

## CHAPTER FIVE: DISCUSSION

### 5.1 Introduction

The present study was an exploration of the psychosocial factors involved in the susceptibility, experience and rehabilitation of injuries sustained in long-distance running. The purpose of this chapter is to discuss the findings of the study and relate these findings to the literature that has focused on psychosocial factors involved in sport injuries. Furthermore, the findings are considered and examined from the biopsychosocial theoretical perspective. Finally, a biopsychosocial theoretical model that attempts to explain the experience of injury and the successful rehabilitation thereof in long-distance running is proposed.

### 5.2 Running history and training programs

The present study was borne out of reading contemporary literature on long-distance running in which the passion runners of all abilities have for the sport is captured. In order to place the study in context, it is necessary to consider the popularity long-distance running enjoys in South Africa and throughout the world. A consideration of the running history and training programs of the participants, in turn, links the study to the popularity of the sport.

The following long-distance running enjoys throughout the world is evident when reviewing the statistics of standard marathons held in major cities; these statistics were detailed in Chapter One. Long-distance running in South Africa is also a favoured sport. *Runner's World* columnist, Simon Gear's observation that South Africans are obsessed with ultra distance running (2008) is not unfounded when one considers South Africa's road running calendar (Cottrell, 2010). Over 700 road races are listed in the country's annual road running calendar. Included in the calendar are races that vary in distance from five kilometres to the standard marathon distance of 42.2 kilometres as well as a range of ultra-marathons (Cottrell, 2010).

Many South Africans tend to focus on ultra-marathons and in particular, on the Comrades Marathon and the Two Oceans Ultra Marathon (Cameron-Dow, 1989). Statistics show that in 2010, 14338 runners completed the Comrades Marathon and 5825 finished the Two Oceans Ultra Marathon (Cottrell, 2010). Although the numbers who complete the Comrades Marathon and the Two Oceans Ultra Marathon cannot be compared to the number of runners who finish marathons such as the London Marathon and the New York Marathon, Burfoot (2009a) expressed the opinion that in the USA only approximately 71 runners would attempt races the distance of the Comrades Marathon. A study of the South African road running calendar shows that races are held throughout the country on most weekends in the year. Furthermore, certain races are held at

specific times of the year in order to give runners the opportunity to train for ultra-marathons such as the Two Oceans Ultra Marathon and in particular, the Comrades Marathon.

The researcher has been involved in long-distance running for a number of years and is of the opinion that the participants in the present study are typical of long-distance runners in South Africa. An examination of the running history of the participants shows that they had all run a variety of races. At the time of being interviewed, only one participant had not run a standard marathon; she had been training for her first marathon when she suffered an injury. Three of the participants had each run in excess of 100 marathons. Most of the participants (10) had run the Comrades Marathon and between them they had run the race 87 times. Furthermore, six participants had run the Comrades 10 or more times; thus, earning a green number. Upon running the Comrades 10 times, a runner earns a green number; this permanent number is assigned to the particular runner and no other runner in the history of the race will ever run with that number. The importance attached to being awarded a green number for the Comrades Marathon was clearly exemplified by the participant who was determined to run his tenth Comrades Marathon despite suffering a stress fracture of his second metatarsal.

It was further evident to the researcher that the participants in the study were typical of long-distance runners in South Africa when they spoke about their training programs. When they shared details of their goals and training programs, the majority of them (13) gave the impression that they were committed and dedicated to long-distance running; thus, exemplifying the passion South African runners have for the sport. The participants' passion for long-distance running was, in fact, evident throughout their interviews by the apparent enthusiasm with which they spoke about their involvement in the sport.

An examination of the participants' training programs shows that they all had specific goals that they wanted to achieve in long-distance running. A review of their goals further illustrates South African runners' tendency to focus on ultra-distance running. At the time of their interviews, the majority of the participants (9) related that although they had other goals that they wanted to achieve, their most important goal each year was to run an ultra-marathon such as the Two Oceans Ultra Marathon and in particular, the Comrades Marathon. One participant succinctly captured this when he stated that his running "revolved" around the Comrades Marathon and another stated that besides running many other races, she "just" ran to do well in the Comrades. Three of the other six participants mentioned ultra-marathons such as the Mont-Aux-Sources 50 km Challenge and the Comrades Marathon that they wished to run in the future. Only one of the participants had not run an ultra-marathon and she said that she had no desire to

do so. Although not regarded as a long-distance road running event as such, four of the participants also expressed their desire to participate in the South African Ironman, a grueling triathlon which entails a 3.8 kilometres sea swim, 180 kilometres of cycling and running a standard marathon; thus, further emphasizing South African runners' interest in ultra-endurance events.

In order to achieve their goals, the majority of the participants (11) followed what they perceived to be a structured training program, designed to help them reach their specific goals; one of these participants referred to his program as his formula for training for the Comrades Marathon. Furthermore, five of the participants gave the impression that they planned their training carefully and systematically. Although one of the participants perceived his program to be semi-structured and another said that he did not follow a structured training program, their descriptions thereof appeared to be very similar to those who believed that they followed a structured training program. As stated previously, the calendar of long-distance running events in South Africa is thus arranged in order to assist those training for the Comrades. An examination of the participants' training programs suggests that they used the road running calendar to plan their training. This was evident when injury prevented them from running particular races that they normally ran in preparation for the Comrades Marathon. They experienced a sense of loss, and feared they would lose their fitness and consequently, not be ready to run the Comrades; one of the participants said that because of his injury he was uncertain that he would be able to run the "cruel distance" of the race. It is noteworthy that two of the participants who had no structure in their training programs were not training for an ultra-marathon.

In conclusion, an examination of the running history and training programs of the participants in the study shows their interest in long-distance running and in particular, in ultra-distance marathons such as the Comrades Marathon. A review of the country's annual road running calendar reveals that South African runners tend to favour ultra-distance events; thus, making the participants in the study typical of runners in the country. In the next section, the benefits and disadvantages the participants perceived they experienced because of their involvement in the sport are examined.

### **5.3 Perceived benefits and disadvantages of running**

A review of the benefits long-distance runners perceive they experience because of their involvement in the sport may explain why the sport enjoys such popularity throughout the world and in particular, in South Africa. Furthermore, an examination of these perceived benefits may shed light on and consequently, help one to understand runners' reactions and responses when they are unable to run because of injury.

Although not the focus of the literature study of this thesis, reference was made to literature that has dealt with the physical benefits of long-distance running (Fixx, 1977; Fordyce & Renssen, 2002; Higdon, 1993; Noakes, 2001; Sparks & Kuehls, 1996). A few of the many studies that have examined the psychological benefits of participating in the sport were also mentioned (Chan & Lai, 1990; Hassmen & Blomstrand, 1991; Symonds, 1995; Ziegler, 1991). The benefits that the participants in the present study perceived they experienced because of their involvement in the sport concur with those described in the studies listed above.

The participants in the present study all spoke at length about the benefits they believed that they experienced because of their involvement in long-distance running. Their enthusiasm for the sport was particularly evident to the researcher when they described these benefits. It is also important to note that they perceived physical, social and psychological benefits. Although the participants did not directly state that they participated in long-distance running because of the benefits they associated with the sport, it was apparent to the researcher that this may have been the case. Furthermore, as a result of their injuries, they described experiences of loss because they no longer enjoyed the benefits they perceived running afforded them.

The majority of the participants (10) expressed the opinion that their participation in long-distance running enhanced their health. They described a variety of health benefits, but placed the most emphasis on weight control, improved fitness and increased energy levels. Single participants also mentioned the following health benefits: increased life expectancy, good posture, regular sleeping patterns and relief from headaches. Taunton et al. (2002) noted that running is the choice of sport for many because of the health benefits associated with it. The participants who described the health benefits they perceived they experienced also suggested that they had become involved in the sport because of these benefits. Furthermore, when injured they experienced a sense of loss because they no longer enjoyed these benefits. A number of the participants feared they would lose their fitness levels because they could no longer train as they had previously. Two of the participants were concerned that they would put on weight. Although the participants who associated long-distance running with increased energy levels and regular sleeping patterns did not state that they no longer experienced these benefits because of their injuries, previously it has been noted that when runners are unable to run they often experience generalized fatigue and insomnia (Chan & Lai, 1990; Morgan, 1979; Sachs & Pargman, 1979).

Most of the participants (10) perceived the enjoyment they derived from long-distance running to be a benefit. A few of these participants, after initially becoming involved in the sport for other reasons, continued to run because of the enjoyment they

experienced. This suggests one's involvement in long-distance running as well as the popularity the sport enjoys may be dependent on the benefits experienced. The opportunity to form friendships and be with one's friends was also perceived by the majority of participants (9) to be a benefit of the sport. Once again, a few of these participants had originally started running because their friends were involved in the sport and experienced loss when they could no longer run with their friends when they were injured. Hardy and Crace (1993) stated that injured athletes may experience loneliness and isolation because as they can no longer train, they feel cut off from their teammates.

Some of the participants also believed that because of their involvement in long-distance running, they experienced the following benefits: the fulfillment of competitive needs; the opportunity to travel and visit new places; the chance to interact with nature; and time for spiritual needs. Once again, when these participants were injured and could not participate in the sport, they experienced a loss of these benefits. One participant, for example, stressed that he could no longer run the times he had before his injury and another shared that she had not felt the winter on her skin. Once again, it may be assumed that benefits such as these described above have helped popularize the sport.

All of the participants perceived that they experienced psychological benefits because of their participation in long-distance running. Firstly, they believed that running helped them to cope with stress, frustration and anger, and to overcome problems. The question as to whether runners run more than they usually do when they are experiencing more stress and/or higher levels of frustration and anger than normal may be posed. One participant, for instance, stated that when under much stress he would "take it out on the road." Another two participants used the phrase, "kill ... the road" when describing how running helped them to alleviate their frustration and anger. According to Blumenthal et al. (1985), some individuals may run in order to control their distress. Noakes (1992; 2001) stated that these runners may use running as a remedy to reduce their stress and may have no other stress management methods. However, although the majority of the participants acknowledged that at times they overtrained, they did not link their overtraining to stress-relief and/or an alleviation of frustration and anger. Secondly, the majority of participants also associated their involvement in long-distance running with an array of positive psychological benefits. The benefits they described are as follows: increased confidence; improved self-esteem; a sense of freedom; the opportunity to spend time alone; the chance to think; mental strength; enhanced creativity; relaxation; a sense of fulfillment; and a sense of self-identity. As stated previously, the psychological benefits listed above concur with those that have

emerged in previous studies (Chan & Lai, 1990; Hassmen & Blomstrand, 1991; Percy et al., 1981; Ungerleider et al., 1989; Ziegler, 1991).

