

Cardiff School of Sport
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 Empirical ¹

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Comments	Section		
	Title and Abstract (5%) Title to include: A concise indication of the research question/problem. Abstract to include: A concise summary of the empirical study undertaken.		
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CARDIFF METROPOLITAN UNIVERSITY
Prifysgol Fetropolitan Caerdydd

CARDIFF SCHOOL OF SPORT

DEGREE OF BACHELOR OF SCIENCE (HONOURS)

**SPORT CONDITIONING, REHABILITATION AND
MASSAGE**

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**ADHERENCE TO SPORT REHABILITATION
PROGRAMMES: AN INVESTIGATION INTO WHETHER
ADHERENCE IMPROVES THE OUTCOME OF
REHABILITATION**

Dissertation submitted under the SCRAM area

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ADHERENCE TO SPORT REHABILITATION
PROGRAMMES: AN INVESTIGATION INTO WHETHER
ADHERENCE IMPROVES THE OUTCOME OF
REHABILITATION

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Abstract

The purpose of the study was to gain a better understanding of adherence levels over long term and short term sport rehabilitation programmes. An additional focus was to examine the relationship between motivation levels and adherence, as motivation is identified as a key predictor in increasing adherence levels.

Data was collected through the use of a questionnaire (n=42), which firstly asked a set of demographic questions to gain background information on the participant, followed by an adapted version of the 25-item preliminary Rehabilitation Adherence Measure for Athletic Training (RAdMAT) to measure the individual's adherence levels to a sport injury rehabilitation programme. The answers of all respondents to all questions were reviewed and analysed. Descriptive analysis of the results were taken which highlighted the main contributors to adherence levels and the key themes within the study.

The findings of the study highlighted that athletes who completed a short term rehabilitation programme were more motivated and showed more compliance than those who completed a long term programme. In addition, it showed that those who had fulfilled a short term programme showed more interest and therefore had more compliance to their prescribed programme than those that completed a long term programme. However, the study also identified that those who completed long term rehabilitation programmes felt that they had showed more initiative. This further highlights that motivation appears to be a key influencing factor when completing a sport rehabilitation programme suggesting that achievable goal setting would be an effective intervention factor to help motivate an individual completing a long term programme and thus achieve full adherence.

In conclusion, the study appears to support previous literature, which has identified that motivation influences adherence. Implications from the study identified that a rehabilitation practitioner could break down a long term programme (e.g. 16 weeks duration) into smaller individual programmes (e.g. 4x4 weeks) to maintain motivation levels. Each smaller individual programme would require the setting of goals for the individual. There is limited direct research on the impact of programme duration on adherence levels in sport rehabilitation and further research is needed to fully understand the differences in adherence levels between short and long term rehabilitation programmes. This further research could well support the limited findings in this study.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Injury is inevitable in sport performance; Tracey (2003) implied that there is a high prospect of risk of injury when involved in any sport or physical activity. Each year there appears to be an increase in sporting injuries requiring rehabilitation programmes to enable the athlete to return to sport. A large volume of research exists on injury prevention and rehabilitation programmes. A key focus during the recovery process is to understand both the psychological and physical factors that affect the rehabilitation of an athlete.

It is essential to adhere to the rehabilitation process to overcome an injury and ensure a successful return to sport, with positive motivation being a key factor in ensuring adherence levels are maintained (Siegert and Taylor, 1994; Spetch and Kolt 2001). Participation, attendance and exercise completion all play crucial roles in achieving optimum rehabilitation outcomes. Taylor and Taylor (1998) proposed that an athlete needs to adhere to increase the chance of obtaining a positive outcome from their rehabilitation if they have suffered an injury serious enough to warrant a sport rehabilitation programme. The aim of a sport rehabilitation programme is to enable an athlete to recover from injury and return to their sport as quickly and safely as possible (Fields et al., 1995; Brewer, 1999). However if the individual does not participate in their prescribed rehabilitation programme at the required intensity then the sport injury rehabilitation programme may be unsuccessful (Fields et al., 1995). Therefore there is a strong research assumption that high adherence leads to optimal return to sport.

Non-adherence to rehabilitation programmes and low adherence levels can be an issue in practice. A review carried out by Brewer (1998) analysing various previous studies concluded that sport injury rehabilitation adherence rates could be as low as 40%. Similarly, it is acknowledged that home based rehabilitation and long rehabilitation programmes adherence levels may even be lower than this. It is assumed that an athlete's adherence to their prescribed programme predominantly influences and increases their chances of a successful return to sport. However, outcome studies have shown that the relationship is not that straightforward and their findings are inconsistent in recording a connection between adherence and injury recovery.

It is apparent that individuals find it difficult to adhere to rehabilitation given the psychological demands, including motivation which goes alongside it. Injury can have both a facilitative and debilitating effect on motivation levels dependent on an individual's

characteristics. Within the sport psychology field, motivation refers to what steers and interests an individual to participate in sport (Weiss & Ferrer-Caja, 2002). Supporting this Wagman and Khelifa (1996) proposed that athletes who are able to use their motivation and competitive drive to adhere to rehabilitation have a greater chance of a positive outcome and full return to sport after injury. It could be that low motivational drive has a negative effect on injury outcome. It appears evident that goal directed behaviour can have a significant role in increasing motivation levels as goal setting allows the individual to see a logical end to their injury process and therefore remain motivated to adhere throughout. Additionally, social support has been highlighted by previous literature as facilitating adherence levels, especially during the rehabilitation process (Bone and Fry, 2006; Duda et al., 1989).

Sport injury rehabilitation adherence has predominantly been quantitative in nature Niven (2007). This study also implies that quantitative studies could deliver some support for previous research studies, whereas qualitative studies offer a more robust approach with real time evidencing of athletes motivations and subjective feelings, when attempting to predict adherence levels.

The aim of the present study is to quantitatively investigate the main components that affect an athlete's adherence to rehabilitation programmes and to gain a better understanding of these factors in order to enhance adherence, support previous literature and inform practice. It is hypothesised that motivation, compliance and engagement influences rehabilitation adherence. Therefore a sample of previously injured athletes completed a set of demographic questions and an adapted version of the RAdMAT. RAdMAT is a measure of athlete rehabilitation adherence. The analysis of the data will be used to produce a greater understanding of adherence levels to sport rehabilitation programmes and to determine whether the adherence levels differentiate between short term and long term programmes. This analysis may lead to further recommendations and focus on any practical implications that may have arisen from the results of the study.

CHAPTER TWO
REVIEW OF LITERATURE

2.0 Literature Review

2.1 Introduction

Injury is an inevitable misfortune which many athletes across all sports will experience. It is important that an athlete adheres to and has faith in their rehabilitation programme when injury is sustained (Bone and Fry, 2006). Following a severe injury, returning to sport can be a difficult process for any athlete both physically and psychologically (Bianco, 2001). Podlog and Eklund (2005) identified the significance of athletes' adherence to rehabilitation programmes, stating that it will help overcome any damaging psychological responses caused by injury and therefore help in facilitating recovery. This is supported by Cornelius and Petitpas (2000) who indicated that adherence to rehabilitation programmes is essential to optimising the chance of successfully overcoming an injury. The physical readiness of any athlete during the rehabilitation stage may be interchangeable with the psychological readiness and any constriction in these psychological factors will be unfavourable to performance (Crossman, 1997).

