

Running head: SPORT PSYCHOLOGY EDUCATION

Sport Psychology Education for Sport Injury Rehabilitation Professionals: A Review

Caroline A. Heaney^a, Natalie C. Walker^b, Alison, J.K. Green^a and Claire L. Rostron^a

^aThe Open University, Walton Hall, Milton Keynes, MK7 6AA, UK

^bUniversity of Northampton, Boughton Green Rd, Northampton, NN2 7AL, UK

Please address all correspondence to Caroline Heaney (Email: caroline.heaney@open.ac.uk,

Tel: +44 (0)1908-653703, Fax: +44 (0)1908-652218).

Abstract

Objectives: Sport psychology education has been shown to have a positive impact on the practice of sport injury rehabilitation professionals (SIRPs). The purpose of this paper is to review recommendations relating to such education.

Design: This paper presents a review of existing literature relating to the content and mode of delivery for a sport psychology education programme for SIRPs. The review seeks to address four questions: (1) What topic areas do researchers suggest should be integrated into the sport psychology education of SIRPs?, (2) What topic areas are currently being recommended by professional bodies?, (3) What are the findings of research examining the impact of sport psychology education on SIRPs?, and (4) What do researchers recommend to be the most appropriate mode of delivery for sport psychology education for SIRPs?

Conclusions: The findings of the review suggest that in order to maximise adherence amongst already qualified SIRPs sport psychology education should be delivered in a flexible short duration package. Additionally three broad areas that sport psychology education should cover emerged: (1) understanding of the psychological impact of injury, (2) interventions and psychological skills/techniques, and (3) referral and professional boundaries. This has important implications for the future training of SIRPs.

KEY WORDS: sport psychology, education, continuing professional development, injury rehabilitation

SPORT PSYCHOLOGY EDUCATION FOR SPORT INJURY REHABILITATION

PROFESSIONALS: A REVIEW

Sport psychology intervention has been shown to benefit sport injury rehabilitation (Armatas, Chondrou, Yiannakos, Galazoulas, & Velkopoulos, 2007; 2004; Levy, Polman, Clough, & McNaughton, 2006). As such previous research investigating the attitudes and behaviours of sport injury rehabilitation professionals (SIRPs) has indicated that sport psychology education is likely to have a positive impact on the sport psychology related behaviours of SIRPs (Arvinen-Barrow, Hemmings, Weigand, Becker, & Booth, 2007; Hamson-Utley, Martin, & Walters, 2008; Heaney, 2006a). However, the nature of such education is clearly important, as a poorly designed education programme with little relevance to its target audience will likely have much less impact than a well designed programme with highly relevant content. Previous researchers have discussed the appropriate content and mode of education on the psychological aspects of sport injury for SIRPs, but to date no research has reviewed the existing literature. This is necessary in order to help shape and standardise psychology education for SIRPs, which has been found to be inconsistent (Heaney, Green, Rostron, & Walker, 2012). Therefore the purpose of this paper is to present a review of this work with the aim of identifying the most appropriate content and mode of delivery for a sport psychology education programme. The review will specifically seek to address the following research questions:

1. What topic areas do researchers suggest should be integrated into the sport psychology education of SIRPs?
2. What topic areas are currently being recommended by professional bodies?

3. What are the findings of research examining the impact of sport psychology education on SIRPs?
4. What do researchers recommend to be the most appropriate mode of delivery for sport psychology education for SIRPs?

Method

Sources

The strategy used to identify published materials relating to the education and training of SIRPs involved: (1) electronic searches of online databases including SPORTDiscus, PubMed, Academic Search Complete, PsycINFO, PsycARTICLES, MEDLINE, CINAHL, and Google Scholar, (2) checking citations within publications identified through electronic searches, (3) manual searches of key journal titles including *Journal of Sport Rehabilitation*, *The Sport Psychologist*, *Journal of Applied Sport Psychology*, *Psychology of Sport & Exercise*, *Journal of Sport & Exercise Psychology*, *Journal of Athletic Training*, *Physical Therapy in Sport*, *Journal of Medicine & Science in Sport*, *British Journal of Sports Medicine*, and (4) searching the websites of key professional bodies including the Chartered Society of Physiotherapy, Association of Chartered Physiotherapists in Sports Medicine, National Athletic Training Association, Sports Therapy Council and Society of Sports Therapists. Combinations of the following search terms were used when conducting online searches: sport(s) psychology, sport(s) injury, rehabilitation, education, training, physiotherapist, athletic trainer, sport(s) therapist, physical therapist, and sports medicine. The inclusion criteria for publications were that they must include content relating to the education and training of SIRPs relative to one of the four research questions, be in English language and peer reviewed (with the exception of those relating to professional bodies). Since this is a relatively novel area of research, no restrictions were placed on the age of publication.

