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## Journal Item

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Is there a link between previous exposure to sport injury  
psychology education and UK sport injury rehabilitation  
professionals' attitudes and behaviour towards sport  
psychology?

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ABSTRACT

*Objectives:* The use of sport psychology strategies during sport injury rehabilitation can lead to several positive outcomes such as improved adherence and self-efficacy. The purpose of this study was to compare the sport psychology related attitudes and behaviours of UK sport injury rehabilitation professionals (SIRPs) who had studied the psychological aspects of sport injury to those who had not.

*Participants and design:* Ninety-four SIRPs (54 physiotherapists and 40 sports therapists with a mean of 9.22 years' experience of working in sport) completed an online survey and were grouped according to their level of previous exposure to sport injury psychology education at an undergraduate/postgraduate level. Analyses were undertaken to establish whether there were any differences in sport psychology related attitude (MANOVA), usage (MANOVA), and referral behaviours (chi square) between the groups.

*Results:* The MANOVA and chi square tests conducted revealed that those who had studied the psychological aspects of sport injury reported using significantly more sport psychology in their practice and making more referrals to sport psychologists.

*Conclusions:* It was concluded that sport injury psychology education appears to be effective in increasing the sport psychology related behaviours (use of sport psychology and referral) of SIRPs and should be integrated into professional training.

*Keywords:* athletic injuries, psychological factors, education

IS THERE A LINK BETWEEN PREVIOUS EXPOSURE TO SPORT INJURY  
PSYCHOLOGY EDUCATION AND UK SPORT INJURY REHABILITATION  
PROFESSIONALS' ATTITUDES AND BEHAVIOUR TOWARDS SPORT  
PSYCHOLOGY?

Introduction

A relatively large body of evidence exists which suggests that use of sport psychology during sport injury rehabilitation can lead to several positive outcomes such as improved attitude, adherence, and self-efficacy (Brewer, 2010). Sport injury rehabilitation professionals (SIRPs), such as athletic trainers, physiotherapists, and sports therapists, are considered to play an important role in ensuring that injured athletes receive sport psychology support and are given the opportunity to experience these positive outcomes (Kamphoff, Thomae, & Hamson-Utley, 2013; Lafferty, Kenyon, & Wright, 2008; Tracey, 2008). There is a consensus that, due to their frequent contact with the injured athlete, SIRPs are ideally placed to provide some degree of psychological support to the injured athlete (Arvinen-Barrow, Massey, & Hemmings, 2014). Heaney (2006b) proposed that SIRP should act as a “frontline practitioner” providing basic sport psychology support, with the sport psychologist delivering more advanced services.

SIRPs appear to be open to such a role and aware of the potential impact of psychological factors on the rehabilitation process. Research in the field has consistently found that SIRPs show a positive attitude towards the role of sport psychology during injury rehabilitation (Arvinen-Barrow, et al., 2014). In their study of 215 athletic trainers in the USA, Clement, Granquist and Arvinen-Barrow (2013) found that the

majority of athletic trainers they surveyed felt that athletes were affected psychologically by injury, reported several psychological factors distinguishing between those who cope successfully and unsuccessfully with injury (e.g. positive attitude), and highlighted the importance of psychological skills in sport injury rehabilitation.

Although this might suggest that SIRPs recognise the importance of sport psychology and use it accordingly, deeper investigation reveals that this is not the case. Firstly, whilst SIRPs generally hold a positive attitude towards sport psychology, this does not always extend to implementation. For example, in their review of the literature Alexanders et al. (2015) identified a gap between SIRPs recognising the importance of psychological intervention and providing such intervention. It has been suggested that this may be a reflection of a lack of knowledge or training relating to sport psychology (Arvinen-Barrow, Hemmings, Weigand, Becker, & Booth, 2007; Arvinen-Barrow, Penny, Hemmings, & Corr, 2010; Heaney, 2006a). This view is supported by SIRPs themselves. Research has shown that there is almost universal agreement that the training of SIRPs in sport psychology is inadequate and that SIRPs consistently express a desire to develop their knowledge of sport injury psychology theory and practice (Arvinen-Barrow, et al., 2010; Heaney, 2006a; Lafferty, et al., 2008).