It is therefore important to understand the predominant factors which have an impact on adherence to sport rehabilitation programmes and thus determine the outcome of injury. The following literature will aim to give an overview of the key themes which underpin adherence; motivation, duration, goal setting, attitude and social support. Additionally it will focus on whether there are different adherence levels in short term and long rehabilitation programmes.

2.2 Rehabilitation

Correct and timely rehabilitation is a necessary component of treatment of a sport injury, using progressive exercises in a phased approach to achieve full recovery and pain free range of movement. Granquist et al., (2010) defines rehabilitation adherence as "the behaviours an athlete demonstrates by pursuing a course of action that coincides with the recommendations of the athletic trainer". Rehabilitation programmes may be prescribed for those athletes who experience an injury as a result of sport which is serious enough to authorise a sport rehabilitation programme (Brewer, 1999). The purpose of a sport rehabilitation programme is to enable an athlete to recover from injury and return to their sport as quickly and as safely as possible (Fields et al., 1995; Brewer, 1999). Dishman (1988) found that around 50% to 80% of people will drop out within the first six months of commencing a sport injury rehabilitation programme.

It is understood that there are a number of psychological and behavioural factors which influence human behaviour within the sporting arena, having an effect on an individual's adherence to injury rehabilitation programmes. These factors include; motivation, goal setting and an individual's attitude to adherence. The quality and duration of the rehabilitation process will be made more positive if any of these highlighted factors are present, making the process of rehabilitation more ordinary, controllable and predictable for the injured athlete Weiss and Troxel (1986). There is a collective misconception that the recovery process is consistent and stable, however plateaus and setbacks during the early phase of the process will have a negative effect on adherence to the rehabilitation programme potentially reducing the athletes motivational drive.

2.3 Adherence

Adherence is defined by De Heredia (2004) as "the injured person's level of compliance with medically prescribed rehabilitation plans." Duda (1989) describes adherence as "a composite of attendance at prescribed sessions, degree of completion of the prescribed protocol, and the athlete's intensity of effort exerted in performing the prescribed exercise". Indeed, adherence is multi-factorial. The surrounding support system is considered to affect patient's exercise adherence (Van Gool et al., 2005). Hayden (2005) stated that patients who adhere are identified to have better treatment outcomes than non-adherent patients; thus showing that non-adherence has a negative effect on rehabilitation (Powell, 2014).

A study by Duda et al., (1989) highlighted that the overall adherence of an athlete to rehabilitation is linked directly to the predictors of adherence including self-motivation and social support. The study identified that the physiotherapist-athlete relationship is an important factor for adherence. The athletes who had a positive environment created by their support team had a greater level of belief in the efficacy of the rehabilitation programme and as a result of this they invested more time and effort in the rehabilitation process leading to a more successful outcome (Powell, 2014).

There have been numerous studies which have identified the importance of adherence to facilitate successful outcomes from rehabilitation programmes and successful return to sport. An investigation into physiotherapists' perceptions of rehabilitation adherence in sport revealed elite athletes had relatively high levels of adherence Niven (2007). A feasible explanation may be due to the palliative coping strategies of the participants, particularly their self-help activities (Powell, 2014).

Research implies that adherence to rehabilitation programmes will provide successful recovery and return to sport. There are a number of factors which enhance adherence in sport rehabilitation and it is apparent that the personality characteristics of an athlete determine adherence to sports injury rehabilitation, in conjunction with certain aspects of their programme but also the quality of interactions developed between the practitioner and the athlete have an influence on adherence (Powell, 2014).

2.3.1 Factors influencing adherence levels

One of the most important variables to help the injured athlete reach optimum recovery is the level of adherence to the prescribed sport rehabilitation programme. It confounds some rehabilitation practitioners as to how adherence levels differentiate between athletes. Therefore this has led to several studies investigating both the personal and situational factors which could be associated with rehabilitation adherence among athletes. The idea that non-adherence to rehabilitation programmes will provide unsuccessful recovery and a delayed return to sport is supported by Fields et al., (1995) who suggested that if athletes do not adhere, they are unlikely to have a successful recovery and risk a failure in their goal of a full return to sport. There are a number of factors which enhance adherence in sport rehabilitation. A successful predictor of rehabilitation adherence is considered to be self-motivation (Byerly et al., 1994). This study discovered that well-developed communication between athletes and the physiotherapist will also contribute to positive adherence to rehabilitation (Powell, 2014).

Both physiological and psychological approaches are important for rehabilitation adherence and full recovery after injury; this why the aim of a sport rehabilitation programme has a two-fold focus; mental and physical. As previously mentioned, motivation should be the main psychological focus when helping an athlete sustain adherence to rehabilitation. Goal setting, positive self-talk, imagery and relaxation are various tools which empirical research have identified having a positive impact on rehabilitation adherence (Petitpas and Danish, 1995). Christakou and Lavallee (2009) agree that goal setting is an effective strategy to enhance adherence levels to rehabilitation, suggesting that by setting realistically achievable goals, positive expectations and beliefs about goal attainment will be maintained therefore increasing an individual's motivation levels. Similarly, Theodorakis et al., (1996) also found that recovery time was reduced with the use of effective, personal goal setting.

More recent research, carried out by Brewer et al., (2002), indicates that personal variables and characteristics such as mood states, motivation and situational variables such as social support, are fundamental to adherence by an athlete during their recovery process.

As aforementioned, adherence to sport rehabilitation programmes is regarded as fundamental to achieve positive post-injury outcomes. It is thought that those who adhere to the rehabilitation programme have a strong social support system which reduces any negative behaviour and ensures that the individual has an increased chance of a positive full return to sport.

Motivation, pain tolerance and goal orientation are some of the psychological factors demonstrated by injured athletes that are associated with positive rehabilitation outcomes. Factors such as; sense of loss, threat to self-esteem, heavy sporting demands and unrealistic recovery time were all associated with negative and poor rehabilitation outcomes (Andrews et al., 2004).

2.3.1 Motivation

Within adherence literature, motivation has been identified as a key predictor in increasing adherence to sport rehabilitation programmes. Studies by Duda et al., (1989), Dishman and Gettman (1980) and Fisher, Domm and Wuest (1998) established that injured athletes' were less likely to attend scheduled appointments, comply with prescribed rehabilitation exercises and give maximum efforts during the exercises if they had traits of low self-motivation. Findings from these studies lead to the understanding that goal setting would be a successful intervention to increase motivation levels therefore improving adherence to their prescribed rehabilitation programme. These findings were consistent with a study by Fisher and Hoisington (1993) indicating that there is a direct association between an athlete's strength of character and their levels of self-motivation and adherence. Additionally, Fields et al., (1995) found that motivation is a seemingly important trait to have during the rehabilitation process, with results from their study showing that individuals who adhered to their rehabilitation programme were more self-motivated than those who did not adhere. A qualitative study, using interviews with experienced physiotherapists carried out by Niven (2007) showed that confidence and motivation were key themes which influenced both positive and negative adherence levels; if an individual has higher levels of both of these attributes then this will have a positive effect on their rehabilitation experience.

2.3.2 Goal setting

Scherzer et al., (2001) demonstrated that those who report setting rehabilitation goals have greater rehabilitation adherence than those who do not set targets. Realistic and positive goals should be set. Weiss and Weiss (1987) suggest that it is paramount to ensure that all goals are recorded and measurable to ensure that they have a positive effect on rehabilitation adherence. Wilson and Brookfield (2009), indicate that goal setting is more important during the mid to end phase of the rehabilitation process ensuring that motivation levels are maintained to ensure high adherence levels are maintained throughout the programme. They also suggest that process goals increase motivational levels, whether long term or short term focussed (Andrews et al., 2004). Supporting this, Bone and Fry (2006) imply that if an athlete receives high levels of social support, their adherence to rehabilitation will be maximised through an improvement in their self-motivation and belief.