Procedure

Copies of the publications identified were obtained and assessed for relevance in accordance with the inclusion criteria. Those deemed relevant were then grouped into four key areas relating to the research questions: (1) content recommendations from scientific studies, (2) content recommendations from professional bodies, (3) research which measures the effectiveness of sport psychology education, and (4) research examining the most appropriate mode of sport psychology education. Quality assessment checks were undertaken using a quality assessment checklist to ensure that the selected papers (with the exclusion of those related to professional bodies) had an appropriate and rigorous methodology (Smith, 2010). The relevant data from these publications were then extracted, synthesised and content analysis undertaken. The extraction strategy included the use of data extraction forms relating to each research question as suggested by Smith (2010).

Results and Discussion

In total 34 publications were identified that satisfied the inclusion criteria. Of these, 26 related to content recommendations from scientific studies, 3 to content recommendations from professional bodies, 4 to research which provided and measured the effectiveness of sport psychology education, and 2 to research examining the most appropriate mode of sport psychology education (one paper was used in two research question areas, thus the total number of papers is 34 not 35). These are discussed in the following sections addressing each of the four research questions identified in the introduction.

Question 1: What topic areas do researchers suggest should be integrated into the sport psychology education of SIRPs?

Various studies investigating SIRPs' attitudes and behaviours in relation to the role of sport psychology in sport injury rehabilitation have called for enhanced sport psychology education for these professionals (Arvinen-Barrow et al., 2007; Hamson-Utley et al., 2008; Heaney, 2006a; Tracey, 2008). Often these studies have highlighted particular areas that such education should address. Twenty-six such studies were identified as part of this review and the topics recommended by these are summarised in table 1.

TABLE 1 TO BE INSERTED AROUND HERE

The table shows a reasonably high degree of consistency in perceptions of what should be covered, with 17 of the 21 topic areas being suggested by 5 or more studies.

Interpersonal communication was the most commonly cited topic area that SIRPs are believed to need training in (18 studies). The psychological techniques of positive self-talk (15 studies) imagery (14 studies), goal-setting (13 studies) and relaxation (12 studies) were also recommended by a large proportion of the studies, as was athlete referral (12 studies). It is interesting to note that these topic areas with the highest levels of consistency all relate to practical skills rather than theoretical knowledge. This could be indicative of a perception that practical skills are more important than theoretical knowledge for SIRPs, or it could instead reflect a perception that these practical skills must inherently be supported by theoretical knowledge. Since many of the studies involved were focused on wider issues, they often stated topics they thought were important, without any deeper discussion regarding their specific nature and teaching. However, there does appear to be a strong consensus in the literature that any education intervention for SIRPs should be applied or practical in nature (Clement & Shannon, 2009; Hamson-Utley et al., 2008; Heaney, 2006a), using teaching methods such as case studies, role play and reflective practice in order to promote implementation of sport psychology strategies in clinical practice (Clement & Shannon, 2009; Stiller-Ostrowski & Hamson-Utley, 2009).

Interestingly there were four topic areas (pain management strategies, coping behaviours, behaviour modification and malingering) that were only recommended in one or two studies. These topic areas all seem credible and it is possible they did not receive further support because many of the studies were focused on issues beyond recommendations regarding the content of sport psychology education for SIRPs. Additionally terminology may be a factor here. For example, some studies may not have

explicitly cited pain management strategies as a topic, but may consider psychological techniques such as imagery and self-talk as pain management strategies.

Cramer-Roh & Perna (2000) state that SIRPs need to receive adequate training in the recognition, evaluation and treatment of psychological factors associated with sport injury. In line with this it would seem that the topic areas identified in this review can be grouped into three broad themes: the psychological impact of injury, psychological skills/techniques, and referral. Much of the training of SIRPs is governed by professional bodies and so the recommendations of researchers and SIRPs are of limited value unless they are adopted by these bodies. The next section examines the recommendations of such professional bodies and organisations with regard to sport psychology education.

Question 2: What topic areas are currently being recommended by professional bodies?

Various bodies have suggested appropriate content for the psychology education of SIRPs of various guises. These either take the form of recommendations for content or required competencies that members or accredited programmes are required to demonstrate. As part of the review process the recommendations of three organisations were reviewed (National Athletic Trainers' Association, Society of Sports Therapists, and International Federation of Sports Physiotherapists). No published recommendations relating to the content of sport psychology education for SIRPs were found for other bodies.

In the United States of America (USA) the National Athletic Trainers' Association (NATA) require Athletic Training degree programmes to cover 'psychosocial strategies and referral' stating that athletic trainers need to be able to

recognise clients exhibiting abnormal social, emotional, and mental behaviours, know when to intervene and refer such individuals, have an appreciation of the role of mental health in injury and rehabilitation and be able to use interventions to optimise rehabilitation (NATA, 2011). The recommended content for this topic is split into three areas in NATAs competencies document: (i) theoretical background, (ii) psychosocial strategies, and (iii) mental health and referral, and is summarised in table 2.

In the United Kingdom (UK) the Society of Sports Therapists (SST) indicate that it is a requirement for the Sports Therapy degree programmes they validate to cover aspects of sport psychology (SST, 2005). Their competencies and scope of practice document states that sports therapists must have an understanding of various psychology related areas as summarized in table 2. The International Federation of Sports Physiotherapists, in collaboration with five higher education institutions across Europe, set up the Sports Physiotherapy for All project, which was charged with developing sports physiotherapy competencies and standards (Bulley & Donaghy, 2005). These standards, which recognise sports physiotherapy as a postgraduate level specialism, incorporate several competencies relating to sport psychology as summarised in table 2 (Bulley et al., 2005).