Secondly, it would seem that there are discrepancies between the types of sport psychology interventions SIRPs employ and research evidence (Arvinen-Barrow, et al., 2007; Cormier & Zizzi, 2015). SIRPs tend to gravitate towards more practical techniques that are motivational in nature, such as goal setting, rather than more unfamiliar techniques such as imagery or relaxation strategies (Clement, et al., 2013; Cormier & Zizzi, 2015; Lafferty, et al., 2008). This is perhaps indicative of SIRPs developing their skills in delivering psychological support through experiential rather

than formal learning and lack knowledge and training relating to specific techniques (Arvinen-Barrow, et al., 2010). Alternatively, it could be due to a perception that teaching such techniques is beyond the professional role and boundaries of the SIRP and best delivered by a sport psychologist, who should ideally work alongside the SIRP as part of a sports medicine support team (Arvinen-Barrow, et al., 2010; Clement & Arvinen-Barrow, 2013).

Thirdly, as well as there being deficiencies in the amount and type of sport psychology intervention delivered directly by SIRPs, there is also appears to be deficiencies in referral behaviour. Referral rates to sport psychologists by SIRPs are relatively low, for example, Clement et al. (2013) found that only 17% of SIRPs they surveyed had ever referred an injured athlete to a sport psychologist. This could be due to a perceived lack of access or due to a perceived lack of need for referral; both factors that could be influenced by exposure to psychology of sport injury education. As such, researchers have highlighted the need for SIRPs to be educated on the benefits of referral and working with a sport psychologist (Heaney, Walker, Green, & Rostron, 2015).

Given the shortcomings evident in SIRPs use of sport psychology in their work with injured athletes and their expressed desire for further training on sport psychology it would appear that the training and education of SIRPs in sport psychology is of importance. It has been suggested that sport psychology training for SIRPs needs to be highly relevant and thus education that specifically addresses the psychological aspects of sport injury is required rather than more general sport psychology education (Heaney, et al., 2015). The focus of this study is therefore on sport injury psychology education. Despite the apparent importance of sport injury psychology education, very few studies

have investigated the links between sport injury psychology education and the attitudes and behaviours of SIRPs. Research has shown that well-designed education can lead to changes in attitude and behaviour. For example, education interventions been shown to be successful in influencing attitudes and behaviours amongst sports coaches (Zakrajsek & Zizzi, 2008), SIRPs (Clement & Shannon, 2009), nurses (Patterson, Whittington, & Bogg, 2007), and medical students (Kuhnigk, Strebel, Schilauske, & Jueptner, 2007).

The theory of planned behaviour (Ajzen, 1985, 1988) can be used as a framework to explain how education might influence attitudes and behaviour. The central component to the theory is intention, which is thought to have a direct effect on behaviour. The theory suggests that the stronger an individual's (e.g. SIRP) intentions are towards a specific behaviour (e.g. use of sport psychology), the more likely they are to engage in that behaviour. Intention is determined by three factors: attitude, subjective norm and perceived behavioural control; all of which can potentially be influenced by education. Attitude toward the specific behaviour is the product of the individual's beliefs about the consequences of engaging in the behaviour (behavioural beliefs) and the evaluation of those consequences (Carron, Hausenblas, & Estabrooks, 2003), both of which can potentially be enhanced through education.

One way to evaluate the potential effectiveness of sport psychology education on SIRPs is to compare the attitude or behaviours of a group of professionals who have received such training to a group that have not. This approach was used in a study by Hamson-Utley, Martins, and Walters (2008) who examined the perceptions of athletic trainers and physical therapists in the USA towards the use of psychological skills during sport injury rehabilitation. Athletic trainers are required by the National Athletic Trainer's Association to demonstrate competency on the psychological aspects of sport



injury, whilst physical therapists are not (Hamson-Utley, et al., 2008). It was found that athletic trainers reported more positive attitudes than physical therapists towards the use of psychological skills during sport injury on the majority of survey items. These differences were largely related to controlling pain, positive self-talk and goal-setting. Interestingly, there appeared to be no difference between athletic trainers and physical therapists in relation to their attitudes toward mental imagery (Hamson-Utley, et al., 2008). The authors attributed this to less knowledge of mental imagery compared to other techniques, which supports the findings of other researchers such as Arvinen-Barrow et al. (2010).