2.3.3 Social Support

It is understood that those who received support from their surrounding environment had a greater belief in their rehabilitation process and therefore, as a result invested more time and effort in their recovery. Social support comes from the surrounding environment, whether it is the physiotherapist or family (Andrews et al., 2004). There is considerable body of research including Fisher (1999) that supports the suggestion that creating strong social support is a beneficial strategy to enhance adherence levels.

Furthermore, there is an extensive amount of quantitative studies on social support which agrees that it can facilitate positive adherence in injury rehabilitation programmes. Fisher et al., (1998) advised that tolerance and motivation towards adherence amplified when greater amounts of social support by the physiotherapist and coach were given to the injured athlete. This study corresponds with a suggestion from Wadey and Evans (2012), implying that during the recovery from injury, social support is an authoritative factor to positively influence motivation, leading to improved levels of adherence and a full recovery to sport. However, in disagreement to this, there are also a number of limitations to the current research studies on the effects of social support on adherence levels (Bone and Fry, 2006; Duda et al 1989). Furthermore, this research has been retrospective in nature, which could limit the investigation as participants may record how they normally behave as opposed to how they acted during the rehabilitation process; thus potentially giving an unreliable result (Gratton and Jones, 2010). In future, research could be qualitatively

conducted to understand the reasoning behind social support playing such a significant role in adherence to sport injury rehabilitation programmes.

2.3.5 Attitude and Compliance

To achieve positive post injury outcomes adherence to the prescribed rehabilitation programme is regarded as being necessary. It is understood that individuals who apply positive mental skills to manage pain and limit behaviour which could put them at risk, will have a positive attitude to their rehabilitation and thus have a greater adherence level leading to positive return to sport.

2.3.4 Duration of Programme

An important factor in relation to adhering to a sport rehabilitation programme is the duration of the overall programme. A question always asked by the injured athlete is 'how long will it take me to get back?' as it is typically their first concern. The response to this question is vital as it cements the individuals understanding of the rehabilitation process and the psychological approach and attitude which they will put into the programme (Taylor and Taylor, 1997). It is thought that it is best to inform the individual of the typical length of the rehabilitation process for the particular injury, and include the contributing factors which may affect recovery time. These contributing factors include psychological factors, physical fitness, the body's healing capabilities and the type, severity and complications of the injury itself. These could all prolong the rehabilitation process.

Having awareness and understanding of the process as well as making daily adjustments to the rehabilitation programme facilitate the healing process. How diligently an individual adheres to their rehabilitation is an important factor which they can control themselves. Emphasising this at the start of rehabilitation and reminding the athlete throughout will increase the likelihood of adherence and result in faster rehabilitation.

An investigation by Kahanov and Fairchild (1994) found that out of fifty-two school athletes and six athletic trainers, just over half of the athletes were unsure of their applied rehabilitation programme specific to their injury. Kahanov and Fairchild (1994) concluded from the investigation that athletic training coach's (ATC's) need to have an increased awareness of the possibility of miscommunication. Athletes are required to be provided with an improved understanding of their injury and what the rehabilitation process will entail. When an athlete had full understanding they had the motivation to adhere to the programme, thereby improving the likelihood of a successful return to sport.

2.4 Measuring Adherence

To date, research examining sport injury rehabilitation adherence has been essentially quantitative in nature and has focused on predictors of adherence behaviour (Niven, 2007). It is thought that several personal and situational factors affect rehabilitation adherence (Brewer, 1998). An individual's cognitive, emotional and behavioural responses to injury are influenced by the interactions between these factors (Brewer, 1994). Brewer (1998) suggested that the study of sport injury rehabilitation adherence could contribute considerably to the role that sport psychology plays in the rehabilitation of sports injuries and the practice of sports medicine.

Brewer et al., (2000) measured three elements of adherence clinical, home-based and attendance, when they focused on the psychological factors affecting athletes post ACL reconstruction. The results concluded that self-motivation is the main predictor of home based adherence and sport rehabilitation programmes. Additionally, Brewer et al., (2000) found that athletic identity, social support and psychological distress did not have any impact on adherence levels for home based rehabilitation.

There have been a number of studies that have identified and evaluated the approaches of recreational athletes' adherence levels. The use of semi-structured interviews and questionnaires highlighted the key themes which emerged once participants had disclosed their experiences of adhering to sport rehabilitation programmes. The key themes which materialised from this were confidence, coping, social support, motivation and pain.

A complementary approach is offered by qualitative studies as compared to quantitative studies with regard to understanding adherence to rehabilitation and could provide more support for previous research findings (Niven, 2007). To measure adherence to sport rehabilitation programmes in injured athletes, numerous methods have been used. Surveys, interviews, questionnaires and reports are a number of the testing methods which are used. The increasing concern with the measurement of adherence is how reliable methods are? (Brewer et al., 2002). A three item questionnaire is used by The Sport Injury Rehabilitation Adherence Scale (SIRAS). The SIRAS assesses an athlete's adherence during clinic-based rehabilitation sessions as rated by the physiotherapist. The SIRAS uses a five point Likert Scale to rate the intensity that athletes performed rehabilitation exercises to measure the adherence levels of the athlete.

For a positive outcome and successful rehabilitation from injury, athletes' adherence to rehabilitation protocols is fundamental. The SIRAS scale has been found reliable and efficient when used in other research studies. According to Brewer (2002), the SIRAS scale can also be used in a clinical setting. This will determine participants sport rehabilitation adherence over a period of time, highlighting those who are experiencing difficulty adhering to protocols during rehabilitation. Although there has been an increase in peer reviewed sport injury rehabilitation studies recently, Brewer (2004) suggests that additional research is required to refine conclusions in regard to the most crucial elements affecting adherence to sport rehabilitation programmes (Powell, 2014).

As previously mentioned, Granquist et al., (2010) developed the Rehabilitation Adherence Measure for Athletic Training scale (RAdMAT). The scale was used as an adapted and improved version of the SIRAS scale but, with the use of subscales, it was able to accumulate results for more than just attendance levels and completion of exercises. Unlike the SIRAS scale the RAdMAT also evidences the communication with and the attitude of the athlete.

2.5 Conclusion

It is clear that with all the research taken together a number of factors affect an athlete's levels of adherence to sport rehabilitation programmes. The most influential factors are; motivation, goal setting, social support and attitude. All the factors however are influenced by the duration of the rehabilitation programme, dependent on the injury severity. The current study addresses this by examining the relationship between short term and long term rehabilitation programmes and their effects on adherence.

CHAPTER THREE
METHODOLOGY

3.0 Methodology

3.1 Introduction

The purpose of this study is to obtain an in depth understanding of adherence to sport rehabilitation programmes, and to understand if athletes adhered to a short term programme better than those who completed a long term programme. To obtain the necessary information for this study, a quantitative method of data collection is required through the use of questionnaires.

3.2 Research Design

The research design utilised in the study is retrospective in nature. It takes a look back at events which have already taken place; in this case athletes will be focusing on their adherence levels to a previous sport injury rehabilitation programme which they have completed. Similarly, Gratton and Jones (2010) used a retrospective study where participants were interviewed post injury phase and reflected on their experiences. Carson and Polman (2008) would disagree with this, suggesting that participants would not report how they behaved at the time of the rehabilitation programme, but report how they would normally or would want to be seen to behave.