As can be seen by the information provided in table 2 the recommendations for the content of sport psychology education from professional bodies and organisations share some similarities, generally fitting into three broad categories – theoretical underpinning, psychosocial interventions and referral/professional boundaries. These broad categories loosely match with those identified in the previous section (question 1), indicating some consistency between what is being recommended in research findings and what is being recommended by professional bodies, which is clearly a

positive finding. However, it should be noted that some of the specific detail and focus under each of these broad categories does at times vary between organisations.

Additionally, the organisations provide differing levels of detail on content requirements, making comparison more difficult. For example NATA and the Sport Physiotherapy for All project both have more than 15 sport psychology related competencies, whilst the SST has just 6. To provide clarity on what content is most appropriate it is important to examine the findings of research that has evaluated the impact of sport psychology education.

TABLE 2 TO BE INSERTED AROUND HERE

Question 3: What are the findings of research examining the impact of sport psychology education on SIRP?

To date only a limited number of studies (four were identified within this review – see table 3) have delivered a sport psychology education intervention to SIRPs and measured its impact and all have examined USA athletic trainer populations, with the majority of these being student populations. This would suggest that further research is needed examining a broader range of SIRPs, including those who are already qualified, since it has been suggested that those already qualified are also in need of sport psychology training (Arvinen-Barrow et al., 2007; Hamson-Utley et al., 2008; Heaney, 2006a). Those studies that exist do, however, provide a valuable insight into the recommended content of sport psychology education and its effectiveness.

Harris, Demb and Pastore (2005) investigated the impact of a ten week college course examining the psychological impact of injury on nineteen athletic training

students in the USA. To evaluate the effectiveness of the course, information regarding the perceptions and attitudes of the students in relation to sport injury psychology was collected pre-course and post-course using questionnaire and interview methods. The questionnaire measured four constructs; sport influences (perceptions about the stresses related to factors such as the timing of injury in relation to the competitive season, level of competition and financial implications), social influences (the importance athletic trainers place on the quality, type and provider of social support), academic impact (perceptions athletic trainers hold about the academic impact of injury on student athletes) and stress reactions (perceptions of common psychological reactions to injury). It was found that pre to post-course scores were significantly improved on three of these constructs (sport influences, social influences and academic impact), demonstrating that the students developed a greater understanding of the impact that factors such as the timing of injury, coaches' reactions, and team-mates' reactions can have on the injured athletes psychological response to injury and the negative effect injury can have on academic performance amongst student athletes (Harris et al., 2005). No significant differences were seen between the pre and post-course scores for the stress reactions construct. The authors suggested that this was likely due to the students being familiar with such concepts pre-course (Harris et al., 2005). The positive influence of the course was also supported by the interview data, which revealed that the students became more empathetic in their interactions with injured athletes and more skilled in recognising the factors which can influence the level of psychological distress experienced by the injured athlete (Harris et al., 2005). Whilst these results are positive, a key limitation of this study is that it only measures attitudes in relation to sport psychology and not behaviour, therefore the impact of the course on sport psychology related behaviour is

unknown. Additionally it used a relatively small participant group and there was no control group.

In contrast, in a similar study, Clement and Shannon (2009) assessed the effectiveness of a sport psychology education intervention on the behaviour of a much larger group of 160 athletic training students towards sport psychology. Students were randomly assigned to either an education intervention group or a control group. The education intervention comprised of a 75 minute workshop covering aspects of sport psychology and its application to athletic training, the content of which is summarised in table 3. To assess the effectiveness of the workshop the Sport Psychology Behaviours (SPB) questionnaire, an instrument developed specifically for the study, was administered pre-intervention and six weeks post-intervention. The SPB questionnaire sought to glean information about sport psychology behaviours engaged in by the students and was divided into three sections – access to sport psychology, intentions to use sport psychology and use of sport psychology, and measured five behaviours (use of sport psychology techniques, talking to a sport psychology consultant, talking to athletes about sport psychology, seeking out information about sport psychology, and referring injured athletes to a sport psychology consultant). It was found that those in the education intervention group demonstrated a significant increase in their total reported use of sport psychology behaviours post-intervention compared to those in the control group (Clement & Shannon, 2009). Specifically, the athletic training students in the intervention group demonstrated significant increases in their use of sport psychology techniques, talking to a sport psychology consultant, talking to athletes about sport psychology and seeking out information about sport psychology. No significant increase was seen in the behaviour of referring an injured athlete to a sport

psychology consultant, although the authors suggested that this may be due to a lack of access to a sport psychology consultant. It should also be noted, however, that the workshop did not appear to include any significant content on referral (see table 3), which is perhaps of consequence of having a short duration workshop. These findings would suggest that the education intervention was effective in improving behaviours in relation to sport injury psychology.