Although 25% of the participants in a previous study (Symonds, 1995) stated that they had originally become involved in running in order to enjoy psychological benefits, the participants in the present study gave no indication that they had originally become involved in the sport for this reason. However, during the participants' interviews it was evident to the researcher that they continued to run so as to enjoy these benefits. Furthermore, a number of the participants described how because of injury they experienced a loss of these psychological benefits. One participant, for example, declared that whereas running helped him to cope with stress, not being able to run was adding to his stress. A second participant said that he was not himself if he was unable to run and a third compared her loss of not being able to run to the death of a person. Leddy et al. (1994) found that injured runners had significant lower levels of self-esteem following injury. Van Raalte and Brewer (2002) stated injury may be a threat to one basic identity. Furthermore, injury may lead to an attack on self-image, a loss of self-confidence and a loss of self-worth (McGowan et al., 1994; Petrie, 1993; Rotella & Heyman, 1986).

The participants in the present study were also asked to detail any disadvantages they perceived that they experienced because of their involvement in long-distance running. They all spent considerably less time describing these disadvantages than they had spent explaining the benefits they believed that they experienced. They placed the most weight on the possibility of sustaining an injury, the problems they experienced in their relationships because of their involvement in long-distance running and the negative effect the sport had on their social lives. It was the researcher's perception that the participants who spoke about injury being a disadvantage of the sport were linking it to the possibility and actual loss of the benefits they perceived they experienced. Furthermore, most of those who explained that the sport had a negative effect on their relationships appeared to experience much tension when they were unable to meet family obligations and fulfill expectations because of their running commitments. When the participants described the disadvantages running posed for their social lives, it seemed that they regarded this as a mere irritation and not a problem. The other disadvantages mentioned by either one or two participants are as follows: time spent away from home; the expense of the sport; a neglect of other interests; the safety of the sport; and the effect running had on one's physical appearance.

In conclusion, it was evident to the researcher that the participants may have been involved in long-distance running in order to enjoy the benefits they perceived their involvement in the sport afforded them. However, when the participants got injured,

they experienced loss because they no longer experienced these perceived benefits. Furthermore, the benefits they believed they experienced outweighed the disadvantages they associated with the sport. It appears from the participants' experiences that the benefits associated with long-distance running may have enhanced the popularity of the sport. In the next section, the participants' personal understanding of the nature of injury as well as their experiences of injury is discussed.

#### **5.4 Personal understanding of the nature of running injuries**

An examination of the participants' personal understanding of the nature of running injuries may lead to a better understanding of their experience of injuries. A study of their personal perceptions of what constitutes an injury may also shed light on their psychological responses to injury. Furthermore, this knowledge may assist those who are involved in the rehabilitation of injured runners.

Researchers in the field of sport psychology face a number of difficulties when conducting research on sport injuries. These difficulties include the various ways sport injury has been defined, ascertaining the role of pain in injury and determining the severity of injuries. In an attempt to overcome these difficulties and offer an alternative approach, the researcher in the present study asked the participants what their personal understanding of an injury was. It must be noted that they mainly deliberated on their subjective viewpoints and not on objective criteria.

As reported in the literature study, a number of researchers have attempted to quantify what determines if an athlete is injured. Brown (1971), Dunn et al. (2001), Maddison and Prapavessis (2005), and Rogers and Landers (2005) amongst others, all used the criterion of time lost from participation to decide whether the participants in their research were injured. Flint (1998) expressed the opinion that in order for a sport injury to be classified as such the athlete must seek medical advice. These criteria of establishing what should be categorized as an injury may be problematic: time lost cannot be determined scientifically and a medical practitioner's opinion may be subjective (Powell, 1991). Although the participants in the present study did not equate time lost from participation to injury, they feared that the time they lost because they were unable to run would have a detrimental effect on their fitness levels and subsequent performance. Furthermore, even though all the participants with the exception of one sought medical advice, it was noticeable that they did not need a medical practitioner to confirm whether they had sustained an injury. Rather, it was apparent that the participants consulted the medical profession for rehabilitation purposes.

The majority of the participants (10) in the present study perceived they were injured when they were unable to run or could not run with ease. A review of the individual

participants' perceptions shows that what they regarded as not being able to run or not being able to do so with ease was very subjective. One participant, for instance, stated that injury was anything that slowed him down while another only considered herself to be injured when she was a "cripple." Their criterion of equating injury with not being able to run with ease or being unable to run may be linked to the third and fourth stages of Noakes' (2001) four stages or grades of running injuries. According to Noakes (2001), a runner is able to run with a Grade I or Grade II injury as despite feeling pain hours after running or experiencing discomfort during a run respectively, the runner's training and racing performance is not limited. However, a Grade III injury is painful and limits training and racing, and a Grade IV injury is debilitating and consequently, prevents any running. A couple of the participants placed emphasis on Noakes' (2001) grades of injury; when deliberating on their personal understanding of a running injury, they gave an account of his categorization of the stages of injury.

Some of the participants also equated injury to pain. Once again, the participants' evaluation of pain differed and was very subjective. As delineated in the literature study, researchers experience difficulty in defining pain. The label, pain is employed to describe an array of unpleasant sensations; furthermore, a variety of words is used to explain these disagreeable sensations (Addison et al., 1998). In sporting terms, pain is also used to express a diversity of sensations ranging from delayed muscle soreness after a hard training session to that associated with injury. The participants in the present study also explained their perceptions about pain and injury in various ways. They described an injury as something that caused pain. They also likened pain to a sore muscle, referred to it as dreadful as it prevented one from running, and wondered how much pain runners could endure before they were unable to run. It is noteworthy that the participant who expressed the latter view refused to stop running even though he was unable to run without pain and medical practitioners had advised him to stop running for two years. Pike and Maguire (2003) emphasized the risks involved in disassociating from pain and subsequently, tolerating pain that should prohibit participation as it may exacerbate the possibility of serious injury. Heil (1993), however, expressed the opinion that in order to succeed, athletes have to tolerate pain. In order to achieve their goals, a few of the participants in the study were prepared to tolerate and/or mask their pain. One of the participants remembered that although experiencing much pain, she had been prepared to crawl to the finishing line of an important race. Another intended running the Comrades Marathon despite suffering a stress fracture, and a third recalled how he had trained for and run the Comrades on painkillers.

A number of the participants in the study also spoke about the minor aches and pains, commonly known as niggles, that they experienced. They did not regard niggles as injuries, but perceived them to a "runner's thing" that was part of the sport. They also



acknowledged that although they believed that most of the pains they experienced were unimportant, it may be necessary to slow down or have a day's rest when they experienced niggles. One of the participants stated that runners needed to differentiate between niggles and injuries. This view as well as that of another participant who stated that injury was "a whole problem for a runner to define" highlights the problems associated with defining the type and severity of injury. It appeared to the researcher that the participants did not identify with the view expressed by Young and Press (1994); namely, that a running injury is defined as a condition that forces a runner to reduce his/her mileage or training per week. Most of the participants believed that this definition more aptly describes niggles.

Besides Noakes (2001), other sport scientists have attempted to classify the type and severity of injury. Petrie (1993) made a distinction between three types of injury. The researcher is of the opinion that all the participants in the study could relate to Petrie's classification. Some of the participants believed that they had self-limiting injuries which prevented participation; one participant stated that there was no way he had been able to run with the injuries he had sustained. The majority of the participants (10) perceived their injuries to be painful, but believed they could still run with them. A number of these participants also identified with Petrie's third category; namely, they perceived their injuries to fall into a grey area because they did not know whether to run or not. On the contrary, one of the participants expressed the opinion that runners know if their injuries are serious. Most of the participants appeared to vacillate between the three categories proposed by Petrie. Applying Petrie's classification to the participants in the present study is based on their subjective ideas and not on objective criteria.

Flint (1998) made a distinction between microtrauma and macrotrauma injuries; commonly referred to as chronic and acute injuries respectively. Long-distance runners seldom suffer acute injuries, but an accumulation of seemingly negligible, gradual, repetitive damage causes them to sustain chronic injuries. One of the participants in the study resonated with this view when he stated that an injury happens before a runner becomes aware of it. The majority of the participants believed their injuries were chronic and acknowledged that their injuries were the result of overtraining.

The researcher is of the opinion that the participants' personal, subjective perceptions of injury as well as their opinions concerning whether they were injured or not enhances the quality of the study. The participants' personal perceptions of injury afforded the researcher a more comprehensive understanding of their experiences of and approach to injury; this is discussed in the following section.

## 5.5 Experience of injuries

One of the participants in the present study voiced the opinion that long-distance runners face a dilemma when they are injured. She thus expressed her view: "Can I run with this injury or is it going to damage it more ... or can I run through it?" It was apparent to the researcher that the participants in the present study were also confronted with the difficult decision of not knowing whether they could and/or should run with injury.

At the time of the interviews, the majority of participants (12) in the study acknowledged that they were running or had attempted to run with their present injuries. A further participant who declared that she had stopped running as a result of the injury she had suffered, had previously run with injury. The question as to why runners are willing to tolerate injury and run with pain may be posed. A number of studies have attempted to examine why runners are reluctant to stop running. Baekeland (1970) had to abandon a study to determine the effects runners encounter when unable to run for a period of time. Despite offering financial incentives to the runners, they refused to participate in the study because they did not want to stop running. Morgan (1979) reported that in an observation of eight injured runners, three continued to run. In the present study, a brief examination of the participants' experiences of injury may reveal some of the difficulties runners encounter when confronted with the decision to run with injury.

All the participants in the study, as stated previously, had goals in long-distance running that they wanted to achieve in long-distance running. Some of the participants were pursuing and training for specific goals when they got injured. One of these participants who was training for the Comrades Marathon carried on running with Achilles tendinosis for seven months despite been unable to put his foot down comfortably on waking each day. After resting for four weeks, he resumed training despite the fact that his injury was still troubling him. He wanted to train for the Comrades, but was unsure whether he would be able to run that "cruel distance" with his injury. A second participant, as described previously, declared that no one was going to stop him from running the Comrades for the tenth time despite suffering a stress fracture. He did not want to wait for another year to achieve his goal. A third, after resting for a brief period and then trying to run, decided to rest and go for treatment until he had recovered; however, he feared that his decision would have a negative effect on his preparation for the Comrades Marathon.

A couple of the participants who had almost recovered from their injuries after not being able to run for a few months voiced the concern that they were unsure if they were able to resume hard training yet, but feared that if they did not do so they would not achieve specific goals they had set for themselves. The one participant acknowledged that his

recovery was not going to be quick, but was categorical that he had to be ready for a particular event. The other participant explained that his situation was “tricky” as he would be unable to run if he trained hard, but emphasized that if he postponed his hard training he would not be ready to compete in the event.