3.3 Participants

The present study included a sample of previously injured athletes (n=42) who had sustained an injury which required a sport injury rehabilitation programme. At the time of the study all participants had fully recovered from injury and completed their rehabilitation programme. For the purpose of the study participants were purposely selected from Cardiff Metropolitan University and Celtic Dragons Netball Team, to allow a range in sporting ability, varying from non-elite athletes to elite athletes. Purposeful sampling chosen from a sporting environment was used in order to select a suitable sample of participants to take part in the study. The participants' consisted of both males (n=20) and females (n=22), whose ages ranged from 18-23. Participants came from a variety of different sporting backgrounds; netball (n=15), hockey (n=11), rugby (n=6), football (n=3), tennis (n=2), basketball (n=1), cricket (n=1) and athletics (n=3). To take part in this study the participants had to meet certain requirements. Firstly, they must have sustained an injury severe enough to warrant a sport rehabilitation programme, which had a minimum duration of four weeks. Sachs et al., (1999) stated that there is not necessarily a definition of injury severity, but a benchmark for this could be time-loss from sport. To allow for a reliable set

of results the injury must have been sustained in the last three seasons, to ensure they can answer the adherence questions to the best of their ability.

3.4 Instrumentation

Data was collected by the use of questionnaires which included a set of demographic questions followed by a questionnaire using 25 preliminary questions to measure athlete rehabilitation adherence (RAdMAT). Adherence questions were answered on a four point Likert Scale of how much the participant agrees with the statement (1=Never, 2=Occasionally, 3=Often, 4=Always), which allowed for statistical analysis of the raw data. The purpose of the demographic questions was to gain background information on the participants, which included; age, gender, sport, level of participation, nature of injury and rehabilitation process. The purpose of the RAdMAT scale was to measure the individual's rehabilitation adherence by using an established validated measure. Although RadMAT was initially developed for athletic training settings for a coach to answer based on their perceptions of an athlete's adherence levels, this study adapted the questions so that the injured athlete could answer for themselves. The use of the subscales within RAdMAT allows for interventions and guiding practice to enhance adherence to sport rehabilitation programmes if a participant has been shown to have low adherence levels. The rationale for the use of questionnaires is supported by Gratton and Jones (2004) who suggested that questionnaires provide highly structured quantitative data. This study used quantitative data as it allows the variables to be assigned numerical values, which allows analysis of the relationships between two or more variables (Gratton and Jones, 2004).

3.5 Pilot Study

To ensure that there were not any potential problems or mistakes within the questionnaire it was essential for a pilot study to be undertaken prior to distribution of the main questionnaire. This was piloted with (n=6) athletes to check understanding and if all questions were appropriate. Some questions within the study were changed so the athlete could give a more direct answer. A study by Van Teijlingen et al., (2002) reinforces the importance of conducting a pilot study for a successful study design. This study highlighted that a successful pilot study increases the likelihood of a successful full study and allows the full study to be adjusted to ensure full participation, compliance and understanding.

3.6 Procedure

Prior to the questionnaires being distributed ethical approval was obtained from the University. Participants had to give informed consent before taking part in the study to

ensure them that all information provided in the study remained confidential. Each participant was recruited through Cardiff Metropolitan University and the Celtic Dragons netball team. They received an information sheet, which made them aware of the nature of the study and were given the right to withdraw from participation at any time without explanation (Patton, 2002). In terms of this project, the pilot survey was reviewed to ensure that there were no mistakes present as well as making sure that the questions in the survey did not influence or maintain a bias, which would affect the responses provided by those answering the survey.

3.7 Data Analysis

Once the data had been collected, the results were analysed to compare the individuals' sport injury rehabilitation adherence, to see whether adherence improves rehabilitation outcomes for return to sport and if a short programme is more successful than a longer programme for someone suffering from injury. Burns (2000) suggested that the purpose of data analysis is to organise it to ensure that comparisons can be made of the study to extract meaning from the data, thus allowing a greater insight into the research.

CHAPTER FOUR

RESULTS

4.0 Results

Table 1. The percentage of all respondents for each question

Question	Long term Rehab programme (n=26)				Short term Rehab programme (n=16)			
	1	2	3	4	1	2	3	4
1	0%	7.6%	19.2%	73.1%	0%	6.2%	25%	68.8%
2	0%	3.8%	11.5%	84.6%	0%	6.2%	25%	68.8%
3	0%	7.6%	23.1%	69.2%	0%	0%	38%	62%
4	0%	15.4%	19.2%	57.7%	0%	0%	43.8%	56.2%
5	3.8%	19.2%	15.4%	38.4%	0%	12.5%	31.3%	56.2%
6	0%	34.6%	23.1%	42.3%	0%	6.25%	50%	43.8%
7	0%	15.4%	34.6%	50.0%	0%	6.3%	25%	68.8%
8	3.8%	15.4%	50%	30.8%	0%	31.3%	31.3%	37.4%
9	3.8%	15.4%	65.4%	15.4%	6.25%	31.3%	31.3%	31.3%
10	0%	15.4%	30.8%	57.7%	0%	12.5%	43.8%	43.8%
11	3.8%	26.9%	38.5%	30.8%	0%	12.5%	25%	62%
12	3.8%	26.9%	30.8%	38.5%	0%	31.3%	31.3%	37.4%
13	23.1%	15.4%	42.3%	19.2%	12.5%	18.8%	25%	0%
14	7.6%	15.4%	42.3%	34.6%	0%	0%	50%	50%
15	0%	15.4%	50%	34.6%	0%	0%	31.3%	68.8%
16	3.8%	23.1%	30.8%	42.3%	0%	0%	38%	62%
17	0%	11.5%	30.8%	57.7%	0%	6.25%	38%	55.8%
18	0%	0%	53.8%	46.2%	0%	6.25%	31.3%	62%
19	3.8%	15.4%	42.3%	57.7%	0%	12.5%	43.8%	43.8%
20	3.8%	11.5%	23.1%	61.6%	0%	6.25%	25%	68.8%
21	0%	19.2%	50%	30.8%	0%	6.3%	25%	68.8%
22	0%	15.4%	30.8%	53.8%	0%	0%	38%	62%
23	0%	11.5%	42.3%	46.2%	0%	12.5%	25%	62%
24	0%	34.6%	23.1%	42.3%	0%	25%	31.3%	43.8%
25	0%	3.8%	50%	46.2%	0%	25%	18.8%	56.2%

*Data in bold reflects key differences between programmes

4.1 Introduction

The questionnaires collected were independently analysed and the percentage of all responses for each question were calculated from the set of raw data shown in Appendix E. After analysing the results presented in Table 1, a number of clear themes and differences were noticed between those who completed a long term rehabilitation programme and those who finalised a short term rehabilitation programme. Although the overall results of the study were inconclusive, reviewing supporting previous studies it would appear that adherence does improve injury outcomes.

