources on
social support, imagery, self-talk, relaxation, and goal setting. These five topic areas were
selected as they are widely recognized as being of benefit during sport injury rehabilitation in the
literature (e.g., Heaney et al., 2015). The materials were written by the first author, drawing on their expertise of preparing online teaching materials and providing sport psychology support to injured athletes. They were reviewed by the second author who had similar expertise and were piloted on a sport injury rehabilitation professional and an injured athlete. The materials contained written and audio-visual content and athlete activities. The resources section also contained a ‘Further support’ page containing information on sources of additional support and how to access professional help after the study (e.g., sport psychologist), which was designed to supplement the personalized support offered through the diary. The athletes were asked to visit the hub and look at the resources at least once a week and were encouraged to share their experiences of trying these techniques in the forum and in their diary.

These areas of the hub (discussion forum, diary, and resources) were selected based on the previous research discussed earlier in this article which indicated that forums and diaries are potentially useful forms of sharing and emotional disclosure during injury and that the strategies included in the resources section have all been shown to benefit injured athletes. The intervention lasted for a period of six weeks and no new athletes were allowed to join after the second week. This meant that athletes were required to access the hub for a period of four to six weeks depending on when they joined the group. At the end of the six-week period athletes were asked to complete their final diary entry, and then one week later were asked to complete an online evaluation questionnaire. Athletes that did not complete the evaluation questionnaire were sent reminder emails a week later.

**Evaluating the impact of the hub**

Three measures were used to evaluate the impact of the hub: discussion forum posts, diary entries, and an evaluation questionnaire. At the end of the intervention athletes were sent
an online evaluation questionnaire, developed by the authors based on the hub content and existing literature, which aimed to evaluate how effective the athletes perceived the Sport Psychology Hub for Injured Athletes to be. The questionnaire was split into four sections – one evaluating each section of the hub (discussion forum, diary, resources) and one section evaluating the hub as a whole. For each section athletes were first required to answer questions about their level of engagement with that aspect with the hub and factors affecting their engagement. They were then asked to state how strongly they agreed or disagreed with a series of statements about that aspect of the hub using a five-point Likert scale ranging from *strongly agree* to *strongly disagree*. A *non-applicable* option was also available for each of these statements. Example statements from each section of the questionnaire are given in below.

- **Forum**: I found reading about other athletes’ sport injury experiences useful.
- **Diary**: Keeping a diary was a useful way for me to reflect on my thoughts and feelings about being injured.
- **Sport psychology resources**: The resources in this section have had a positive impact on my sport injury rehabilitation.
- **General**: Participating in this project made me more aware of the psychological impact of my injury.

Each section of the questionnaire had an optional open comments box where athletes could explain the answers they had given, discuss what they liked/disliked, or offer any suggestions for improvement. The final section of the questionnaire asked athletes to rate on a scale of one (little or no benefit) to ten (extremely beneficial) how beneficial they felt the hub had been to their sport injury rehabilitation.

*Data analysis*
The multi-method approach adopted generated quantitative and qualitative data from three sources – forum, diary, and evaluation questionnaire. A qualitative analysis of the content of the discussion forum was undertaken along with a quantitative analysis of the number, frequency, and spread of posts in order monitor engagement. Quantitative data on the number of diary entries recorded by each athlete were collected and a qualitative analysis was undertaken on the content of the entries. The evaluation questionnaire generated largely quantitative data from which descriptive statistics on engagement with each component of the hub and the various ratings of each component were calculated. A qualitative analysis of the data derived from the ‘additional comments’ boxes was also conducted.

All qualitative data (forum, diary and questionnaire) were analysed within the software package NVivo using a conventional content analysis approach (Hsieh & Shannon, 2005). The qualitative data were analysed using the content analysis procedures suggested by Cote et al. (1993) and Kyngäs (2020), which involved organising the data into units of analysis or ‘meaning units’ (meaningful verbatim segments of text comprehensible by themselves) of raw data and grouping or coding these into similar themes or categories (higher order themes) through an inductive/interpretational approach. The coding of data into higher order themes was continued as far as possible, terminating in ‘general dimensions’ as the highest order themes (Jones & Gratton, 2015). This coding was undertaken by the first author and scrutinised by the second author. An inductive approach aligned with the authors’ athlete-centred philosophy, although it is acknowledged that the use of pre-determined questions in some aspects of the data may infer some element of deductive analysis.