The researcher sensed that the participants in the study desperately wanted to achieve their goals even though they were injured and experienced pain when they ran. However, it was also apparent that some of the participants feared they would not recover from their injuries and/or risk further injury if they continued to run. As noted previously, Heil (1993) stated that athletes have to tolerate pain if they wish to succeed whereas Pike and Maguire (2003) warned that tolerating pain may exacerbate the possibility of serious injury. The researcher believes that the participants in the study experienced conflict in that they wanted to achieve their goals, but feared their injuries would worsen. Shuer and Dietrich (1997) contended that besides risking further injury, injured athletes who continue to train may exacerbate their emotional distress by training in discomfort and pain. The participant who had run with injury previously declared that she no longer ran with injury because of all the negative experiences associated with it.

Pike and Maguire (2003) suggested that athletes often tolerate pain in order to maintain their athletic identity. Wiese-Bjornstal (1998) stated that injured athletes who have a strong athletic identity might perceive injury as being more disruptive than injured athletes whose athletic identity is not as strong. The researcher is of the opinion that a runner’s athletic identity may partially depend on the races he/she has run and/or is training to run. As stated previously, many South African runners tend to concentrate on the Comrades Marathon and the Two Oceans Marathon; thus, it appears that these races probably enjoy a higher status than most other races in the country. Thus, the participants in the study who had run the Comrades Marathon and the Two Oceans Ultra Marathon and/or who were training for them when they got injured might have also wanted to preserve their athletic identity and consequently, were willing to tolerate pain. Although one participant could not run as fast as he had prior to his injury, he continued to run with runners whom he coached. It appeared that when he helped others to achieve their goals, it helped him to compensate for his inability to run the times he wanted to run, and in so doing maintain his athletic identity.

During the study, it also became clear that the participants wanted to continue running with injury for reasons other than a realization of the goals they had set for themselves. Their choice to run with injury was linked to the benefits they perceived running afforded them. Heil (1993) also expressed the opinion that training with pain is easier to cope with than intense negative emotions such as tension, anxiety, depression and interpersonal discord that surface when athletes are unable to train. Blumenthal et al. (1985)

suggested that running may help individuals to regulate their emotions such as improving their feelings of self-worth or controlling their distress. According to Noakes (2001), runners may use running as an antidote to reduce their stress. However, in order to consider these viewpoints, the participants' psychological responses to injury have to be analyzed in depth.

## 5.6 Psychological responses to injury

Sport injuries not only affect athletes' physical functioning and concomitantly, sport's performance negatively (Brewer, 2001b), but may also adversely affect their psychological well-being (Lynch, 1988). An in-depth study of injured long-distance runners' psychological responses to injury may not only lead to a more comprehensive understanding of why they are inclined to run or attempt to run with injury, but may also assist those involved in the rehabilitation of injured runners. The participants in the present study all responded in various ways when they shared their thoughts about their injuries.

### 5.6.1 Denial

Some of the participants in the study found it difficult to admit that they were injured and they seemed to experience denial. In the context of the present study, denial may be described as a distortion, minimization, avoidance or blatant rejection of the obvious (Heil, 2000). In other words, it is the inability to accept the inevitable. One of the participants recalled that it was hard not to run and further explained, "I thought I could run as long as I could." A second participant acknowledged that she avoided thinking and talking about her injury because she feared that she was injured. Shuer and Dietrich (1997) found that 81% of the injured athletes in their study avoided thinking about their injuries so as not to upset themselves. According to Heil (2000), denial may surface as unacknowledged distress. He also stated that denial can be functional as it can enable athletes to remain positive and protect them from distressing thoughts and negative emotions (Heil, 1993). Certainly, a third participant in the present study convinced himself that because he had been able to run the Two Oceans Ultra Marathon with injury, he would be able to run the Comrades Marathon with it too. However, Heil (1993) warned that denial can be dysfunctional if it results in the athlete disregarding prescribed limits and rehabilitation. A fourth participant, for example, admitted that when he experienced pain he usually blocked it out and ran despite being advised to rest for two years.

Long-distance runners appear to find it difficult to accept injury and may tend to deny it for various reasons. Firstly, as examined in the previous section, they want to achieve their specific goals. Secondly, they fear the loss of benefits they perceive as a result of their involvement in the sport. Thirdly, in accordance with Heil's (1993) view, it may be

easier to run with injury than deal with the negative emotions athletes experience when they are unable to train.

### 5.6.2 Sense of loss

Hardy and Crace (1993) expressed the opinion that regardless of the type and severity of injury, injured athletes may perceive a sense of personal loss. During their interviews, it was evident to the researcher that all the participants experienced a sense of loss for a variety of reasons.

The participants experienced loss because they feared that they were losing their fitness, were unable to participate in races and could not run the times they had run previously. One of the participants related that losing his fitness was his greatest worry when he was injured. According to Lynch (1988), athletes experience both physical and emotional loss when injured. Evans and Hardy (1995) stated that the more athletes have invested emotionally in their sport, the more threatened they are likely to feel when injured. A second participant shared that her heart was sore because she was unable to run the Comrades Marathon. Furthermore, injury and performance are intricately linked (Cashmore, 2002). A third participant, for instance, stressed, "My times! I can't live out what I want to do." Cashmore added that many athletes' perceptions of self are based on physicality, and they depend on a unity of body and self to participate in their chosen sport. When they suffer injury, this unity is broken and consequently, they experience a sense of failure because their sense of wholeness is disrupted. The sense of loss that the participants in the present study experienced may have encompassed far more than a loss of fitness and form. Rather, long-distance running seemed to form an intrinsic part of who they were and thus, when they were unable to run their self-identity and self-worth appeared to be threatened. Van Raalte and Brewer (2002), as noted previously, stated that injury can be a threat to one's basic identity; the researcher believes that this may contribute to long-distance runners' inclination to run with injury.

The participants in the present study also described how because of injury they no longer enjoyed the benefits they perceived running afforded them. The benefits the participants associated with the sport were discussed thoroughly in an earlier section of this chapter. Consequently, it is suffice to state that the participants experienced loss because they no longer enjoyed the health, social and psychological benefits they believed they experienced as a result of their involvement in the sport. During their interviews, it was evident that the participants ran to enjoy these benefits. However, during the course of the study it appeared that they were reluctant to stop running when injured because they feared a loss of these benefits. Those involved in the rehabilitation of injured runners need to consider what mechanisms runners can use to cope with a loss of these benefits and/or offer them alternative ways to enjoy similar benefits. One of the

participants, for example, started to walk when she could no longer run and related that she loved it, found it refreshing and was considering pursuing it as a sport.

### 5.6.3 Negative emotions

Athletes are known to experience a period of emotional duress after suffering an injury (Brewer, 2001b). A number of studies have examined the effect injury has on the emotional well-being of the athlete. Studies have shown that injured athletes typically experience depression, anger, hostility, anxiety, tension, disgust, negative mood, confusion, fear, panic, frustration, discouragement and a loss of self-esteem (Acevedo et al., 1992; Brewer, 2001a; Brewer, 2001b; Callen, 1983; Chan and Grossman, 1988; Potgieter 1997; Quakenbush & Crossman, 1994). Some injured athletes may also believe they are failures because they perceive themselves as being responsible for their injuries (Heil, 2000). According to Hardy and Crace (1993), injured athletes may also experience separation, loneliness, isolation and a loss of independence. Wiese-Bjornstal et al. (1998) included the following emotional responses in their integrated model: fear of the unknown, tension, anger, depression, frustration, boredom and grief.

When the participants in the present study related their experience of injury, they all appeared to experience a number of emotions. The following emotions were highlighted: disappointment, frustration, confusion and uncertainty, apprehension, personal dissatisfaction, and anger.

The majority of the participants (10) experienced disappointment as a result of their injuries. Their disappointment was probably largely related to their sense of loss of not being able to achieve the goals they had set for themselves. Some of the participants attempted to cope with their disappointment by distancing themselves from the sport as well as from their friends with whom they ran. The researcher is of the opinion that as a result of their decision to distance themselves, the participants may have experienced isolation and loneliness; this concurs with the view expressed by Hardy and Crace (1993).

The majority of the participants (11) also experienced frustration as a result of their injury. Their frustration seemed to emanate from their perception that their recovery was too slow. One of the participants stated, "My first injury ... doesn't want to go away." This perception, in turn, was primarily linked to their desire to return to competition and achieve the goals they had set for themselves. A second participant thus voiced his frustration: "I'm supposed to be able to run now." However, their frustration may have also been related to their sense of loss of the benefits they perceived running afforded them.

Some of the participants appeared to experience uncertainty and confusion about their injury. In most instances, their uncertainty and confusion seemed to be connected to

their recovery and in particular, to their readiness to resume training so that they could achieve specific goals they had set for themselves. One participant, for example, wondered if the pain he was still feeling was psychosomatic and two were concerned whether they would be able to run the Comrades Marathon. Results from Quinn and Fallon's (1999) study showed that athletes' levels of confusion were high immediately after sustaining injury and during the course of rehabilitation, their levels of confidence increased. They asserted that medical practitioners should explain the nature of the injury and rehabilitation to injured athletes. According to Brewer (2001b), injuries may have a profound psychological effect on the athlete. Another participant believed the sport was good for her soul and thus, questioned the reason for injury. Once again, it is of the utmost importance that therapists understand how injured athletes perceive their injuries (Williams & Roepke, 1993).

Some of the participants were apprehensive about both the short-term and long-term consequences of their injury. As noted previously, a few of the participants feared they were losing their fitness and would not be able to realize their short-term goals of running various races and in particular, the Comrades Marathon. Although one of the participants had started training again, he doubted whether he would ever be able to run long-distances again. Crossman et al. (1995) found that during rehabilitation and on their return to competition athletes experienced fear.

Some of the participants also appeared to experience feelings of personal dissatisfaction because they were injured. One of the participants referred to herself as stupid for getting injured. According to Heil (2000), a minority of athletes believe they are failures because they perceive they are responsible for their injury. Another participant reflected that because of her injury, she did not "like her (my) life" and a third participant believed that it was not a pleasure to be with him. Rotella and Heyman (1986) stated that an attack on self-image may be the cause of irrational thoughts which may, in turn, lead to the athlete drawing unwarranted conclusions.

A couple of the participants experienced anger because of their injury. Albinson and Petrie (2003) found that the players in their study who were still injured after 28 days coped with their disappointment by isolating themselves and taking their anger out on others. One of the participants in the present study, who appeared to be disappointed because of his injury, said he had isolated himself from his running friends and acquaintances, and moreover, he had considered buying a punching bag that he could "just hit and lash out at."