4.2 Question Key Themes

The questions naturally fall into key adherence/rehabilitation themes which are referred to in the discussion. These themes, and the specific questions, can be categorised as follows;

- Adherence/Attendance: Question's 1, 2, 20, 22
- Motivation and Goal Setting: Question's 3, 4, 5, 6, 7, 8, 9, 23
- Attitude: Questions 12, 13, 14, 15, 16, 18, 19, 21, 24
- Social Support: Question's 10, 11, 17

4.3 Short Term Rehabilitation Key Themes

The themes which emerged from short term rehabilitation programmes were; compliance, attitude, motivation and interest. The results show that short term athletes were more compliant than long term athletes, for example when advised not to run (Question 5) and the short term athletes completed more exercises correctly than those completing long term rehabilitation programmes (Question 7). It is apparent that these athletes asked more questions about their rehabilitation than long term athletes (Question 11). The results also show that those who completed short term rehabilitation had more of a positive outlook, encompassed more of a positive attitude during the rehabilitation sessions and adopted a positive attitude towards the whole process when compared to those who completed a long term programme (Questions 14, 15 and 16). The final main findings from the results of short term injury rehabilitation showed that these particular individuals stayed more focused whilst doing rehabilitation exercises than long term rehabilitation athletes, were

more prepared for rehabilitation sessions and showed more interest in the rehabilitation process (Questions 21, 23 and 25).

4.4 Long Term Rehabilitation Key Themes

The prominent key themes which emerged from the respondents who completed a long term rehabilitation programme were attitude, initiative and punctuality. As less positive themes emerged from long term programme athletes responses it could be argued that this reduced number of positive themes indicates that longer term rehabilitation programmes have lower adherence than short term rehabilitation programmes. However, it was evident that long term programme athletes were more punctual to sessions than short term and they also completed more home rehabilitation than short term (Questions 1 and 9), although by its very nature a long term rehabilitation programme requires more home rehabilitation than a short term rehabilitation programme. Positive attitude was another theme highlighted from the results of the long term programme respondents as shown in Questions 13 and 19. It is clear that athletes provided more feedback about their rehabilitation than short term and took more initiative in their rehabilitation than the short term athletes.

CHAPTER FIVE
DISCUSSION

5.0 Discussion

5.1 Introduction

The purpose of the study was to examine the relationship between adherence levels and sport rehabilitation programmes. From the literature review it can be seen that it is generally accepted that adherence improves injury outcome but the results from this study were not consistently significant enough to support this hypothesis. The results, which are discussed below address the key themes which have emerged, with a focus on the differences in short term and long term rehabilitation programme adherence levels.

Evidence from this study shows that there are higher levels of adherence in short term rehabilitation programmes than in long term rehabilitation programmes. This is due to a higher representation of the recognised key themes that underpin adherence; motivation and goal setting, positive attitude and social support.

5.2 Motivation and Goal Setting

The complexity of adherence requires a number of factors to be present for an athlete to adhere to their prescribed rehabilitation programme (Brewer, 1998). One of the most prominent factors identified in this area of research is motivation, which in this study, is a key theme highlighted in the results. This is supported by a number of other studies which identify motivation (Fields et al., 1995) and support for rehabilitation (Byerly et al., 1994) as factors which have positive effects on adherence. The results of the motivational themed questions indicate that this has a stronger presence in short term rehabilitation programmes than long term rehabilitation programmes.

The results of the study correspond with an investigation conducted by Evans and Hardy (2002) who found that goal setting produced a positive relationship with adherence levels. Furthermore, both Wilson and Brookfield (2009) and Evans et al (2006) stressed the importance of using process goals and goal setting, reporting that goals set in particular by the physiotherapist or coach successfully resulted in a positive impact to the injured athlete's motivation levels. Deci and Ryan (1985) have argued that this improved level of adherence is due to the deliberate use of goal setting to develop motivation.

The results from question three "I followed the instructions given to me" show that overall short term programme respondents adhered to instructions better than long term

programme respondents. The responses in the study to the motivational and goal setting themed questions show the significance of goals being set in order to develop motivation to adhere to sport rehabilitation programmes. This is reinforced by Wilson and Brookfield (2009) who indicated that motivation and goal setting are interlinked. This study showed that half of the participants who took part in the study dropped out when not receiving adequate support and directional goals. It has been demonstrated that goal setting plays a pivotal role in motivation levels emphasising the importance of goal setting throughout all of the support networks. Additionally from the results it became evident that different types of goal setting could be developed dependent on the length of the rehabilitation programme prescribed, whether it be short term or long term based on the severity of the injury. It could also be suggested that those prescribed a short term rehabilitation programme would need directed goals which rely less on patient will-power and more on the ability to follow instructions given over a short period of time.

Question five also indicates that athletes on a short term programme have the ability to follow instructions; "I complied with any restrictions identified (e.g. not to run)". For long term rehabilitation programmes it appears to be different as there is more reliance on the motivational drive of the athlete. The results of the motivational and goal setting themed questions are supported by Wilson and Brookfield (2009) who also conducted a study to research the influence that different types of goal setting had on motivation.

Over two-thirds of respondents from the short term rehabilitation data answered 'Always' to Question seven "I completed all exercises correctly". On the other hand only half of the long term rehabilitation athletes selected 'Always'. It could be understood that the reasoning for this is due to low motivational drive and lack of realistically achievable goals when participating in a long term rehabilitation programme. Athletes on a short term programme do not have the same exposure to boredom as those on a long term programme; therefore they will be able to remain more focused, whereas others would not want to pursue the task in hand as they could not see the logical end point to their recovery process.

This links with results from the study which also show that motivation levels were higher from those who took part in a short term programme. This agrees with Weis and Weiss (1987) who as previously mentioned suggested that it is important to ensure that all goals are measurable and achievable to ensure adherence is maintained throughout the rehabilitation process. The reasoning for this could be due to the fact that the injured

individual is able to see a logical end point to their rehabilitation programme, allowing them to remain focused and motivated. It could be suggested that they experience this behaviour as they have more contact with their therapist and the end point of their programme is more apparent. This is supported by studies by Levy et al., (2009) and Niven (2007) which as previously mentioned shows the importance of motivation levels with the physiotherapist's awareness of adherence suggesting that low adherence levels were associated with poor motivation levels displayed by athletes. An individual on a long term rehabilitation programme may lose interest in their recovery as they cannot see an end point, leading to boredom and lack of motivation which will therefore decrease adherence levels. Furthermore, the motivational themed questions are supported by this research and highlight this with the results showing that more short term rehabilitation athletes` had a positive outlook and attitude towards the overall rehabilitation process. Positive outlook is another key theme in improving adherence levels.

Question eight "I completed any assigned home exercises" and Question nine "I completed a home rehabilitation programme" results show that overall athletes who completed a long term rehabilitation programme completed more home based exercises than short term. Long term rehabilitation programmes will by their very nature require more home based rehabilitation sessions, so these results are not a surprise.

As previously mentioned in the literature review, a study by Brewer et al., (2000) shows that self-motivation is a main predictor of home based adherence and sport rehabilitation programmes .This could be due to self-motivation being a key driver for the individual as they have less contact with the rehabilitator and therefore have to keep themselves motivated throughout the process. A self-motivation study carried out by Podlog and Eklund (2006) agrees with this as it demonstrated that motivation during the rehabilitation process is essential, principally with the use of social support which facilitates higher levels of compliance. These findings also support the longitudinal study by Levy et al (2008) who carried out a study on 70 individuals investigating their levels of motivation throughout recovery from injury which showed motivation, along with self-efficacy, were important factors. Whilst the participants were not from a specific sporting population it indicated that home-based adherence improves in long term rehabilitation.