Findings

General evaluation
Athletes were asked to evaluate the overall impact of participating in the project and engaging with the online sport psychology support hub by rating how strongly they agreed or disagreed with a series of statements. The majority of athletes agreed (selected agree or strongly agree) that participating in the project made them more aware of the psychological impact of their injury (92.9%), helped them to feel more positive (71.4%) and motivated (64.3%), and had a positive impact on their sport injury experience (78.6%). Very few (7.1%) felt that participating had helped them to recover more quickly. Most athletes (64.3%) were neutral about this statement. When asked to rate out of ten how beneficial they had found participating in the project the mean score was 7.1 (range = 5-9, median = 7, mode = 8). Four athletes used the open comments box attached to these questions. Their comments were predominantly about the strengths of the hub (e.g., “I think that the resources are magnificent, and that the lessons from this should be taught to all athletes”).

**Forum**

Of the 14 athletes who completed the evaluation questionnaire, 11 reported that they had posted in the forum and all 14 reported that they had read other people’s posts. Those who didn’t post attributed this to a lack of time (n=2), not feeling ready to post (n=1), or feeling they had nothing to contribute (n=1). Athletes posted in five discussion threads (welcome and introductions, how has being injured made you feel, any positive consequences of being injured, goal setting during injury and self-talk during injury) all of which were pre-existing threads. The athletes did not start any new threads. Most of the athletes expressed positive aspirations about engaging with the hub in the forum (e.g., “I’m hoping sport psychology can help get me get focussed on recovering again”) and some highlighted their shared experiences with other athletes (e.g., “Just wanted to say that I’m sorry you’re in a similar position to me! “). This theme was
repeated in the diary entries where several participants highlighted that reading about the injury experiences of others was positive (e.g., “I found reading about everyone’s injuries interesting and it was great to hear a wide variety of experiences with many underlying emotions/thoughts similar to mine”).

Athletes tended to post more in the first half of the study – 81.1% of athletes posted in the first three weeks of the study and 18.8% posted in the final three weeks. Overall, the athletes made 25 posts on the forum (there were additional posts from the forum moderator). Four of these 25 posts were classified as interaction between athletes, measured as the number of times athletes responded directly to or referred to another athlete in the forum.

Athletes were asked to evaluate the effectiveness of the discussion forum by rating how strongly they agreed or disagreed with a series of statements. All athletes (100%) agreed (selected agree or strongly agree) that they would recommend a forum like this to other injured athletes. The majority agreed that the discussion forum was useful (71.4%), and that reading about other athletes’ sport injury experiences was particularly useful (85.7%). Of those who posted in the forum, most agreed that posting about their sport injury experiences was useful (72.7%) and they felt comfortable sharing their experiences (72.7%), however, only 45.5% agreed that interacting with other injured athletes was useful. The open comments supporting these questions from seven athletes primarily identified themes of frustration with the limited interaction between athletes (n=4, e.g., “I didn't find the discussion forum as interactive as I had hoped”) and the benefits of shared experience (n=3, e.g., “I think hearing about other athletes’ experiences really helped me feel like I wasn’t alone”).

Diary
Fourteen of the 16 athletes completed a diary. The number of diary entries made per athlete ranged from one to six (mean = 3.4, mode = 3 and 4). Only one person who completed the evaluation questionnaire had not completed a diary and the reason given for this was “Lack of time - low mood”. A wide range of topics were discussed in the diary entries and the participants highlighted through their entries that they found keeping a diary a useful experience (e.g., “I’ve found doing the diary entries really useful, even if sometimes hard. I often try to ignore my thoughts/feelings about it all to avoid being upset. I know that bottling up emotions is not helpful so putting it down has been really good for me to have to do.”).

In the evaluation questionnaire athletes were asked to evaluate the effectiveness of keeping a diary by rating how strongly they agreed or disagreed with a series of statements. Most of the athletes who completed a diary agreed (selected agree or strongly agree) that it was a useful way to reflect on their thoughts and feelings about being injured (84.6%) and would recommend keeping a diary like this to other injured athletes (92.3%). Only 46.2% of the athletes who completed a diary agreed that it was a useful way for them to reflect on how effective the sport psychology strategies on the hub were. The open comments supporting these questions from five athletes primarily identified themes of the diary facilitating greater self-awareness (n=2, e.g., “I usually bottle up my emotions to avoid feeling them and getting upset which I know is not a good strategy. This gave me a space each week where I had to look at my thoughts and feelings and in a constructive way, so I found this very useful”) and the positive impact of messages received from the sport psychologist in response to diary entries (n=2, e.g., “The messages from the sports psychologist were also helpful”).