Brewer (2001a; 2001b) observed that studies have advised that 5 – 24% of injured athletes suffer clinical levels of emotional disturbance. Smith and Milliner (1994), for example,

noted that some injured athletes have become so depressed that they have attempted suicide. Although the emotional distress experienced by the majority of injured athletes may be subclinical, Arvinen-Barrow et al. (2007) reported that 99.7% of the physiotherapists in their study perceived that 83% of the time all athletes were psychologically affected by their injuries. Even though it appeared that the participants in the present study did not experience clinical levels of emotional distress, they seemed to be emotionally affected because of their injury. It is beneficial for injured athletes to realize that it is normal if they experience distressing thoughts and emotions (Crossman et al., 1995; Noakes, 2001; Williams & Roepke, 1993).

#### 5.6.4 Sense of urgency

Some of the participants experienced a sense of urgency with regard to their recovery. This was primarily related to their desire to resume training so that they could achieve the specific goals they had set for themselves. They expressed their sense of urgency unequivocally; one declared, "I want to finish this damn race" and another uttered, "I've got to fix it." The sense of urgency that the participants experienced appeared to be connected to their feelings of frustration that seemed to emanate because they perceived their recovery was too slow.

#### 5.6.5 Eventual acceptance

Towards the end of their interviews, more than half of the participants (8) gave the impression that they eventually accepted that they were injured. Two of the participants stated that it did not help them not to accept that they were injured; one stated, "I've made peace with the fact that I can't run at this stage. It doesn't help to fight against it." Several researchers have observed that acceptance facilitates the recovery process (Brewer, 2001a; Heil, 1993; Potgieter, 1992; Silva & Hardy, 1991). Noakes (1992; 2001) asserted that once injured runners reach the final stage of acceptance, they are likely to have recovered from the injury. It is noteworthy that not all the participants in the present study who gave the impression that they had accepted injury, had recovered or almost recovered from their injury.

#### 5.6.6 Theoretical models

Udry and Andersen (2002) stated that an understanding of athletes' complex psychological responses from the onset of injury until full recovery has posed a challenge to researchers. Consequently, in an effort to explain injured athletes' psychological responses to injury, researchers have developed two broad categories of theoretical models; namely, stage models and cognitive appraisal models. When considering the present study, the question as to whether these models help explain the participants' psychological response to injury may be posed. This is thus briefly examined.



#### 5.6.6.1 Stage models

Kubler-Ross' (1969) stage model that comprises a sequence of five stages that terminally ill patients are confronted with has been applied to the field of sport injury by several researchers such as Lynch (1988) and Rotella and Heymen (1986). When Noakes (1992; 2001) adapted Kubler-Ross' model to describe long-distance runners' reactions to injury, he omitted the stage of bargaining. Findings in the present study reveal that only some of the participants experienced denial, anger, depression and acceptance, and none of them gave any indication that they had started bargaining at any stage of their injury. Results of research conducted by Udry et al. (1997) showed minimal support for the denial stage and no support for the bargaining stage. Quackenbush and Crossman (1994) found that the injured athletes in their study did not experience denial. Thus, it may be difficult to adapt Kubler-Ross' theory to sport injury because not all injured athletes appear to experience the emotions described in the model.

On the other hand, there may be some value in attempting to apply Kubler-Ross' stage theory as well as similar stage models such as the two stage model proposed by McDonald and Hardy (1990) to the field of sport injuries. According to Brewer (2001b), the fundamental assumption of the adaptation is that injury epitomizes a facet of a loss of self, and athletes' responses to injury are similar to those who are suffering from grief (Brewer, 2001a). The participants in the present study, as discussed previously, all experienced a sense of loss. As noted previously, injury is a threat to one's basic identity (Van Raalte & Brewer, 2002). Stage models may help clarify the emotional turmoil that injured long-distance runners experience as they deal with their loss.

However, stage models presume that an athlete's psychological response to injury follows a predictable sequence and they do not take individual differences into account. The researcher's views concur with those expressed by Petrie (1993) who stated that an athlete's response to injury is a personal thing. Furthermore, athletes do not necessarily respond in a stereotypic pattern (Brewer, 2001b; Quinn & Fallon, 1999). An examination of the findings of the present study reveals that although many of the participants' experience of and psychological responses to their injury were similar, they also differed. Two of the participants, for instance, were both training for the Comrades Marathon when they got injured. While both experienced a sense of loss and were apprehensive, one also appeared to be disappointed, frustrated and uncertain before showing signs of acceptance while the other experienced denial as well as a sense of urgency. This points to individual difference and may be used as an argument against stage models.

Some proponents of stage models such as Heil (1993; 2000) have pointed out that injured athletes can vacillate between stages in a cyclical process. During the study, it also

seemed as though some of the participants tended to move back and forth between the different emotions they experienced. One participant, for example, appeared to vacillate between his sense of urgency to recover so that he could compete in the Ironman and his acceptance of the possibility that he might not be able to run long distances again. This lends some support to the affective cycle of injury proposed by Heil who alleged that his model facilitates an awareness and understanding of the challenges of injury and rehabilitation.

#### 5.6.6.2 Cognitive appraisal models

The participants in the present study, as noted previously, responded to injury in similar yet different ways. Brewer (1994) stated that cognitive appraisal models were developed to account for individual differences stage models are unable to explain. Thus, a consideration of the integrated model (Wiese-Bjornstal et al., 1998) which is regarded as the most evolved and well-developed cognitive appraisal model may explain the participants' differing responses to injury (Brewer, 2001b; Udry & Andersen, 2002).

An examination of the transcriptions of the participants' interviews suggests that their psychological responses as well as behavioural responses to their particular injury were influenced by their cognitive interpretations of the injury. Furthermore, the participants' cognitive appraisals were, as postulated by the integrated model, affected by both their personal and situational factors. It is also noteworthy that behaviours and emotions, on the other hand, may have an effect on cognitive appraisals (Wiese-Bjornstal et al., 1998). In order to illustrate this interplay of variables, a few of the participants' individual cognitive appraisals of their injury, and psychological and behavioural responses to it are briefly considered.

One of the participants who sustained a serious injury while training to run his tenth Comrades Marathon and accordingly, be awarded his green number was unsure whether time constraints due to family commitments and his perception that it was more difficult to get fit each year would allow him to train for the race the following year. Consequently, he had difficulty in accepting he was injured, experienced a sense of urgency, but was determined to run the race. Despite a lack of confidence, he relied on a cross-training program that did not involve running as well as his years of running experience to complete the race in the allotted time.

A second participant who was also training for the Comrades Marathon when he suffered his injury experienced a sense of loss and subsequently, experienced disappointment, frustration, uncertainty and apprehension because he feared becoming unfit and being unable to run the race. Research conducted by Bianco et al. (1999) found that skiers' experience of disappointment and loss was magnified during an

important competition such as the Olympics. However, the participant in the present study decided to rest and showed signs of acceptance when he convinced himself that it was more advantageous to be undertrained than overtrained for the race.

A third participant who had been injured for two years experienced frustration and anger in his difficulty in accepting that he was injured. His reluctance to accept his injury seemed to be ignited by his constant questioning as to why he was injured and his perception that it was unfair. He convinced himself that he could still run with injury even though his enjoyment of the sport was compromised, he acknowledged that injury had a negative effect on his relationships and he had been advised by medical practitioners to rest for two years.

In conclusion, the participants in the study responded in various ways to injury. Utilizing both stage models of grief and cognitive appraisal models may shed light on runners' psychological responses to injury. Furthermore, successful rehabilitation of injury is unlikely without the knowledge of the possible causes of the injury. In the next section, the participants' perceived causes of their injury are discussed.

## 5.7 Perceived causes of injury

Wiese-Bjornstal and colleagues stated that the factors that may make athletes more vulnerable to injury may also play a role in their adjustment to injury (Udry & Andersen, 2002). The researcher also thinks that knowing what the causes of a long-distance running injury are may lead to a more comprehensive understanding of injured runners' psychological responses to injury. Consequently, an examination of the causes of injury is invaluable to any study on sport injury. In the present study, the participants were asked what they perceived had caused their injury. In some instances, the participants' perceptions concerning the causes of their injury were confirmed by medical practitioners. However, regardless of whether or not their perceptions were confirmed by the medical profession, these perceptions influenced their psychological and behavioural responses to their injury. Furthermore, the participants' perceived causes of injury were of a biological, psychological and social nature.

Some of the participants expressed the opinion that their injuries were a result of overtraining. Research has shown that the majority of injuries sustained in long-distance running are overuse in nature (Bennell & Crossley, 1996). One of the participants stated that because of overtraining runners spend their time "wrestling" with injuries. Overtraining which is characterized by physical symptoms such as chronic and persistent muscle soreness and fatigue (Silva & Hardy, 1991) is often referred to as the plods and super plods (Noakes & Granger, 1995). Chronic injuries are more likely to occur when runners have reached their breakdown point; this usually happens when runners train

harder than their genetic limitations allow (Noakes, 1985; Noakes, 2001). A second participant alluded to this opinion when he stated, "Maybe my body couldn't just take this anymore." Kerr and Goss (1996) concluded their study on the effects of a stress management program on injury by suggesting that overuse and fatigue might make a gymnast more susceptible to injury than stress. Participants in a study conducted by Johnson (2011) perceived psycho-physiological stress such as feeling drained of energy to be a cause of injury. It was apparent during the present study that the participants who overtrained did so in order to achieve their goals and as noted previously, were prepared to tolerate pain in order to do so. Furthermore, it appears that runners may often put pressure on themselves to do the same volumes of training as their running friends. A third participant, when unable to run, lamented that his friends were doing a lot of mileage while all he could do was "plod along." The results of the study suggest that runners are inclined to be obsessed by their logbooks in which they record their training. A fourth participant who declared, "You must for that logbook" indicates that runners may be inclined to think that the more they record in their logbooks the better prepared they will be to run races. Noakes (1992; 2001) contended that in order to achieve their ambitions, once-injured runners will eventually train more than their adequacies allow. However, he further stated that they experience tension because although they want to achieve their goals, they recognize their genetic limitations. Altshul (1981) referred to this as the stage of renewed neurotic disequilibrium.

A couple of the participants also attributed their injuries to racing too hard. Because tense and fatigued muscles have poor shock-absorbing qualities, the risk of injury is increased (Williams and Andersen, 1998). It appears that runners may race too hard in order to achieve their goals. One participant, for instance, stated that he had run exceptionally hard to overtake someone. Runners may also be inclined to run too hard in races because of their competitive needs; a second participant related that in races he tended to challenge runners. A few participants expressed the opinion that they had sustained their injuries because of a lack of preparation. When he shared his experience of injury, a third participant alluded to the fact that runners may run too hard in races despite a lack of preparation. Once again, it may be speculated that this occurs because of their need to achieve the goals they have set for themselves.