Hamson-Utley et al.'s (2008) study examined North American SIRPs. To date no similar study has been conducted to examine UK SIRPs and no study has compared different levels of exposure to sport psychology education (e.g. short duration education compared to long duration education). Heaney et al. (2015) suggest that only a limited number of studies have investigated the impact of psychology of sport injury education on SIRPs and have called for further research. The purpose of this study was to compare the sport psychology related attitudes and behaviours of UK SIRPs who have studied the psychological aspects of sport injury to those who have not. The hypotheses are stated below.

Hypothesis 1: SIRPs who have been exposed to psychology of sport injury education will have significantly higher '*attitude towards sport psychology*' scores than those who have not.

Hypothesis 2: SIRPs who have been exposed to psychology of sport injury education will have significantly higher '*use of sport psychology*' scores than those who have not.

Hypothesis 3: SIRPs who have been exposed to psychology of sport injury education will have significantly higher *rates of referral of an injured athlete to a sport psychologist* than those who have not.

## Materials and Methods

### *Participants*

The participants (n=94) were UK physiotherapists (n=54) and sports therapists (n=40), qualified to a minimum of undergraduate level, who had been working in sport for at least one year prior to participating in the study (range = 1-34 years, mean = 9.22 years, SD = 7.72 years). Forty-eight of the participants (51%) were qualified to postgraduate level (42 physiotherapists and 6 sports therapists) and 46 (49%) were qualified to undergraduate level (12 physiotherapists and 34 sports therapists). Physiotherapists and sports therapists were chosen as they are key professionals engaged in the injury rehabilitation of athletes in the UK.

### *Measures*

Information regarding the participants was collected using an online questionnaire, which was divided into three sections. The first section of the questionnaire asked participants questions relating to three areas: (i) formal sport injury psychology education, (ii) informal sport injury psychology education, and (iii) sport psychologist referral. Participants were asked whether they had undertaken any formal study of the psychology of sport injury as part of their undergraduate or postgraduate

training, and if so how much they had undertaken (covered as part of a more general module/session or studied an entire module on sport injury psychology). Formal study was defined as an organised session or module led by an academic member of staff that formed part of their undergraduate or postgraduate degree. Participants were also asked whether they had any informal education experiences in relation to the psychology of sport injury (reading, workshop, conference, or speaking to a sport psychologist). As a measure of referral behaviour participants were asked if they had ever referred an injured athlete to a sport psychologist.

The second section of the questionnaire examined participants' attitudes towards sport psychology using the Attitudes About Imagery Survey (AAIS) (Hamson-Utley, et al., 2008). The AAIS measures attitudes towards a range of mental skills and has four subscales: mental imagery, positive self-talk, goal setting, and pain tolerance, as well as a total score. Hamson-Utley et al. (2008) reported that the AAIS was developed based on components of the Integrated Model of Response to Sport Injury (Wiese-Bjornstal et al., 1998) and was designed to measure the attitudes of athletic trainers and physical therapists in the USA. Its content validity was assessed by four experts in sport psychology, athletic training and physical therapy, who examined the item wording, relevance and appropriateness (Hamson-Utley et al., 2008). Test-retest reliability correlations of 0.60 to 0.84 on all fifteen items (all significant at the 0.01 level) were reported by Hamson-Utley et al. (2008). As a further measure of reliability Cronbach alphas were calculated on the current data set yielding the following results: mental imagery subscale,  $\alpha = 0.92$ ; positive self-talk subscale,  $\alpha = 0.78$ ; goal setting subscale,  $\alpha = 0.97$ ; and pain tolerance subscale,  $\alpha = 0.89$ .