*Sport psychology resources*
The sport psychology resources section provided materials on five topics – social support, imagery, self-talk, relaxation, and goal setting. Of the 14 athletes who completed the evaluation questionnaire, only three (21.4%) reported that they had read materials on all five topics. Most athletes had only read one topic (n=5, 35.7%), whilst two (14.3%) had read two topics, two (14.3%) had read three topics, one (7.1%) had read four topics, and one had read no topics at all. Imagery and self-talk were reported to be the most popular topics with each having been read by eight athletes (57.1%). Social support and goal setting were read by seven (50%) athletes, and relaxation was read by four (28.6%) athletes.

Athletes were asked to evaluate the effectiveness of the resources section of the hub by rating how strongly they agreed or disagreed with a series of statements. All of the athletes who engaged with the resources section agreed (selected agree or strongly agree) that the resources were useful (100%) and would recommend sport psychology resources like this to other injured athletes (100%). Most also agreed that the resources in this section had a positive impact on their sport injury rehabilitation (69.2%). All of the athletes who used the social support materials agreed they were useful (100%), whilst most of the athletes who used the imagery (80%), self-talk (90%), goal setting (90%), and relaxation (62.5%) materials agreed that they were useful.

The open comments supporting these questions from six athletes identified a range of themes such as positive experiences (n=2, e.g., “The resources section is magnificent”) and a lack of time to engage with the materials (n=2, e.g., “I feel I have wasted an opportunity by not using the resources whilst I had access to them”).

Analysis of the forum data indicated positive engagement with the sport psychology resources (e.g., “I am going to try more self-talk this week and link it to short-term goal setting over the next month”). Likewise, the diary entries indicated use of the five strategies covered in
the sport psychology resources section of the hub - social support (e.g., “This week I've tried to build my social support again by meeting with a running group”), imagery (e.g., “I'm very positive though as the visualisation has definitely had an effect”), self-talk (e.g., “I have found the self-talk resource useful this week, at least it reminds me to not default to a negative and lazy mindset”), relaxation (e.g., “…but the fact I've prioritised work and relaxing over doing extra sessions is positive!”), and goal setting (e.g., “I looked at the goal setting section. ...It reminded me to focus on the short-term”).

Discussion

The purpose of this case study was to investigate the impact of an online, psychologist supported, sport psychology support hub incorporating social support (discussion forum), written emotional disclosure (diary), and psychological skills education (resources) on injured athletes. In line with other studies that have examined online support for injured athletes (e.g., Ardern et al., 2022; Cassilo & Sanderson, 2019), the findings indicated that online sport psychology support can be of benefit to injured athletes. Data from the evaluation questionnaire suggest that it had a positive impact with the athletes rating the overall benefit of the hub highly (mean = 7.1 out of 10) and high levels of agreement with statements such as “participating in this project made me more aware of the psychological impact of my injury” (92.9%). Despite this high level of satisfaction, engagement with some aspects of the hub was not as high as it could have been with some participants not adhering to the expectations set at the start of the study (interaction with each element of the hub at least once a week). Steps, therefore, need to be taken to enhance athlete engagement in order to further maximize the benefits.

The discussion forum was the one area where engagement could have been better, however, despite this, those who did engage derived positive benefits (e.g., “I think hearing
about other athletes’ experiences really helped me feel like I wasn’t alone”). This finding is in line with other studies both inside (Cassilo & Sanderson, 2019) and outside (e.g., Allen et al., 2016; Naslund et al., 2016) of the sport injury context that have utilized online forums. All athletes completing the evaluation questionnaire agreed that they would recommend a similar forum to other injured athletes. These findings support the notion that other injured athletes are a particularly credible source of social support (Trainor et al., 2020). If such benefits are still being derived even with limited engagement, this case study indicates firstly, that online forums are beneficial to injured athletes, and secondly, that with greater engagement they have the potential to provide even further benefit.

Whilst most athletes posted in the forum at least once, forum engagement was predominantly confined to the early part of the study. Additionally, there was only a minimal amount of interaction between athletes in the forum (athletes responding directly to or referring to another athlete in the forum), which some athletes identified as a limitation. More interaction would perhaps have led to greater engagement, but despite the efforts of the moderator this interaction was not forthcoming. Given the known benefits of social support during injury (Forsdyke et al., 2016), peer social support through the forum was intended to be a key feature of the hub and so it was disappointing that it was not fully utilized. Those who did not post in the forum attributed this to a lack of time, lack of readiness to post, and a perception that they had nothing of interest to contribute. Other athletes identified that they found the forum quite demotivating (e.g., “It is though slightly depressing reading of other runners, clearly at a higher level than me, who've been trying for several years to get back to exercise”) and this could have further contributed to the lower engagement levels.
Another explanation for the lower levels of engagement with the forum could be the composition of the group. Based on the authors’ experiences in online education environments, where mixed groups add to the richness of forum discussions (e.g., Heaney & Walker, 2012), it was assumed that the diversity in sport, injury, age, gender, level, and stage of injury within group would enhance group interactions. On reflection, this may have in fact hindered group interaction. In support of this, Clement et al. (2012b) suggested that sport injury groups are most effective when they are homogenous and contain athletes with similar injuries estimated recovery time. Where there is not homogeneity group cohesion can be negatively impacted and the ability to meet the needs of all athletes reduced (Clement et al., 2011). The mix within the group could therefore have minimized opportunities for athletes to recognize similar or shared experiences in others. There was, however, evidence that this was not the case for all athletes as some cited that they did recognize shared experiences despite the diversity of the group.