Some of the participants believed that their injuries were due to biomechanical problems and muscle imbalances as well as a lack of stretching. One of the participants, for example, stated that weak lower muscles and hip abductors which had caused his injury were the result of hard training. The reason runners tend to train too much has been discussed in depth. Most of the participants (8) considered that wearing incorrect or old shoes may have contributed to their injuries; one participant referred to her shoes as a nightmare pair of shoes. However, it must be noted that when some of these

participants started to run in other shoes, they did not recover from their injuries. It may be necessary for runners to find a cause for their injuries as it may help them to cope.

A few of the participants attributed their injuries to previous injuries they had suffered. Age and the number of years of involvement in the sport were also perceived by some of the participants to be a cause of their injuries. Research conducted by Van Mechelen et al. (1996) showed that the strongest independent predictors for sport injuries were previous injury and exposure time. Results from a study conducted by Steffen et al. (2009) showed that the risk of sustaining an injury was twice as high for those who had sustained previous injuries than for those who had no history of injuries. It is noteworthy that the participants who perceived that their injuries may have been caused by previous injuries were referring to injuries that were not related to long-distance running; one of the participants, for instance, blamed her injury on a fall off a bicycle when she was a child.

During their interviews, the participants in the present study were specifically asked if they perceived stress to be a cause of their injuries. Only three of the participants perceived a link between stress and their injuries. This may appear to contradict the findings of research that has been conducted to determine if there is a link between stress and sport injury. Most of this research has tested one or more components of Andersen and Williams' (1988) model of stress and athletic injury. According to Williams (2001), the majority of these studies have found a positive relationship between life stress and athletic injury. Recent studies that have confirmed that this positive relationship exists include those of Fawcner et al. (1999), Dunn et al. (2001) and Steffen et al. (2009).

The fact that only three participants in the present study perceived stress to be a cause of their injuries does not necessarily contradict the findings of the research referred to in the preceding paragraph. Firstly, the participants were asked about their personal perceptions regarding the causes of their injury whereas in the studies that were discussed in the literature chapter of this thesis, life stress was assessed by using diverse methods (Williams, 1999) such as employing scales such as SARRS (Bramwell et al., 1975) and the ALES (Passer & Seese, 1983) as well as by measuring peripheral vision (Rogers & Landers, 2005). Secondly, and possibly more significantly, Williams and Andersen (1998) acknowledged that their stress-athletic injury model was a better predictor of acute injuries than chronic injuries. The fact that long-distance runners generally sustain chronic injuries because of their inclination to train too much has been examined previously in this chapter.

Although all the participants deliberated on a number of factors they perceived had caused their injuries, some of them also said that they found it difficult to make sense of

their injuries. One participant's difficulty in making sense of her injury was captured when she declared, "So actually I really don't know." The researcher is of the view that this difficulty highlights the disrupting effects injury may have on a long-distance runner's life.

In conclusion, although the participants attributed their injuries mainly to physical factors such as overtraining, their perceptions had social as well as psychological roots and consequences. Devanter (2011) stated that although injury is largely a physical phenomenon, it is dependent on a number of variables such as type of sport, level of participation, training and competition. The next section examines the participants' approach to rehabilitation.

## 5.8 Approach to rehabilitation

An examination of injured long-distance runners' perceptions regarding their rehabilitation may assist those who are involved in their rehabilitation. It is customary for medical practitioners as well as sport coaches to concentrate on the physical aspects of sport injury rehabilitation (Brewer et al., 2002). However, not all athletes who suffer similar injuries react emotionally and/or respond to rehabilitation in the same way (Flint, 1998). Research has shown that physiotherapists would welcome more knowledge on psychological interventions that may assist injured athletes (Evans et al., 2000; Larson et al., 1996). An examination of the participants' perceptions of rehabilitation and attitudes towards those in the medical profession reveals that an understanding of the psychological responses of injured runners may be invaluable to those involved in their rehabilitation programs; this concurs with the view expressed by Williams and Roepke (1993). In this regard, a biopsychosocial model of sport injury rehabilitation which was proposed by Brewer et al. (2002) may aid medical practitioners involved in sport rehabilitation to view injury holistically.

Almost half of the participants in the study were happy with the treatment they received from those whom they had consulted in the medical profession. Predictably, these participants expressed their trust in most medical practitioners. Furthermore, they gave the impression that they believed the rehabilitation they received was beneficial. Rock and Jones (2002) found that athletes who believe in the efficacy of rehabilitation were more inclined to adhere to the program. The participants in the present study displayed a number of the characteristics identified by physiotherapists in a study conducted by Arvinen-Barrow et al. (2007) of injured athletes who cope with injury successfully. One participant, for example, displayed a positive and proactive attitude towards injury, and complied with the treatment program by following his physiotherapist's advice and going to her once a month for, what he referred to as, a check-up. It was evident that a second participant had an understanding of injury, realistic expectations and tried to exercise patience when he gave a detailed explanation of his injury and acknowledged that he had to be prepared to take it slowly if he was to recover. A third participant

revealed his confidence and trust in rehabilitation when he stated that he had a high regard for his physiotherapist and always consulted her when he was injured. Francis et al. (2000) also found that an athlete's willingness to listen to the physiotherapist was perceived by physiotherapists as being important for successful rehabilitation. Similarly, physiotherapists in the Gordon et al. (1991) study believed that athletes who had a positive psychological response to injury listened ably to advice and asked questions about rehabilitation. The researcher does not disregard the findings of the studies referred to above, but considers that it may be easy for injured runners to display the characteristics outlined above towards injury if they perceive that they are recovering.

A few of the participants in the study detailed their unsuccessful attempts to recover from their injuries. They gave the impression that they were dissatisfied with their rehabilitation and did not trust the medical practitioners they had consulted. One of the participants, for example, declared that the medical practitioners she had consulted were grasping in the dark and another said, "Everyone has an opinion and they can just tap you on the shoe and show you what they've done." Some of the results of the present study contradict the findings of the Arvinen- Barrow et al. study (2007). Both the participants in the present study who were satisfied as well as those who were dissatisfied with the medical practitioners from whom they had sought help and with the treatment they received displayed the characteristics identified by physiotherapists in their study of athletes who were not coping with injury; namely, a negative attitude towards injury, exercise addiction, unrealistic goals, impatience, and stress, anger, anxiety and depression. The results of the present study are also contrary to the findings of research conducted by Moss-Morris et al. (2002) which revealed that athletes who believe their injuries are more problematic experience greater emotional disturbances than that of athletes who have more positive perceptions of their injuries.

A few of the participants chose to treat their injuries themselves. According to Noakes (2001), injured runners can be divided into two groups: firstly, those who want to be in control of their treatment and thus, only require simple advice and secondly, those who need exact and detailed advice from the medical profession. The participants who chose to treat their injuries themselves did not fit into Noakes' first category. Their decision to follow their own treatment program also had nothing to do with their trust or lack thereof in the medical profession. Rather, they chose to follow their own treatment programs because of personal circumstances such as limited medical aid cover and work commitments. However, one of the participants who sought treatment, appeared to trust his doctor and followed her advice gave the impression that he nevertheless wanted to take charge of his own rehabilitation. The findings of studies conducted by Brewer et al. (2000) and Laubach et al. (1996) emphasize the importance of personal control in the rehabilitation of sport injury.

The integrated model (Wiese-Bjornstal et al., 1998) proposes that athletes' cognitive appraisals of injury and subsequent emotional and behavioural responses may have implications for both their physical and psychological recovery outcomes. Their cognitive appraisals may, in turn, be mediated by both situational and personal factors. Bianco et al. (1999) found that skiers who suffered similar injuries to skiers who had recovered from injury were more confident than those who suffered less common injuries. Similarly, one of the participants in the present study said that the knowledge that other runners suffer injuries gave him hope. Athletes may also experience anxiety at the thought of possibly not achieving the levels of performance they achieved before suffering injury (Morrey et al., 1999; Podlog & Eklund, 2007; Vergeer, 2006; Wiese & Weiss, 1987). The participant referred to above, for instance, also feared that he would be unable to run long distances again. His differing thoughts are indicative of how injured runners' emotions may fluctuate during rehabilitation. Research conducted by Dawes and Roach (1997) and Morrey et al. supports this assertion. Francis et al. (2000) reported that athletes believed that knowing how long their recovery would take helped them in the healing process. A second participant in the study who had been injured for two years was advised by the medical profession to stop running for two years, but he refused to do so because they could not guarantee that he would recover from his injury.

The participants in the study were also asked what measures they believed would facilitate their recovery. The majority of the participants perceived that rest and/or exercising discipline by starting to train slowly when they had recovered was essential for their recovery. It is noteworthy that the participant who refused to rest despite being advised to do so by the medical profession acknowledged that it would facilitate his recovery. It is apparent that although runners experience a sense of loss when they are injured because they are unable to run and also have a tendency to run with injury, they admit that rest is of utmost importance. Thus, there appears to be a contradiction between continuing to run and knowing what they should be doing. Some of the participants thought that strengthening exercises and changing their training methods would help them to overcome their injury and reduce the risk of sustaining further injury. The researcher believes that treating the cause of the injury may not only help injured runners physically, but emotionally as well. A small number of the participants also perceived that going to physiotherapy regularly would assist them in their recovery; thus depicting their trust in the medical fraternity. Another participant whose injury had not improved expressed the view that it would help her if she sought advice from one medical practitioner instead of becoming confused by the opinions of a number of them as she had. Although the participants did not state it directly, it appeared that their tendency to go to more than one medical practitioner might have been indicative of their urgency to recover so that they could resume running. The injured rugby player in Vergeer's (2006) study consulted a number of medical practitioners when he faced



disconcerting information in order to find out more or better information. It is possible that injured runners may go to a number of practitioners in the medical field until they find a practitioner who understands what running means to them. Research conducted by Evans et al. (2000) revealed that injured athletes perceived emotional support to be important when they experienced setbacks and progress was slow.

Injury can befall every athlete (Quinn & Fallon, 1999; Udry & Andersen, 2002). More specifically, opinions regarding the potential risk of sustaining a running injury have been noted in the literature overview of this thesis (Fordyce & Renssen, 2002; Noakes, 2001; Noakes & Granger, 1990; Taunton et al., 2002; Young & Press, 1994). Junge's (2000) model of the influence of psychological factors on sport injury proposes that by assisting athletes with their emotional states and coping resources, injury may be prevented. Research has revealed that training in specific skills such as somatic relaxation and stress management may help reduce injury (Johnson et al., 2005; Kerr & Goss, 1996; Maddison & Prapavessis, 2005). Although the focus of the latter studies was on acute injuries, it is possible that similar intervention programs can be implemented in the training programs of runners as well in rehabilitation centres to help prevent injury in long-distance running. On the basis of their findings, Martin et al. (1995) suggested that runners who direct attention inwards and are thus, more sensitive to muscular tension may be less susceptible to injury. This concurs with Schomer's (1990) study that found that consistent body monitoring which is characteristic of associative thinking was responsible for the minimization of overuse injuries. The researcher suggests that such skills could be included in intervention programs for runners.