The impact of a sport injury psychology education intervention on the behaviour of athletic training students was again assessed by Stiller-Ostrowski, Gould and Covassin (2009), but this time using a longer duration education intervention (6 weeks). The content of this is summarised in table 3. Twenty-six students participated in the study, with eleven students undertaking the education intervention and fifteen students forming the control group which received no sport psychology training. Sport psychology knowledge and skills usage were measured using two questionnaires developed specifically for the study at five points; pre-intervention (baseline), mid-intervention (week 3 of the education intervention), immediately post-intervention (week 6 of the education intervention), seven weeks post-intervention and fourteen weeks post-intervention (Stiller-Ostrowski et al., 2009). It was found that both sport psychology knowledge and skills usage increased in the education intervention group from baseline to immediately post-intervention (Stiller-Ostrowski et al., 2009). A reduction in sport psychology knowledge was evident in the retention measures taken seven and fourteen weeks post-intervention in comparison to the measures taken during (week 3) and immediately after the education intervention (week 6), however, these scores were still well above the baseline scores, indicating that some knowledge had been retained (Stiller-Ostrowski et al., 2009). In contrast, sport psychology skills usage

was maintained during the retention period, with student athletic trainers continuing to use sport psychology skills with their injured athletes 14 weeks after the education intervention was completed (Stiller-Ostrowski et al., 2009). These findings indicate that the education intervention was effective in improving sport psychology knowledge and use amongst athletic training students.

A limitation of the three studies discussed so far is that they all have relatively short follow-up periods (6-14 weeks post-intervention) and consequently fail to examine the long term retention of sport psychology education. Additionally, all three of these studies rely on student populations and thus their findings cannot easily be generalised to SIRPs who are already qualified. A study by Pero and Sachs (1997) addressed both of these issues. They investigated the impact of a five-hour sport psychology workshop for qualified athletic trainers aimed at increasing their knowledge of sport psychology. They were particularly interested in the longitudinal effects of the workshop and consequently measured the long term participant retention of the concepts covered in the workshop in the year following the workshop. A Sport Psychology Knowledge Test was given to participants: (1) prior to the workshop, (2) immediately post-workshop, (3) 6 months post-workshop and (4) 1 year post workshop. A further questionnaire measuring use of sport psychology was also administered 1 month, 6 months and 1 year after the workshop. The workshop covered the areas listed in table 3. It was found that sport psychology knowledge significantly improved from pre to immediately post workshop (Pero & Sachs, 1997). Whilst sport psychology knowledge scores decreased slightly six months post- and one year post-workshop, these decreases were not statistically significant (Pero & Sachs, 1997). Additionally, the athletic trainers reported that they were still using a variety of sport psychology techniques presented at the

workshop both six months and one year after the workshop (Pero & Sachs, 1997). The authors concluded that the athletic trainers retained a significant amount of sport psychology knowledge from the workshop and were incorporating this into their practice as much as one year after the workshop (Pero & Sachs, 1997).

TABLE 3 TO BE INSERTED AROUND HERE

The content of the sport psychology education interventions used in the four studies discussed in this section (table 3) link to the findings of question 1 and question 2 of this review. They all contain content that links to the psychological impact of injury, psychological skills/techniques and referral, thus providing further support for these as themes that should be present in sport psychology education for SIRPs. However, it should be noted that not all of the education interventions explicitly had content that mapped onto each of these themes, perhaps due to restrictions resulting from their structure and duration. The studies reviewed in this section have illustrated that sport psychology education interventions of various modes/durations appear to be effective in improving sport psychology related knowledge and behaviour. Deeper investigation of the most appropriate mode of study/education is addressed in the next section.

Question 4: What do researchers recommend to be the most appropriate mode of delivery for sport psychology education for SIRP?

Having considered the content of sport psychology education packages for SIRPs, it is also important to consider the most appropriate mode of delivery. The ideal

mode of delivery is clearly to have a sound, applied and consistent coverage of sport psychology integrated into either undergraduate or postgraduate degree programmes (Arvinen-Barrow et al., 2007; Cramer Roh & Perna, 2000; Gordon, Potter, & Ford, 1998; Heaney, 2006a; Stiller-Ostrowski & Ostrowski, 2009). However, research has shown that a large number of SIRPs are not receiving such training (Arvinen-Barrow et al., 2007; Hamson-Utley et al., 2008; Heaney, 2006a). Therefore, the best way in which to deliver sport psychology education to those who have already qualified also needs to be considered.

In deciding the most appropriate mode of delivery for those who are already qualified it is important to consider the views of SIRPs. To date only two key studies have surveyed these professionals (Arvinen-Barrow, Hemmings, Becker, & Booth, 2008; Scherzer & Williams, 2008), indicating a need for further research. Scherzer and Williams (2008) described a case where they provided a series of optional sport psychology education sessions on psychological skills training for athletic training students and graduate athletic trainers over a three week period. Whilst those who attended the sessions reported positive benefits from doing so (e.g. increased use of psychological skills), they represented just 9% of the eighty-seven people invited to participate in the sessions. Scherzer & Williams (2008) surveyed those who didn't attend to identify the reasons for their non-participation. One section of the survey asked the respondents to rank their top three reasons for not attending from a list of six possible reasons. The top three reasons identified were 'study too time consuming', 'too busy with work in the athletic training room' and 'too busy with schoolwork', indicating that time was a significant factor. This was supported by answers to an open-ended question where the respondents were asked to describe in their own words why