The final section of the questionnaire examined participants' use of sport psychology skills and techniques as part of their work in treating injured sports performers using the Psychology of Injury Usage Survey (PIUS) (Stiller-Ostrowski, Gould, & Covassin, 2009). The PIUS has thirty-six items and six subscales: communication, social support, motivation and goal setting, attitude and attentiveness, relationship, and sport psychology (imagery, relaxation, self-talk, cognitive restructuring), as well as a total score. Stiller (2008) reported that a group of five experts in athletic training and sport psychology were responsible for ensuring content validity and refining the initial pool of items (Stiller, 2008). Inter-item reliability coefficients of between 0.72 and 0.89 were reported for the six subscales (Stiller, 2008). As a further measure of reliability Cronbach alphas were calculated on the current data set yielding the following results: communication subscale,  $\alpha = 0.84$ ; social support subscale,  $\alpha = 0.77$ ; motivation and goal setting subscale,  $\alpha = 0.82$ ; attention subscale,  $\alpha = 0.68$ ; relationship subscale,  $\alpha = 0.74$ ; and sport psychology subscale,  $\alpha = 0.92$ .

#### *Procedure*

Sports therapists and physiotherapists were invited to participate in the study through invitations placed on relevant online forums (e.g. PhysioForum) and invitations emailed directly to physiotherapists and sports therapists whose details appeared in various professional online directories (e.g. Association of Chartered Physiotherapists in Sports and Exercise Medicine, Society of Sports Therapists). The invitations briefly outlined the purpose of the study and what was required from participants and directed participants to the online questionnaire. The invitations also provided contact details for further information and indicated that the study had gained ethical approval.

Those wishing to participate in the study subsequently completed the online questionnaire. Informed consent was obtained from all participants and all fully completed questionnaires received by the specified deadline were analysed (n=94). The study adhered to the ethical procedures of the British Psychological Society and home institution ethics committee.

#### *Data analysis*

The data from the AAIS and PIUS were analysed using multivariate analysis of variance (MANOVA). As attitude measured by the AAIS and behaviour measured by the PIUS were considered to be unrelated two MANOVA tests were undertaken. The first MANOVA sought to examine the effect of education about the psychology of sport injury on the four AAIS questionnaire subscales (hypothesis 1), whilst the second MANOVA sought to examine the effect of education about the psychology of sport injury on the six PIUS questionnaire subscales (hypothesis 2). Three groups were compared: those who had not studied the psychology of sport injury (group 1, n=34), those who had studied the psychology of sport injury as part of a more general session (group 2, n=41) and those who had studied an entire module on the psychology of injury (group 3, n=19). Analysis of variance (ANOVA) was used to identify which of the subscales demonstrated significant effects and Bonferonni post-hoc analyses were used to examine where precisely these significant effects occurred. ANOVAs were also undertaken on the total scores for the AAIS and PIUS. The analysis of the referral data involved calculating referral rates for participants from the three groups and a chi square test. The chi square test was undertaken to examine whether any significant differences existed between the three groups (hypothesis 3).

## Results

In order to test hypothesis 1 a MANOVA was undertaken on the AAIS questionnaire subscales. The mean scores are shown in Table 1. The MANOVA revealed that there was no significant multivariate effect of psychology of sport injury education on the questionnaire scores ( $F(8, 178) = 1.235, p = 0.281$ ; Pillai's trace = 0.105).

To test hypothesis 2 a MANOVA was also undertaken on the PIUS questionnaire subscales. The mean scores are shown in Table 2. This MANOVA revealed that there was a significant multivariate effect of psychology of sport injury education on the questionnaire scores ( $F(12, 174) = 3.025, p = 0.001$ ; Pillai's trace = 0.345). Follow-up ANOVAs on each of the dependent variables showed significant effects for all PIUS subscales and total score (see Table 2). Bonferonni post-hoc analyses were undertaken to identify where specifically these significant effects occurred, and these are summarised in Table 3. In order to test hypothesis 3 referral data were collected for the three groups. Referral rates increased according to level of exposure to psychology of sport injury education with group 1 (not studied) reporting a referral rate of 32% and group 2 (general session) and group 3 (entire module) reporting referral rates of 46% and 68% respectively. A chi-square test was undertaken to establish whether there were any significant differences. This revealed that there were significant differences between the groups in referral rates ( $\chi^2(2) = 7.12, p = 0.029$ ) - the more psychology of sport injury education a SIRP was exposed to the more likely they were to refer to a sport psychologist.