In this section, the participants' approach to rehabilitation was examined. As noted, cognizance of long-distance runners' perceptions regarding their rehabilitation may be beneficial to medical professionals involved in it. Furthermore, it may be beneficial if training programs and rehabilitation programs also included interventions that could help reduce injury. In the next section, the coping mechanisms the participants employed to help them cope with their injuries is considered.

## 5.9 Coping mechanisms

A consideration of what mechanisms the participants employed to help them cope with injury as well as the support that significant people in their lives gave them because they were injured may help those involved in the rehabilitation of injured runners. As stated previously, runners experience a sense of loss when they are injured. Coping mechanisms may help runners to come to terms with their loss and subsequently, alleviate some of the negative emotions such as disappointment, frustration, confusion and uncertainty, apprehension, personal dissatisfaction and anger that they experience.

Almost half of the participants said that cross-training helped them to cope with their injuries. One of the participants, for example, said that since being able to go to gym, swim and do spinning, he was coping better than he had when he was not allowed to exercise after his operation. The participants, as examined previously, all experienced a sense of loss for various reasons because they were injured. Doing other forms of physical exercise might have helped them to cope with their fear of becoming unfit; in other words, they might have perceived that by cross-training they would not lose their fitness completely. A second participant related that she tried to compensate by cycling and swimming. A third participant found that she could walk fast and that she loved it. Cross-training might have allowed them to experience some of the other benefits they perceived as a result of their involvement in long-distance running.

A few of the participants found that they were able to cope with their injuries by getting involved in club activities, coaching other runners and keeping in contact with their running friends. One of the losses the participants experienced because of injury was the social benefits they perceived the sport afforded them. Remaining involved in the sport might have offered them some comfort and support. One of the participants explained that even though he was unable to run, running was about friendship and thus, he enjoyed watching his friends run; however, he added that it would have been more enjoyable to run. Andersen and Williams (1988) stated that fostering team cohesiveness and a sense of belonging are examples of interventions that may alter an athlete's cognitive appraisal of a stressful event and subsequently, reduce the risk of injury. The researcher believes that these interventions may also help reduce the sense of loss injured runners experience and hence, help their recovery. On the contrary, a couple of the participants believed that by distancing themselves from the sport as well as the friends with whom they ran helped them to cope with their injury. Carson and Polman (2010) found that avoidance coping such as getting involved in other aspects of the sport, avoiding contact with other people, denial and becoming engrossed in other activities were beneficial during rehabilitation.

Some of the participants coped with their injuries through rationalization. One of the participants, for example, reasoned that in order to complete his tenth Comrades Marathon, he only had to run the race once. Andersen and Williams (1988) also stated that techniques that eradicate negative and irrational thought patterns may also alter the cognitive appraisal of a stressful event and hence, reduce the likelihood of injury. Researchers such as Junge (2000), Potgieter (1992) and Sachs et al. (1993) have suggested athletes need coping resources so that they will be able to deal with stress and thus, prevent injury. As noted in the previous paragraph, techniques that make runners less susceptible to injury may also assist them in their recovery process when they are injured.

During their interviews, the participants also spoke about their support systems. Williams (2001) stated that although what is regarded as social support and how to measure it is unclear, it is mainly associated with the presence of significant people; those people whom an individual values and on whose care the individual can rely.

Some of the participants believed that the significant people in their lives gave them the support they needed. They mentioned their wives and running friends and one participant also mentioned her coach. According to Sachs et al. (1993), because coaches are in regular contact with their athletes it is imperative that they are involved in helping athletes deal with stress. Thus, it may be beneficial for coaches to be involved in their injured runners' rehabilitation in order to offer them the support they need. Research conducted by Woodman and Hardy (2001) indicated that coaches did not practise psychological skills. Accordingly, it may be advantageous for coaches to attend courses in sport psychology so that they understand the psychological needs of their runners.

Some of the participants did not perceive support from the significant people in their lives. One participant's husband did not even know that she was injured while another participant related that when she told her friends she was injured, they did not even ask her what she had hurt. Research conducted by Green and Weinberg (2001), revealed that injured athletes who were more content with their social support networks displayed less mood disturbance than those who were not content. Manuel et al. (2002) found that increased social support was linked to decreased depression in injured athletes. In the present study, there was no indication that those who did not perceive support from significant people experienced more negative emotions than those who did. Because of the small sample, the researcher could not determine the intensity of the participants' negative emotions.

The majority of the participants (12) also deliberated on how they reacted to advice other runners offered them. Most of these participants (8) did not listen to this advice. One participant remarked, "They talk so much rubbish." A further two participants believed they had more knowledge about running than other runners and hence, did not listen to any advice from them. On the contrary, a couple of runners valued the advice given to them; one explained that older runners had experience. Finally, a couple of runners listened to some of the advice, but rejected other advice offered to them by other runners. As discussed previously, runners may become uncertain and confused when they are injured.

This section considered the different coping mechanisms the participants employed to help them cope with their injury. Furthermore, the support the participants perceived they experienced from the significant people in their lives was also discussed. A consideration of a runner's personality is important to facilitate an understanding of his/her experience of injury. In the present study, the preferences the participants exercised as measured by the MBTI was determined; a discussion thereof follows.

## 5.10 Results from the MBTI

In order to fully comprehend the psychosocial factors involved in injuries sustained in long-distance running and moreover, develop a biopsychosocial theoretical model to help explain the phenomenon of injury sustained in long-distance running, a consideration of personality is of paramount importance.

Only a few identified studies have examined the role personality plays in injury. Early studies used the 16PF (Jackson et al., 1978; Valliant, 1980; Valliant 1981). Subsequently, studies were conducted on the personality factors included in Andersen and Williams' (1988) stress-athletic injury model; namely, hardiness, locus of control, sense of coherence, competitive trait anxiety and achievement motivation. According to Udry & Andersen (2002), most of the studies conducted on these variables have yielded mixed results. The identified studies in the literature study of this thesis depict the roles Type A and Type B (Gill et al., 1995), the estimation and overestimation of ability (Kontos, 2004), and trait anxiety, locus of control and self-concept (Kerr & Minden, 1988) play in an athlete's susceptibility to injury.

No identified studies on psychosocial factors involved in sport injury have used the MBTI. The researcher decided to use the MBTI to explore if the preferences the participants exercised and their subsequent preference type played a role in their experience of injury.

Results showed that some (5) of the participants had an ISTJ preference and a few (3) had an ESTJ preference. A couple of the participants had an ENFJ preference and further two had an ENTP preference. Of the remaining participants, one each had an INFJ preference, an INTP preference and an ESFJ preference. The participants all exhibited many similar behaviours and attitudes associated with people who have their particular preference type. Some of these characteristics appeared to influence the manner in which they trained and to a lesser extent, the way they experienced injury and approached rehabilitation; these attributes are thus briefly examined.

Those who had an ISTJ preference followed a structured training program and worked in an organized, steady and orderly manner in order to achieve their goals. In doing so,

they relied on experience, were realistic and practical. They also seemed to rely on the same training program they had been using for many years. They followed their rehabilitation program conscientiously. Characteristic of those who have an ISTJ preference, they preferred being alone. They all exhibited a strong sense of responsibility to the significant people in their lives.

The participants who had an ESTJ preference also followed a structured training program; they were organized, systematic and worked steadily and with determination to achieve their goals. They valued competence and productivity, and were results-orientated, but were also rigid, dogmatic, critical and intolerant of incompetence. These participants experienced disappointment because of their injuries.

Although the participant who an ESFJ preference said that he followed a semi-structured training program, when he sustained his injury he was concerned because of the lack of order, structure and stability in his training program. Furthermore, he was organized and planned his time carefully in order to achieve his goals. He followed his physiotherapist's advice and was able to focus on the present during his rehabilitation.

The two participants who had an ENFJ preference enjoyed variety and change, and consequently, included it in their training programs. Furthermore, they appeared to enjoy new challenges. Both of these participants experienced uncertainty as a result of their injuries. They were very critical of medical practitioners; because of a lack of medical aid cover, neither of them had sought help from anyone involved in the medical profession when they got injured.

The participant who had an INFJ preference included variety into her training program. Although she trained in a group, she preferred training alone and often ran off alone while training with others; during this time she was able to be creative. She seemed to be critical when she referred to the medical practitioners from whom she had sought help. She became more reserved, introspective and self-sufficient because of her injury. According to Noakes (2001), quiet introverted runners become more even more so when injured.

The couple of participants who had an ENTP preference also enjoyed new challenges. They were intolerant of incompetence and were very critical; one was critical of the medical practitioners who had been unable to help her with her injury. The other participant was able to see connections that were not apparent to others and appeared to have intuitive insight. She believed that one of the causes of her injury was stress.

The participant who had an INTP preference was results-orientated, competitive and emphasized proficiency. He was analytical, logical and objective, and developed theories; these attributes were evident when he explained his perception about the causes of his injury. He tended to become arrogant and critical, especially when he referred to other runners who had tried to give him advice.

Although the present study employed a mixed methods research design with the purpose of expansion, most of the study was conducted within the qualitative paradigm. It is very difficult to draw definite conclusions about the MBTI because of the small sample. However, an examination of the sample reveals that there was a preponderance of Sensing (9), Thinking (11) and Judging (12) types. This is reflected in Table 5.1. The number of participants who experienced the particular emotion is indicated in the relevant cell.

Psychological responses	E (7)	I (8)	S (9)	N (6)	T (11)	F (4)	J (12)	P (3)
Denial (5)	3	2	4	1	4	1	5	0
Sense of loss (15)	8	7	9	6	11	4	12	3
Disappointment (11)	7	4	6	5	8	3	8	3
Frustration (10)	7	3	5	5	6	4	8	2
Confusion & uncertainty (6)	2	4	3	3	3	3	5	1
Apprehension (5)	3	2	5	0	4	1	5	0
Personal dissatisfaction (5)	5	0	3	2	3	2	2	5
Anger (2)	1	1	0	2	1	1	1	1
Sense of Urgency (5)	1	4	3	2	5	0	3	2
Eventual acceptance (8)	3	5	7	1	1	7	7	1

Table 5.1 – Psychological responses of MBTI preferences

Nine of the participants were Sensing types. People who have a Sensing preference are known to like facts, and are realistic and practical. Furthermore, they work steadily, give attention to detail and follow a procedure when working (Bayne, 1995). In their quest for enjoyment they are very observant, especially of the external environment. They are known to depend upon their physical surroundings (Briggs-Myers & Myers, 1980). Sensing types are also present-orientated and trust experience (Myers et al., 1993).