Additionally, there is the potential for competitiveness amongst homogenous groups which might negatively impact of recovery. For example, an athlete may feel under pressure to match the outcomes of other group members with a similar injury and cause damage in the pursuit of doing so.

On the surface it may seem that group cohesion might be more difficult to achieve in an online environment, which could be a barrier to athletes sharing their feelings on a forum. Barak et al. (2008), however, suggested that interpersonal dynamics are in fact accelerated in online environments due to the online disinhibition effect, where people feel less inhibited in an online environment and more comfortable sharing their thoughts and feelings. Tanis (2008) suggested that this is in part due to the anonymity that can be afforded in online forums, particularly for
those fearful of stigmatization. Tanis (2008) also suggested that sharing in written word rather than verbally makes online forums more attractive to some.

Other factors which could improve forum engagement are a smaller group and the moderation of the group by a sport injury rehabilitation professional as well as a sport psychologist (Clement et al., 2011). Clement et al. (2012b) recommend a group of around ten injured athletes, although it should be noted that this recommendation is specifically for face-to-face groups and in other non-sport injury related online settings larger groups have been successful (e.g., Meade et al., 2018). Having the forum open for a longer period may also have helped as studies such as Meade et al. (2018) have explored forum interactions for periods significantly longer than the six weeks used in this case study. As engagement dropped in the second half of the current study, this, however, may not have had an effect, although it perhaps would have given the athletes more time to engage with more of the sport psychology techniques in the resources section of the hub and thus more to talk about in the discussion forum. Future research should aim to identify the optimal length of online interventions.

A lack of experience of interacting in online environments could also potentially have had an impact on the engagement levels of the athletes and on reflection it may have been of use to ask the athletes more about this. For example, some athletes may have been unfamiliar with interacting with others and sharing their thoughts and feelings online. This project took place prior to the global COVID-19 pandemic and it could be hypothesized that as the pandemic has made us more accustomed to communicating online as a result of enforced lockdowns (e.g., Blanchard, 2021) engagement may be enhanced if the project were repeated now. Indeed, since this case study was undertaken, as a result of the COVID-19 pandemic, the delivery of sport psychology services through online platforms has become more normalized (Hurley, 2021).
Engagement with the diary was far greater than engagement with the forum and the athletes appeared to elicit significant benefits from keeping a sport injury diary. The athletes discussed a wide variety of topic areas predominantly fitting into the higher order themes of coping strategies and interventions, negative aspects of sport injury, and positive aspects of sport injury. They identified a range of coping strategies and interventions with the four most commonly discussed being the forum, goal setting, social support, and distraction, most of which have been identified in previous studies such as Gennarelli et al. (2020) and Arvinen-Barrow et al. (2015). As has been shown consistently in previous research (Brewer & Redmond, 2017), the diary entries demonstrated that sport injury can lead to several negative responses such as concerns about not being able to train or compete and negative emotions such as anger and sadness. Some athletes also expressed concerns about a lack of faith in their sports medicine providers (e.g., not confident that the rehabilitation program set is appropriate), underpinning the importance of the relationship between the injured athlete and the sport injury rehabilitation professional in ensuring a successful treatment and rehabilitation program (Bennett et al., 2016).

The athletes appeared to view completing a diary as a cathartic experience. Consistent with previous research, such as Mankad and Gordon (2010), the vast majority of athletes agreed that it was a useful way to reflect on their thoughts and feelings about being injured and most said that they would recommend keeping a similar diary to other injured athletes.

A unique feature of the hub was that it was supported by a sport psychologist who was able to interact with and support the participants through the forum and responding to diary entries. This was considered an important component of the package to ensure athlete wellbeing and maximize the level of support available through the online platform. Receiving responses to diary entries from a sport psychologist was well received by the athletes who reported that
receiving such feedback was useful and motivational. Consistent with Day and Thatcher (2009) and Salim and Wadey (2018), whilst the participants viewed the process positively, the diaries did at times discuss difficult emotions and experiences that could potentially be retraumatizing for the athlete. This further emphasized the importance of having a sport psychologist embedded within the intervention who was able to help the athletes navigate these emotions. Consequently, this approach is recommended for future studies to encourage wellbeing, engagement, and growth.