Data were also collected regarding participants' engagement in any informal sport psychology education activities (reading, workshop, conference or speaking to a

sport psychologist). This revealed that 93% of participants had engaged in such activity (reading 69%, workshop 26%, conference 27% and speaking to a sport psychologist 73%).

### Discussion

The purpose of this study was to compare the sport psychology related attitudes and behaviours of UK SIRPs who had studied the psychology of sport injury as part of their undergraduate/postgraduate training to those who had not. Hypothesis 1 was rejected as no significant differences were observed in attitude towards sport psychology between the three groups. This is in contrast to the findings of Hamson-Utley et al. (2008) who found significant differences between those who had studied sport psychology as part of their training (athletic trainers) and those who had not (physical therapists) on three of the four AAIS subscales. Conversely hypothesis 2 was accepted as significant differences in the reported use of sport psychology were seen between those who had studied the psychology of sport injury and those who had not, across all subscales of the PIUS and the total PIUS score. For example, those who had not studied the psychology of sport injury scored significantly lower on the PIUS total score than those who had studied it either as part of a more general session or had studied an entire module on the topic. These findings indicate that sport injury psychology education is related to SIRPs use of sport psychology strategies, but not to SIRPs attitude towards sport psychology. This would suggest that whilst positive attitudes regarding the psychological aspects of sport injury can be formed in the absence of education, sport psychology education is required in order for SIRPs to make changes to their practice (i.e. sport psychology strategies need to be taught before they

can be implemented). This supports previous studies which have consistently shown that SIRPs demonstrate a positive attitude towards sport psychology (Arvinen-Barrow, et al., 2007; Heaney, 2006a), and studies that have indicated that there is often a gap between such positive attitudes and the translation into action (i.e. use of sport psychology strategies) (Alexanders, et al., 2015; Washington-Lofgren, Westerman, Sullivan, & Nashman, 2004).

Alternatively, the reason why significant differences were only seen for sport psychology related behaviours and not attitudes could be related to the self-selected nature of the participant group. It is perhaps feasible to suggest that only those with a positive attitude towards sport psychology would agree to participate in a study of this nature and therefore the capacity for differences in attitudes to be seen between groups was limited. In support of this all groups achieved a mean AAIS score indicative of a positive attitude towards sport psychology.

Given the finding that sport injury psychology education is linked to sport psychology related behaviours, it would be reasonable to expect that greater levels of exposure might lead to greater levels of sport psychology related behaviour. Such a dose-response effect has previously been reported in the psychology education of physiotherapists (Green, Jackson, & Klaber Moffett, 2008). Whilst those who had studied an entire module on the psychological aspects of sport injury had higher PIUS scores than those who had studied sport injury psychology as part of a more general session, the differences were not significant. This may indicate that shorter duration education packages can be just as effective as longer duration packages in increasing SIRPs use of sport psychology.



Those who had studied sport injury psychology also demonstrated significantly higher sport psychologist referral rates than those who had not and thus hypothesis 3 was supported. However, in contrast to the PIUS data, there appeared to be a dose-response effect for referral, with those who had studied an entire module on the psychology of sport injury reporting significantly higher referral rates than those who had studied it as part of a more general session. The 68% referral rate reported by those who had studied an entire module on the topic is considerably higher than the 17% referral rate reported by Clement et al. (2013). On the surface this would indicate that undergraduate/postgraduate sport injury psychology education could have a highly positive impact on referral behaviour, however, it should be noted that participants were asked if they had ever, in the span of their whole career, referred an injured athlete to a sport psychologist setting a relatively low bar for referral. It may have been more appropriate to measure frequency of referral.