The manner in which the participants who were Sensing types responded to injury as well as the subsequent emotions they appeared to experience may be linked to the attributes that Sensing types are known to have. When they spoke about the benefits that they perceived running afforded them, most of them spoke about the enjoyment they derived from being fit as well as from the friendships they had made because of the sport. The loss all of the participants who had a Sensing preference experienced was partly due to their loss of enjoyment. They also experienced loss because injury had disrupted their training plans and thus, they were unable to follow their accustomed

procedures. A number of these participants also experienced disappointment, frustration and apprehension; once again, these emotions can be attributed to their loss of perceived benefits as well as having their training programs thwarted. The majority of the participants (7) who were Sensing types also eventually accepted that they were injured; this may be due to the fact that Sensing types are known to be present-orientated.

Eleven of the participants had a Thinking preference. Those who give preference to thinking are logical and analytical (Bayne, 1995). They are able to organize facts and ideas into a logical sequence (Briggs-Myers & Myers, 1980). Furthermore, they use cause-and-effect reasoning and strive for impersonal, objective truth (Myers et al., 1993). Thinking types are guided by clear and consistent principles, and tend to be fair, yet firm. At times they may be critical and skeptical (Bayne).

The participants who were Thinking types displayed a tendency to be logical and analytical. They all had a need to understand why they had got injured and by means of reasoning most of them arrived at very definite ideas as to why they had sustained their injuries. They also tried to be objective when they discussed their perceived causes of injury. The manner in which they responded to injury and a few of the emotions they experienced because of injury seemed to be indirectly related to the attributes characteristic of Thinking types. Some of the confusion and uncertainty, frustration and disappointment they experienced may have been partially due to their inability to make sense of their injuries. One of the participants experienced anger and frustration because he believed that it was unfair that he had got injured. Some of them also tended to be critical and skeptical of the medical profession; these tendencies were also accompanied by frustration and disappointment.

Twelve of the participants were Judging types. Those who have a Judging preference are known to follow plans and do not welcome unplanned and unexpected occurrences (Briggs-Myers & Myers, 1980). They like to plan ahead so as to avoid any stress at the last minute (Myers et al., 1993). Furthermore, Judging types tend to be industrious, organized and systematic. They have a need to meet deadlines and are happy when matters have been settled (Bayne, 1995). They also tend to be self-regimented, purposeful and exacting (Briggs-Myers & Myers).

Of the 11 participants who followed a structured training program, nine were Judging types. It appears that the runners in the sample preferred structure and planned their training programs accordingly. When they suffered injury, their plans were disrupted and they reacted in various ways. Five of the Judging types found it difficult to accept that they were injured and seemed to experience denial; some of these participants

continued running because they did not want to alter their training plans. All the participants experienced a sense of loss which appeared to be directly related to having their plans of preparing for an event disrupted. Eight of the participants who had a Judging preference experienced frustration and disappointment. Once again, this was directly linked to having their goals and training programs thwarted. The participants who were Judging types also experienced confusion and uncertainty (5), apprehension (5), personal dissatisfaction (5), a sense of urgency (3) and eventual acceptance (7). In most instances these emotions can be attributed to the fact that their goals and subsequent plans had been hindered because of injury.

It has been noted that the sample of 15 long-distance runners in the present study are typical of long-distance runners in South Africa; however, as stated previously, it is difficult to draw definite conclusions about the preference types of long-distance runners because of the small sample. One will only be able to ascertain whether those who have Sensing, Thinking and Judging preferences are attracted to long-distance running if a larger sample is used. However, a consideration of the results described above indicates that the MBTI may be a useful instrument that both those involved in coaching long-distance runners as well as those involved in runners' rehabilitation can employ. Knowing runners' preference types may lead to a better understanding of their approach to training, their experience of injury, their psychological responses to injury and their approach to rehabilitation.

In the following section, a biopsychosocial model that sheds light on the factors that are affected by and affect long-distance runners' experience of injury is presented.

### **5.11 The biopsychosocial model of long-distance running injuries**

An examination of long-distance runners' experience of injury reveals that injury has an effect on and is affected by the following factors: running history and training program; perceived benefits and disadvantages; personal understanding of injury; personality factors; psychological responses to injury; perceived causes of injury; approach to rehabilitation; and coping mechanisms. Furthermore, there is an intrinsic interplay of biological or physical, psychological and social processes inherent in the experience of injuries sustained in long-distance running. The biopsychosocial model of long-distance running injuries is thus proposed and presented. Although the model emanates from the experiences of the 15 participants in the present study, it may be applied to long-distance runners in general. However, cognizance is also taken that all distance runners are individuals and may respond to injury in a unique manner. The model is depicted in Figure 5.1. An explanation of the model follows.



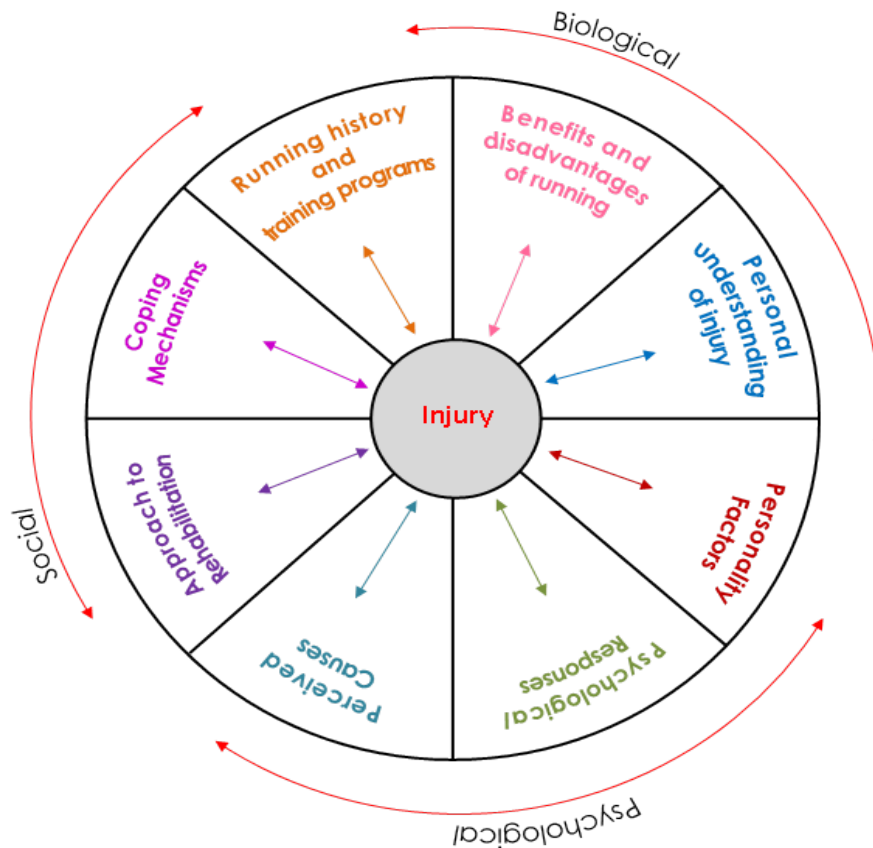


Figure 5.1: The Biopsychosocial Model of Long-distance Running Injuries

A long-distance runner's *experience of injury* is the essence of the biopsychosocial model of long-distance running injuries. Consequently, it forms the core of the model and accordingly, is placed in the centre of the model. Each of the factors that are affected by and have an effect on injury are linked to the experience of injury by bidirectional arrows; thus, depicting the integral relationship between injury and each of the factors. Furthermore, in order to show that all these factors are related to and have an influence on one another, the model is circular. The biopsychosocial nature of the model is represented by the bidirectional arrows outside the circle. A brief consideration of all the components of the model follows.

A long-distance runner's *history of running and training program* is the first factor that has an effect on and is affected by injury. The runner's history of running involves the individual's experience in the sport and more specifically, the races he/she has run. The biopsychosocial model of long-distance running injuries proposes that runners possess an athletic identity which may be dependent on the races they have run. Furthermore, they tend to follow training programs in order to achieve their goals. The experience of injury may be very disruptive as it impinges on the realization of their goals and subsequently, may have a negative effect on their athletic identity. Wiese- Bjornstal (1998) stated that injured runners who have a strong athletic injury may experience injury as more disturbing than those whose athletic injury is not as strong. However, in order to

achieve their goals, injured runners may attempt to run with injury. Heil (1993) stated that athletes have to tolerate pain if they wish to succeed. Pike and Maguire (2003), on the other hand, contended that tolerating pain may exacerbate the possibility of serious injury.

The second factor linked to injury involves the *benefits and disadvantages* long-distance runners perceive as a result of their involvement in the sport. The physical benefits experienced by distance runners have been well-documented (Fixx, 1977; Fordyce & Renssen, 2002; Higdon, 1993; Noakes, 2001; Sparks & Kuehls, 1996). Extensive research has also been conducted on the psychological benefits associated with the sport (Chan & Lai, 1990; Hassmen & Blomstrand, 1991; Percy et al., 1981; Symonds, 1995; Ungerleider et al., 1989; Ziegler, 1991). The participants in the present study not only perceived that running afforded them physical and psychological benefits, but social benefits too. The biopsychosocial model of long-distance running injuries proposes that if injury prevents runners from participating in the sport, they may experience a loss of these benefits. According to Van Raalte and Brewer (2002), injury may be a threat to one's basic identity. This, in turn, may result in their decision to run with injury; as stated previously, this may worsen the injury and result in a further loss of perceived benefits.

The third factor linked to injury, the core of the model, is runners' *personal understanding of injury*. As discussed previously, the difficulties encountered when conducting research on sport injuries include the various ways injury is defined, determining the role of pain in injury and ascertaining the severity of injuries. The model, however, proposes that runners' personal understanding of injury has a direct influence on their experience of injury and subsequent decision whether to run with injury or not. Runners, for instance, who believe they are only injured when they cannot run, are more likely to ignore pain and continue running than those who adopt a more cautious view. Conversely, runners' experience of injury may also determine how they define and approach it; for example, those who have previously sustained debilitating injuries because of their reluctance to stop training when injured may subsequently, adopt a more conservative approach and pay heed to minor aches and pains. Runners' personal understanding of injury and their experience thereof is subjective.

The fourth factor that is connected with bidirectional arrows to injury is *personality factors*. Only a few identified studies have explored the role personality plays in injury (Gill et al., 1995; Jackson et al., 1978; Kerr & Minden, 1988; Kontos, 2004; Valliant, 1980; Valliant, 1981). However, the biopsychosocial model of long-distance running injuries proposes that personality factors may have a direct influence on injured runners' experience of injury and moreover, injury may have an impact on their personality. Thus, the inclusion thereof is of paramount importance. Although the present study employed the use of

the MBTI to explore if the preferences runners exercise and their subsequent preference type play a role in their experience of injury, it is acknowledged that other personality inventories may offer alternative insights of the experience of injury.