they failed to participate. Again, time was the most commonly cited reason (68%), with reasons such as a lack of interest in the subject area (20%) also cited. When asked what would make them more likely to participate the respondents gave answers that were categorised into four groups; 'if the training was less time consuming/the athletic trainer had more time' (57%), 'if the training was conducted during the off-season' (13%), 'if there was less paperwork involved' (13%) and 'other' (39%), which included responses such as "if I knew more about the benefits of participation" (Scherzer & Williams, 2008). Scherzer and Williams (2008) concluded that due to the time constraint barriers identified by the athletic trainers, to maximise participation sport psychology training should either be a compulsory integral part of the curriculum or delivered as a single session. There exists a degree of support for a single-session approach. For example, Pero & Sachs (1997) and Clement & Shannon (2009) both successfully used one-day sport psychology workshops to improve sport psychology related knowledge and behaviour amongst SIRPs. Similarly, others have identified that SIRPs prefer shorter duration, single-day, continuing professional development activities (Armstrong & Weidner, 2010).

This finding was supported by Arvinen-Barrow et al. (2008) who surveyed twenty-two delegates at the 2006 Annual Conference of the Association for Chartered Physiotherapists in Sports Medicine in the UK about their preferences for the delivery of sport psychology training. They identified workshops and seminars as the two most preferred modes of delivery; both modes which are typically delivered over one day. Mentoring and coaching, activities which typically do not require extensive travel, were also identified as attractive delivery options (Arvinen-Barrow et al., 2008). Most of respondents (45.5%) indicated that they would prefer sport psychology training to take

place in single intensive training days rather than over multiple days, although 22.7% indicated that they would prefer training to be distributed over an academic year. Time was again an important factor with a large proportion of participants (40.9%) stating that they could dedicate just one to three days per year on such training (Arvinen-Barrow et al., 2008).

The findings of these two studies would suggest that a brief education intervention for qualified physiotherapists would be more attractive than a longer duration education intervention and would consequently derive greater levels of adherence. It is important to note that time appears to be a significant consideration in the decision to attend education sessions (Arvinen-Barrow et al., 2008; Scherzer & Williams, 2008). Consequently it can be hypothesised that providing such training via e-learning or distance learning methods would potentially increase the number of SIRPs able to participate. Various studies have indicated that the flexibility provided by distance learning gives it an advantage over face-to-face learning (St. Pierre, 1998). Distance learning is considered to be a viable teaching method for SIRPs. For example, Armstrong & Weidner (2010) identified that home study courses were a popular mode of continuing education amongst the 427 SIRPs they surveyed. Additionally, whilst not rated as highly as the delivery methods of workshops and seminars, e-learning and distance learning were suggested as viable delivery methods by some of the physiotherapists surveyed by Arvinen-Barrow et al. (2008).

It has been demonstrated in this section that various modes of sport psychology education have the potential to benefit SIRPs. However, it would appear that education for those who have already qualified and are working in the field would most

appropriately be delivered in a package of shorter duration, perhaps utilising distance learning modalities.

Conclusions: Bringing it all together

This review has considered both the most appropriate mode of delivery for sport psychology education for SIRPs and the most appropriate content. With regard to the most appropriate mode of delivery there is a consensus that applied sport psychology education should be integrated into undergraduate and postgraduate degree programmes. However, as there appears to be a large group of already qualified SIRPs who are deficient in such training, consideration needs to be given to the provision of sport psychology training for qualified professionals. To maximise recruitment and adherence amongst these busy professionals, such education needs to be provided in a flexible short duration package.

With regard to content, this review has detailed a wide range of content suggestions both from scientific research and professional bodies and organisations. Whilst these suggestions/recommendations have varied, there are three broad content areas that have emerged as key topics for the sport psychology education of SIRPs, as illustrated in figure 1. As the figure shows, there is a consensus that the delivery of such content should have a strong applied focus as well as a strong theoretical underpinning.

FIGURE 1 TO BE INSERTED AROUND HERE

Firstly, SIRPs need to have an understanding of the psychological impact of injury and its potential influence on the rehabilitation process. Secondly, as well as being aware of the potential impact of psychological factors, SIRPs need to know how to respond and intervene when psychological factors are impeding recovery and well-being. Consequently, sport psychology education in this domain needs to address two

broad areas – psychological skills/techniques and referral. SIRPs should receive training on the use of psychological skills/techniques that may benefit rehabilitation from sport injury such as imagery, positive self-talk, goal-setting, relaxation strategies and social support. Such training will provide SIRPs with the basic skills to help their athletes address the psychological aspects of injury. More advanced skills will be required by some athletes, therefore, alongside training on psychological skills/techniques SIRPs need to receive training on professional boundaries, and on how and when to refer an athlete to a sport psychologist or other professional.