Collectively these results suggest that education on the psychological aspects of sport injury has a positive impact on the sport psychology related behaviours of SIRPs, thus supporting the findings of various USA based studies such as Clement and Shannon (2009) and Stiller-Ostrowski et al. (2009).

Whilst this is a positive finding it cannot be assumed that university education alone is responsible for attitudes and behaviours in relation to sport psychology. Professional experience and other forms of education are likely to influence attitudes and behaviours. Kamphoff et al. (2010), for example, suggest that professional experience may improve attitudes toward sport psychology. It would consequently be reasonable to assume that those with more experience, who have had greater opportunity to experience the psychological aspects of sport injury and develop an

approach to addressing them, might have higher attitude and behaviour scores in relation to sport psychology than those with less experience. Likewise, those with more experience of working with a multi-disciplinary support team, including a sport psychologist, may also have higher attitude and behaviour scores. A potential limitation of the study is that participants had a vast range of experience spanning from 1 to 34 years, and that the nature of participants' experience was not investigated. Future studies should perhaps compare sport psychology related attitudes and behaviours between groups with varying levels and types of experience, and investigate the combined effects of sport psychology education and professional experience.

Educational experiences outside of a university setting are also likely to impact upon attitudes and behaviours in relation to sport psychology and it is important to acknowledge their impact within this study as the vast majority of participants (93%), including those who had not studied any sport psychology at university, indicated that they had undertaken some form of voluntary sport psychology education outside of a university setting (reading, workshop, conference or speaking to a sport psychologist). A limitation of this study is therefore that it did not take this into account within the statistical analyses. Future studies should investigate the combined impact of formal and informal learning.

Profession may also have had an impact on the findings of this study. The groups contained a mix of both physiotherapists and sports therapists, who whilst holding some parallels, do have differences in their roles and consequently may have differences in their professional experiences of sport psychology related issues. Initially it was expected that sports therapists and physiotherapists would form two distinct groups, however, through data collection it emerged that there was great diversity in

exposure to sport injury psychology education within both groups and therefore grouping according to profession was not appropriate. This supports previous research by Heaney et al. (2012) who identified great diversity and inconsistency in the psychology education of physiotherapists.

Whilst discussing the impact of exposure to sport injury psychology education on SIRPs it is important to acknowledge professional boundaries. It has been suggested that the SIRP should act as a “frontline practitioner” providing basic sport psychology support and ‘triaging’ further support needs (Heaney, 2006b). Whilst sport injury psychology education generally aims to increase the use of sport psychology intervention by SIRPs, it should not aim to replace the skills and expertise offered by the sport psychologist, and should not encourage SIRPs to deliver strategies they are not qualified to deliver. As such Heaney et al. (2015) suggest that sport psychology education for SIRPs should include training on professional boundaries and on how and when to refer an injured athlete to a sport psychologist. Similarly, Clement and Arvinen-Barrow (2013) suggest that psychological support should be delivered to the injured athlete by a multidisciplinary team which includes the SIRP and sport psychologist. It was beyond the scope of the present study to examine the aims, content and quality of the sport injury psychology education received by the participants and identify whether it included training on referral and professional boundaries, but this can clearly have a significant impact on the effectiveness of such education. Future research should therefore consider the aims, content and quality of sport injury psychology education and its relative impact. Clarity on where exactly the professional boundaries lie would also be of benefit.

*Conclusion*

This study has provided evidence to suggest that sport injury psychology education is associated with greater levels of sport psychology related behaviour (usage and referral) amongst SIRPs. Given that previous research has indicated that SIRPs have gaps in their knowledge in this area and have a desire to develop their knowledge (Heaney, 2006a), the findings of this study indicate that an education intervention could be effective in improving behaviours amongst SIRPs. Future research should directly measure the impact of a psychology of sport injury education intervention.