Nearly two-thirds of athletes who completed a short term rehabilitation programme answered 'Always' when asked if "motivated to complete rehabilitation" compared to less than half of athletes answering 'Always' who completed a long term programme. Again, it

could be acknowledged that the reasoning for the higher levels of adherence to completing the rehabilitation programme within the short term programme participants is due to self-motivation and lack of goal setting for long term injuries.

5.3 Attitude

The results from the study suggest that those who completed a short term rehabilitation programme appeared to have a more positive attitude, although this could be partly due to them having more regular and sustained support from their coach, physiotherapist and rehabilitation support network.

The findings demonstrate that to complete a long term programme the injured athlete will need to generate and maintain similar levels of self-belief to that evidenced for short term rehabilitation. This needs to be achieved despite less regular contact with the rehabilitator and therefore the injured athlete will need to rely more on self-belief, a long term positive attitude and sustained support from the surrounding environment.

Furthermore, it can be seen from the results that those who completed a long term programme were less compliant and appeared to be less motivated than those who completed a short term rehabilitation programme. As previously discussed poor compliance to rehabilitation will have a negative outcome on the recovery process (Petitpas and Danish, 1995). The severity of the injury can have a major impact on the injured athlete's attitude to the rehabilitation process. If, say, an individual has suffered an ankle sprain they could possibly visualise an end point to recovery as it is a shorter rehabilitation progress to that of an injury such as an ACL rupture. The long term nature of this injury, with no immediate positive outcome, may have a negative impact on the individual. A negative attitude towards the recovery process can lead to a lack of compliance in following instructions and therefore this non-adherence to their rehabilitation will slow down the final target achievement of a full return to sport. This appears to be supported by the results, with attitude being the key theme. This can be seen in Question 18 "I gave 100% effort in rehabilitation sessions" with two-thirds of athletes who completed a short term rehabilitation programme 'Always' giving 100% in their efforts compared to less than half of athletes who completed a long term rehabilitation programme. The reasoning for this could be that those prescribed a lengthy programme had a negative outlook towards their rehabilitation process and therefore lacked positive attitude and motivation when completing exercises and therefore did not adhere to the programme as much as they could have.

5.4 Social Support

There were no specific questions in the RAdMAT scale highlighting the psychological impacts of social support during the rehabilitation process. Question 10 “I had good communication skills with the person providing the programme” and Question 17 “I found it easy to work with the person providing my rehabilitation” demonstrate the importance of a support system and a positive surrounding environment during rehabilitation. It is acknowledged that a strong support environment is beneficial in delivering strong adherence levels and reinforces the previous themes of goal setting, motivation and positive attitude. The results show that both long term and short term rehabilitation participants demonstrated reasonable adherence levels when asked if they communicated with the person prescribing the programme. This is reiterated by Bianco (2011), who acknowledged that a strong social support network had a positive influence on the motivation levels of injured athletes. This coincides with the social support themed questions. Podlog and Eklund (2009) also reinforced this, arguing that a physiotherapist’s personal interest in the injured individual can provide a motivational boost during the long recovery phase, which will encourage the athlete to maintain interest in adhering to their rehabilitation process.

From previous literature and analysis of the results it can be seen that with the positive support of the surrounding environment the injured athlete is able to cope better and maintain high adherence levels throughout their rehabilitation programme. A study by Brewer (1995) confirms this, as it found that injured athletes who receive the least amount of support and control over their rehabilitation were the most susceptible to emotional distress. Furthermore, Duda et al., (1989) also indicated that to help recovery it is very important for the athlete to believe in the treatment and rehabilitation process. The responses to Question 11 “I asked questions about my rehabilitation” is supported by previous social support focused literature. An athlete during the rehabilitation process will want to know the most efficient way to perform the specific rehabilitation exercises to ensure they have the fastest possible recovery and return to sport. Therefore by asking the physiotherapist questions about their rehabilitation they will receive informative social support allowing the individual to maintain focus and interest in their programme, increasing levels of adherence which will be highly beneficial to their rehabilitation. This again reiterates research (Bianco and Eklund, 2011) which suggested that social support can be a motivational factor when increasing adherence to rehabilitation.

5.5 Strengths and Limitations

The study had a number of strengths and limitations which should be recognised. Strengths of the study include the researcher's knowledge of the sporting and social environment of the participants enabled a greater understanding and interpretation of their responses. In addition, the study was carried out as part of a focused dissertation on rehabilitation and adherence and therefore used very specific questions derived from other successful studies. Consequently, the results can be compared to and supported by previous literature have which followed the same methodologies using the RAdMAT scale Granquist et al., (2010).

Limitations within the study should also be addressed. A retrospective approach was adapted in the study as participants were answering questions on a scale of their past experiences which can lead to a bias. To improve upon this retrospective approach, adherence could be measured during the rehabilitation process; on a weekly basis to repeatedly measure adherence to provide a true reflection of their rehabilitation experience. A different approach could have been to carry out a longitudinal study during the rehabilitation process of the injured athletes, with the use of interviews as well as questionnaires, enabling the direct measurement of adherence and identification of the impacts of changes in factors such as positivity, motivation and perception of support. The use of a longitudinal study will measure the same variables and subjects multiple times over a specific duration, to show any prominent patterns in behaviours which may develop during the study (Levy et al., 2008).

Another limitation that may impact on the validity of the study and limit the clarity of interpretation of the proposed research was the small sample size. Again, a sample size such as used by Levy et al (2008), which had 70 participants, may have provided a more robust and reliable set of data. Using a larger amount of participants may also help to improve knowledge on the usefulness of the RAdMAT scale, determining whether it is a useful predictor of rehabilitation adherence.

Silverman (2000) proposed that it is important in qualitative research to identify that the methods used in the study are reliable, and the conclusions and results drawn for the study are valid. Additionally, Lincoln and Guba (1985) also suggested that qualitative research should be determined by its trustworthiness. An understanding and improved

knowledge of criteria is required when assessing methodological rigour in qualitative data to establish trustworthiness.

5.6 Further Recommendations

As some of the results from this study were inconclusive, further recommendations would be to repeat the quantitative study on a larger sample over a longer period of time. This would allow for a more robust investigation providing stronger results. Additionally, the comparison of elite and non-elite athletes could be used to see whether there are differences in adherence amongst the purposefully selected samples, although an equally large sample of both types of athletes would need to take part in the study. The difference in these two sample groups is evidenced by previous research by Niven (2007) and Udry (1997) who found high levels of adherence in professional athletes but lower levels in recreational athletes.

It is clear from this study and previous published literature that adherence improves rehabilitation outcome, more so in short term programmes than long term programmes. Whilst the questionnaires distributed did not directly address all the key themes underpinning adherence the responses and the interpretations of the results underline the importance of sustaining the key themes throughout the rehabilitation process.

Another area which merits further attention, is to maintain motivation levels during a long term rehabilitation programme. To ensure an individual adheres to their rehabilitation process it would be beneficial for the practitioner to apply achievable short term goals for the injured athlete, segmenting their programmes into a series of short term programmes. However improving the levels of adherence by segmenting the rehabilitation programme into short term goals will still be dependent on the individual's self-motivation levels and drive to succeed and the severity of the injury. For example it could be recommended that a 16 week programme be split into four segments of four weeks each, for the athlete to maintain focus and motivation, as motivation is a key driver in maintaining high adherence.