This paper has provided a review of the existing research examining the content and mode of sport psychology education for SIRPs and has developed a model of recommended content for education programmes. Research in this area is relatively sparse and more is needed, in particular more research is needed to test the impact of sport psychology education on a broad spectrum of SIRPs.

References

- Armatas, V., Chondrou, E., Yiannakos, A., Galazoulas, C., & Velkopoulos, C. (2007). Psychological aspects of rehabilitation following serious athletic injuries with special reference to goal setting: A review study. *Physical Training*, 8(1), 1-15.
- Armstrong, K. J., & Weidner, T. G. (2010). Formal and informal continuing education activities and athletic training professional practice. *Journal of Athletic Training*, 45(3), 279-286.
- Arvinen-Barrow, M., Hemmings, B., Becker, C. A., & Booth, L. (2008). Sport psychology education: a preliminary survey on chartered physiotherapists' preferred methods of training delivery. *Journal of Sport Rehabilitation*, 17(4), 399-412.
- Arvinen-Barrow, M., Hemmings, B., Weigand, D., Becker, C., & Booth, L. (2007). Views of chartered physiotherapists on the psychological content of their practice: a follow-up survey in the UK. *Journal of Sport Rehabilitation*, 16(2), 111-121.
- Arvinen-Barrow, M., Penny, G., Hemmings, B., & Corr, S. (2010). UK chartered physiotherapists' personal experiences in using psychological interventions with injured athletes: an interpretative phenomenological analysis. *Psychology of Sport & Exercise*, 11(1), 58-66.
- Barefield, S., & McCallister, S. (1997). Social support in the athletic training room: athletes' expectations of staff and student athletic trainers. *Journal of Athletic Training*, 32(4), 333-338.
- Bone, J. B., & Fry, M. D. (2006). The influence of injured athletes' perceptions of social support from ATCs on their beliefs about rehabilitation. *Journal of Sport Rehabilitation*, 15(2), 156-167.
- Bulley, C., & Donaghy, M. (2005). Sports physiotherapy standards: A minimum threshold of performance. *Physical Therapy in Sport*, 6(4), 201-207.
- Bulley, C., Donaghy, M., Coppoolse, R., Bizzini, M., van Cingel, R., DeCarlo, M., et al. (2005). Sports Physiotherapy Competencies and Standards. *Sports Physiotherapy for All Project* Retrieved 24th July, 2009, from <http://www.sportsphysiotherapyforall.org/images/stories/publications/SPTCompencies&Standards.pdf>
- Clement, D. (2008). *Effectiveness of an Educational Intervention on the Attitudes Toward Sport Psychology of Athletic Training Students*. Unpublished PhD Thesis, West Virginia University, Morgantown.
- Clement, D., & Shannon, V. (2009). The impact of a workshop on athletic training students' sport psychology behaviors. *The Sport Psychologist*, 23(4), 504-522.
- Cramer Roh, J. L., & Perna, F. M. (2000). Psychology/counseling: a universal competency in athletic training. *Journal of Athletic Training*, 35(4), 458-465.
- De Heredia, R. A. S., Munoz, A. R., & Artaza, J. L. (2004). The Effect of Psychological Response on Recovery of Sport Injury. *Research in Sports Medicine*, 12(1), 15-31.
- Ford, I. W., & Gordon, S. (1993). Social support and athletic injury : the perspective of sport physiotherapists. *Australian Journal of Science & Medicine in Sport*, 25(1), 17-25.
- Ford, I. W., & Gordon, S. (1997). Perspectives of sport physiotherapists on the frequency and significance of psychological factors in professional practice :