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Table 1

*Mean AAIS scores and standard deviations*

		<b>Group 1: not studied (n=34)</b>	<b>Group 2: general session (n=41)</b>	<b>Group 3: entire module (n=19)</b>
<b>AAIS</b>	Mean	75.41	78.41	80.57
<b>Total</b>	SD	17.04	18.65	19.43
<b>AAIS</b>	Mean	37.06	39.44	39.63
<b>Imagery</b>	SD	8.54	10.54	10.47
<b>AAIS Goal</b>	Mean	11.65	11.87	12.58
<b>Setting</b>	SD	3.48	3.21	3.72
<b>AAIS</b>	Mean	15.85	16.71	16.63
<b>Self-Talk</b>	SD	4.19	3.86	4.18
<b>AAIS</b>	Mean	10.85	10.39	11.74
<b>Pain</b>	SD	3.28	3.18	3.14

Table 2

*Mean PIUS scores and standard deviations*

		<b>Group 1: not studied (n=34)</b>	<b>Group 2: general session (n=41)</b>	<b>Group 3: entire module (n=19)</b>
<b>PIUS Total</b>	Mean	243.24	270.22	282.47
	SD	28.94	32.09	23.45
<b>PIUS Social Support</b>	Mean	42.76	46.32	48.11
	SD	6.37	5.50	4.52
<b>PIUS Relationship</b>	Mean	38.59	41.63	41.47
	SD	4.72	3.52	3.86
<b>PIUS Sport Psychology</b>	Mean	30.18	44.37	49.47
	SD	13.05	14.22	12.61
<b>PIUS Attention</b>	Mean	30.97	32.68	33.05
	SD	3.33	3.16	1.87
<b>PIUS Communication</b>	Mean	57.29	58.93	61.26
	SD	4.60	4.60	2.02
<b>PIUS Motivation</b>	Mean	43.44	46.29	49.11
	SD	6.72	6.74	3.23



Table 3

*ANOVA and post-hoc analyses for PIUS subscales*

<b>Subscale</b>	<b>ANOVA</b>	<b>Post-hoc (Bonferonni)</b>
<b>PIUS Total</b>	$F(2, 91) = 13.074, p < 0.001, \text{partial } \eta^2 = 0.223$	Group 1 scored significantly lower than group 2 (mean difference = 26.984, $p < 0.001$ , CI(95%)10.343-43.626) and group 3 (mean difference = 39.238, $p < 0.001$ , CI(95%)18.688-59.788)
<b>PIUS Social Support</b>	$F(2, 91) = 6.390, p = 0.003, \text{partial } \eta^2 = 0.123$	Group 1 scored significantly lower than group 2 (mean difference = 3.552, $p = 0.024$ , CI(95%)0.349-6.755) and group 3 (mean difference = 5.341, $p = 0.004$ , CI(95%)1.385-9.296)
<b>PIUS Relationship</b>	$F(2, 91) = 5.914, p = 0.004, \text{partial } \eta^2 = 0.004$	Group 1 scored significantly lower than group 2 (mean difference = 3.046, $p = 0.005$ , CI(95%)0.749-5.343) and group 3 (mean difference = 2.885, $p = 0.045$ , CI(95%)0.049-5.722)
<b>PIUS Sport Psychology</b>	$F(2, 91) = 15.824, p < 0.001, \text{partial } \eta^2 = 0.258$	Group 1 scored significantly lower than group 2 (mean difference = 14.189, $p < 0.001$ , CI(95%)6.556-21.822) and group 3 (mean difference = 19.297, $p < 0.001$ , CI(95%)9.871-28.723)
<b>PIUS Attention</b>	$F(2, 91) = 4.085, p = 0.020, \text{partial } \eta^2 = 0.082$	Group 1 scored significantly lower than group 2 (mean difference = 1.712, $p = 0.049$ , CI(95%)0.005-3.420)
<b>PIUS Communication</b>	$F(2, 91) = 5.437, p = 0.006, \text{partial } \eta^2 = 0.107$	Group 1 scored significantly lower than group 3 (mean difference = 3.969, $p = 0.004$ , CI(95%)1.026-6.913)
<b>PIUS Motivation</b>	$F(2, 91) = 5.291, p = 0.007, \text{partial } \eta^2 = 0.104$	Group 1 scored significantly lower than group 3 (mean difference = 5.664, $p = 0.006$ , CI(95%)1.334-9.995)