CHAPTER SIX
CONCLUSION

6.0 Conclusion

It can be summarised that this study has demonstrated how motivation and goal setting, attitude and social support can increase levels of adherence improving injury rehabilitation outcome and full return to sport. Although it is not evident in this particular study, previous literature indicates that adherence improves injury outcome (Taylor and Taylor, 1998). In this study it is apparent that there are a number of conclusive differences in adherence levels between short term and long term rehabilitation programmes. It could be concluded that this is due to the ability to maintain the three themes of motivation and goal setting, attitude and social support which are easier to support through short term programmes, as evidenced in this current study.

The principal key themes which emerged from the results were found to aid overall adherence to rehabilitation. It is apparent that motivation and goal setting both positively influenced the participant's adherence to their prescribed rehabilitation programme. As previously mentioned these factors can have a facilitative effect on injury recovery, as goal directed behaviour is a key driver to motivation levels (Wilson and Brookfield, 2009). The study also found that a positive attitude had an affirmative effect on adherence levels. Athletes who had completed a short term rehabilitation programme had higher levels of positive attitude towards their rehabilitation process than those who completed a long term rehabilitation programme supporting Wagaman and Khelifa's (1996) study which indicated that a competitive drive to adhere to rehabilitation leads to positive outcomes and attitude. Social support was found to be beneficial to participants by delivering a motivational boost during long term rehabilitation especially, encouraging a desire to maintain adherence during their rehabilitation process (Podlog and Eklund, 2009).

It could be suggested that long term rehabilitation adherence levels can be improved by the practitioner breaking down the prescribed rehabilitation programme into short term segments, for goal setting purposes. This study, and previous literature, suggests that goal setting over shorter periods of rehabilitation is more effective than goal setting over longer periods of rehabilitation. The study suggests that by setting goals within a series of shorter programmes it will make the long term rehabilitation process feel more achievable and prevent the athlete from losing interest, as they can see an end point to their recovery.

Overall the current study has provided elements of support for previous research as individually identified within the discussion. All found that adherence to sport rehabilitation

programmes can have a positive effect on injury outcome and full return to sport primarily due to the key psychological factors identified as recurring themes throughout the research; motivation and goal setting, social support and attitude and compliance.

There are identified differences in levels of adherence between short term and long term rehabilitation programmes but further research will be required to fully understand the reasons for this. However it is clear from the study that the key factors improving adherence in short term rehabilitation are evident in long term rehabilitation and that these tools can be adapted to improve adherence levels in long term rehabilitation. An effective example of this would be the segmenting of long term goal setting into smaller, more manageable goals with more apparent end points.

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APPENDICES

APPENDIX A
PARTICIPANT INFORMATION SHEET

Participant Information Sheet

Project Title: Adherence to Sport Rehabilitation Programmes: An investigation into whether adherence improves the outcome of rehabilitation.

Background

This research project is an attempt to understand the effects of adherence on the outcome of a rehabilitation programme. This study is concerned with experiences of adhering to a sport rehabilitation programme and whether adherence improves the outcome of rehabilitation. The study will use participants who have undergone a rehabilitation programme for a minimum of 4 weeks. A discussion will be generated from the key themes that have arisen from analysis of the questionnaires.

Why have you been asked?

You have been asked to participate due to your current injury status or previous injury. Previous research has looked into a range of health issue related behaviours affecting adherence to sport rehabilitation programmes. This study is concerned with the correlation between adherence to a sport rehabilitation programme and outcome success. A successful rehabilitation programme decreases the chances of re-injury. Therefore research needs to be conducted to find out what factors affect adherence to sport rehabilitation programmes.

What would happen if you agree to take part?

If you agree to join the study you will be given a questionnaire asking a number of mainly one answer questions. This questionnaire will be anonymous. The findings of the questionnaire will be available for yourself if you wish to know further information on this topic.

Are there any risks?

There are no significant risks involved in this research study.

Your rights

You have the right to withdraw from the study at any time. You also have the right to not answer any question which you may feel is too personal.

What happens to the results of the evaluation?

The findings taken from the evaluation and analysis will be put into a discussion paper which will identify perceptions and experiences of adhering to a sport injury rehabilitation programme. A relationship may be identified to see whether certain factors identified have more of an effect than others to successful programmes. You will remain completely anonymous throughout the study and any findings from the study will be available on request if you wish to know further about adherence to sport rehabilitation programmes.

Are there any benefits from taking part?

You will gain knowledge and have a better understanding of rehabilitation adherence and what factors have both positive and negative effects on successful adherence to a sport rehabilitation programme.

What happens next?

With this information sheet, you are required to fill out a consent form giving permission to be involved in this study. By reading the information provided and signing the consent form you are fully aware what is expected of both myself and yourself participating.

How we protect your privacy

Throughout the study your privacy will be respected. You will remain anonymous throughout the study and no information that you have given us to complete this study will be available to enable anyone to identify you. All forms completed by you will be stored securely and at the end of the study, they will be destroyed.

Further information

If you have any questions in regards to the research or how we intend to conduct the study, please contact myself.

Olivia Powell

Telephone: 07554 001904

Email: st20034372@outlook.cardiffmet.ac.uk

APPENIDX B
PARTICIPANT CONSENT FORM

UWIC PARTICIPANT CONSENT FORM

UREC Reference No:

Title of Project: Adherence to Sport Rehabilitation Programmes: An investigation into whether adherence improves the outcome of rehabilitation.

Name of Researcher: Olivia Powell

Participant to complete this section: Please initial each box.

1. I confirm that I have read and understand the information sheet for this study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that the participation is voluntary and that it is possible to stop taking part at any time, without giving a reason.
3. I understand that information from the study may be used for reporting purposes, but I will not be identified.
4. I agree to take part in this evaluation.

Name of Participant _____

Signature of Participant _____

Date _____

* When completed, one copy for participant and one copy for researcher's files.

APPENDIX C
QUESTIONNAIRE

Demographic Information

Age _____

Gender _____

What is your main sport _____

What level do you compete at

Recreational

Club

County

Regional

National

International

Recent injury history: Please identify any injuries which you have sustained in the last 3 seasons which have affected your training

Have you been required to follow a specific rehabilitation programme for this injury?

Yes

No

Who prescribed you this programme _____

How long did the programme last _____

How many specific rehabilitation sessions did you have per week _____

In which of the following settings did your programme predominantly take place

Outpatient clinic hospital

Physiotherapy Clinic

Local sports centre/gym

Home based programme

Within club training sessions

Other (please state) _____

Were you required to do the programme

On your own

With other athletes within your club

With other patients(public)

Please give a brief description of the programme/exercises required (If you have a copy of this please could one be sent):

Were each of the sessions supervised? Yes No

If so by who _____

Approximately what percentage of the rehabilitation programme did you successfully complete

Less than 10%

Between 10-50%

50-90%

All

REHABILITATION ADHERENCE MEASURE FOR ATHLETIC TRAINING

The following is a measure of athlete rehabilitation adherence. Rehabilitation adherence is defined as the behaviours an athlete demonstrates by pursuing a course of action

that coincides with the recommendations of the athletic trainer.