- complications for curriculum design in professional training. *Australian Journal of Science & Medicine in Sport*, 29(2), 34-40.
- Ford, I. W., & Gordon, S. (1998). Perspective of sport trainers and athletic therapists on the psychological content of their practice and training. *Journal of Sport Rehabilitation*, 7(2), 79-94.
- Francis, S. R., Andersen, M. B., & Maley, P. (2000). Physiotherapists' and male professional athletes' views on psychological skills for rehabilitation. *Journal of Science & Medicine in Sport*, 3(1), 17-29.
- Gordon, S., Milios, D., & Grove, J. R. (1991). Psychological aspects of the recovery process from sport injury : the perspective of sport physiotherapists. *Australian Journal of Science & Medicine in Sport*, 23(2), 53-60.
- Gordon, S., Potter, M., & Ford, I. W. (1998). Toward a psychoeducational curriculum for training sport-injury rehabilitation personnel. *Journal of Applied Sport Psychology*, 10(1), 140-156.
- Hamson-Utley, J. J., Martin, S., & Walters, J. (2008). Athletic trainers' and physical therapists' perceptions of the effectiveness of psychological skills within sport injury rehabilitation programs. *Journal of Athletic Training*, 43(3), 258-264.
- Harris, L. L., Demb, A., & Pastore, D. (2005). Perceptions and attitudes of athletic training students toward a course addressing psychological issues in rehabilitation. *Journal of Allied Health*, 34(2), 101-109.
- Heaney, C. (2006a). Physiotherapists' perceptions of sport psychology intervention in professional soccer. *International Journal of Sport & Exercise Psychology*, 4(1), 67-80.
- Heaney, C. (2006b). Recommendations for successfully integrating sport psychology into athletic therapy. *Athletic Therapy Today*, 11(2), 60-62.
- Heaney, C., Green, A. J. K., Rostron, C. L., & Walker, N. C. (2012). A qualitative and quantitative investigation of the psychology content of UK physical therapy education programs. *Journal of Physical Therapy Education*, 26(3), 48-56.
- Hemmings, B., & Povey, L. (2002). Views of chartered physiotherapists on the psychological content of their practice: a preliminary study in the United Kingdom. *British Journal of Sports Medicine*, 36(1), 61-64.
- Lafferty, M. E., Kenyon, R., & Wright, C. J. (2008). Club-based and non-club-based physiotherapists' views on the psychological content of their practice when treating sports injuries. *Research in Sports Medicine*, 16(4), 295-306.
- Larson, G. A., Starkey, C., & Zaichkowsky, L. D. (1996). Psychological Aspects of Athletic Injuries as Perceived by Athletic Trainers. *Sport Psychologist*, 10(1), 37-47.
- Levy, A. R., Polman, R. C. J., Clough, P. J., & McNaughton, L. R. (2006). Adherence to Sport Injury Rehabilitation Programmes: A Conceptual Review. *Research in Sports Medicine*, 14(2), 149-162.
- Moulton, M. A., Molstad, S., & Turner, A. (1997). The role of athletic trainers in counseling collegiate athletes. *Journal of Athletic Training*, 32(2), 148-150.
- NATA. (2011). *Athletic Training Education Competencies* (5th ed.). Dallas: NATA.
- Ninedek, A., & Kolt, G. S. (2000). Sport physiotherapists' perceptions of psychological strategies in sport injury rehabilitation. *Journal of Sport Rehabilitation*, 9(3), 191-206.

- Pero, S. F., & Sachs, M. L. (1997). Long term retention of concepts presented in a sport psychology program for athletic trainers. *Journal of Athletic Training, 32*(2), S45.
- Scherzer, C. B., & Williams, J. M. (2008). Bringing sport psychology into the athletic training room. *Athletic Therapy Today, 13*(3), 15-17.
- Smith, M. F. (2010). *Research Methods in Sport*. Exeter: Learning Matters.
- SST. (2005). Competencies and Scope of Practice for Sports Therapy. Retrieved 19 August 2011, from <http://www.society-of-sports-therapists.org/public%20info/COMPETENCIES%20%20-%20Final%20Draft.pdf>
- St. Pierre, P. (1998). Distance learning in physical education teacher education. *Quest, 50*(4), 344-356.
- Stiller-Ostrowski, J. L., Gould, D. R., & Covassin, T. (2009). An evaluation of an educational intervention in psychology of injury for athletic training students. *Journal of Athletic Training, 44*(5), 482-489.
- Stiller-Ostrowski, J. L., & Hamson-Utley, J. J. (2009). The ATEP certified athletic trainer: educational satisfaction and technique use within psychosocial intervention and referral content area. *Journal of Athletic Training, 44*(3), S-97.
- Stiller-Ostrowski, J. L., & Ostrowski, J. A. (2009). Recently certified athletic trainers' undergraduate educational preparation in psychosocial intervention and referral. *Journal of Athletic Training, 44*(1), 67-75.
- Stiller, J. L. (2008). *An Evaluation of An Educational Intervention in Psychology of Injury for Athletic Training Students*. Unpublished PhD Thesis, Michigan State University, East Lansing.
- Tracey, J. (2008). Inside the clinic: health professionals' role in their clients' psychological rehabilitation. *Journal of Sport Rehabilitation, 17*(4), 413-431.
- Washington-Lofgren, L., Westerman, B. J., Sullivan, P. A., & Nashman, H. W. (2004). The role of the athletic trainer in the post-injury psychological recovery of collegiate athletes. *International Sports Journal, 8*(2), 94-104.
- Wiese, D. M., & Weiss, M. R. (1987). Psychological rehabilitation and physical injury: implications for the sportsmedicine team. *Sport Psychologist, 1*(4), 318-330.
- Wiese, D. M., Weiss, M. R., & Yukelson, D. P. (1991). Sport psychology in the training room: a survey of athletic trainers. *Sport Psychologist, 5*(1), 15-24.

Table 1

Topic areas suggested to be important in the education and training of SIRPs

Topic	Level of consensus (number of studies recommended in)
Interpersonal communication	18
Positive self-talk / cognitive restructuring	15
Imagery	14
Goal-setting	13
Listening skills / counselling skills	13
Relaxation techniques	12
Athlete referral to a sport psychologist or other practitioner	12
Providing/improving social support	11
Stress / anxiety / arousal	10
Motivation and adherence	10
Athlete self confidence	9
Concentration / attention	9
Depression	7
Recognising and evaluating psychological reactions to sport injury	7
Emotional control strategies	6
Professional boundaries	6
Creating variety in rehabilitation exercises	5
Emotional control strategies	6
Professional boundaries	6
Behaviour modification	2
Coping behaviours	1
Malingering	1
Pain management strategies	1