Collectively, these findings suggest that written emotional disclosure in the form of a diary can be highly beneficial for injured athletes and should be considered as part of a support package for injured athletes.

The resources area of the hub introduced the athletes to five sport psychology techniques that could be used to enhance their sport injury rehabilitation (social support, imagery, self-talk, relaxation, and goal setting). These resources were viewed positively by the athletes who unanimously agreed that they were useful materials. Interestingly, despite the limited engagement with the social support aspect of the hub (discussion forum), the social support resources were viewed to be the most useful of the five techniques. Analysis of the diary entries suggests that these resources encouraged athletes to seek social support from sources external to the forum such as teammates, family, and friends, and provides further explanation to why the forum may have been underutilized. Consistent with Arvinen-Barrow et al. (2015), the goal setting, self-talk, and imagery resources also gained high ratings of usefulness (80% or more). Despite injury being recognized as causing feelings of stress and anxiety (Rex & Metzler, 2016), the relaxation materials were considered to be the least useful of the five techniques and were also the least viewed of the five techniques with only 28.6% of athletes reading them. This may
indicate a lack of awareness of the potential benefits of relaxation techniques for injured athletes (Cormier & Zizzi, 2015).

Whilst satisfaction with the materials in the resources area was high, there was scope for improvement in engagement. Only 21.4% of the athletes read about all five techniques in the resources section of the hub. Again, consistent with Arvinen-Barrow et al. (2015) imagery and self-talk were the most popular techniques, read by 57.1% of the athletes. The duration of the study may have impacted on engagement. Four to six weeks was perhaps not long enough for the athletes to read, practice, and apply all five techniques, and future studies should consider longer duration interventions in order to facilitate this. The delivery of such materials online does, however, have potential given that even with limited engagement highly positive results were reported.

Limitations and future directions

Whilst this study has identified some useful findings it does have some limitations. Firstly, whilst diverse in some characteristics (e.g., sport type, gender, and injury), the participants were all from English speaking Western nations. More culturally diverse participants could have led to a wider range of experiences creating a greater richness in the exchanges in the forum. By their very nature through having no geographical boundaries online platforms provide shared spaces that can be accessed by international and multicultural audiences and future research should embrace this capacity and aim to recruit participants from around the globe. Schinke et al. (2019) have highlighted the importance of intersectionality on athlete identity, therefore, this study may also have been enhanced if data had been collected on additional characteristics such as ethnicity to allow the consideration of intersectionality on experiences of injury (e.g., the unique experiences of black women),
Whilst online platforms reduce the costs associated with sport psychology support and consequently increase access it is important to recognize that digital poverty will still act as a barrier to some athletes. For example, 7% of the UK population are reported to have limited online access (Donaghy, 2021). Consideration needs to be given to how these athletes can be supported. Making content available both online and offline through smartphone apps may have potential in reaching part of this audience. Ardern et al. (2022) advocate for the use of app-based support and suggest that they are an accessible platform. Smartphone apps may also have the added benefit of being more convenient, which may impact positively on engagement.

**Conclusion**

The purpose of this case study was to explore the impact of online sport psychology support for injured athletes. The hub provided a unique package of support compared to previous research in that it (1) combined social support (discussion forum), written emotional disclosure (diary), and psychological skills education (resources), and (2) had a sport psychologist embedded. The findings suggest that despite some aspects of the hub being underutilized, the injured athletes benefitted from engaging with the hub. This has important implications for professional practice suggesting that the delivery of sport psychology support to injured athletes through an online platform is a viable method of reaching injured athletes. Online programs such as this could be adopted by sports medicine clinics and their sport injury rehabilitation professionals, who Zakrajsek et al. (2016) described as “gatekeepers to athletes’ rehabilitation experiences” (p.403), in order to provide athletes with the psychological support required during injury that such clinics are often unable to provide.

Online sport psychology delivery is often perceived as an inferior option to face-to-face delivery – a perspective that should be challenged. Online delivery must not be viewed as a
deficit model, but as a platform with several affordances such as on-demand delivery, flexibility, increased reach, potential for greater diversity of participants, expanded social networks, and anonymity, that may make it superior to face-to-face delivery in many respects. As with face-to-face delivery appropriate design and ethical consideration is required to ensure maximum effectiveness. Consequently we call for further research exploring its adoption in applied sport injury settings.
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