Please rate yourself on each item by ticking the most appropriate box:

	Never	Occasionally	Often	Always
I attended scheduled rehabilitation sessions				
I showed up to rehabilitation on time				
I followed the instructions given to me				
I followed the prescribed rehabilitation plan				
I complied with any restrictions identified (eg not to run)				
I completed all rehabilitation tasks assigned to me				
I completed all exercises correctly				
I completed any assigned home exercises				
I completed a home rehabilitation programme				
I had good communication skills with the person providing the programme				
I asked questions about my rehabilitation				
I identified any concerns if there was a problem with the exercises				
I provided feedback about the rehabilitation programme				
I had a positive outlook				
I had a positive attitude during rehabilitation sessions				
I had a positive attitude toward the rehabilitation process				
I found it easy to work with the person providing my rehabilitation				
I gave 100% effort in rehabilitation sessions				
I took the initiative in rehabilitation				
I was an active participant in the rehabilitation process				
I stayed focused while doing rehabilitation exercises				
I was motivated to complete rehabilitation				
I was prepared for rehabilitation sessions				
I worked well on my own during rehabilitation sessions				

I showed interest in the rehabilitation process				
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APPENDIX D
ORIGINAL RA_dMAT

REHABILITATION ADHERENCE MEASURE FOR ATHLETIC TRAINING

The following is a measure of athlete rehabilitation adherence. Rehabilitation adherence is defined as the behaviours an athlete demonstrates by pursuing a course of action that coincides with the recommendations of the athletic trainer.

Please rate the athlete on each item using the scale: 1=never, 2=occasionally, 3=often, 4=always.

The athlete:

1. attends scheduled rehabilitation sessions.
2. shows up to rehabilitation on time.
3. follows the athletic trainer's instructions.
4. follows the prescribed rehabilitation plan.
5. complies with activity restrictions.
6. completes all tasks assigned by the athletic trainer.
7. completes exercises correctly.
8. completes assigned home exercises.
9. completes the home rehabilitation program.
10. has good communication with the athletic trainer.
11. asks questions about his/her rehabilitation.
12. communicates if there is a problem with the exercises.
13. provides feedback about the rehabilitation program.
14. reports pain or discomfort when appropriate.
15. has a positive outlook.
16. has a positive attitude during rehabilitation sessions.
17. has a positive attitude toward the rehabilitation process.
18. is easy to work with in rehabilitation.
19. gives 100% effort in rehabilitation sessions.
20. takes initiative in rehabilitation.
21. is an active participant in the rehabilitation process.
22. stays focused while doing rehabilitation exercises.
23. is motivated to complete rehabilitation.
24. is prepared for rehabilitation sessions.
25. works well on his/her own during rehabilitation sessions.
26. shows interest in the rehabilitation process.

APPENDIX E
RAW DATA

Table to show %age of ALL respondents for each question

Question	Long term Rehab programme (n=26)				Short term Rehab programme (n=16)			
	1	2	3	4	1	2	3	4
1		7.6%	19.2%	73.1%		6.25%	25%	68.8%
2		3.8%	11.5%	84.6%		6.25%	25%	68.8%
3		7.6%	23.1%	69.2%			38%	62%
4		15.4%	19.2%	57.7%			43.8%	56.2%
5	3.8%	19.2%	15.4%	38.4%		12.5%	31.3%	56.2%
6		34.6%	23.07%	42.33%		6.25%	50%	43.8%
7		15.4%	34.6%	50%		6.25%	25%	68.8%
8	3.8%	15.4%	50%	30.8%		31.3%	31.3%	37.4%
9	3.8%	15.4%	65.4%	15.4%	6.25%	31.3%	31.3%	31.3%
10		15.4%	30.8%	57.7%		12.5%	43.8%	43.8%
11	3.8%	26.9%	38.5%	30.8%		12.5%	25%	62%
12	3.8%	26.9%	30.8%	38.5%		31.3%	31.3%	37.4%
13	23.1%	15.4%	42.3%	19.2%	12.5%	18.8%	25%	
14	7.6%	15.4%	42.3%	34.6%			50%	50%
15		15.4%	50%	34.6%			31.3%	68.8%
16	3.8%	23.1%	30.8%	42.3%			38%	62%
17		11.5%	30.8%	57.7%		6.25%	38%	55.8%
18			53.8%	46.2%		6.25%	31.3%	62%
19	3.8%	15.4%	42.3%	57.7%		12.5%	43.8%	43.8%
20	3.8%	11.5%	23.07%	61.63%		6.25%	25%	68.8%
21		19.2%	50%	30.8%		6.25%	25%	68.8%
22		15.4%	30.8%	53.8%			38%	62%
23		11.5%	42.3%	46.2%		12.5%	25%	62%
24		34.6%	23.07%	42.33%		25%	31.3%	43.8%
25		3.8%	50%	46.2%		25%	18.8%	56.2%

Table to show %age of NON-ELITE Respondents for each question

Question	Long term Rehab programme (n=21)				Short term Rehab programme (n=11)			
	1	2	3	4	1	2	3	4
1		9.5%	23.8%	66.7%		9.1%	36.4%	55%
2		4.8%	14.3%	81%		9.1%	36.4%	55%
3		9.5%	28.6%	62%			54.5%	45.5%
4		19.04%	23.8%	57.7%			54.5%	45.5%
5	4.8%	23.8%	52.4%	19%		18.2%	18.2%	63.6%
6		42.9%	23.8%	33.3%		9.1%	63.6%	27.3%
7		19.04%	33.3%	47.7%		9.1%	27.3%	63.6%
8	4.8%	19.04%	42.9%	33.3%		27.3%	45.5%	27.3%
9	4.8%	19.04%	61.9%	14.26%		36.4%	45.5%	18.2%
10		19.04%	33.3%	47.7%		9.1%	54.5%	36.4%
11	4.8%	28.6%	33.3%	33.3%		18.2%	18.2%	63.6%
12	4.8%	33.3%	28.6%	33.3%		36.4%	27.3%	36.4%
13	28.6%	19%	28.6%	23.8%	9.1%	27.3%	27.3%	36.4%
14	9.5%	19%	33.3%	38.2%			54.5%	45.5%
15		14.2%	33.3%	53%			36.4%	53.6%
16	4.8%	23.8%	23.8%	47.7%			45.5%	54.5%
17		28.6%	33.3%	38.2%		9.1%	45.5%	45.4%
18			50%	50%		9.1%	45.5%	45.4%
19	4.8%	19.04%	52.3%	23.8%		18.2%	54.5%	27.3%
20	4.8%	28.6%	23.8%	42.8%		9.1%	27.3%	63.6%
21		23.8%	42.8%	33.4%		9.1%	27.3%	63.6%
22		28.6%	38.1%	33.3%			45.5%	54.5%
23		28.6%	42.8%	28.6%		9.1%	36.4%	54.5%
24		42.9%	19%	38.1%		27.3%	36.4%	36.4%
25		4.8%	42.8%	52.4%		27.3%	18.2%	54.5%

Table to show %age of ELITE Respondents for each question

Question	Long term Rehab programme (n=5)				Short term Rehab programme (n=5)			
	1	2	3	4	1	2	3	4
1			20%	80%				100%
2				100%				100%
3				100%			20%	80%
4				100%			20%	80%
5			80%	20%			60%	40%
6			20%	80%			20%	100%
7			40%	60%			20%	80%
8			60%	40%				100%
9			80%	20%	20%			80%
10			20%	80%		20%	40%	50%
11		20%	60%	20%			40%	60%
12			40%	60%		20%	40%	60%
13			100%		20%		20%	60%
14			20%	80%			40%	60%
15			80%	20%			40%	60%
16			80%	20%			20%	80%
17			80%	20%			20%	80%
18			20%	80%				100%
19			20%	80%			20%	80%
20			20%	80%			20%	80%
21			20%	80%			20%	80%
22			20%	80%			20%	100%
23			40%	60%		20%		100%
24			40%	60%		20%	20%	60%
25		20%	20%	60%		20%	20%	60%