The fifth factor intrinsically linked to injury is runners' *psychological responses* to it. Numerous studies, detailed in the literature chapter of this thesis, have examined the effect injuries have on the psychological well-being of athletes. These studies include those of Acevedo et al. (1992), Albinson and Petrie (2003), Cashmore (2002), Evans and Hardy (1995), Quinn and Fallon (1999), and Shuer and Dietrich (1997). The results of these studies, by and large, concur with the findings of the present study. The biopsychosocial model of long-distance running injuries proposes that runners may experience denial, a sense of loss, disappointment, frustration, uncertainty and confusion, personal dissatisfaction, apprehension, anger and a sense of urgency when they are injured. Furthermore, during the course of their rehabilitation they may eventually accept that they are injured. The psychological responses to injury listed above emerged during the present study and thus, are not a comprehensive list.

The biopsychosocial model of long-distance running injuries also proposes that injury is a personal and individual experience and consequently, runners do not respond to injury in a stereotypic pattern as suggested by the proponents of stage models. This view is in agreement with that of Brewer (2001b), Petrie (1993), and Quinn and Fallon (1999). Rather, the model proposes that injured runners' psychological responses to injury are influenced by their cognitive interpretations of the injury which, in turn, are affected by their personal and situational factors. This is in accordance with the integrated model postulated by Wiese-Bjornstal et al. (1998). Furthermore, as contended by Shuer and Dietrich, the model proposes that injured runners who continue to train with injury, may exacerbate their emotional distress by training in discomfort and pain; hence, the inclusion of bidirectional arrows in this component of the model.

The sixth factor linked to injury is the *perceived causes* thereof. The relationship between injury and the causes of it is self-explanatory. However, the model proposes that runners' perceived causes of injury and more specifically, of their own injuries may have a direct influence on their rehabilitation and thus, recovery outcomes. By acknowledging the possible causes of injury, runners may understand and consequently, take charge of their own injuries. However, if they choose to ignore what they perceive to be the causes of injury, they may exacerbate their injuries and suffer further injury.

The seventh factor that is intrinsically linked to injury is runners' *approach to rehabilitation*. Based on the findings of the present study, the biopsychosocial model of long-distance running injuries proposes that runners who perceive they are recovering from their injuries are likely to be happy with their treatment, trust those medical practitioners involved in it

and adhere to their rehabilitation programs. Rock and Jones (2002) found that athletes who believe in the efficacy of rehabilitation are more likely to adhere to the program. On the other hand, the model further proposes that runners who have not successfully recovered from their injuries and are dissatisfied with the treatment they are receiving may experience a lack of trust in the medical profession. Furthermore, these runners may be less inclined to adhere to their rehabilitation programs and may consult a number of medical practitioners in their urgency to recover from their injuries. According to Noakes (2001), some runners want to be in control of their own treatment and only require simple advice. This component of the model is enhanced by the inclusion of the measures runners believe will help facilitate their recovery as it accommodates both those runners who choose to treat their own injuries as well as those who seek medical help. However, the decision whether to follow these perceived measures may depend on their cognitive appraisal of the implications of their injury. This view is in accordance with the integrated model postulated by Wiese-Bjornstal et al. (1998). Runners, for example, who fear they may not be ready for major races if they do not train, may run with injury even if they acknowledge that their recovery is dependent on rest.

The eighth factor that is connected to injury is *coping mechanisms*. This factor includes support from significant others. The model proposes that runners who have coping mechanisms and/or support from significant others are better able to cope with injury than those who have neither. Furthermore, these mechanisms and support systems or the lack thereof may affect the runners' recovery. Green and Weinberg (2001) revealed that injured athletes who were more content with their social support networks displayed less mood disturbance than those who were not content. Similarly, Manuel et al. (2002) found that increased social support was connected to decreased depression in injured runners.

The circular nature of the biopsychosocial model of long-distance running injuries, as noted previously, depicts the interrelation of the factors that are intrinsically linked to injury. This is best illustrated by a couple of examples. Runners' psychological responses to their injuries are likely to have an effect on their approach to rehabilitation; on the other hand, their experience of rehabilitation may affect their psychological responses to their injuries. Similarly, injured runners' personal understanding of injury may be directly linked to their running history and training programs. Their training programs, in turn, may be influenced by personality factors; in the present study, the participants' training programs tended to be influenced by their MBTI preferences.

Finally, the biopsychosocial nature of the model is illustrated by the bidirectional arrows on the outside of the circle. The model proposes that injured runners can only be understood fully if they are viewed holistically. Physical or biological, psychological and

social factors are interrelated. Furthermore, a circular and not a linear relationship exists between them (Borrell-Carrio et al., 2004). Injuries sustained in long-distance running are, in essence, physical but are intrinsically linked to psychological and social factors. Each of the factors that affects and is affected by injury, and which has been outlined in this section, is also biopsychosocial in nature.

The biopsychosocial model differs from those discussed in the literature study in that it encompasses factors involved in the susceptibility, experience and rehabilitation of injuries sustained in long-distance running whereas the models reviewed only focused on one or two of these factors. Furthermore, unlike the models examined in the literature study the biopsychosocial model focuses specifically on injuries sustained in long-distance running which are usually chronic injuries.

In this section, a biopsychosocial model that sheds on light on the experience of injuries sustained in long-distance running has been proposed. The development of the biopsychosocial model of long-distance running injuries was the product of the present study. The model is biopsychosocial in nature and explores the integral relationship between injury and various factors.

## 5.12 Conclusion

In this chapter, the findings of the present study were discussed and related to the literature that has focused on psychosocial factors that are involved in sport injury. Furthermore, the biopsychosocial model of long-distance running injuries was proposed. The model emanated from the experiences of the 15 participants in the present study, but may be applied to long-distance runners in general. In the following and final chapter, the strengths and weaknesses of the study, and resulting recommendations for further research are briefly considered.

## CHAPTER SIX: CONCLUSION

### 6.1 Introduction

The present study was an exploration of the psychosocial factors involved in the susceptibility, experience and rehabilitation of injuries sustained in long-distance running in order to develop a biopsychosocial theoretical model that will help explain injury and the successful rehabilitation thereof in long-distance running. In Chapter One, the context of and motivation for the study was examined. In Chapter Two, there was a comprehensive discussion on the literature on the psychosocial factors involved in sport injury. There was an elucidation of the research methodology of the study in the third chapter. The results of the study were presented in Chapter Four. In Chapter Five, the results of the study were discussed extensively. In this chapter, the recommendations for further studies that have emanated from the strengths and weaknesses of the study are considered.

### 6.2 Recommendations

The participants in the study were typical of long-distance runners in South Africa. Purposive sampling with a snowballing effect ensured that specific types of individuals who have particular attributes, namely committed long-distance runners, were included in the study (Berg, 1998). Furthermore, the sample comprised a broad spectrum of running experience and ability. One participant, for example, was a previous winner of the Comrades Marathon and had represented South Africa in the World 100 km Championships while another participant battled to complete a 21.1 kilometre race within the allotted time. Furthermore, one of the participants had run in excess of 110 marathons and ultra-marathons while another was training for her first marathon when she suffered her injury. However, the sample was not representative of the demographics of the South African population. The majority of the participants (13) were classified as white and two as belonging to the coloured community in the country. None of the racial groups in the country were excluded; all long-distance runners were invited to participate in the study. The researcher was put into contact with black runners who were injured, but they declined the invitation to participate in the study. It is recommended that future studies may want to ensure that long-distance runners from all the racial groups in the country are included.

The study was enhanced by employing a mixed methods research design with the purpose of expansion and using case studies. According to Johnson and Wuegbuzie (2004), a combination of qualitative and quantitative approaches allows researchers to answer a wider and complete range of questions than if either approach was used alone. Although both qualitative and quantitative techniques were used to collect data, most of the study was conducted within the qualitative paradigm. The semi-

structured interviews that were conducted with each participant yielded rich, in-depth knowledge of their experience of injuries sustained in long-distance running. The participants also completed the MBTI in order to examine what preferences the participants exercised. By employing both qualitative and quantitative forms of data, the breadth and range of the study was expanded (Johnson & Wuegbuzie). However, because of the small sample it is difficult to draw any definite conclusions from the findings of the MBTI. It is recommended that in order to ascertain whether the preferences long-distance runners exercise are linked to their experience of injury, future research may wish to conduct a study within the quantitative paradigm and select a larger sample than that used in the present study.

The participants were not all at the same stage of injury when they were interviewed. They could be categorized into three groups: some were in the initial stages of injury, some were recovering from their injuries and the third group had recovered from their injuries. Future studies may wish to find a sample of long-distance runners who are at the same stage of injury. However, as stated previously, not all long-distance runners sustain injuries at the same time and furthermore, during their interviews it appeared that the participants tended to be reluctant to speak about their injuries. It is also noteworthy that all the participants appeared to react to and experience injury in similar ways regardless of their stage of injury; this enriched and enhanced the findings of the study.

The findings of the study show that the participants' injuries affected, as suggested by Brewer (2001b), their physical functioning and running performance negatively. A consideration of the participants' psychological responses to their injuries is in accordance with Lynch's (1988) view that sport injuries may also affect the psychological well-being of an athlete negatively. Williams and Roepke's (1993) stated that it may be valuable to include psychological interventions to address the emotional difficulties of injury in a rehabilitation program. Furthermore, as noted by Evans et al. (2000) and Larson et al. (1996), physiotherapists would welcome more knowledge of psychological interventions that may assist injured athletes in rehabilitation. The findings of the present study are in agreement with the opinions expressed above. Further studies may wish to focus specifically on psychological interventions in the rehabilitation of injured long-distance runners.

The development of a biopsychosocial model of factors involved in long-distance running injuries may be regarded as the principal strength of the study. Although not exhaustive, the model shows the factors that may be involved in long-distance running injuries. The model specifically indicates that injuries should be viewed holistically. It was not in the realms of the present study to focus on the biological or physical factors involved in injuries sustained in the sport. Further studies may wish to include and/or concentrate specifically on these factors. Whereas most of the research discussed in the

literature study was on acute injuries, the present study and subsequent model focused specifically on injuries sustained in long-distance running which are usually chronic in nature. This further enhances the quality of the study.

### **6.3 Conclusion**

This chapter has briefly examined the strengths and weaknesses of the present study and suggested recommendations for further studies. The findings of the present study have emphasized the need to view injuries sustained in long-distance running holistically. In other words, in order to understand why long-distance runners sustain injuries as well as their experiences of injuries and rehabilitation, it is necessary to consider a multitude of factors. Furthermore, the study recognized that biological, psychological and social processes are integrally and interactively engaged in injuries sustained in long-distance running (Suls & Rothman, 2004).