Studies used: Arvinen-Barrow et al. (2007), Arvinen-Barrow et al. (2010), Barefield & McCallister (1997), Bone & Fry (2006), Clement & Shannon (2009), Cramer Roh & Perna (2000), Ford & Gordon (1993, 1997, 1998), Francis et al. (2000), Gordon et al. (1991), Gordon et al. (1998), Hamson-Uiley et al. (2008), Harris et al. (2005), Heaney (2006a, 2006b), Hemmings & Povey (2002), Lafferty et al. (2008), Larson et al. (1996), Moulton et al. (1997), Ninedek & Kolt (2000), Stiller-Ostrowki & Ostrowski (2009), Tracey (2008), Washington-Lofgren et al. (2004), Wiese & Weiss (1987), Wiese et al. (1991).

For studies which used a question asking participants to rate on a likert scale which skills/techniques, from a given list, it is important for SIRPs to learn, only skills/techniques achieving a mean score of 3 (5-point likert scale) or 5 (7-point likert scale) and above are included in the table.

Table 2

The content recommended by professional bodies (adapted from NATA, 2011; SST, 2005; Bulley et al., 2005)

	NATA Psychology Related Competencies	SST Psychology Related Competencies	Sports Physiotherapy for All Psychology Related Competencies
THEORETICAL UNDERPINNING:			
knowledge and understanding of psychological theories and approaches	✓	✓	✓
psychological/psychosocial influences on the rehabilitation process		✓	✓
basic principles of personality, trait anxiety, locus of control, intrinsic and extrinsic motivation, and patient and social environment interactions	✓		
biopsychosocial / psychological and emotional responses to injury and forced inactivity	✓	✓	✓
psychological factors in the assessment of injury risk and prevention of injury		✓	✓
psychosocial considerations in to return to activity or participation (e.g., motivation, confidence)	✓		
effective interpersonal and cross-cultural communication	✓		✓
understanding of behaviour change	✓		✓
the psychological demands of specific sports and psychosocial influences in different athletic contexts			✓
the psychological effects of massage		✓	
psychological benefits of different types of physical activity and exercise in specific individuals			✓
psychosocial factors affecting optimal performance			✓
PSYCHOSOCIAL INTERVENTIONS:			
social support and psychological and emotional well-being	✓		
psychological skills and techniques (e.g., goal setting, imagery, positive self-talk, and relaxation) that can be used during injury rehabilitation and return to activity	✓		✓
psychosocial factors affecting persistent pain sensation and perception	✓		
sports specific rehabilitation programmes to address psychological problems and deficiencies related to the patients injury/trauma		✓	

REFERRAL AND PROFESSIONAL BOUNDARIES:			
indications and possibilities for referral	✓		✓
basic signs and symptoms of mental health disorders and personal/social conflict	✓		
psychological and sociocultural factors associated with eating disorders	✓		
psychological and sociocultural factors associated with substance misuse/abuse	✓		✓
tensions between sporting interests and the duty of care of the health professional			✓

Note: the SST competencies are much broader and less detailed than the NATA and Sports Physiotherapy for All competencies

Table 3

The content of education packages in studies examining the impact of sport psychology education on SIRPs

Harris et al. (2005)	Clement & Shannon (2009)	Stiller-Ostrowski et al. (2009)	Pero & Sachs (1997)
<ul style="list-style-type: none"> • The rehabilitation process and the sports medicine team • Theories and literature on psychological impact of injury • Common psychological stress reactions resulting from injury • Sport influences on the psychological response to injury • Injury influences on the psychological response to injury • Psychosocial development theory • Personal influences on the psychological response to injury • Social influences on the psychological response to injury. 	<ul style="list-style-type: none"> • What is sport and exercise psychology? • Sport and exercise psychology and athletic training: They can function collaboratively • Sport and exercise psychology and sport injury: The real world • Areas in sport and exercise psychology that can be helpful (confidence, adherence, motivation, anxiety) • Basic principles of relaxation • Basic principles of imagery • Principles of goal setting • Stereotypes and sport psychology. 	<ul style="list-style-type: none"> • 3 key areas (antecedents , emotional reactions, psychology of athletic injury rehabilitation) • Communication • Clarifying expectations (pain as a physical and emotional experience, rehabilitation progression, demands of rehabilitation, expectations of athletic trainers) • Facilitating rehabilitation adherence • Social support • Motivational strategies • Introduction to psychological skills training • Physiological techniques • Cognitive techniques • Self-talk • Imagery • The athletic trainer as a counsellor • Dual-role conflicts • When and how to refer. 	<ul style="list-style-type: none"> • Overview of sport psychology in athletic training • How sport psychology techniques can be used to prevent injury • The use of psychological skills training techniques (e.g., goal setting, imagery, self talk, relaxation) during sport injury rehabilitation.

Note that for Clement & Shannon (2009) and Stiller-Ostrowski et al. (2009) additional detail regarding the content of the education intervention has been obtained from the doctoral theses from which the articles have emerged (Clement, 2008; Stiller, 2008)

Figure Captions

Figure 1. Summary of areas that should be covered in sport psychology education for SIRPs

